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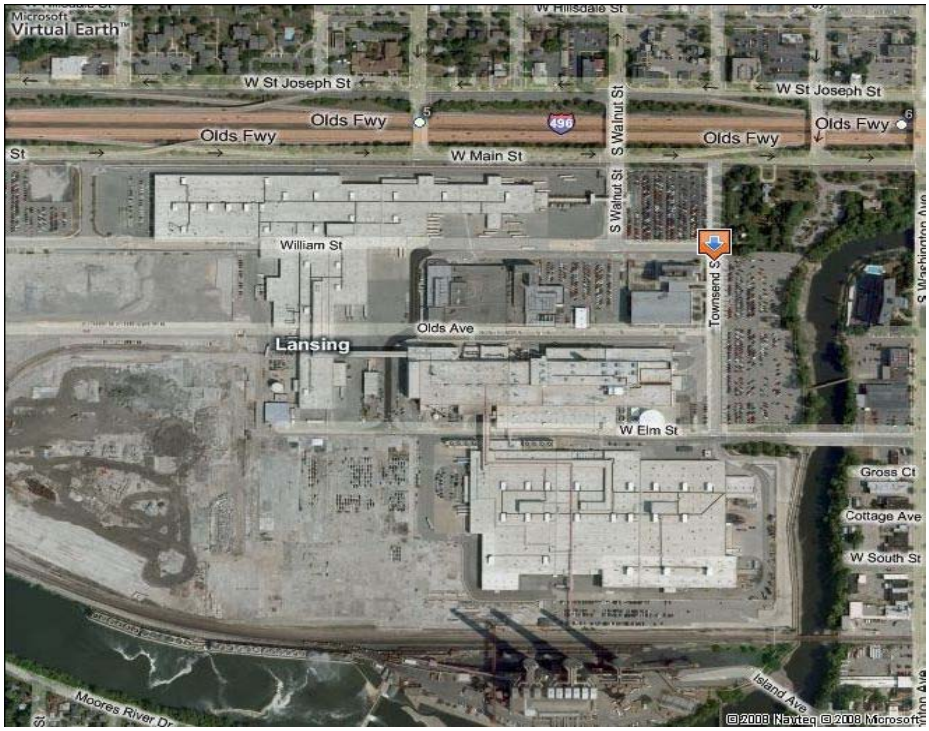
Current Condition Report

Volume I of III

July 25, 2008



ARCADIS

Current Conditions Report

Lansing Plant 1

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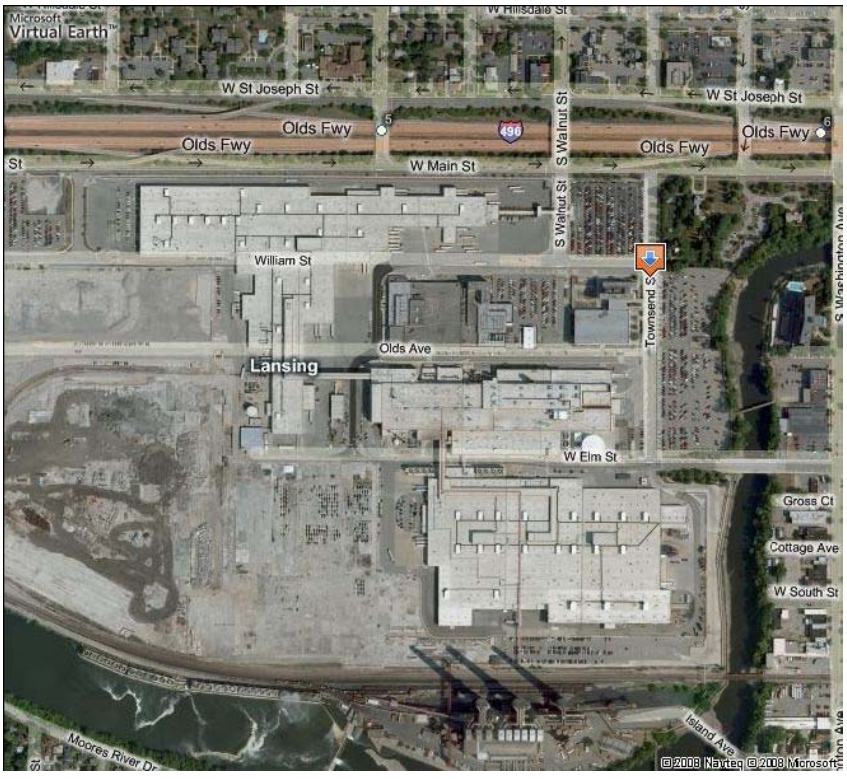
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- List of References (RFAR, URS 2001)
- Stormwater Drainage Areas (Tetra Tech, Inc., 2003)
- RCRA Permit #MID 005356894 (EPA, February 29, 1984)
- Release of Financial Capability Requirements for Facility Closure, GMC, Lansing Plant 1 Facility, MID 005 356 894 (MDEQ, December 11, 1998)

Appendix D Restrictive Covenant

Appendix E Data Evaluation and Databox Figure Development Methodology

Appendix F 2005 Site Assessment Support Data

Appendix G Historical Soil Boring Logs

Appendix H Earth-Metal Data

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Figure 6-1 Groundwater Databox and Elevation Contour Map – Basal Sandstone Aquifer Set 1

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Acronyms and Abbreviations

AOC	Area of Concern
AOI	Area of Interest
ARCADIS	ARCADIS of New York, Inc.
AST	Above Ground Storage Tank
BBL	Blasland, Bouck, & Lee, Inc., currently ARCADIS
BWL	Board of Water and Light
CCR	Current Conditions Report
CFR	Code of Federal Regulation
cf	cubic feet
cfs	cubic feet per second
CSM	Conceptual Site Model
DWP	Drinking Water Protection
ELPO	electrodeposition painting
ENVIRON	ENVIRON International Corporation
^{o}F	Degree Fahrenheit
the Facility	GM Lansing Plant 1
ft amsl	feet above mean sea level
ft bgs	feet below ground surface
GM	General Motors Corporation
gpm	gallons per minute
GSI	Groundwater Surface Water Interface
GSIP	Groundwater Surface Water Interface Protection
IDC	Industrial Direct Contact
IPSIC	Industrial Particulate Soil Inhalation Criteria
ISVIIC	Industrial Soil Volatilization to Indoor Air Inhalation Criteria
IVSIC	Industrial Infinite Source Volatile Soil Inhalation Criteria
LCA	Lansing Car Assembly
LGR	Lansing Grand River Assembly
MDEQ	Michigan Department of Environmental Quality
MDNR	Michigan Department of Natural Resources
mg/L	milligrams per liter
mg/kg	milligrams per kilogram
MLKJrB	Martin Luther King Jr. Boulevard
MSU	Michigan State University
µg/L	microgram per liter
NFA	no further action
NPS	National Parks Service

PA/VSI	Preliminary Assessment/Visual Site Inspection
PCB	Polychlorinated Biphenyl
PID	Photoionization Detector
PRC	PRC Environmental Management, Inc.
RCRA	Resource Conservation and Recovery Act
RDC	Residential Direct Contact Criteria
RFAR	Revised Final Assessment Report
RPSIC	Residential Particulate Soil Inhalation Criteria
RSVIIC	Residential Soil Volatilization to Indoor Air Inhalation Criteria
RVSIC	Residential Infinite Source Volatile Soil Inhalation Criteria
RWC	Risk-based construction worker contact
SAWP	Site Assessment Work Plan
SWMU	Solid Waste Management Units
SVOCs	Semi- Volatile Organic Compounds
TAL	Target Analyte List
TCL	Target Compound List
VOCs	Volatile Organic Compounds
USEPA	United States Environmental Protection Agency
URS	URS Consultants, Inc.
USGS	United States Geological Survey
UST	underground storage tank
VCAA	Voluntary Corrective Action Agreement
WMU	Western Michigan University

1. Introduction

This *Current Conditions Report* (CCR) describes the current conditions and historical waste management practices at the General Motors Corporation (GM) Lansing Plant 1 (United States Environmental Protection Agency [USEPA] ID MID 005 356 894), hereafter, referred to as "the Facility," in Lansing, Michigan.

1.1 General

This CCR has been prepared for GM and ENCORE, a wholly-owned subsidiary of GM as part of the initial step in the Resource Conservation and Recovery Act (RCRA) Corrective Action program being implemented at the Facility. In support of Corrective Action activities for GM and ENCORE, a project team has been developed for the Facility. This project team is currently made up of ARCADIS of New York, Inc. (ARCADIS) providing the project management lead, Conestoga-Rovers & Associates (CRA) providing data validation and data management, ENVIRON International Corporation (ENVIRON) providing the human health exposure assessment support, and Exponent Inc. (Exponent) providing the ecological exposure assessment support.

The Facility lies north and west of the Grand River and to the south of Interstate 496, at 920 Townsend Street in Lansing, Michigan (Figure 1). The Facility encompasses approximately 188 acres of land, and is divided into two sections:

- The western half of the Facility is designated as the Lansing Car Assembly (LCA). Operations ceased at LCA in 2005 and decommissioning and demolition activities began in 2006.

- The eastern half of the Facility is designated as the Lansing Grand River Assembly (LGR), which currently produces the Cadillac CTS, STS, and SRX.

The Facility has manufactured parts for and assembled automobiles since 1902. The most recent operations of the Facility have included body manufacturing, painting, and vehicle assembly. A Facility layout map is shown on Figure 2.

1.2 Areas of Interest

This section presents an overview of the areas of interest (AOIs) evaluated in this CCR. For the RCRA Corrective Action at the Facility, areas identified during prior investigations using terms such as Solid Waste Management Units (SWMUs) and

Areas of Concern (AOCs) identified by agencies, as well as additional areas identified by GM have been designated as AOIs.

New AOIs were identified by ARCADIS by conducting the following scope of work:

- ARCADIS reviewed approximately 10,000 Facility historical drawings in both hardcopy and electronic format to obtain information on historical operations and hazardous waste and material management.
- ARCADIS conducted interviews of Facility personnel with knowledge of the past and present operations.
- ARCADIS conducted Facility reconnaissance including Facility walkthroughs to evaluate the presence of AOIs.

The following AOIs were identified:

- 23 AOIs (22 SWMUs and 1 AOC) were identified by PRC Environmental Management, Inc. in the Lansing Plant #1 USEPA Preliminary Assessment/Visual Site Inspection (PA/VSI) Report (PRC, 1992).
- 78 additional AOIs were identified during the review of historical information for the Facility.

The AOIs are summarized on Table 1. The AOI locations are presented in Figure 3. The initial strategy was to have the AOIs sequentially numbered. However, through additional research and review of historical records, the AOI numbering could not remain sequential. The development of the AOI list is further discussed in Section 5 and 6.

1.3 Purpose and Scope

On July 1, 2008 the Michigan Department of Environmental Quality (MDEQ) and GM entered into a Voluntary Corrective Action Agreement (VCAA) for the Facility. The agreement calls for GM to work independently and voluntarily to investigate and, as necessary, stabilize and remediate releases of hazardous wastes, hazardous constituents, and hazardous substances at or from the Facility in accordance with RCRA and relevant USEPA corrective action guidance documents. This CCR is the first deliverable pursuant to the VCAA.

The following activities have been completed as part of the corrective action process:

- prepared an overview of the pertinent features of the Facility
- prepared a summary of the regional setting of the Facility
- reviewed available information concerning the current and historical uses of the Facility for the treatment, storage, or disposal of solid and hazardous wastes, hazardous constituents or hazardous substances
- summarized previous investigations conducted at the Facility
- summarized remedial activities conducted at the Facility
- evaluated existing data to identify AOIs at the Facility, and to support the determination of whether a release of hazardous waste, hazardous constituents or hazardous substances may have occurred at an AOI that would warrant further action
- prepared justification for no further action (NFA) at AOIs identified in this CCR that do not warrant further investigation or evaluation

1.4 Document Organization

This CCR is organized as follows:

Volume I

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List of Acronyms

Section 1 Introduction

This section presents the background, scope, and organization of the document.

Section 2 Regional Setting

This section presents regional information pertaining to the Facility, including surrounding land use, demographics, climate, geology, hydrogeology, groundwater use, hydrology, and ecology.

Section 3 Facility Description

This section presents a description of the Facility, including its location, historical and current operations, historical and current waste management practices, and Facility-specific geology, hydrogeology including groundwater quality, hydrology, ecology, and a preliminary conceptual site model (CSM) for human exposure.

Section 4 Investigations and Remedial Actions and Data Screening Process

This section presents a brief summary of previous investigations and remedial actions conducted at the Facility. Environmental investigations and remedial actions are further discussed in Sections 6 and 7, with other information related to the individual AOIs. In addition the section includes a description of the data screening protocol used.

Section 5 Groundwater Quality Data

This section describes and summarizes the available groundwater data.

Section 6 Areas of Interest Defined in the USEPA's PA/VSI Report

This section describes and summarizes the 23 AOIs identified at the Facility in the PA/VSI Report (PRC, 1992), including AOI locations, historical operations, previous investigations and remedial actions, and current status.

Section 7 Newly Identified Areas of Interest

This section presents information on the 78 additional AOIs identified from the review of historical information, including AOI locations, historical operations, previous investigations and remedial actions, and current status.

Section 8 References

This section presents a list of references used in this CCR.

Tables

Tables 1 and 2 are provided behind the first tab of Volume 1 of this report.

Appendices

Appendix A includes a City of Lansing zoning map and groundwater usage support data.

Appendix B includes a summary of historical Sanborn maps and aerial photographs of the Facility from 1938 to 1998.

Appendix C includes documents referenced in the CCR that were obtained from different sources.

Appendix D includes a copy of the deed restriction filed with Ingham County Register of Deeds on August 11, 2003 along with a Facility layout map showing the locations of the nine restrictive covenant areas (Area 1 through 9).

Appendix E summarizes the data screening process and databox figure development methodology used to evaluate soil and groundwater data collected at the Facility.

Appendix F presents a summary of the Site Assessment work conducted by Blasland, Bouck & Lee in 2005 including soil boring logs and laboratory reports (on CD).

Appendix G includes a list of soil borings and groundwater monitoring wells present at the Facility and the available soil boring logs (on CD).

Appendix H presents a summary of earth metals (aluminum, iron, magnesium, and sodium) data available for the Facility.

Appendix I includes a list of miscellaneous pits, sumps, and trenches identified in historical drawings during the research conducted for the completion of this report. A map depicting their location is also included in this appendix.

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Set 1 Databox Figures (5-1 through 53-1)

Volume III

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Set 2 Databox Figures (5-2 through 53-2)

2. Regional Setting

2.1 Land Use and Zoning

Properties surrounding the Facility are described in the *PA/VSI Report* (PRC, 1992) as mixed use. The Facility is bordered to the south by the Grand Trunk Western Railroad, Lansing Board of Water and Light (BWL), and by the Grand River. The area across the river from the Facility includes a park and mixed commercial and residential properties. Commercial, light industrial and residential properties also exist north, east, and west of the Facility. The Facility is currently zoned as heavy industrial according to the City of Lansing and Township of Lansing Zoning Map included in Appendix A. Future land use is expected to remain industrial for the area east of the North Bound Martin Luther King Jr. Boulevard (N. Bound MLKJrB). Future use of the area west of the N. Bound MLKJrB has the potential to be residential. Zoning of adjacent properties is business and residential

2.2 Location and Demographics

The City of Lansing, Michigan is located in the south-central portion of the state and is positioned within three counties; the northwest corner of Ingham County, the northeast corner of Eaton County, and the south-central portion of Clinton County. The Facility is located within the portion of the city that lies within Ingham County. Ingham County has a population of approximately 279,500 (2000 U.S. Census Data) of which 43% reside in the City.

2.3 Climate

The climate of the City of Lansing area was generalized in the *Revised Final Assessment Report (RFAR)* (URS, 2001) as "…having a continental climate. These continental conditions dominate when there is little wind or the wind direction minimizes influence from the Great Lakes. Occasionally, semi-marine conditions result when weather patterns project Great Lakes' conditions inland. Due to the influence of the Great Lakes, Lansing generally has milder winters and cooler summers than areas west of the Great Lakes at the same latitude."

In winter, the average temperature is 23.4 degrees Fahrenheit (ºF) with an average monthly minimum temperature of 13.5ºF (January). In summer, the average temperature is 68.5ºF with an average monthly maximum temperature of 82.6ºF (July) (www.worldclimate.com). The average yearly precipitation for the City of Lansing is

31.53 inches. Monthly precipitation values are fairly distributed, with the greatest amount of precipitation between April and September. June, August, and September have the highest average precipitation (i.e., between 3.4 and 3.5 inches per month). Snowfall is moderate, averaging 49.20 inches per year. The prevailing wind is from the southwest (BBL, 2005a).

2.4 Regional Geology

The physiographic province of the greater Lansing area is the Eastern Lake Section of the Central Lowlands Province, Interior Plains Region (United States Geological Survey [(USGS]) and National Parks Service [NPS], 2000). The topography of this area can be described as a combination of level to gently rolling lowlands (glacial ground moraine) and flat outwash plains (McNab, 1996). Surface elevations range from 830 to 890 feet above mean sea level (ft amsl), with the lower elevations corresponding to the Grand River drainage. The regional stratigraphy is composed of both overburden (i.e., unconsolidated deposits) and bedrock formations.

2.4.1 Overburden Geology

Native overburden deposits at the Facility consist of glacial drift soils (tills) associated with glacial ground moraines and outwash plains. These tills are predominately composed of clays and silts, with discontinuous layers of sand, silty sand, and gravels (WMU, 1981). Based on soil borings and monitoring wells installed during previous subsurface investigations, till thicknesses range from 20 and 60 ft (BBL, 2004a; 2004b; and 2005a).

2.4.2 Bedrock Geology

The Pennsylvanian-age Grand River and Saginaw Formations underlie the overburden deposits of the greater Lansing area. The depth to bedrock ranges from 25 to 107 feet below ground surface (ft bgs) and range in thickness from a feather edge to more than 700 ft, but are typically less than 300 ft (USGS, 2000). Bedrock across the Facility consists primarily of medium to light gray sandstones and shales with some minor coal seams and limestone layers. Natural exposures of the Saginaw Formations are not observed in the immediate area of the Facility. The Saginaw and Grand River Formations represent cyclic deposition of stream and river channel sands, floodplain silts and clays, marine clays and carbonates, and, therefore, minor coal layers (Dorr and Eschman, 1970). The Grand River Formation consists of filled erosional valleys of the underlying Saginaw Formation (USGS, 2000).

2.5 Regional Hydrogeology

The primary aquifer in the Lansing area is the Grand River-Saginaw aquifer, which is a major supplier of water for municipal, industrial and domestic use in the Lansing area (USGS, 2000) as further discussed in Section 2.8. Because the sandstone of the Grand River Formation was formed within erosional valleys of the Saginaw Formation, the two formations are hydraulically connected, and thereby comprise one aquifer known as the Grand River-Saginaw aquifer (USGS, 2000). The principal source of recharge of the Grand River-Saginaw aquifer is the unconsolidated overburden deposits (USGS, 2000). However, known outcroppings of these formations exist along the Grand River, where recharge could occur as well.

As observed across the Facility and at nearby properties (GM Plants 2, 3 and 6 to the north), groundwater may be present in relatively more permeable units (i.e., sand and gravel) within the glacial clay till. These "perched" water units are typically discontinuous and vary in elevation and thickness (BBL, 2005a). Because flow within perched water units is primarily controlled by gravity, flow direction within these units varies. Groundwater in the perched water units may ultimately flow downward toward the bedrock aquifer or horizontally through relatively permeable material toward Grand River.

Because the sandstone of the Grand River Formation was formed within erosional valleys of the Saginaw Formation, the two units are hydraulically connected, and thereby comprise one aquifer known as the Grand River-Saginaw aquifer (USGS, 2000). The Grand River-Saginaw aquifer is a major supplier of water for municipal, industrial and domestic use in the Lansing area (USGS, 2000) as further discussed in Section 2.8. The principal source of recharge of the Grand River-Saginaw aquifer is the unconsolidated overburden deposits (USGS, 2000). However, known outcroppings of these formations exist along the Grand River, where recharge could occur as well.

2.6 Regional Hydrology

The Grand River watershed consists of more than 5,500 square miles in 19 counties and is the largest watershed with one common river in the state of Michigan (Cannon Township, 2006). The Grand River itself flows for approximately 270 miles from Hillsdale and Jackson Counties in the southern portion of the state to Grand Haven in Ottawa County, where it empties into Lake Michigan (Cannon Township, 2006). With the exception of a small portion of the southeast corner, Ingham County is completely

covered by the watershed (approximately 1,230 square miles) (Cannon Township, 2006). Mean annual stream flow for the Grand River at Lansing is approximately 1,000 cubic feet per second (cfs) (USGS, 2006). River flow is highly variable due to precipitation and runoff throughout the year and seasonal changes.

South of the Facility, the Grand River flows west to east through the City of Lansing (Figure 1). Immediately upstream of and adjacent to the Facility is an impoundment created by Moores Park Dam. The Grand River changes direction several times through Lansing and finally leaves the city, northwest of the Facility, in a westerly direction (BBL, 2005b).

The major tributary to the Grand River in the greater Lansing area is the Red Cedar River (Cannon Township, 2006). The Red Cedar River flows east to west from Livingston County, through East Lansing and the east-central portion of the City of Lansing. The Red Cedar River enters the Grand River where that river starts its south to north flow through the City of Lansing east of the Facility (Figure 1).

It should be noted that the Grand River is not used as a drinking water supply (MDEQ electronic communication).

2.7 Regional Ecology and Recreational Uses

The Grand River and the system of tributaries that make up the Grand River watershed provide habitat for communities of fish and other aquatic organisms. The Grand River is used for recreation, including boating and fishing, but is not used as a drinking water source in the Lansing area (MDEQ electronic communication). In addition to the aquatic ecosystem, the associated riparian corridor provides habitat for terrestrial plants and animals. Wetlands are not present near the Facility. The land along the river adjacent to the Facility consists of a narrow riparian corridor, a recreational path, and a mixture of industrial and commercial development and residential areas (BBL, 2005). Animal species that may inhabit this portion of the watershed may include various reptiles and amphibians, birds, and small mammals, especially those types that can coexist with humans in an urban setting. Warm-water species of fish are prevalent in the Grand River, with the occasional coldwater species present (MDEQ, 2005). Warm water species include smallmouth bass, walleye, northern pike, catfish, and carp. When water temperatures cool in the fall, Coho and Chinook salmon, steelhead, lake, and brown trout also may be present.

2.8 Regional Water Supply and Groundwater Use

Groundwater from the deep wells completed approximately 400 ft bgs in the Grand River-Saginaw aquifer is used for potable and nonpotable sources in the Lansing Area and is supplied by the Lansing BWL. BWL transports groundwater through large transmission lines to two water-conditioning plants located within the city limits (URS Consultants, Inc. [URS], 2001). A map of the BWL groundwater production wells in the vicinity of the Facility is presented in Figure A-1 included in Appendix A. The closest groundwater production well is well 3300006319 owned by the BWL located approximately 1,700 feet east of the Facility. The eastern portion of the Facility is located within the City of Lansing Well Head Protection Area. A map of the Facility showing the approximate Facility location within the City of Lansing and Township of Lansing Well Head Protection Areas that was obtained from the Michigan State University (MSU) Remote Sensing and GIS Research and Outreach Services (RSGIS) Interactive Viewer on 12/4/2006 is included in Figure A-2, Appendix A.

Data submitted by the BWL in January 2004 are attached in Appendix A and presents the data measured at the water conditioning plant over the period July 1998 through 1999. Aluminum groundwater concentrations ranged from <20 micrograms per liter (µg/L) to 140 µg/L. Arsenic groundwater concentrations ranged from <1 µg/L to <5 µg/L. Barium groundwater concentrations ranged from 140 µg/L to 280 µg/L. Cadmium groundwater concentrations ranged from <0.2 µg/L to <2.4 µg/L. Calcium groundwater concentrations ranged from 83,000 µg/L to 140,000 µg/L. Chromium groundwater concentrations ranged from <4.2 µg/L to 11 µg/L. Copper groundwater concentrations ranged from <20 µg/L to 510 µg/L. Iron groundwater concentrations ranged from 140 µg/L to 700 µg/L. Lead groundwater concentrations were typically <3 µg/L, with one exception (8.7 µg/L). Magnesium groundwater concentrations ranged from 32,000 µg/L to 44,000 µg/L. Mercury groundwater concentrations ranged from <0.2 µg/L to <0.21 µg/L. Nickel groundwater concentrations ranged from <25 µg/L to 86 µg/L. Selenium groundwater concentrations ranged from <1 µg/L to 5 µg/L. Silver groundwater concentrations ranged from <0.2 µg/L to <5 µg/L. Sodium groundwater concentrations ranged from 9,100 µg/L to 17,000 µg/L.

According to the BWL 2005 Annual Water Quality Report included in Appendix A, barium, fluoride, and nitrite were measured at the water conditioning plant. The concentrations of barium ranged from 30 to 33 µg/L. The concentrations of fluoride were 900 µg/L. The concentrations of nitrite ranged from 59 to 61 ppb.

No local ordinance is currently in place restricting installation of supply wells in the unconsolidated formation (perched water units); however, no municipal wells are installed in this formation. In addition, no Facility supply wells are installed in the unconsolidated formation

3. Facility Description

3.1 Facility Location

The Facility is located at 920 Townsend Street in Lansing, Michigan on approximately 188 acres of land in an area of mixed industrial, residential, and commercial uses. The Facility includes the LCA and the LGR. The LCA encompasses approximately 96 acres and is located on the western portion of the Facility, while the LGR encompasses approximately 92 acres and is located on the eastern portion of the Facility. The Facility is bordered by Interstate 496, commercial buildings and residences to the north; the Grand River, Scott Park, and residential and commercial buildings to the east; the Grand Trunk Western Railroad, BWL, the Grand River, and Moores Park to the south; and residential buildings to the west.

3.2 Current and Historical Operations

3.2.1 Current Operations

The Facility contains a number of large buildings that house maintenance, shipping, and automotive assembly and painting operations. In 1999, a large portion of the east half of the Facility was demolished and subsequently redeveloped with the construction of the LGR which currently produces the Cadillac CTS, SRX, and STS. The west half of the Facility, the LCA, produced the Pontiac Grand Am and the Chevrolet Classic. Operations recently ceased at LCA in 2005 and demolition activities are currently underway. A facility layout map is shown on Figure 2.

3.2.2 Historical Operations

The Facility was originally constructed in 1902 and has been used for the manufacturing of automobiles and automobile parts. From 1902 until 1908, Oldsmobile Motor Works operated the Facility. In 1908, Oldsmobile Motor Works became part of the General Motors Corporation.

The most recent operations at the Facility included: (1) the machining of 6-cylinder (V-6) engines; (2) manufacturing of automobile front ends, bumpers, and gasoline tanks; (3) remanufacturing of 8-cylinder (V-8) engines; (4) repairing pumps and valves; (5) painting automobile front ends, bumpers, and engine parts; (6) testing engines; (7) and assembling hoods, gasoline tanks, V-6 engines; (8) assembly of the Pontiac Grand

Am, the Oldsmobile Alero, and the Chevrolet Classic; and (9) assembly of the Cadillac CTS, SRX, and STS.

3.3 Historical Mapping and Aerial Photographs

Historical topographic maps, Sanborn maps, and aerial photographs from Facility records were reviewed and 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 Facility as time has passed.

3.4 RCRA Regulatory History

According to the PA/VSI Report, a Notification of Hazardous Waste Activity form for the Facility was submitted to the EPA on August 7, 1980. The Facility submitted a RCRA Part A Permit Application on November 14, 1980 in accordance with 40 Code of Federal Regulation (CFR) Part 270.

The Facility submitted a RCRA Part B Permit Application to operate a hazardous waste container storage area on November 30, 1982. The application included the following wastes: arsenic (D004), barium (D005), cadmium (D006), chromium (D007), lead (D008), mercury (D009), and wastewater treatment sludge from electroplating operations (F006). A Part B permit was issued on March 29, 1984. The permit authorized storage of D001, D002, D004, D005, D006, D007, D008, D009, F001, F002, and F006 wastes in containers in the hazardous waste container storage area.

The Facility has had minor RCRA compliance issues in the past. These violations were observed during a series of Michigan Department of Natural Resources (MDNR) inspections between 1981 and 1990. These violations pertained mainly to improper placarding, improper labeling of drums and tanks containing hazardous waste, and failure to inspect interim status and 90-day accumulation tank and secondary containment systems daily. No orders were issued as a result of the inspections.

GM closed the unit under Part 111 Hazardous Waste Management of the NREPA, PA451. Closure documentation was approved by MDEQ with the release from financial assurance requirements for facility closure, dated December 11, 1998 (see Appendix C).

3.5 Historical and Current Waste Management Practices

3.5.1 Historical Waste Management Practices

The PA/VSI Report was reviewed for information pertaining to historical waste management practices at the Facility. In the past, the Facility has generated various waste streams in the following general categories: zinc phosphate wastes; painting wastes; waste solvents and oils; and scrap metal.

Non-hazardous wastewater treatment sludge was generated from the SWMU 9 Wastewater Treatment System (AOI 1-9) which serviced all operations throughout the Facility. Nonhazardous used oil was generated from throughout the Facility and treated at the SWMU 1 Used oil Treatment System (AOI 1-1). After treatment, oil was transported to a licensed facility. Solids from the process wastewater stream were collected in a gondola and transported to the Building 22 Roll-Off Dumpster (AOI 1-14) prior to disposal.

The Facility generated waste paint (D001, D007, F003, F005), non-hazardous paint sludge, and paint thinner (D001, D007, F003, F005) from engine, fascia, and bumper painting operations. Solvent-based painting was used during engine head and block painting, as well as during various touch-up painting operations. Waste paint and paint thinner were stored in 55-gallon drums in the former Hazardous Waste Storage Area (AOI 1-19) and the former Satellite Accumulation Areas (SAAs) (AOI 1-21). The drums were placed on pallets on a reinforced concrete epoxy-coated floor, and the wastes were periodically transported by tanker truck to a licensed disposal facility.

The Facility conducted wet machining of parts, which used lubricating oil. This wet machining as well as dry machining produced waste metal chip shavings. Scrap metal was generated from engine machining, engine remanufacturing, gas tank manufacturing, and automobile assembling. Scrap metal was stored in the 20 ft by 20 ft by 15 ft concrete Outdoor Scrap Metal Bins (AOI 1-15). The scrap metal was picked up by a scrap metal recycler. Residual oil from scrap metal stored in these bins drained into the Outdoor Scrap Metal Underground Storage Bins (AOI 1-16). This oil was then pumped to the Used Oil Treatment System (AOI 1-1).

Asbestos was generated from engine remanufacturing operations and contained in 4-millimeter plastic bags, which were then stored in the Former Asbestos Dumpster (AOI 1-17). Adhesive waste (D001) was generated from engine remanufacturing operations. Nonhazardous waste polyol and waste isocyanate solids were generated

during fascia and bumper manufacturing. Waste solvents were generated from pump and valve repair, fascia and bumper manufacturing, and hood assembly.

The PA/VSI Report stated that automobile assembly engine testing operations generated waste gasoline and waste brake fluid (D001, D018). These fluids were accumulated at AOI 1-5, AOI 1-6, and AOI 1-7 and transferred via tanker trucks to AOI 1-19. See sections 6.5, 6.6, and 6.7 for details on the waste handling practices at each of these AOIs.

Wastewater filter cake (F006) was generated from former plating and phosphating operations (AOI 1-20). Solid sheet molding compound waste resin containing styrene and metals (D001, D006, D008, and D009) was generated during plastic molding operations. These wastes were stored in the Hazardous Waste Storage Area (AOI 1-19).

The Facility generated non-hazardous oil filter residue from machining operations throughout the Facility. These "wet" oily filter residue filters were stored in the Building 22 Roll-Off Dumpster (AOI 1-14). Baghouse dust was generated from gas tank manufacturing, and nonhazardous baghouse dust was generated from engine remanufacturing and pump and valve repair (AOI 1-13).

SAAs (AOI 1-21), which consisted of 55-gallon drums and 2-cubic-yard hoppers, were used to accumulate waste at the point of generation prior to storage and disposal. The SAAs managed the following wastes: wet machining residue and filter paper; waste paint and paint thinner; dry machining chip waste; adhesive waste; non-hazardous waste solids form rapid reaction injection molding (RRIM) operations; waste solvents; wastewater treatment sludge from zinc phosphating operations; and purge resin from plastic molding operations.

3.5.2 Current Waste Management Practices

LCA ceased operations in 2005 and is currently undergoing demolition.

LGR currently generates several wastes, including: light ballasts, aerosols, water-based paint, used electric lamps, paints and thinners, rags and debris, used oil, cafeteria grease, solvent rags, used batteries, newspaper, mixed flammable auto fluids, computer equipment, weld collection dust, paint sludge, phosphate sludge and debris, empty paint pails, steam booth sludge, drained aerosols, mercury debris, used oil, electrodeposition painting operation (ELPO) filter and phosphate sludge, scrap

metal, and adhesive/sealer and debris. Each of the waste streams are accumulated in designated areas throughout LGR.

Wastes generated at the Facility are transported from the Facility by contractors to a licensed disposal facility.

3.6 Facility Geology

The subsurface deposits at the Facility have been characterized through the completion of numerous soil borings, overburden monitoring well installations, and bedrock monitoring well installations. The following descriptions of the Facility geology are based on those investigations as described in the *Site Assessment Work Plan, Lansing Car Assembly* (LCA) (SAWP) (BBL, 2005).

The overburden deposits identified at the Facility can be grouped into the following units:

Fill – Fill deposits that range in thickness from 5 to 20 feet are present beneath most areas of the Facility. Fill deposits consist primarily of dark to light brown, fine- to medium-grained sands with some coarse sand, trace gravel, and occasional cobbles which may be reworked native material from the Facility property. Fill debris, including concrete and brick, is also present in some areas.

Unconsolidated Glacial Deposits – Unconsolidated glacial deposits (overburden) are present at the surface or beneath the fill deposits across the Facility area. The overburden can be subdivided into two units based on the primary soil type present:

- Coarse-Grained Units – Sand and gravel-rich deposits are present beneath the fill and are most likely glaciofluvial in origin. The deposits are comprised primarily of brown to light brown, fine-grained sands, sands and gravels, silty sands, with varying amount of fine-grained (i.e., silt and clay). As shown on the geologic cross sections presented in Appendix C, the lower (elevation below 820 feet amsl) coarse-grained deposits are typically discontinuous. The coarse-grained unit observed between an elevation of approximately 820 and 840 feet amsl appears to be continuous across the Facility. As described in Section 3.7.1, saturation (“perched” water) may be present within these coarse-grained deposits.

- Fine-Grained Units – Fine-grained deposits are comprised primarily of gray sandy clays and silts with varying amounts of sand and gravel. These fine-grained units are defined as "tills" in that the material was directly deposited by glaciers.

The bedrock encountered at the Facility consists primarily of sandstones, shale, and occasional limestone and coals of the Pennsylvanian-age Saginaw Formation and is first encountered at depths ranging from approximately 20 to 60 ft bgs (820 to 795 feet elevation amsl). The Saginaw Formation at the facility is characterized by two distinct units: an upper shaly sandstone and a basal sandstone as described below:

- Upper Shaly Sandstone – The upper shaly sandstone consists of fine-grained micaceous sandstone interbedded with shale, shaly sandstone, coal, and occasional lenses of limestone. The unit is approximately 30 to 50 ft thick with a top of unit elevation range of approximately 820 to 795 ft elevation amsl and a unit base elevation range of approximately 735 to 775 feet elevation amsl. The upper 20 ft of the unit is highly fractured.

- Basal Sandstone – The basal sandstone consists of a poorly graded, medium-grained sandstone. The top of the basal sandstone unit ranges from approximately 735 to 775 feet elevation amsl. The base of the basal sandstone unit was not encountered in borings completed as part of the Facility investigations; however, some borings have been advanced up to 100 feet into the unit and, based on boring observations, the unit is consistent with depth and massive with limited fracturing.

Appendix C presents cross sections of the Facility geology as prepared for the RFAR.

3.7 Facility Hydrogeology

3.7.1 Perched Water Units

As discussed above, the unconsolidated deposits at the Facility are primarily silt and clay with varying amounts of sand and gravel. Sand-and-gravel deposits are often encountered as lenses. Zones of saturation within these sand and gravel deposits above the water table, or "perched" water units, are encountered at several locations across the Facility. Where present, the perched water units are typically encountered between 5 and 30 feet bgs. The locations where perched water is present across the Facility are shown on Figure 4, as based on the investigation completed by URS

described in the RFAR. It should be noted that the URS findings were reassessed by ARCADIS and one area identified by URS as having perched water present (in the vicinity of 12MW020D) was not included based on the well screen depth which indicated the screen was most likely set into the water table, not into a perched water unit.

Groundwater flow within the perched water units is controlled primarily by gravity with groundwater in these zones flowing either downward into the bedrock aquifers or horizontally within the perched water unit itself or a hydraulically connected preferential pathway (relatively high permeability unit). As shown on Figure 4, most of the perched water units identified are bounded within the Facility with no direct contact with surface water. The only potential for discharge to surface water from these zones would be indirectly through a sewer line located beneath a perched water unit that ultimately discharges to the river. The potential for indirect discharge of groundwater to surface water through the storm sewer network will be addressed at selected locations during the upcoming RCRA Facility Investigation (RFI).

In addition to possible indirect discharge through storm sewers, perched water units may be in direct hydraulic communication with the river as is the case with the perched water unit in which temporary wells 17MW001, 17MW002 and 17MW003 were completed (Figure 4). Based on the screen depths for these sample locations and the observations in the boring logs regarding saturation, the perched water unit elevation at this location (approximately 810 to 820 feet amsl) in general correlates to the Grand River surface water elevation in this area (818 feet amsl based on a surface water level measurement collected near the Elm Street bridge on November 14, 2007). Because groundwater and surface water elevation measurements were not collected from the borings and river, the groundwater flow direction is not known (i.e., perched water unit water may be discharging to the river or surface water may be infiltrating into the perched water unit).

3.7.2 Bedrock Aquifer

The water table within the Facility property is generally located within the upper shaly sandstone and ranges in elevation from approximately 810 to 785 feet amsl with the water table dropping in elevation to 730 feet amsl near the extraction wells due to pumping. However, the water table has been shown to be present above the bedrock into the overburden deposits as observed at well 12MW020D.

The upper shaly sandstone and basal sandstone units are hydraulically connected (i.e., flow between these units is not limited) and, therefore, are not truly separate aquifers. However, because these units differ in general lithologic description and contaminant concentrations differ between the two units, the upper shaly sandstone and basal sandstone aquifers are identified as separate groundwater units for investigation purposes.

In general, potentiometric head elevation decreases with depth within the bedrock aquifers indicating a downward vertical hydraulic gradient throughout the Facility which is most likely at least partially attributable to pumping from the extraction system.

A groundwater extraction and treatment system is in operation to remediate groundwater in the upper shaly sandstone and basal sandstone units which has shown impact from previous releases. Groundwater contour maps were developed for the upper shaly sandstone aquifer (Figure 5-1) and the basal sandstone aquifer (Figure 6-1) based on water levels collected on November 4, 2007. Extraction wells, EW-1, EW-2, EW-3, and piezometer EW-5, were completed as open boreholes across both of these units. Therefore, the groundwater elevations from these wells were used on both of the groundwater contour maps. During the water level monitoring, extraction wells EW-1 and EW-3 were pumping while EW-2 was shut off. As shown by the approximated extent of the groundwater capture zone presented on Figures 5-1 and 6-1, groundwater in the upper shaly and basal sandstones is controlled across the Facility by the extraction system.

Prior to startup of the groundwater extraction system, groundwater flow in both bedrock units was to the north-northeast (URS, 2001).

3.8 Facility Surface Water Hydrology

The nearest surface water body to the Facility is the Grand River which is adjacent to the south and east of the property as shown on Figure 1. River flow is toward the east (on the south side of the Facility) and north (on the east side of the Facility) with water ultimately discharging to Lake Michigan. The Moores Park Dam is located south of the Facility as shown on Figure 1 creating an impoundment on the upstream (west) side of the dam. Based on survey data collected during November 2007, the Grand River surface elevation is above the on-Facility water table in the bedrock aquifer and, therefore, the Grand River is considered a “losing” stream (i.e., surface water infiltrates to the groundwater).

Regarding on-Facility surface water (storm water) runoff, the majority of the LGR is paved; therefore, surface water runoff on the LGR portion of the facility is mostly controlled by storm sewer drains. A relatively small proportion of the precipitation infiltrates through landscaped/grassy areas.

Facility storm water runoff from paved areas is captured by the stormwater drainage system. The stormwater sewer system is shown on Figure 2 (East) and Figure 2 (West) presented in Appendix C. Stormwater captured within Drainage Areas 1-003, 1-005, 1-006, 1-007, 1-008, 1-009, 1-012, 1-016, 1-017 and 1-018 (Appendix C Figures 2[East] and 2[West]) is discharged directly to the Grand River through the corresponding National Pollutant Discharge Elimination System (NPDES) outfalls shown on Figure 3A under General Permit #MIS310000 and Certificate of Coverage #MIS3100363.

Stormwater runoff within Drainage Area 1-001 is conveyed to AOI 1-9 prior to discharge to the City of Lansing wastewater treatment plant through the City's combined sewer on the east side of the property. In the near future this connection will be eliminated by the City and the stormwater from Drainage Area 1-001will also discharge to the Grand River.

3.9 Facility Ecology

The Facility is located within an industrial/manufacturing setting where almost the entire surface is paved (asphalt and/or concrete) parking lots and building structures. A minimal area adjacent to parking lots and building structures consists of maintained landscaping (i.e., lawn and shrubs) and remnant riparian vegetation. Animals that may exist on the Facility include birds, small mammals, and scavengers, especially those species that can coexist with humans and are tolerant of disturbance (BBL, 2005). Use of the Facility by such species is expected to be minimal due to the lack of undeveloped areas on the Facility and the disturbance caused by manufacturing activities. Habitat for ecological receptors is nonexistent at the AOIs evaluated in this CCR.

The nearest surface water body to the Facility is the Grand River which is adjacent to the south and east of the property edges. The Grand River begins as a slow moving stream with a soft silt and clay substrate at its headwaters south in Jackson and Hillsdale Counties. At Eaton Rapids, Eaton County, the river widens, with increased flow, sand and gravel substrate with boulders, and an alternating pattern of riffles and pools. These conditions persist through to Lake Michigan except where the river has

been impounded. Immediately adjacent to the Facility is one of these impoundments formed by the Moores Park Dam. Warm-water fishes noted in the Grand River and Moores Park Dam impoundment include largemouth and smallmouth bass, walleye, northern pike, channel and flathead catfish, carp, bluegill, and crappie as well as various species of non-game fish. The Brenke Fish Ladder is located downstream of the Facility at the North Lansing Dam, a currently non-functioning hydroelectric dam. The Brenke Fish Ladder allows anadromous fish species such as chinook and coho salmon, steelhead, and brown trout to migrate upstream as far as the Moores Park Dam and into the Red Cedar River system.

No wetlands have been identified within 1,500 ft of the Facility. Cooley Gardens, a small horticultural display garden and park, is located adjacent to the northeast corner of the Facility, occupying approximately one acre of land. The park has an eclectic collection of plants. A narrow riparian forested strip extends from Elm Street north toward the Cooley Gardens, between the northeast Facility boundary and the Grand River.

Across the Grand River there are Moores Park and Riverside Park, to the south of the Facility; and Scott Park to the northeast. These parks offer maintained landscape, trees, and open space which may provide habitat for birds and mammals.

Animals that may exist on these parks and gardens include the typical birds, small mammals, and scavengers that coexist with humans in an urban setting. Figure 1 shows the location of the above-mentioned parks and gardens.

3.10 Facility Water Supply and Groundwater Use

There are no water production wells located on the Facility property used for potable or nonpotable purposes. Municipal supply is used to provide all the water needs at the Facility.

3.11 Preliminary Conceptual Site Model

Based on available information regarding land and groundwater use at and adjacent to the Facility, as described in previous sections, a preliminary conceptual site model (CSM) for potential human exposure at the Facility was developed. This CSM identifies potentially exposed populations under current and reasonably expected future land use, potential routes of exposure, and environmental media to which these populations may become exposed. The preliminary CSM for the Facility is provided in

Table 2. The discussion below presents the reasonably expected exposure scenarios at the Facility as summarized in the preliminary CSM

On-Facility

The LGR portion on the eastern half of the Facility currently produces three brands of Cadillac automobiles. The LCA portion on the western half of the Facility ceased operations in 2005 and is currently undergoing demolition activities.

A Restrictive Covenant has been filed by GM in Ingham County restricting residential land use at a portion of the Facility east of N. Bound MLKJrB "unless site soils and groundwater are remediated to levels protective of potential residential exposures". A copy of the Restrictive Covenant is included in Appendix D. Because of this restriction, reasonably expected future use at the Facility is expected to remain commercial/industrial. However, because GM is also considering other options for redevelopment of Plant 1, future residential use west of N. Bound MLKJrB has been included in the CSM as a hypothetical future exposure scenario.

As a result, potentially exposed populations on-facility are expected to include:

East of N. Bound MLKJrB.

- Routine Workers
- Trespassers
- Maintenance Workers
- Construction Workers

West of N. Bound MLKJrB.

- Routine Workers
- Trespassers
- Maintenance Workers
- Construction Workers
- Residents

Routine workers consist of persons who typically spend most of the work day indoors conducting industrial or commercial activities. As noted above, the LGR portion of the Facility is the only portion of the Facility where routine workers are currently present. Routine workers could be exposed to volatile constituents in subsurface soil or in shallow groundwater via vapor migration into indoor air in locations where buildings exist or may exist in the future. When outdoors intermittently, routine workers can be exposed to surface soil in areas currently without cover (e.g., pavement, buildings) or in areas where cover may be removed and left uncovered in the future.

Maintenance workers consist of a fraction of the workers at the Facility who may conduct occasional subsurface construction or maintenance activities (i.e., installation or repair of underground utilities, removal or repair of pavement, or repair or maintenance of storm water management systems). Subsurface activities could result in exposures to subsurface soil and shallow groundwater. Potential exposures to sediment and water are possible during repair or maintenance of storm water management drains.

As with routine workers, trespassers could be potentially exposed to surface soil in areas currently without cover or in areas where cover may be removed in the future and left uncovered.

Facility decommissioning and demolition activities are currently being conducted in the LCA portion of the Facility and could reasonably be expected to occur in the future in the LGR portion of the Facility. As a result, a construction worker may be exposed to surface soil in areas which are uncovered or may become uncovered in the future. Given that decommissioning and demolition activities may also included subsurface activities, such as slab and soil removal, construction workers may also be exposure to subsurface soil and shallow groundwater.

Residents are not currently present on the Facility. The hypothetical future residents west of N. Bound MLKJrB. may be exposed to surface soil in areas without cover. Residents could be exposed to volatile constituents in soil and shallow groundwater via vapor migration into indoor air in locations where on-facility residential buildings may exist in the future.

Exposure of workers and hypothetical future residents to groundwater via potable or non-potable use is not likely. On-facility drinking water is currently provided by the municipal water supply and there is no on-facility withdrawal wells for non-potable uses. Any future residents are reasonably expected to use municipal water for potable

and non-potable purposes. In addition, a Restrictive Covenant has been filed by GM with Ingham County precluding installation of new wells east of N. Bound MLKJrB Appendix D).

Off-Facility

The potentially exposed populations in off-facility areas include:

- Residents
- Routine Workers
- Maintenance Workers
- Recreational Users

No facility-related soil contamination is known to exist in off-facility areas, however, residents and off-facility routine workers and maintenance workers may be exposed to constituents in soil from the Facility due to windblown dust and vapors emanating from areas currently without cover or from areas which may be uncovered in the future.

Off-facility residents and off-facility routine workers adjacent to and near the Facility are not expected to be exposed via potable or non-potable use of on-facility groundwater, because a municipal water supply is available for these locations. The preliminary CSM considers potential potable and non-potable use of groundwater in the future, however, because withdrawals and use of off-facility groundwater are possible, given the absence of institutional and/or regulatory controls that otherwise preclude such uses. In addition, as stated in Section 2.8, production wells used to obtain potable water for BWL are present off-facility. The closest BWL well is 1,700 ft east of the Facility.

If off-facility groundwater were found to be impacted by facility-related releases, off-facility residents and workers may also be exposed to volatile constituents in shallow groundwater via vapor migration into indoor air and off-facility maintenance workers may be exposed to shallow groundwater during occasional subsurface construction or maintenance activities (i.e., installation or repair of underground utilities, or removal or repair of pavement). The likelihood of off-facility impacts to groundwater is considered low given the presence of an existing on-facility groundwater extraction system which currently is capturing groundwater in the deep (“basal sandstone aquifer”) and

intermediate (“upper shaly sandstone unit”) groundwater units, which precludes its migration off the Facility.

Finally, off-facility recreational users may be exposed to environmental media in the segment of the Grand River located adjacent to the southern and eastern boundaries of the Facility. Potential current and reasonably expected future exposures include:

- Incidental ingestion, dermal contact with sediment
- Incidental ingestion, dermal contact and inhalation of surface water and/or
- Ingestion of fish

As discussed in Section 3.7, the potential for on-facility groundwater discharge to surface water would be from perched water either directly by discharging where in hydraulic communication with the River, or indirectly by discharging through a sewer line located beneath a perched water unit that ultimately discharges to the River. Groundwater within the deep (“basal sandstone aquifer”) and intermediate (“upper shaly sandstone unit”) groundwater units is not believed to have the potential to discharge to the Grand River.

4. Previous Investigations / Remedial Actions and Data Screening Process

4.1 Previous Investigations and Remedial Actions

This section presents a chronological summary of previous major investigations and remedial actions conducted at the Facility. Additional information is included in Table 1 and with the discussion of each AOI, in Sections 6 and 7.

4.1.1 Investigation and remedial actions associated with the USTs

Underground storage tanks (USTs) have been used at the Facility primarily for storing gasoline, diesel fuel, motor oil, automotive transmission fluids, and used oil. Product releases associated with certain USTs were reported in the late 1980s and prompted site-specific environmental investigations. In 1991, investigations were conducted at the Facility at 16 UST/tank farm locations (URS, 2001). These investigations included installing monitoring wells, collecting soil samples, and sampling perched groundwater when encountered. As a response to the findings of the UST/tank farm investigations, the tanks were emptied, cleaned, and either removed from the ground or abandoned in place with flowable fill in the early 1990's. Approximately 32,645 cubic yards (cy) of soil identified to be contaminated were removed and disposed of offsite. Documentation of these activities is contained in the Final Assessment Report (FAR) and the *RFAR* (URS, 1996 and URS, 2001, respectively) and references therein. The list of references from RFAR A including documents previously submitted to the MDEQ, such as closure plans and closure verification reports is included in Appendix C.

In 1999 – 2000, during the construction of LGR, approximately 180,995 cy of potentially petroleum-impacted soil were removed and appropriately disposed off site. Soil samples collected at that time along the future sewer lines were identified with the prefix "GP" and were taken and analyzed for health and safety purposes to facilitate construction activities. AOI-specific information is included in Appendix E and with the discussion of each AOI, in Sections 6 and 7.

The exact locations and depths of excavations conducted at the Facility in 1999-2000 are not known at this time; therefore, the data screening, included in Appendix E, may contain analytical results from soil that has already been excavated.

In March 2001, GM submitted the *RFAR* (URS, 2001) to the MDEQ, Underground Storage Tank Division. As part of that document, a Correction Action Plan (CAP)

pursuant to Section 21304a of Part 213 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, for impacts relating to LUSTs associated with manufacturing operations at the Facility was described. Currently, GM is in the process of implementing the CAP that consists of the following components:

- a groundwater extraction and treatment system, on a continuous basis
- free product recovery systems, on a continuous basis
- a long-term monitoring plan, on a semi-annual basis
- institutional controls on a continuous basis

The groundwater extraction and treatment system began as a pilot program in 1995, in response to the site-specific investigations of the underlying bedrock, which identified petroleum-impacted groundwater underneath the Facility including the regional sandstone aquifer. As previously described, the City of Lansing obtains potable water from this same bedrock aquifer, using wells located as close as 1,700ft from the Facility. Initially, groundwater was extracted from wells EW-5 and MW-21. During the construction activities on site MW-21 was abandoned. EW-5 remained as a piezometer and three new extraction wells were installed in 1999. Currently, the groundwater extraction system consisting of the three extraction wells, EW-1, EW-2 and EW-3, captures impacted groundwater from the Facility and maintains hydraulic control of the impacts detected in the bedrock aquifer beneath the Facility. The extraction wells are located adjacent to the west side of Building 66, as shown on Figures 5-1 and 6-1. The extraction wells continuously pump impacted groundwater at a total pumping rate of approximately 175 gallons per minute (gpm) to an activated carbon treatment system. The treated groundwater is discharged to the Grand River under the NPDES General Permit # MIG080000 and Certificate of Coverage #MIG080989. Groundwater within the Facility boundary is not used for potable or industrial purposes, and a deed restriction on groundwater use at the Facility east of N. Bound MLKJr.B. was filed with Ingham County on August 11, 2003. As previously mentioned, a copy of the deed restriction is included in Appendix D along with a Facility layout map showing the locations of the nine restrictive covenant areas (Area 1 through 9). Section 6 provides a general description of the restrictions in place at the AOI specifically addressed by the restrictive covenant. . The restrictive covenant areas were developed to address remaining contaminants that exceeded risk-based criteria at specific AOIs. The restrictive covenant areas and the specific AOIs addressed by these restrictive covenant areas are listed below:

- Area 1 covers the portion of the Facility that is east of N. Bound MLKJr.B
- Area 2: AOI 1-152
- Area 3: AOI 1-23(3)
- Area 4: AOI 1-23(1). AOI 1-115 is also located within the footprint of this Restrictive Covenant Area
- Area 5: AOI 1-23(5). AOIs 1-124 and 1-129 are also located within the footprint of this Restrictive Covenant Area
- Area 6: AOI 1-23(7). AOI 1-101 is also located within the footprint of this Restrictive Covenant Area
- Area 7: AOI 1-8
- Area 8: AOI 1-23(6)
- Area 9: AOI 1-1(3)

GM began collecting free product actively from four locations at the Facility in 1993. These locations are at Building 66 North Tank Farm (AOI 1-152), Building 35 Tanks #49 and #50 [AOI 1-23(7)], Building 37 Central Tank Farm [AOI 1-23(1)], and east of former Buildings 36/38 Tanks #77 and #78 [AOI 1-23(5)]. Currently, free product is being recovered (actively and passively) in accordance with the CAP at three of these locations; product collection ceased at Building 37 in 2000 since free product has not been detected since January 1999 (URS, 2001). A final free product recovery status report for Building 37 was submitted in the RFAR (URS, 2001). Free product recovery status reports are submitted to the MDEQ on a quarterly basis for the other three areas. Figures 5 and 6 depict the location of the wells undergoing recovery operations conducted at Building 66 (in well 02MW011), former Building 35 (in wells 04MW009 and 04RW001), and a skimming product pump operating near former Buildings 36/38 (in well PRW-4) (BBL, 2007).

The CAP also includes a long-term monitoring plan consisting of semi-annual groundwater monitoring of groundwater quality and water levels. Groundwater samples are collected from 18 wells for lab analysis for a specified list of volatile organic compounds and dissolved metals; while 28 monitoring wells, three extraction

wells, and one piezometer are used for water level monitoring (ARCADIS, 2007). Locations of the groundwater monitoring wells are illustrated in Figures 5-1 and 6-1.

Demolition activities at the LCA portion of the Facility which began in 2006 have not impacted or interrupted the ongoing free product recovery operations conducted on site. Free product recovery operations and the groundwater extraction and treatment system have proven effective in retrieving free product from certain locations and controlling the migration of contamination via groundwater beyond the limits of the Facility (BBL, 2006).

4.1.2 LGR redevelopment activities

On January 10 - 11, 2005 Blasland, Bouck, and Lee, Inc. (BBL) (currently ARCADIS) completed subsurface investigation in support of expansion activities of the LGR Body Building. This investigation included installation of nine soil borings, identified with the prefix 01SB-1 to 01SB-9, for geotechnical and environmental purposes.

On April 12 - 14, 2005 BBL completed subsurface investigation in support of another LGR Body Building Expansion on the southeast side of the building. This investigation included installation of seven geotechnical borings and installation of 14 shallow soil borings to a depth of approximately 10 ft bgs for environmental sampling purposes. A total of 35 soil samples, identified with the prefix SB-1 to 9, and SB-101 to SB-107 were collected for environmental and geotechnical purposes.

Additional subsurface investigation was performed by BBL on August 18-19, 2005 in support of the LGR Body Building Southwest Expansion. This investigation included installation of four soil borings (SB110 to SB113) to bedrock (approximately 35 ft bgs) for environmental and geotechnical sampling purposes. Each boring was placed in the immediate vicinity of a proposed caisson to be installed in the future Facility expansion area. Two soil samples were collected from each soil boring including a sample from directly above the bedrock and a second sample collected from the interval with the highest photoionization detector (PID) reading.

In 2005, low levels of polychlorinated biphenyls (PCBs) were detected in the water treatment building, Building 69. Building 69 was thoroughly cleaned and PCBs have not been detected since.

4.1.3 2005 Site Assessment

In April 2005, BBL conducted an initial Site Assessment soil investigation to investigate potential releases of hazardous constituents that may be associated with AOIs in the south end of the LCA area of the Facility. In November 2005, additional AOIs identified throughout the Facility were investigated. Groundwater sampling and analysis were not included in either of these investigations. The *Site Assessment Work Plan Lansing Car Assembly (LCA)* was provided to the MDEQ in May of 2005 (BBL, 2005a), followed by the *Addendum to Site Assessment Work Plan Lansing Car Assembly (LCA)* (Addendum) issued by GM in October 2005 (BBL, 2005b). The sampling program rationale and approach is described in Appendix F. The sample collection methodology followed in November 2005 is graphically shown on Figure F-1. Analytical results of the implementation of the SAWP and Addendum are included in the databox figures. The field screening results are provided in the boring logs included in Appendix F and summarized in Table F-1. Laboratory data sheets and laboratory validation reports are available on the CD included in Appendix F.

Historical soil boring logs obtained during the document review process have been retained and included on a CD for future references if needed. A list of all soil borings / groundwater monitoring wells present on site and the boring logs available on the CD are provided in Appendix G.

4.2 Data Screening Process

Appendix E describes the data screening process used to evaluate all soil and groundwater data collected to date at the Facility. The screening results are used to assess whether hazardous substances have been released to the environment, as discussed in the second subsection of each individual AOI. Analytical results for aluminum, iron, magnesium, and sodium were not considered in the screening process. These earth-metals are naturally occurring and are not related to Facility-related activities. Available analytical results for the earth metals are included in Appendix H.

Analytical data from previous investigations are summarized in tables in Appendix E. Table E-1a presents a summary of soil screening against residential criteria; Table E-1b presents a summary of soil screening against nonresidential criteria; Table E-1c presents a summary of soil samples exceeding one or more of the screening criteria. Table E-2a summarizes the groundwater screening results; Table E-2b presents the

samples for perched and bedrock groundwater that exceed at least one of the screening levels. The following screening criteria were used:

Soil

- Industrial Soil Volatilization to Indoor Air Inhalation Criteria (ISVIIC)
- Industrial Infinite Source Volatile Soil Inhalation Criteria (IVSIC)
- Industrial Particulate Soil Inhalation Criteria (IPSIC)
- Industrial Direct Contact Criteria (IDC)
- Residential Drinking Water Protection Criteria (DWP)
- Risk-based redevelopment worker contact (RWC)
- Groundwater Surface Water Interface Protection Criteria (GSIP)
- Residential Soil Volatilization to Indoor Air Inhalation Criteria (RSVIIC)
- Residential Infinite Source Volatile Soil Inhalation Criteria (RVSIC)
- Residential Particulate Soil Inhalation Criteria (RPSIC)
- Residential Direct Contact Criteria (RDC)
- Generic Soil Saturation Concentration (Csat)

Groundwater

- Drinking Water Criteria (DWC)
- Groundwater Volatilization to Indoor Air Inhalation Criteria (GWVIA)
- Groundwater Contact Criteria (GCC)
- Groundwater Surface Water Interface Criteria (GSI)

The analytical data selected through the screening process (Appendix E) are shown on the databox figures that consist of two sets of figures. In Set 1, the databox figures for groundwater (Figures 5-1 and 6-1) show the site-wide spatial distribution of chemicals in each hydrogeologic unit with concentrations that exceed screening levels. The Set 1 databox figures for soil (Figures 8-1 through 53-1) show the local distribution of chemicals with concentrations that exceed screening levels. The second set of figures, Set 2, for groundwater data (Figures 5-2 and 6-2) and for soil data (Figures 8-2 through 53-2), focuses in by highlighting the exceedances of screening levels that require further action on a location specific or AOI-specific basis. Appendix E describes the data screening methodology used to develop these databox figures.

5. Groundwater Quality Data

5.1 Perched Water Units

Impacts from previous Facility releases have been observed within the perched water units based on groundwater samples collected from these units that identified concentrations of metals, volatile organic compound (VOC) and semi-volatile organic compound (SVOC) concentrations greater than Part 201 generic criteria (screening levels) presented in the MDEQ *Remediation and Redevelopment Division Operational Memorandum No. 1* (December 10, 2004). Sample results for samples collected from the perched water units from previous investigations are shown on Figure 4.

Light non-aqueous phase liquid (LNAPL) has been observed in perched water unit wells 04MW009 and 04RW001 near AOI 1-23(7). LNAPL continues to be recovered from these wells as described in the quarterly *Free Product Recovery Status Reports* for the Facility that are submitted to the MDEQ under the Part 213 Leaking Underground Storage Tank (LUST) program. LNAPL within the perched water unit had previously been observed near AOI 1-23(1) (Central Tank Farm); however, recovery activities ended in 2001 when LNAPL was no longer present as described in the RFAR.

As described in Section 3.7.1, there is potential for contaminant migration from the perched water units downward into the bedrock aquifer. However, due to hydraulic containment of bedrock groundwater by the extraction system, the potential for subsequent off-Facility migration of infiltrating perched groundwater is minimized. The potential for indirect contaminant migration of perched unit groundwater through storm sewers will be further evaluated as part of the RFI.

As described in Section 3.7.1, a perched water unit was identified in the southeast corner of the Facility in which temporary wells 17MW001, 17MW002 and 17MW003 were completed. This perched water unit is potentially in direct hydraulic communication with the Grand River. As shown on Figure 4, no impacts were observed in the samples collected from these locations indicating no discharge of impacted groundwater to the Grand River.

As described above, both LNAPL and groundwater concentrations above screening levels are observed in samples collected from locations within the perched water unit identified near the southern property boundary associated with AOI 1-23(7). Since this area has not been delineated to the south, the potential for off-Facility migration and

direct discharge to the Grand River from this area exists. This area will be further investigated during the RFI.

5.2 Bedrock Aquifer

As shown on Figures 5-1 and 6-1, impacts have been observed historically from previous Facility releases in samples collected from both the upper shaly sandstone and basal sandstone aquifers in the form of metals, VOC and SVOC concentrations greater than the drinking water criteria. LNAPL has been observed in upper shaly sandstone well MW-35-04 and LNAPL recovery activities continue at this location as described in the quarterly free product recovery status reports for the Facility.

Several monitoring wells located around the perimeter of the Facility are sampled on a semi-annual basis to monitor the effectiveness of the groundwater extraction system. Based on the most recent groundwater sample results presented in the February 18, 2008 *Long-Term Monitoring Semi-Annual Report* (ARCADIS, 2008), the only current contaminant concentrations observed in the Facility perimeter monitoring well samples above the screening levels are vinyl chloride in the sample from basal sandstone well MW-29 (0.049 milligrams per liter [mg/l]), dissolved lead in the sample from basal sandstone well MW-14D (0.021 mg/l), and dissolved zinc in upper shaly sandstone well MW-01 (24.2 mg/l). It should be noted that the vinyl chloride detected in the groundwater samples from MW-29 is from an upgradient source located off site, while the lead and zinc present in the groundwater samples are most likely attributable to leaching from the galvanized well material and it is not believed to represent aquifer groundwater quality. As described in Section 3.7.2, because bedrock aquifer groundwater is shown to be fully contained by the groundwater extraction system, there is no potential for off-Facility migration of groundwater from the Facility.

6. Areas of Interest Defined in the USEPA's PA/VSI Report

This section describes and summarizes the 23 AOIs identified at the Facility in the *PA/VSI Report* (PRC, 1992), including location, historical operations, previous investigations and remedial actions, and current status. The AOIs are summarized in Table 1 and are shown on Figure 3. Table 1 also includes the previous investigations and remedial actions, the substances handled at each AOI, and the CCR's recommendations of further or no further action. Decisions regarding the need for further action were made based on professional judgment, screening results, and other factors.

6.1 AOI 1-1 SWMU 1 - Former Used Oil Treatment System

Areas designated as AOI 1-1 were located within former Buildings 128, 28 (Northern Portion), and underground in-between the two buildings (Figure 3). Concrete and steel tanks ranging in capacity from 250 gallons to 50,000 gallons were used to manage three types of non hazardous used oil from throughout the Facility: used hydraulic oil, used soluble oil, and used motor oil. The unit began operations prior to 1960.

This AOI consists of three distinct units.

- AOI 1-1(1) – Above ground storage tanks (ASTs) associated with the treatment of used oil located within the northern portion of the former Building 28 and in former Building 128. The unit began operations in 1991. This unit was at grade level.

- AOI 1-1(2) – USTs associated with the treatment of used soluble oil located between former Buildings 28 and 128. The unit began operations prior to 1960. This AOI is approximately 10 ft deep.

- AOI 1-1(3) – Former building 28 Tank Farm was located north of former Building 28. The unit began operations prior to 1960. This AOI is approximately 10 ft deep.

6.1.1 Historical and Current Operations

AOI 1-1(1) - ASTs associated with the treatment of used oil located in the northern portion of the former Building 28 and in former Building 128 began operation in 1991, replacing previously used USTs described in AOI 1-1(3). Used hydraulic oil was

accumulating in a 700-gallon AST and used soluble oil from RRIM operations was accumulating in a 250-gallon AST in former Building 28. Treatment consisted of separating oil and water through gravity, heating the oil in one of the four 750-gallon tanks, storing the oil in two 5,000-gallon ASTs, and sending the oil to a 1,000-gallon centrifuge. The oil was then transferred via underground pipes in a tunnel to former Building 128 where it was accumulated in one of the eight 10,000-gallon ASTs prior to disposal. Used motor oil, sometimes generated from engine testing, was collected in 55-gallon drums, and transferred to one of the 10,000-gallon ASTs in former Building 128. The oil separated by gravity was sent to the 1,000-gallon centrifuge in former Building 28. Two of the 10,000-gallon tanks located in former Building 128 were used to accumulate oil sludge from the dissolved air flotation units described in AOI 1-1(2) prior to disposal.

AOI 1-1(2) – USTs associated with the treatment of used soluble oil located between former Buildings 28 and 128. This unit consisted of two 50,000-gallon concrete batch holding tanks where oil was accumulated. Alum, emulsion polymers, and flocculation polymers were added to the oil as it was placed in one of the two 4,500-gallon dissolved air flotation tanks that caused the oil sludge to float. The oil sludge was then pumped in one of the two 10,000-gallon ASTs in former Building 128 for disposal.

AOI 1-1(3) – Former building 28 Tank Farm was located underground north of former Building 28. This unit consisted of USTs #123, #124, #125, #126, #128, #129, #130, #131, and #132, containing used oil.

6.1.2 Previous Investigations and Remedial Actions

AOI 1-1(2) and AOI 1-1(3) are located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 5.1.1.

No investigation or remedial actions have been conducted at AOI 1-1(1) and AOI 1-1(2) and none appear to be warranted. No releases to the environment from these units have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992). The ASTs included in AOI 1-1(1) were either stored on concrete floors with no visible cracks or gaps (former Building 28) or in a 5-foot epoxy sealed 40 feet by 80 feet secondary containment (former Building 128). In addition, when AOI 1-1(1) and AOI 1-1(2) were removed in 1999 in preparation for the construction of LGR, decommissioning procedures were followed. They included visual inspection of concrete around operations, cleaning or scarifying of concrete if

determined to be necessary and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was reported during the inspection.

Subsurface investigations were conducted at AOI 1-1(3) as part of the UST Investigations of 1989-1993. To assess potential impacts associated with the former operations at AOI 1-1(3), data from the following soil borings were evaluated: 15BS004, 15BS005, 15BS006, 15BS007, 15BS008, 15BS009, 15BS014, 15BS017, and 15BS013. Soil samples were analyzed for Target Analytes List (TAL) Metals, Target Compound List (TCL) SVOCs, and TCL VOCs. Laboratory analysis showed exceedances of certain screening levels for the following constituents: chromium and copper (GSIP), 1,1,2,2-tetrachloroethane (DWP), 1,1-dichloroethene (DWP, ISVIIC), 1,2-dibromoethane (IDC), tetrachloroethene (DWP), fluoranthene (GSIP), fluorene (GSIP), naphthalene (GSIP), and phenanthrene (GSIP). Results of these investigations are shown on Figures 44-1 and 45B-1 and summarized in Appendix E.

AOI 1-1(3) - Building 28 Tank Farm was identified in the RFAR (URS, 2001). UST #128 was closed in place; the remaining USTs including Tanks #123, #124, #125, #126, #129, #130, #131, and #132 were removed. Approximately 420 cy of soil were removed with Tanks #123, #124, #125, and #126. A Restrictive Covenant was filed with the Ingham County Registrar of Deeds on August 11, 2003 (Area 9 in the figure included in Appendix C) to protect and mitigate against direct contact, volatilization to indoor air, and volatilization to ambient air.

6.1.3 Current Status

The three units of this AOI are no longer in operation.

Based on the nature of the operations at AOI 1-1(1) and AOI 1-1(2), the construction and the waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, absence of apparent evidence of a release from the visual inspection conducted during decommissioning in 1999, no further action at AOI 1-1(1) and AOI 1-1(2) is warranted.

At AOI 1-1(3), only one soil sample exhibited a detected concentration of 1,2-dibromoethane above the IDC value. Because it is a deep sub-surface sample (i.e., 15- to17-ft interval), the exceedance of the IDC value does not indicate potential for significant exposure to workers. Similarly, only one sample exhibited a detected

concentration of 1,1- dichloroethene (ISVIIC) and it was fully delineated by surrounding data. However, due to the GSIP and DWP exceedances (specifically in the deepest samples collected above the perched unit or water table, respectively), further actions at AOI 1-1(3) are recommended. Further actions planned are described in Table 1 and will be defined in more detail in the RFI Work Plan.

6.2 AOI 1-2 SWMU 2 - Used Oil Drip Pans

The used oil drip pans of AOI 1-2 were located throughout the former Building 22 (Figure 3). The drip pans were placed beneath wet grinding machines to collect the used oil. The unit began operations prior to 1960. This AOI was located at grade level.

6.2.1 Historical and Current Operations

Wastes managed at AOI 1-2 included non-hazardous used oil generated during wet machining operations. The drip pans were set on top of the building concrete floor, and were routinely emptied by a vacuum truck.

6.2.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases to the environment from these units have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992). In addition, when AOI 1-2 was removed in 1999 in preparation for the construction of LGR, decommissioning procedures were followed and included visual inspection of concrete around operations, cleaning or scarifying of concrete if determined to be necessary and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was observed during the inspection.

6.2.3 Current Status

AOI 1-2 is no longer in operation. Based on the nature of the operations at this AOI, the construction and the waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and absence of apparent evidence of a release from the visual inspection conducted during decommissioning in 1999, no further action at this AOI is warranted.

6.3 AOI 1-3 SWMU 3 - Former Used Oil Tanks

AOI 1-3 was located in the Building 64 Tank Farm, southwest of former Building 64 (Figure 3), and consisted of one 1,000-gallon steel tank. This AOI was located aboveground and was surrounded by a 4-ft high concrete dike. The unit began operations in 1990 and replaced a former UST with a reported release [AOI 1-23(3)]. This AOI was located at grade level.

6.3.1 Historical and Current Operations

Wastes managed at AOI 1-3 consisted of non-hazardous used motor oil generated during engine cell testing. An additional 10,000-gallon tank was used at this AOI as a form of secondary containment. Sumps in the containment area of the 1,000-gallon tank would pump any releases to the 10,000-gallon tank.

6.3.2 Previous Investigations and Remedial Actions

According to an interim Facility investigation performed in 1991, soil and groundwater contamination was found in the area of AOI 1-3 (PRC, 1992). However, this was due to AOI 1-23(3) (see Section 6.23.2). No releases to the environment from AOI 1-3 have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992). In addition, when AOI 1-3 was removed in 1999 in preparation for the construction of LGR, decommissioning procedures were followed and included visual inspection of concrete around operations, cleaning or scarifying of concrete if determined to be necessary and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was observed during the inspection.

6.3.3 Current Status

AOI 1-3 is no longer in operation. Based on the nature of the operations at this AOI, the construction and the waste management practices employed, and the visual inspection conducted during decommissioning in 1999, there is no evidence that a release to the environment occurred from this AOI and, therefore, no further action at this AOI is warranted.

6.4 AOI 1-4 SWMU 4 - Used Hydraulic Oil Collection Pits

AOI 1-4 was located in former Building 78 (Figure 3) and consisted of 10 concrete used hydraulic oil collection pits beneath each RRIM machine. The pits were approximately two feet deep, and varied in length depending on the individual machine. The unit began operations in 1981.

6.4.1 Historical and Current Operations

Wastes managed at AOI 1-4 consisted of used hydraulic oil generated from RRIM operations. Trenches and sumps in the pits acted as a "housekeeping" feature to collect oil from the clamps used in the RRIM operations. Fluids were normally present during operations at this AOI.

6.4.2 Previous Investigations and Remedial Actions

No releases to the environment from AOI 1-4 have been documented. PRC was not able to observe the pits at the time of the PA/VSI (PRC, 1992), due to their location under the RRIM machines.

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings SA26-1 through SA26-13, SA48-1, SA48-2, and SA48-4 were installed in and around AOI 1-4, as well as, AOI 1-18 and AOI 1-24 (see Sections 5.18 and 6.1). Samples collected at each location were field screened to assess potential environmental impacts from AOI 1-4. In addition, due to presence of plating operations associated with adjacent AOI 1-24, soil samples were also analyzed for TAL Metals. Field screening results are summarized in Table F-1 (Appendix F) and show no evidence of a petroleum product release to the environment. Laboratory analysis showed exceedances of DWP and GSIP screening levels for chromium, cobalt, copper, cyanide, manganese, and nickel. Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1.

6.4.3 Current Status

AOI 1-4 ceased operations and was decommissioned prior to 2005. Based on the field screening results from the 2005 Site Assessment, which identified no evidence of a release of a petroleum product, no further action at this AOI is warranted. The

detected metal exceedances are not related to AOI 1-4 and will be addressed under AOI 1-24 Former Plating Department (see Section 7.1.3 for further discussion on the metal exceedances).

6.5 AOI 1-5 SWMU 5 - 300-Gallon Assembly Line Tank

AOI 1-5 was located on the third floor of former Building 90 (Figure 3) and consisted of a 300-gallon steel assembly line tank. The unit began operations in 1983. This AOI was located at grade level.

6.5.1 Historical and Current Operations

Wastes managed at AOI 1-5 included used oil, gasoline, and brake fluid generated from automobiles that did not pass final quality control procedures on the assembly line.

6.5.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none is warranted.

6.5.3 Current Status

AOI 1-5 ceased operations in 2005 and decommissioning is currently underway. Because AOI 1-5 was located on the third floor of the Facility, no potential for a release to the environment exists. Therefore, no further action at this AOI is warranted.

6.6 AOI 1-6 SWMU 6 - Fluid Fill Area

AOI 1-6 was located in the southwest portion of the Building 90 and consisted of a trench and one underground steel separator tank. The unit began operations in 1984. This AOI is approximately 10 ft deep.

6.6.1 Historical and Current Operations

AOI 1-6 was associated with the fluid fill area portion of the assembly line in former Building 90. Small amounts of gasoline that may have spilled during vehicle filling operations accumulated in the trench. The trench was sprayed with water and the water and gasoline mixture accumulated in the separator tank. The mixture was then

transported to the used oil treatment system (AOI 1-1) or shipped off-site for treatment, depending on the waste's flash point.

6.6.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings SA32-1 through SA32-4 were installed around this AOI. Field screening results are summarized in Table F-1 (Appendix F) and show no evidence of gasoline released to the environment. Initially, it was mistakenly believed that in addition to gasoline; used oil, windshield washer and other vehicle fluids were also handled at this AOI, therefore, samples were analyzed for TAL Metals and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for the following metals: manganese (DWP and GSIP) and chromium (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 10-1 and 11-1. No remedial action has been conducted at this AOI.

6.6.3 Current Status

AOI 1-6 ceased operations in 2005 and decommissioning is currently underway. Based on the nature of the operations at this AOI, materials handled and the field screening results from the 2005 Site Assessment, it is unlikely that there was a release to the environment from this AOI. However, due to metal detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are proposed. Further actions planned are described in Table 1 and will be defined in more detail in the RFI Work Plan.

6.7 AOI 1-7 Former Building 32 Tank Farm

AOI 1-7 was located outside along the east side of Building 32 and consisted of the four former 15,000-gallon USTs that made up the Building 32 Tank Farm. Tank 65 was part of this unit and was identified as SWMU 7 in the PA/VSI (PRC, 1992). The unit began operations in 1984. This AOI is approximately 16 ft deep.

6.7.1 Historical and Current Operations

AOI 1-7 consisted of three product tanks containing gasoline, windshield washer fluid, and antifreeze; and SWMU 7 – Tank 65. SWMU 7 contained small amounts of used

gasoline mixed with water which was generated from the former Building 32 and Building 90 Fluid Fill operations (AOI 1-25 and AOI 1-6, respectively).

6.7.2 Previous Investigations and Remedial Actions

Tank 65 was taken out of service in 1990 and was removed in 1992 with the remainder of the Building 32 Tank Farm. Following the removal of the USTs, an investigation was conducted to define the horizontal and vertical extent of impact to soil and groundwater as required under NREPA Part 213. Soil borings 05BS004, 05BS005, 05BS006, 05BS008, 05BS009, 05BS010, 05BS011, and 05BS012 were utilized to assess this AOI. No free product was discovered in the area. Approximately 2,200 cy of soil were removed from the Building 32 Tank Farm and disposed at a licensed facility offsite, as documented in the *RFAR* (URS, 2001).

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-17-1 through SA-17-4) were installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for ethylbenzene (DWP and GSIP) and xylene (DWP and GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 22-1 and 23A-1.

6.7.3 Current Status

AOI 1-7 was removed in 1992. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are proposed. Further actions planned are described in Table 1 and will be defined in more detail in the RFI Work Plan.

6.8 AOI 1-8 SWMU 8 - Tank #8

AOI 1-8 was located north of former Building 148 (Figure 3) and consisted of one 8,000-gallon steel UST used to accumulate waste paint thinner for less than 90 days. The unit began operation in 1965. This AOI was approximately 16 feet deep.

6.8.1 Historical and Current Operations

Wastes managed at AOI 1-8 included waste paint thinners, which were generated during fascia painting activities. The unit became inactive in 1988, and was removed on October 6, 1992 PA/VSI (PRC, 1992).

6.8.2 Previous Investigations and Remedial Actions

Subsurface investigations conducted as part of the UST Investigations of 1989-1993 showed soil contamination around the AOI. Soil borings 14BS001 through 14BS008, and SB-6 (Tank 8) were utilized to assess this AOI. Samples collected at each location were analyzed for TAL Metals and TCL VOCs. Laboratory analysis showed exceedances of the screening levels for chromium (GSIP), ethylbenzene (GSIP and DWP), toluene (GSIP and DWP), and xylene (DWP, GSIP, IDC, ISVIIC and Soil Saturation Concentration Screening Levels [Csat]). Results of these investigations are shown on Set 1, Figures 16-1 and 17B-1 and summarized in Appendix E.

Approximately 160 cy of soil were removed from the Tank #8 area as documented in the RFAR (URS, 2001). Although one soil sample showed a Csat exceedance, no free product was observed during the removal of the tank. A Restrictive Covenant was filed with the Ingham County Registrar of Deeds on August 11, 2003 (Area 7 in the figure included in Appendix C) to protect and mitigate against direct contact, volatilization to indoor air, and volatilization to ambient air.

6.8.3 Current Status

AOI 1-8 was removed in 1992. Due to exceedances of the screening levels illustrated in Set 2 Figure 17B-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are proposed. Further actions planned are described in Table 1 and will be defined in more detail in the RFI Work Plan.

6.9 AOI 1-9 SWMU 9 - Wastewater Treatment System

AOI 1-9 is located in Building 69 (Figure 3) and consists of two concrete underground wet wells, a bar screen, four sludge pumps, two underground API separators, a rotostrainer, and an 8,000-gal separator tank. The system use to treat about 500,000 gallons of wastewater and stormwater per day. The unit began operations prior to 1960. This AOI is approximately 16 feet deep.

6.9.1 Historical and Current Operations

Wastes managed at AOI 1-9 included solids and oil in process wastewater and stormwater flow collected from a portion of the Facility. Stormwater flow, dry-weather flow, and process water entering the sewer was treated in Building 69 and then was discharged to the City of Lansing sanitary sewer under a discharge permit. Process wastewater was, therefore, associated with this AOI. Currently, only stormwater flow and dry-weather flow are treated at this AOI.

6.9.2 Previous Investigations and Remedial Actions

As mentioned in Section 4, in 2005 an investigation was performed to assess the potential source of PCBs in Building 69. The 8,000-gallon separator tank was also cleaned and visually inspected in 2005. Inspection indicated the integrity of the tank to be uncertain; therefore, the separator tank was removed from service.

6.9.3 Current Status

AOI 1-9 is currently active, treating only dry-weather flow. Building 69 was thoroughly cleaned and no PCBs have been detected in the effluent samples since. Due to the findings of the visual inspection of the 8,000 gallon separator tank, further action is recommended. Soil sampling will be completed near the former separator tank to assess potential releases from the former separator tank, as described in Table 1.

6.10 AOI 1-10 SWMU 10 - Fascia 3,000-gallon Paint Thinner Tank

AOI 1-10 was located within former Building 41, on the west side (Figure 3) and consisted of a 3,000-gallon steel AST. The unit began operations in 1991. This AOI was located at grade level.

6.10.1 Historical and Current Operations

The unit was inside the building on concrete floors and surrounded by a 4-foot steel berm. Waste managed at AOI 1-10 was accumulated for less than 90 days and included waste paint thinner generated during fascia painting activities.

6.10.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases to the environment from this unit have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992).

6.10.3 Current Status

AOI 1-10 ceased operations and was decommissioned prior to 2005. Based on the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, no further action is warranted at this AOI.

6.11 AOI 1-11 SWMU 11 – Facia, Bumper, and Touch-Up Waste Paint Sludge Treatment Units

This AOI consists of three different units (Figure 3) as described below.

- AOI 1-11 (1) - Facia Waste Paint Sludge Treatment Unit was located in the southern portion of the former Building 37, within the paint sludge process room, and consisted of a 1,000 gallon underground concrete tank.

- AOI 1-11 (2) - Bumper Waste Paint Sludge Treatment Unit was located in former Building 78. This unit consisted of a 1,000-gallon tank sitting on the concrete floor used to collect wastewater containing paint overspray for less than 90 days.

- AOI 1-11 (3) – Touch-Up Waste Paint Sludge Treatment Unit was located in former Building 150. This unit consisted of a 1,000-gallon tank sitting on the concrete floor used to collect wastewater containing paint overspray.

6.11.1 Historical and Current Operations

Wastes managed at all three units of AOI 1-11 consisted of wastewater which contained paint overspray and paint precipitate. Chemicals were added to the wastewater, which created a non-hazardous waste paint precipitate sludge. Sludge would then be transferred to the Paint Roll-Off Dumpster (AOI 1-12). Paint sludge was, therefore, associated with operations at this AOI.

6.11.2 Previous Investigations and Remedial Actions

No investigation has been conducted at the Facia Waste Paint Sludge Treatment Unit [AOI 1-11(1)] and at the Bumper Waste Paint Sludge Treatment Unit [AOI 1-11(2)]. No releases to the environment from these units have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992).

In November 2005, ARCADIS completed a site assessment phase of investigation including soil screening at the Touch-Up Waste Paint Sludge Treatment Unit AOI 1-11(3). Two soil boring, SA33-1 and SA33-2 were installed within close proximity of AOI 1-11(3). Samples collected from the borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings. Since no evidence of a release was apparent, no samples were submitted for laboratory analysis. Results of the soil field screening are summarized in Table F-1 included in Appendix F and shown on Set 1, Figures 8-1 and 9-1.

6.11.3 Current Status

AOI 1-11(1) and AOI 1-11(2) ceased operations and were decommissioned prior to 2005. AOI 1-11(3) was removed from service in 2005 and it is currently being decommissioned.

Based on the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

6.12 AOI 1-12 SWMU 12 - Paint Sludge Roll-Off Box

AOI 1-12 was located between Buildings 41 and 156 (Figure 3) and consisted of a 20-cubic-yard metal roll-off box located on a concrete pad. The unit began operations in 1980. This AOI was located at grade level.

6.12.1 Historical and Current Operations

Wastes managed at AOI 1-12 included waste paint sludge generated during engine painting and routine heavy machine maintenance, as well as waste paint sludge

generated from bumper, fascia, and touch-up painting operations. Paint sludge was, therefore, associated with operations at this AOI.

6.12.2 Previous Investigations and Remedial Actions

No releases from this AOI have been documented, and PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992). It was documented in the PA/VSI that the concrete surrounding the AOI was not cracked or stained, and the visible part of the covering tarp was in good condition.

6.12.3 Current Status

AOI 1-12 ceased operations in 2005. Based on the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, no further action is warranted at this AOI.

6.13 AOI 1-13 SWMU 13 - Former Dust Collectors

AOI 1-13 was located in former Building 38 and consisted of 55-gallon drums placed beneath bead blast and shot blast machines. The bead blast began operation in 1985 and the shot blast began in 1991. This AOI was located at grade level.

6.13.1 Historical and Current Operations

Wastes managed at AOI 1-13 consisted of baghouse dust generated during gasoline tank assembly (bead blast), and during engine remanufacturing (shot blast). One 55-gallon drum was placed on top of the concrete beneath each bag house to collect the dust within the building. The drums were emptied or changed out as necessary. Baghouse dust was, therefore, associated with these operations.

6.13.2 Previous Investigations and Remedial Actions

Investigations completed within a portion of this AOI footprint, focused on potential release at depth from AOI 1-23(5), and therefore, could not be used to characterize a potential release from this AOI. However, due to the nature of this AOI, no investigations or remedial action has been conducted at this AOI and none appears to be warranted. No releases to the environment from these units have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992). In addition, when AOI 1-13 was removed in 1999 in preparation for the

construction of LGR, decommissioning procedures were followed and included visual inspection of concrete around operations, cleaning or scarifying of concrete in cases where determined to be necessary, and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was observed during the inspection.

6.13.3 Current Status

AOI 1-13 is no longer in operation. Based on the nature of the operations at this AOI, the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the visual inspection conducted during decommissioning in 1999, no further action is warranted at this AOI.

6.14 AOI 1-14 SWMU 14 - Former Building 22 Roll-Off Box

AOI 1-14 was located in the southeast corner within former Building 22 in the dock area on the concrete floor. The AOI consisted of one 20-cy plastic-lined metal roll-off box. The unit began operation in 1970. This AOI was located at grade level.

6.14.1 Historical and Current Operations

Wastes managed at AOI 1-14 included non-hazardous residue and filter paper generated from wet machining operations. Machining residue was associated with these operations.

6.14.2 Previous Investigations and Remedial Actions

No investigations or remedial action has been conducted at this AOI and none appear to be warranted. No releases to the environment from these units have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992). In addition, when AOI 1-14 was removed in 1999 in preparation for the construction of LGR, decommissioning procedures were followed and included visual inspection of concrete around operations, cleaning or scarifying of concrete in cases where determined to be necessary, and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was observed during the inspection.

6.14.3 Current Status

AOI 1-14 is no longer in operation. Based on the nature of the operations at this AOI, the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the visual inspection conducted during decommissioning in 1999, no further action is warranted at this AOI.

6.15 SWMU 15 - Former Outdoor Scrap Metal Bins

SWMU 15 was also identified by PRC as part of AOC 1. It is discussed further in Section 6.23 under AOI 1-23(5).

6.16 SWMU 16 - Former Outdoor Scrap Metal Bin UST

SWMU 16 - Former Outdoor Scrap Metal Bin UST, was also identified by PRC as part of AOC 1. It is discussed further in Section 6.23 under AOI 1-23(5).

6.17 AOI 1-17 SWMU 17 - Former Asbestos Dumpster

AOI 1-17 was located outside the northwest corner of former Building 49 and consisted of one 20-cubic-yard metal dumpster. The unit began operation in 1991. This AOI was located at grade level.

6.17.1 Historical and Current Operations

Wastes managed at AOI 1-17 included 4-millimeter plastic bags of asbestos waste generated from remanufacturing of V-8 engines and small asbestos abatement projects. Plastic bags of asbestos waste at this AOI were stored closed to prevent releases.

6.17.2 Previous Investigations and Remedial Actions

No investigations or remedial actions have been conducted at this AOI and none appears to be warranted. No releases to the environment from these units have been documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992). In addition, when AOI 1-17 was removed in 1999 in preparation for the construction of LGR, decommissioning procedures were followed and included visual inspection of concrete around operations, cleaning or scarifying of concrete in cases

where determined to be necessary, and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was observed during the inspection.

6.17.3 Current Status

AOI 1-17 is no longer in operation. Based on the nature of the operations at this AOI, the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the visual inspection conducted during decommissioning in 1999, no further action is warranted at this AOI.

6.18 AOI 1-18 SWMU 18 - RRIM Trenches

AOI 1-18 was located in former Building 78 and consists of 6-inch deep concrete, metal grated trenches which ran the entire length of the building. The unit began operations in 1981. This AOI is approximately 0.5 feet deep.

6.18.1 Historical and Current Operations

Wastes managed at AOI 1-18 included non-hazardous waste solids from molds. RRIM process was used for the production of bumpers for vehicles. In this process two liquid-chemical components from separate tanks were provided through pressure supply lines to a mold, where a rapid chemical reaction took place. Waste generated during RRIM operations was pumped into 55-gallon drums, which were then transferred to the former (AOI 1-21). Waste polyol and waste reacted isocynate and polyol was associated with the RRIM operations.

6.18.2 Previous Investigations and Remedial Actions

No releases to the environment from these units have been documented. PRC observed no visible evidence of a release to the concrete surface at the time of the PA/VSI (PRC, 1992).

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). As described in section 6.4.2 (AOI 1-4), soil borings SA26-1 through SA26-13, SA48-1, SA48-2, and SA48-4 were

installed in and around AOI 1-18, as well as adjacent to AOI 1-4 and AOI 1-24 (see Section 7.1). Samples collected at each location were field screened to assess potential environmental impacts from AOI 1-18. In addition, due to the presence of the plating operations of AOI 1-24, soil samples were also analyzed for TAL Metals. Results of the field screening are summarized in Table F-1 (Appendix F) and show no evidence of a petroleum product release to the environment. Laboratory analysis showed exceedances of DWP and GSIP screening levels for chromium, cobalt, cyanide, manganese, and nickel. Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1.

6.18.3 Current Status

AOI 1-18 ceased operations and was decommissioned prior to 2005. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI. The detected metal exceedances are not related to AOI 1-18 and will be further discussed in Section 7.1.3 (AOI 1-24).

6.19 AOI 1-19 SWMU 19 - Former Hazardous Waste Storage Area

AOI 1-19 was located outside the northwest corner of former Building 49 and consisted of an outdoor, roofed 36-ft by 122-ft rectangular area that was enclosed by three walls. Reinforced concrete epoxy-covered floor and walls surrounded the storage area. The unit began operation prior to 1980. This AOI was located at grade level.

6.19.1 Historical and Current Operations

Wastes managed at AOI 1-19 included the following: baghouse dust from bead blast operations; baghouse dust from V-8 engine remanufacturing and pump and valve repair; waste paint thinner from engine head and block painting; adhesive waste from remanufacturing of water pumps for V-8 engines and assembling of hoods; non-hazardous waste solids from RRIM operations; waste solvents from RRIM and pump and valve repair operations; and formerly wastewater treatment sludge from zinc phosphating operations and SMC resin. The wastes were stored in 55-gallon drums which were placed on pallets within the storage area. A 1,000-gallon UST at the northeast corner of the area collected spills and runoff.

GM operated the unit as a less than 90 day hazardous waste storage area for a short time after closure, between 1998 and 1999.

6.19.2 Previous Investigations and Remedial Actions

GM closed the unit under Part 111 Hazardous Waste Management of the NREPA, PA451. Closure documentation was approved by MDEQ with the release from financial assurance requirements for facility closure, dated December 11, 1998 (see Appendix D).

6.19.3 Current Status

AOI 1-19 was removed in 1999 in preparation for the construction of LGR. Because clean closure of AOI 1-19 was approved by MDEQ and, as discussed above, there is no reason to suspect that a release to the environment occurred during the December 1998 and December 1999 when operated as a less-than-90-day storage area, no further action at this AOI is warranted.

6.20 AOI 1-20 SWMU 20 - Former Phosphating Operations Wastewater Treatment System and F006 Filter Cake Container

AOI 1-20 consisted of a former phosphating operations wastewater treatment system. Complete information on location, volumes, and construction material for the unit was unavailable. However, based on the information provided, this AOI is assumed to be associated with bonderite operations located in Building 37. The unit began operations in 1962 and ceased operations in 1984. This AOI is approximately 16 feet deep, based on knowledge of other similar types of USTs at the Facility.

6.20.1 Historical and Current Operations

Wastes managed at AOI 1-20 included wastewater and filter cake generated from zinc phosphating operations.

Used zinc phosphating process waters were pumped to a 25,000-gallon concrete UST. The wastewater was then pumped to a reduction tank where sulfuric acid and sodium bisulfate were added. Next, the wastewater was pumped to a reaction tank where lime was added to remove the trivalent chromium, producing a hydroxide sludge. The sludge was sent through a filter press, from which point the filter cake waste (F006) was placed in a container and then taken to AOI 1-19, while the filtrate was returned to the reaction tank. Zinc phosphating filter cake was, therefore, associated with operations at this AOI.

6.20.2 Previous Investigations and Remedial Actions

This AOI is located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 3.7.2.1.

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). One soil boring (SA21-1) was installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). The soil sample collected was analyzed for TAL Metals and TCL VOCs where the screening methodology identified elevated PID readings. There was no physical evidence to support the need of Oil-in-Soil shake test; therefore, no SVOC analysis was completed. Laboratory analysis showed no exceedances of the screening levels. Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17B-1.

6.20.3 Current Status

AOI 1-20 ceased operations in 1984. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release to the environment from the 2005 assessment, no further action is warranted at this AOI.

6.21 AOI 1-21 SWMU 21 - Former Satellite Accumulation Areas (SAA)

SAA identified as AOI 1-21 were located in former Buildings 22, 27B, 34, and 78 and consisted of 55-gallon drums (hazardous waste) and 2-cubic-yard hoppers (nonhazardous waste). These operations began in 1955 and were located at grade level.

6.21.1 Historical and Current Operations

Wastes managed at AOI 1-21 included: wet machining residue and filter paper; waste paint and paint thinner; dry machining chip waste, adhesive waste, non-hazardous waste solids from RRIM operations (AOI 1-18); and waste solvents. From 1980 to 1984, AOI 1-21 also managed SMC purge resin from plastic molding operations. The drums were used to accumulate waste for less than 90 days at the point of generation prior to storage and disposal.

6.21.2 Previous Investigations and Remedial Actions

No releases from these units have been documented. PRC observed no visible evidence of release at the time of the PA/VSI (PRC, 1992). All units were indoors. All drums were kept closed when not in use and under the direct observation of the operators. In addition, when AOI 1-21 was removed due to demolition activities, decommissioning procedures were followed and included visual inspection of concrete around operations, cleaning or scarifying of concrete in cases where determined to be necessary, and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was observed during the inspection.

6.21.3 Current Status

The SAA located in former Building 22 were removed in 1999 in preparation for the construction of LGR, while SAA located in former Building 27B and former Building 78 were removed in 2005 during the LCA decommissioning. Based on the nature of the operations at this AOI, the construction and the waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the visual inspection conducted during decommissioning in 1999 and 2005 respectively, no further action at this AOI is warranted.

6.22 AOI 1-22 SWMU 22 - Former Bumper 300-Gallon Waste Paint Thinner AST

AOI 1-22 was located in the southeast corner of Building 78AB and consisted of a 300-gallon steel AST surrounded by 5-foot-high steel walls and an associated sump. The unit began operation in 1991. This AOI was located at grade level.

6.22.1 Historical and Current Operations

Wastes managed at AOI 1-22 included waste paint thinner generated from bumper painting operations. This AOI was a “less than 90-day” waste storage area.

6.22.2 Previous Investigations and Remedial Actions

No investigations or remedial action has been conducted at this AOI and none appears to be warranted. No releases to the environment from this unit have been

documented. PRC observed no visible evidence of a release at the time of the PA/VSI (PRC, 1992).

6.22.3 Current Status

AOI 1-22 ceased operation and was decommissioned prior to 2005. Based on the nature of the operations at this AOI, the construction and the waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the decommissioning visual observations, no further action is warranted at this AOI.

6.23 AOI 1-23 AOC 1 - Facility Tank Farms

AOI 1-23 consists of the following eight tank farms: 1) Central Tank Farm; 2) Building 64 Dock Tank Farm; 3) Building 64 South Tank Farm; 4) Tank #45; 5) Tanks #77 and #78; 6) East Tank Farm; 7) Tanks #49 and #50, and 8) the Building 66 South Tank Farm.

6.23.1 Historical and Current Operations

Tanks comprising AOI 1-23 were used to store diesel fuel, motor oils, automatic transmission fluid, and used oil at different locations throughout the Facility (see Table 1). Petroleum products and metals were, therefore, associated with these operations.

6.23.2 Previous Investigations and Remedial Actions

AOIs 1-23(1), 1-23(6) and 1-23(7) are located within areas of the Facility where perched water was investigated and identified (Section 3.7.1. and 5.1.1).

Between June 1989 and December 1990, the eight tank farms were investigated to characterize the extent of releases to soil and groundwater. An area-wide investigation was conducted between December 1991 and January 1992 to further define the nature and extent of releases from the tank farms. Between 1992 and 1998, additional site investigation, remedial system installation, free product recovery and groundwater monitoring activities were completed as described in the *RFAR* (URS, 2001). A list of reports submitted to MDEQ that summarize these activities is provided in Appendix D. Analytical results of these historical investigations are summarized in Appendix E and shown on Set 1 of Soil Databox Figures for each AOI as follows: AOI 1-23(1) on Figures 36A-1, 37A-1, 42-1, and 43-1; AOI 1-23(2), AOI 1-23(3), and AOI 1-23(4) on

Figures 38-1 and 39A-1; AOI 1-23(5) on Figures 42-1 and 43-1; AOI 1-23(6) on Figures 38-1, 39B-1, 44-1 and 45B-1; AOI 1-23(7) on Figures 26-1 and 27-1; and AOI 1-23(8) on Figures 38-1, 39B-1, 40-1 and 41-1. A *Corrective Action Plan* (CAP) was prepared and included in the *RFAR* (URS, 2001). The CAP has been implemented since it was submitted to address remaining impacts at AOI 1-23(5) and AOI 1-23(7).

The removal of the eight tank farms of AOI 1-23 is summarized as follows:

- The Central Tank Farm [AOI 1-23(1)] USTs and approximately 9,526 cy of impacted soil and concrete were removed and disposed of off site at a licensed disposal facility. Free product recovery operations at recovery wells 08MW019 and 08MW033 began in January 1993 by manual methods and active recovery systems were installed in May 1994. Free product has not been detected in the system since January 1999. During subsequent monitoring, free product was not detected in the wells and a final Free Product Status Report for the Central Tank Farm was provided in the *RFAR* (URS, 2001). Laboratory analysis showed exceedances of screening levels for the following constituents: chromium (GSIP), naphthalene (GSIP), benzene (ISVIIC, IVSIC, DWP, RWC, GSIP, RSVIIC, RVSIC, and RDC), ethylbenzene (ISVIIC, IDC, DWP, RWC, GSIP, RSVIIC, RDC, and Csat), toluene (ISVIIC, IDC, DWP, GSIP, RSVIIC, RDC, and Csat), and xylene (ISVIIC, IDC, DWP, RWC, GSIP, RSVIIC, RDC, and Csat). Analytical screening results are included in Appendix E, and shown on Set 1 Figures 36A-1, 37A-1, 42-1, and 43-1.

- The Building 64 Dock Tank Farm [AOI 1-23(2)] USTs and approximately 58 cy of impacted soil and concrete were removed and disposed of off site at a licensed disposal facility. Laboratory analysis showed exceedances of screening levels for the following constituents: chromium (GSIP); benzene (DWP and RSVIIC), ethylbenzene and xylene (DWP and GSIP), and toluene (GSIP). Analytical screening results are included in Appendix E, and shown on Set 1 Figures 36B-1, 37B-1, 38-1, and 39A-1.

- The Building 64 South Tank Farm [AOI 1-23(3)] USTs and approximately 3,198 cy of impacted soil and concrete were removed during closure. Additionally, approximately 6,050 gallons of liquid including free product, water, and fire-retarding foam were removed at the time of excavation. Laboratory analysis showed exceedances of screening levels for the following constituents: benzene, and carbon tetrachloride (ISVIIC, IVSIC, RWC, DWP,

GSIP, RSVIIC, and RVSIC), ethylbenzene (DWP, GSI, and RSVIIC), naphthalene (DWP, GSIP, and RWC), toluene (DWP and GSIP), trichloroethylene (DWP), and xylene (ISVIIC, IDC, DWP, RWC, GSIP, RSVIIC, RDC, and Csat). Analytical screening results are included in Appendix E, and shown on Set 1, Figures 38-1 and 39A-1.

- Tank #45 [AOI 1- 23(4)] was closed in place and approximately 40 cy of impacted soil were removed and disposed of off site at a licensed disposal facility. Soil sample data indicate that there are no exceedances of the screening levels present (Appendix E and/or Figures 38-1 and 39A-1).

- Tanks #77 and #78 [AOI 1-23(5)] were also identified in the PA/VSI as SWMU 16 – Outdoor Scrap Metal Bin USTs. The two USTs were closed in place (URS, 2001). SWMU 15, collocated with SWMU 16 and AOI 1-23(5) consisted of ten 20-feet by 20-feet by 15-feet deep concrete scrap metal bins, was removed in 1999 in preparation for the construction of LGR. Free product recovery operations were initiated in 1994. Free product was initially recovered manually from wells 12MW020 and MW021D. In December 1995, free product recovery wells PRW-1 through PRW-5 were installed to recover product from the eastern area of the former Building 38 (currently the Body Building). During the construction of the Body Building in 1999, all PRW recovery wells were abandoned with the exception of PRW-4. Free product continues to be collected at PRW-4 by an air-driven product recovery SkimRite skimmer/pump. Free product recovery operations are still ongoing in this area in accordance with the CAP, as described in the quarterly *Free Product Recovery Status Reports* for the Facility that are submitted to the MDEQ under the Part 213 Leaking Underground Storage Tank (LUST) program. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (GSIP), benzo(a)pyrene (IDC and RDC), fluoranthene (GSIP), fluorene (GSIP), naphthalene (DWP, RWC, GSIP), trimethylbenzene (GSIP), TCE (DWP), ethylbenzene (GSIP and DWP), and xylene (GSIP and DWP). Results of these investigations are summarized in Appendix E and shown on Set 1, Figures 42-1, 43-1, 44-1, and 45A-1. The source of the free product recovered here is believed to be AOI 1-124 - Kerosene Clarification System for Honing Operations as shown on Figures 46-1 and 47-1.

- The East Tank Farm [AOI 1-23(6)] USTs and approximately 935 cy of impacted soil were removed and disposed of off site at a licensed disposal facility. Laboratory analysis showed exceedances of the screening levels for

the following constituents: chromium (GSIP), naphthalene (GSIP), methyl tert butyl ether (DWP), benzene (ISVIIC, DWP, GSIP, RSVIIC, and RVSIC), ethylbenzene (DWP and GSIP), toluene (GSIP), and xylene (DWP, GSIP, and RWC). Results of these investigations are summarized in Appendix E and shown on Set 1, Figures 38-1, 39B-1, 44-1 and 45B-1.

- Tanks #49 & #50 [AOI 1-23(7)] and approximately 725 cy of impacted soil were removed and disposed of off site at a licensed disposal facility. The free product recovery system at 04MW009 and 04RW001 began in 1993. Passive recovery operations are still ongoing in this area in accordance with the CAP. Laboratory analysis of soil data showed exceedances of the screening levels for the following constituents: chromium (GSIP), 1,1-Dichloroethene (ISVIIC, IVSIC, DWP, GSIP, RSVIIC, and RVSIC), and cis-1,2-dichloroethene (DWP). Results of these investigations are summarized in Appendix E and shown on Set 1, Figures 26-1 and 27B-1.

- The Building 66 South Tank Farm [AOI 1-23(8)] USTs and approximately 2,997 cy of impacted soil were removed and disposed of off site at a licensed disposal facility. Laboratory analysis of soil data showed exceedances of the screening levels for benzene (DWP). Results of these investigations are summarized in Appendix E and shown on Figures 38-1 and 39B-1.

A Restrictive Covenant was filed with the Ingham County Register of Deeds on August 11, 2003 covering land use restrictions in areas AOI 1-23(1), 1-23(3), 1-23(6), and 1-23(7) (Appendix E). The USTs that are part of AOI 1-23 that are being addressed by the CAP are AOI 1-23(5) and AOI 1-23(7). Activities that are being completed to meet the CAP requirements are as follows:

AOI 1-23(5) Tanks #77 and #78 (8,000 Gallon and 1,230 Gallon Used Oil USTs)

- According to the *First Quarter 2008 Free Product Recovery Status Report, General Motors Corporation, Lansing Plant 1* (ARCADIS, 2008), free product is collected by an air-driven product recovery SkimRite skimmer/pump. A four-inch product recovery well (PRW-4) inside the current Body Building (formerly Buildings #36/38) contains a pneumatically driven bladder pump. Compressed air is driven through a 5/16 inch nylon air line into the well to run the pump. Free product collected by the pump is discharged into a 55-gallon drum equipped with an overfill float switch. The drum is checked weekly and is changed when full (approximately 45 gallons).

AOI 1-23(7) Tanks #49 and #50 (6,000 Gallon and 20,000 Gallon Quench Oil USTs)

- According to the *First Quarter 2008 Free Product Recovery Status Report, General Motors Corporation, Lansing Plant 1* (ARCADIS, 2008), monitoring well 04MW009 is monitored monthly for groundwater elevation and detectable free product and uses a TB2-100 two-inch Soakease disposable, sorbent sock to passively collect free product from the well. The sock is changed at approximately 75% saturation.

- According to the *First Quarter 2008 Free Product Recovery Status Report, General Motors Corporation, Lansing Plant 1* (ARCADIS, 2008), monitoring well 04RW001 is monitored monthly for groundwater elevation and detectable free product and uses a sorbent polypropylene hydrophobic pillow (#SKM403 PIG Sump Skimmer Pillow) to passively collect free product from the well. Unlike the sock used in 04MW009, the pillow is wider (eight inches in diameter) and uses a polyester mesh to suspend the pillow. The pillow is changed at approximately 75% saturation.

Facility-specific Groundwater Extraction and Long-Term Monitoring

- The groundwater extraction well system, consisting of three extraction wells, EW-1, EW-2 and EW-3, captures impacted groundwater from the Facility by maintaining a hydraulic gradient beneath the Facility. The extraction wells are located adjacent to the west side of Building 66. The extraction wells continuously pump impacted groundwater at a total pumping rate of approximately 175 gpm to an activated carbon treatment system. The treated groundwater is discharged to the Grand River under an NPDES Permit.

- The semi-annual long-term monitoring events monitor the extent of the capture zone created by the extraction wells and monitor groundwater quality at strategic locations. The semi-annual monitoring event consisted of the following activities:

    - Measurement of groundwater elevations from approximately 33 monitoring points
    - Collection and analysis of groundwater samples from approximately 16 monitoring wells
    - Collection and analysis of quality control and quality assurance samples

- Preparation of groundwater contour maps
- Summarization of analytical results
- Preparation and evaluation of trend plots for specific parameters
- Preparation of the semi-annual groundwater monitoring report.

6.23.3 Current Status

The current status of the eight tank farm areas of AOI 1-23 are summarized as follows:

- The Central Tank Farm [AOI 1-23(1)] USTs were removed. Due to exceedances of the screening levels illustrated in Set 2 Figures 42-2 and 43-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions deemed necessary are described in Table 1 and will be defined in more detail in the RFI Work Plan.

- The Building 64 Dock Tank Farm [AOI 1-23(2)] USTs were removed. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

- The Building 64 South Tank Farm [AOI 1-23(3)] USTs were removed. Due to exceedances of the screening levels and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

- Tank #45 [AOI 1- 23(4)] was removed. Soil sample data indicate that there are no exceedances of the screening levels present and, therefore, no further action at this AOI is warranted.

- Tanks #77 and #78 [AOI 1-23(5)] were closed in place. Due to exceedances of the screening levels illustrated in Set 2 Figure 45A-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

- The East Tank Farm [AOI 1-23(6)] USTs were removed. Due to exceedances of the screening levels illustrated in Set 2 Figure 39B-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

- Tanks #49 & #50 [AOI 1-23(7)] were removed. Due to exceedances of the screening levels illustrated in Set 2 Figure 27B-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

- The Building 66 South Tank Farm [AOI 1-23(8)] USTs were removed. Due to benzene detections above the DWP (specifically in the deepest sample collected), further action on a Facility-wide basis is recommended. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

In summary, the Tank Farm areas of AOI 1-23 where soil sample data indicate that there are exceedances of screening levels, further actions are recommended. These areas are AOI 1-23(1), 1-23(2), 1-23(3), 1-23 (5), 1-23(6), 1-23(7), and 1-23(8). Further actions proposed at these AOIs are described in Table 1 and will be defined in more detail in the RFI Work Plan. No further action is warranted at AOI 1-23(4) because soil sample data indicate that there are no exceedances of screening levels in this area.

7. Newly Identified Areas of Interest

This section presents information on the 73 additional AOIs identified at the Facility from the review of historical drawings, interviews with Facility personnel, and Facility reconnaissance. Items noted during the review process that did not meet the definition of an AOI have been retained for future references if needed. A list of these miscellaneous items and a map showing their locations are provided in Appendix I.

The Facility AOIs are summarized in Table 1 and are shown on Figure 3. Information on location, historical operations, previous investigations and remedial actions, and current status is included in the description of each AOI. For certain AOIs the only source of information is historical drawings. For these AOIs there is limited information on historical operations, and the available information is included in this section and in Table 1.

The data screening process and databox figure development used to evaluate soil and groundwater data collected at the Facility is described in Appendix E and summarized in Section 4.2.

7.1 AOI 1-24 - Former Plating Department

AOI 1-24 is located on the central portion of the former Building 78 and consists of the plating department. This AOI is no more than 10 ft deep.

7.1.1 Historical and Current Operations

AOI 1-24 was associated with chrome and nickel plating operations in Building 78. Plating solutions and metals were associated with these operations.

7.1.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings (SA26-1 through SA26-13) were installed every 50 feet along the perimeter of the plating operation, in between former plating pits, and along the combined storm/process sewer line. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals. Laboratory analysis showed exceedances of the screening levels for metals including chromium (total) (DWP and

GSIP), cobalt (DWP), copper (GSIP), cyanide (GSIP), manganese (DWP), and nickel (DWP and GSIP). Analytical screening results are included in Appendix E and shown on Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.1.3 Current Status

AOI 1-24 ceased operations and was decommissioned prior to 1983. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.2 AOI 1-25 - Fluid Fill Operations

AOI 1-25 is located in the northeast corner of former Building 32 and consists of a trench and one underground steel separator tank. This unit began operations in 1984. This AOI is approximately 10 ft deep.

7.2.1 Historical and Current Operations

AOI 1-25 operated as a fluid fill area for vehicles. Small amounts of gasoline that might have spilled during vehicle filling operations accumulated in the trench. The trench was sprayed with water and the water and gasoline mixture accumulated in the separator tank. Gasoline was, therefore, associated with operations at this AOI.

7.2.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA8-1 through SA8-4) were installed within and around the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening criteria for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Figures 20-1, 21-1, 22-1, and 23A-1. No remedial action has been conducted at this AOI.

7.2.3 Current Status

AOI 1-25 ceased operations in 2005 and decommissioning is currently underway. Based on the nature of the operations at this AOI, materials handled and the field screening results from the 2005 Site Assessment, it is unlikely that the chromium (total) detected above the GSIP screening level was released from this AOI. However, detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. . Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.3 AOI 1-26 - Former Paper Bailer

AOI 1-26 is located in the northeast corner of former Building 75 and consists of a 17 ft deep former paper bailer, hydraulic elevator, and a trash compactor. This AOI is approximately 21 ft deep.

7.3.1 Historical and Current Operations

AOI 1-26 was used for paper bailing operations in Plant 1. A 4 ft deep sump associated with this AOI was located in the southwest corner and fluids were not normally present during operations at this AOI. Used hydraulic oils were associated with operations at this AOI.

7.3.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-4-1 through SA-4-3) were installed within and around the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for the following constituents: naphthalene (GSIP), benzene (DWP, GSIP, RSVIIC), ethylbenzene (ISVIIC, IDC, DWP, GSIP, RSVIIC, RDC), toluene (DWP, GSIP), and xylene (ISVIIC, IDC, DWP, RWC, GSIP, RSVIIC, RDC). Additionally, Csat was exceeded in soil sample SA 4-1 for ethylbenzene and xylene (total). Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17A-1. No remedial action has been conducted at this AOI.

7.3.3 Current Status

AOI 1-26 ceased operations prior to 2005 and decommissioning is currently underway. Although the impacts detected in the vicinity of this AOI are not believed to be related to the activities conducted at this AOI, due to exceedances of the screening levels illustrated in Set 2 Figure 17A-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.4 AOI 1-27 - Former West Tank Farm

AOI 1-27 is located along the outside northwest corner of Building 82 and extended into Buildings 82 and 75. This AOI consists of seven USTs and is approximately 16 ft deep.

7.4.1 Historical and Current Operations

The USTs in this AOI were used to store gasoline, alcohol, naphthalene, windshield washer solvent, and antifreeze. This tank farm was removed in 1982, and the soil around the former tank farm was excavated.

7.4.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-1-1 through SA-1-6) were installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening level for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17A-1.

7.4.3 Current Status

The USTs in AOI 1-27 were removed in 1982. Based on the nature of the operations at this AOI, materials handled and the field screening results from the 2005 Site Assessment, it is unlikely that the chromium (total) was released from this AOI.

However, detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.5 AOI 1-28 - Former Oil Pit and Former Paint Mix Room

AOI 1-28 is located in the southeast corner of former Building 32 and consists of an 11 ft deep oil storage pit, the former drum storage area, and the former paint mix room.

7.5.1 Historical and Current Operations

This AOI was associated with paint mix operations in former Building 32. A sump associated with these operations was located in the paint mix room. Fluids were not normally present during operations at the former drum storage area and former paint mix room. Fluids were normally present during operations at the former oil pit. Used oil and used paint were, therefore, associated with operations at this AOI.

7.5.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-10-1 and SA-10-2) were installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed no exceedances of the screening levels. Analytical screening results are included in Appendix E and shown on Set 1, Figures 20-1 and 21-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.5.3 Current Status

AOI 1-28 ceased operations and was decommissioned prior to 1949. Soil samples collected from soil borings strategically placed identified no evidence of a release. Furthermore, analytical results from soil samples obtained at this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.6 AOI 1-29 - Former Engine Repair Pit

AOI 1-29 is located in the east-central portion of former Building 32 and consists of a former engine repair pit. This AOI is approximately 16 ft deep.

7.6.1 Historical and Current Operations

AOI 1-29 was associated with engine repair operations in former Building 32. Fluids were not normally present during operations at this AOI. Used oils were associated with operations at this AOI.

7.6.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-9-1 and SA-9-2) were installed within and around the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed no exceedances of the screening levels. Analytical screening results are included in Appendix E and shown on Set 1, Figures 20-1, 21-1, 22-1, and 23A-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.6.3 Current Status

AOI 1-29 ceased operations and was decommissioned prior to 2005. Based on the nature of the operations at this AOI, materials handled and the field and analytical screening results from the 2005 Site Assessment, no further action is warranted at this AOI.

7.7 AOI 1-30 - Former Acid Demineralization Pit and Acid Tank Pit

AOI 1-30 is located in the east-central portion of Building 32 and consists of a former 3 ft by 6 ft by 4 ft acid demineralization pit and a 3 ft by 6 ft by 5 ft deep acid tank pit. This AOI is approximately 5 ft deep.

7.7.1 Historical and Current Operations

AOI 1-30 was associated with car wash activities that took place in the former "washmobile" area. A 3 ft by 6 ft by 4 ft pit with associated sump located in the southwest corner comprise this AOI. Fluids were normally present during operations at this AOI. Acidic solutions were associated with these operations.

7.7.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings SA-11-1 and SA-9-5 were as installed in the AOI area. Both soil borings encountered refusal at 3.7 and 5.5 ft bgs, respectively. Results of the field screening are summarized in Table F-1 (Appendix F). The samples collected were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for cobalt (DWP and GSIP) at one location. Analytical screening results are included in Appendix E and shown on Set 1, Figures 20-1 and 21-1. No remedial action has been conducted at this AOI.

7.7.3 Current Status

AOI 1-30 ceased operations and was decommissioned prior to 2005. Based on the nature of the operations at this AOI, materials handled and the field screening results from the 2005 Site Assessment, it is unlikely that the cobalt was released from this AOI. However, due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.8 AOI 1-31 – South Assembly Process Sewer Lines

AOI 1-31 is comprised of process sewer lines downstream of the former plating operations (AOI 1-24). This AOI is no more than 16 ft deep.

7.8.1 Historical and Current Operations

AOI 1-31 was associated with process sewer lines located in South Assembly. Fluids were normally present during operations at this AOI. Process waste was associated with operations at this AOI.

7.8.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-2-1, SA-3-1, SA-3-2, SA-7-1, SA-7-3, SA-12-1, SA-12-2, and SA-47-2) were installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (GSIP), pentachlorophenol (DWP), benzene (DWP), ethylbenzene (GSIP), and xylene (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1, 15-1, 20-1, 21-1, 22-1, and 23A-1. No remedial action has been conducted at this AOI.

7.8.3 Current Status

AOI 1-31 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.9 AOI 1-32 - Former Final Assembly Motor Repair Pit

AOI 1-32 is located in the east-central portion of former Building 32 and consists of a 3 ft deep former motor repair pit.

7.9.1 Historical and Current Operations

AOI 1-32 was associated with the former Final Assembly Motor Repair operations in former Building 32. Fluids were not normally present during operations at this AOI. Used oil was associated with operations at this AOI.

7.9.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-9-5, SA-9-6, and SA-9-7) were installed around the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for the following constituents: arsenic (DWP), chromium (total) (GSIP), cobalt (DWP and GSIP), copper (GSIP), manganese (DWP, GSIP, IPSIC, and RWC), zinc (GSIP), and fluoranthene (GSIP). Analytical screening results are included in Appendix E and shown on Set 1 Figures 20-1 and 21-1. No remedial action has been conducted at this AOI.

7.9.3 Current Status

AOI 1-32 ceased operations and was decommissioned prior to 2005. Due to exceedances of the screening levels illustrated in Set 2 Figure 20-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.10 AOI 1-33 - Former Brake Repair Pit

AOI 1-33 is located in the south-central portion of former Building 32 and consists of a 6 ft deep brake repair pit.

7.10.1 Historical and Current Operations

AOI 1-33 was associated with brake repair operations in former Building 32. Fluids were not normally present during operations at this AOI. Brake fluids were associated with operations at this AOI.

7.10.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-9-3 was used to assess the AOI. Results of the field screening are summarized in Table

F-1 (Appendix F). Samples collected were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed no exceedances of the screening levels. Analytical screening results are included in Appendix E and shown on Set 1, Figures 22-1 and 23A-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.10.3 Current Status

AOI 1-33 ceased operations and was decommissioned prior to 2005. Soil samples collected identified no evidence of a release. Furthermore, analytical results from soil samples obtained at this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.11 AOI 1-34 - Fluid Fill Area

AOI 1-34 was located in the north-central portion of former Building 32 and consists of a 6 ft deep fluid fill pit.

7.11.1 Historical and Current Operations

AOI 1-34 was associated with operations at the former fluid fill area. Fluids were normally present during operations at this AOI. Gasoline, used oil, antifreeze, windshield washer solvent, and brake fluids may, therefore, have been associated with operations at this AOI.

7.11.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-13-1, SA-13-2, SA-13-3, and SA-7-6) were installed around the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) total (GSIP), naphthalene (GSIP), benzene (ISVIIC, IVSIC, DWP, GSIP, RSVIIC, and RVSIC), ethylbenzene (ISVIIC, IDC, DWP, GSIP, RSVIIC, and RDC), toluene (ISVIIC, IDC, DWP, GSIP, RSVIIC, and RDC), and xylene (ISVIIC, IDC, DWP, RWC, GSIP, RSVIIC, and RDC). Additionally, Csat was exceeded in soil sample SA 13-1 for ethylbenzene, toluene and xylene and SA 7-6 for

xylene. Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1, 15-1, 20-1 and 21-1. No remedial action has been conducted at this AOI.

7.11.3 Current Status

AOI 1-34 ceased operations and was decommissioned prior to 2005. Due to exceedances of the screening levels illustrated in Set 2 Figures 15-2 and 21-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.12 AOI 1-35 - Former Chassis Paint Spray Booth

AOI 1-35 was located in former Building 75 and consists of a paint spray booth, two pits, and two 3-4 ft deep sumps.

7.12.1 Historical and Current Operations

AOI 1-35 was associated with chassis paint spray operations in former Building 75. Fluids were normally present during operations at this AOI. Paint solvents were associated with these operations.

7.12.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-14-2 was installed next to the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). The sample collected was analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed no exceedances of the screening levels. Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.12.3 Current Status

AOI 1-35 ceased operations and was decommissioned prior to 2005. Soil samples collected from soil borings strategically placed identified no evidence of a release.

Furthermore, analytical results from soil samples obtained at this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.13 AOI 1-36 - Former Deck Sumps

AOI 1-36 was located in the south central portion of former Building 75 and consists of deck sumps. This AOI is estimated to be 5 ft deep.

7.13.1 Historical and Current Operations

AOI 1-36 was associated with the operations in the oil and grease dispensing area of former Building 75. Fluids were normally present during operations at this AOI. Oil and grease were, therefore, associated with activities at this AOI.

7.13.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-14-1 and SA-7-6 were installed within the footprint of the AOI and in its close vicinity. Results of the field screening are summarized in Table F-1 (Appendix F). The samples collected were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for chromium (total) total (GSIP), naphthalene (GSIP), benzene (ISVIIC, DWP, GSIP, and RSVIIC), ethylbenzene (DWP and GSIP), toluene (DWP and GSIP), and xylene (ISVIIC, IDC, DWP, RWC, GSIP, RSVIIC, and RDC). Additionally, Csat was exceeded in soil sample SA 7-6 for xylene. Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.13.3 Current Status

AOI 1-36 ceased operations and was decommissioned prior to 2005. Due to exceedances of the screening levels illustrated in Set 2 Figures 15-2 and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.14 AOI 1-37 - Former Steering Gear Paint Spray Booth

AOI 1-37 was located in the southeast corner of former Building 75 and consists of a paint spray booth with a 2-3 ft deep sump.

7.14.1 Historical and Current Operations

AOI 1-37 was associated with steering gear paint spray operations in former Building 75. Fluids were not normally present during operations at this AOI. Waste paint was associated with these operations.

7.14.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-6-1 and SA-6-2) were installed within the AOI and around it. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 22-1 and 23A-1. No remedial action has been conducted at this AOI.

7.14.3 Current Status

AOI 1-37 ceased operations and was decommissioned prior to 2005. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.15 AOI 1-38 - Former Differential Fill Area

AOI 1-38 was located in the central portion of former Building 75 and consisted of a differential fill area and two sumps approximately 4.5 ft deep.

7.15.1 Historical and Current Operations

AOI 1-38 was associated with differential fill operations in former Building 75. Fluids were normally present during operations at this AOI. Differential fluids were associated with these operations.

7.15.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-14-3 was installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for benzene (DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.15.3 Current Status

AOI 1-38 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP screening levels (specifically in the deepest sample collected), further action on a Facility-wide basis is recommended. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.16 AOI 1-39 - Former Caster and Camber Fixture Pit

AOI 1-39 was located in the central portion of former Building 75 and consists of the former caster and camber fixture pit. This AOI is approximately 16 ft deep.

7.16.1 Historical and Current Operations

AOI 1-39 was associated with caster and camber fixture operations in former Building 75. Fluids were not normally present during operations at this AOI. Used oil and grease were associated with these operations.

7.16.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-14-4 was installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). The sample collected was analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.16.3 Current Status

AOI 1-39 ceased operations and was decommissioned prior to 2005. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.17 AOI 1-40 - Historic Fluid Fill Deck Area

AOI 1-40 was located in the northeastern portion of former Building 75 and consists of the historical fluid fill deck area and an associated 4-5 ft deep sump. This AOI is approximately 5 ft deep.

7.17.1 Historical and Current Operations

AOI 1-40 was associated with historical fluid fill operations in former Building 75. Fluids were normally present during operations at this AOI. Gasoline, transmission fluid, motor oil, and windshield washing fluid may have been associated with these operations.

7.17.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-5-3 was installed in the vicinity of the AOI. Results of the field screening are summarized

in Table F-1 (Appendix F). The samples collected were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (GSIP), cobalt (DWP and GSIP), and trichloroethene (DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and17A-1. No remedial action has been conducted at this AOI.

7.17.3 Current Status

AOI 1-40 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.18 AOI 1-41 - Former Differential Fill Area

AOI 1-41 is located in the central portion of former Building 75 and consists of a former differential fill area and two sumps approximately 4.5 ft deep.

7.18.1 Historical and Current Operations

AOI 1-41 was associated with differential fill operations in former Building 75. Fluids were normally present during operations at this AOI. Differential fluids were associated with these operations.

7.18.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-14-5 was installed in the vicinity of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). The sample collected was analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP) and benzene (DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.18.3 Current Status

AOI 1-41 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.19 AOI 1-42 - Former Rear Suspension Torque Pits

AOI 1-42 is located in the northeast portion of former Building 75A and consists of a rear suspension torque pit. This AOI is no more than 16 ft deep.

7.19.1 Historical and Current Operations

AOI 1-42 consists of former work pits for the Chassis Control Arms and Rear Suspension operations. Fluids were not normally present during operations at this AOI. Used oil and grease were associated with these operations.

7.19.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-5-1 was installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). The sample collected was analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed no exceedances of the screening levels. Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17A-1.

7.19.3 Current Status

AOI 1-42 ceased operations and was decommissioned prior to 2005. Soil sample collected from the soil boring strategically placed identified no evidence of a release. Furthermore, analytical results from soil samples obtained at this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.20 AOI 1-43 – Underground Storage Tank

AOI 1-43 was located in the southwestern corner of the dock located west of Building 82 and consisted of a former 12,000-gallon UST containing gasoline. This AOI is approximately 15 ft deep.

7.20.1 Historical and Current Operations

This AOI stored gasoline that supplied the fluid fill operations in Buildings 74 and 75. Fluids were normally present during operations at this AOI. The UST was removed from the ground in May 1984.

7.20.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-1-7 was installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). The sample collected was analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (GSIP), naphthalene (GSIP), ethylbenzene (DWP and GSIP), toluene (DWP and GSIP), and xylene (ISVIIC, IDC, DWP, RWC, GSIP, RSVIIC, and RDC). Additionally, Csat was exceeded in soil sample SA 1-7 for xylene. Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.20.3 Current Status

AOI 1-43 ceased operations and was decommissioned prior to 1983. Due to exceedances of the screening levels illustrated in Set 2 Figure 15-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.21 AOI 1-45 – Former Press Pits

AOI 1-45 is located throughout former Building 21A and consists of former press pits. This AOI is approximately 16 ft deep.

7.21.1 Historical and Current Operations

AOI 1-45 consists of former press pits that were located throughout the building. A small amount of fluids were normally present during operations at this AOI. The presses have been removed and the pits have been filled and capped with concrete. Hydraulic oils were associated with operations at this AOI.

7.21.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings SA20-1 through SA20-4 were installed along the press pits. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of screening levels for chromium (total) (GSIP) and cobalt (GSIP and DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17A-1. No remedial action has been conducted at this AOI.

7.21.3 Current Status

AOI 1-45 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.22 AOI 1-47 – Tanks #90 and #91

AOI 1-47 was located northwest of Building 70 and consisted of former 15,000-gallon gasoline USTs #90 and #91.

7.22.1 Historical and Current Operations

The two tanks were used to store gasoline. Fluids were normally present during operations at this AOI.

7.22.2 Previous Investigations and Remedial Actions

Tanks #90 and #91were identified in RFAR (URS, 2001) and is documented to have been closed. An undetermined quantity of soil was removed during closure from the Tank #90 and #91 area during closure. Soil borings 06BS003, 06BS004, and 06BS005 were used to investigate AOI 1-47. Samples collected at each location were analyzed for TAL Metals, and TCL VOCs. Laboratory analysis showed no exceedances of screening levels. Analytical results of these historical investigations are summarized in Appendix E and shown on Set 1, Figures 32-1 and 33-1.

7.22.3 Current Status

AOI 1-47 was taken out of service prior to 2001. Due to the previous remedial actions, and the analytical results from soil samples obtained around this AOI, showing no exceedances of screening levels, no further action is warranted at this AOI.

7.23 AOI 1-50 - Former Dump Tanks

AOI 1-50 consists of three former dump tanks. Two locations were identified in the west portion of former Building 37. This AOI is approximately 16 ft deep.

7.23.1 Historical and Current Operations

The dump tanks were abandoned in place and filled with sand in May 1984. Manhole covers have been tack-welded to rim. It is unknown what was stored in these tanks.

7.23.2 Previous Investigations and Remedial Actions

This AOI is located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 5.1.1.

In November 2005, ARCADIS completed a site assessment phase of investigation in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Three borings (SA-21-1, SA21-4, and SA21-5) were installed. Boring SA21-1 and SA21-4 were sampled for TAL metals, Total PCBs, TCL SVOCs and TCL VOCs. The field screening showed elevated PID readings; however, there were no detections of oil in soil, and the laboratory analysis showed no exceedances of screening levels. Results of the field screening are summarized in Table F-1

(Appendix F). Laboratory analysis showed no exceedances of screening levels. Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17B-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.23.3 Current Status

AOI 1-50 ceased operations and was decommissioned prior to 2005. The tanks were removed in the Fall of 2007. Soil samples collected from the soil borings strategically placed identified no evidence of a release. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.24 AOI 1-54 - Pump Pit

AOI 1-54 is located north of former Building 78 and west of former Building 77 and consists of a pump pit that is estimated to be approximately 15 ft deep as determined from historical drawing review.

7.24.1 Historical and Current Operations

The specific operation of this AOI is unknown, however, based on operations in the vicinity of the pump pit; it is likely that petroleum products were pumped at this AOI. It is assumed the fluids were not normally present during operations at this AOI. Petroleum products were, therefore, most likely associated with operations at this AOI.

7.24.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation. Four borings (SA23-3, SA23-4, SA23-5 and SA23-6) were installed within the footprint of the AOI. Samples collected from the borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings. Since no evidence of a release was apparent, no samples were submitted for laboratory analysis. Results of the soil field screening are summarized in Table F-1 included in Appendix F. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.24.3 Current Status

AOI 1-54 was taken out of service prior to 1983. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.25 AOI 1-60 - Paint Mix Room Containment and Sump

AOI 1-60 is located in the east portion of former Building 150 and consists of the paint mix room containment system and the associated sump immediately outside the building. This AOI is approximately 5 ft deep.

7.25.1 Historical and Current Operations

The paint mix room containment was provided by a three floor-drain system that ran from west to east through the middle of the paint mix room. The system was designed to capture all potential spillage from the paint mix room and to drain to a sump. Paint and paint thinners were, therefore, associated with operations at this AOI.

7.25.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling. One boring (SA33-3) was installed within the footprint of the sump, as shown on Figures 8-1 and 9-1. Samples collected from the boring were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings. Since no evidence of a release was apparent, no samples were submitted for laboratory analysis. Results of the soil field screening are summarized in Table F-1 included in Appendix F. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.25.3 Current Status

AOI 1-60 ceased operations in 2005 and decommissioning is currently underway. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.26 AOI 1-61 – Former Hydraulic Pump Room

AOI 1-61 is located in west side of former Building 150 and consists of a former hydraulic pump room. This AOI is approximately 5 ft deep.

7.26.1 Historical and Current Operations

AOI 1-61 operated as a hydraulic pump room. Hydraulic oil was associated with operations at this AOI.

7.26.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling. One boring (SA34-1) was installed in the area of the sump in the pump room that was the most likely point of a release as shown on Figure 8-1 and 9-1. Samples collected from the boring were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings. Since no evidence of a release was apparent, no samples were submitted for laboratory analysis. Results of the soil field screening are summarized in Table F-1 included in Appendix F. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.26.3 Current Status

The pump room ceased operation and was decommissioned prior to 2005. Soil samples collected from the soil boring strategically placed identified no evidence of a release. Based on the absence of any documented releases and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.27 AOI 1-62 - Former Building 90 Tank Farm

AOI 1-62 is located south of Building 90 and consists of the Building 90 Tank Farm.

7.27.1 Historical and Current Operations

The USTs in AOI 1-62 were used to store power steering transmission fluid, antifreeze, gasoline, windshield washer solvent, and used oil.

7.27.2 Previous Investigations and Remedial Actions

The Building 90 Tank Farm was identified in *RFAR* (URS, 2001) as being closed and the tanks removed. Approximately 9,200 cy of soil and concrete were removed. Soil borings (16BS005 through 16BS012) were installed around the AOI. Samples collected at each location were analyzed for TAL Metals, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for ethylbenzene (GSIP), toluene (GSIP), and xylene (GSIP). Analytical results are summarized in Appendix E and shown on Set 1, Figures 10-1 and 11-1.

7.27.3 Current Status

AOI 1-62 ceased operations and was decommissioned prior to 1994. Detections above the GSIP screening levels (specifically in the deepest sample collected were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.28 AOI 1-63 - Solder Booths, Hydraulic Oil AST, Floor Sumps, and Soluble Oil Pump Back Unit

AOI 1-63 is located in former Building 21 and consists of former solder booths, former hydraulic oil AST, three floor sumps, and a soluble oil pump back unit. This AOI is approximately 5 ft deep.

7.28.1 Historical and Current Operations

AOI 1-63 was associated with solder booth operations in former Building 21. Hydraulic oil and metals were, therefore, associated with operations at this AOI. Fluids were normally present during operations at this AOI.

7.28.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Six borings (SA35-1, SA35-2, SA35-3, SA35-4, SA35-5, and SA35-6) were installed. The field screening showed no evidence of staining or elevated PID readings. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were

analyzed for TAL Metals. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17A-1. There have been no remedial actions at this AOI.

7.28.3 Current Status

AOI 1-63 ceased operations and was decommissioned prior to 2005. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.29 AOI 1-72 – Pit

AOI 1-72 is located in the southeast portion of the former Building 37 and consists of a pit of unknown dimensions, which was identified from a historical GM drawing. This AOI is approximately 10 ft deep, based on knowledge of other similar pits at the Facility.

7.29.1 Historical and Current Operations

It is unknown what operations were associated with AOI 1-72.

7.29.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). One boring (SA 41-1) was installed. The screening showed elevated PID readings; however, there were no detections of oil in soil. A soil sample was analyzed for TAL Metals and TCL VOCs. Results of the field screening are summarized in Table F-1 (Appendix F). Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 24-1 and 25-1. No remedial action has been conducted at this AOI.

7.29.3 Current Status

AOI 1-72 ceased operations and was decommissioned prior to 2005. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.30 AOI 1-74 – Truck Load/Unload Containment Sump

AOI 1-74 is located north of the dock located west of former Building 78AB and consists of a containment sump. This AOI is approximately 5 ft deep.

7.30.1 Historical and Current Operations

AOI 1-74 was used to collect fluids generated at the truck load/unload area. Fluids were normally present during operations at this AOI.

7.30.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings SA23-7, SA23-8, and SA23-10 were installed in immediate vicinity of the AOI. The screening showed elevated PID readings in SA23-7, and detections of oil in soil in SA23-10. Due to a field error, a soil sample was not collected from SA23-10. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected were analyzed for TAL Metals and TCL VOCs. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (GSIP), cobalt (GSIP and DWP), ethylbenzene (GSIP), toluene (GSIP and DWP), and xylene (GSIP and DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 10-1 and 11-1. No remedial action has been conducted at this AOI.

7.30.3 Current Status

AOI 1-74 ceased operations and was decommissioned prior to 2005. Due to detections above the GSIP and DWP screening levels (specifically in the deepest sample collected) and the need to further investigate the oil detected in soil in soil boring SA23-

10, further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.31 AOI 1-76 - Waste Treatment Vault

AOI 1-76 is located in the south portion of the former Building 78 and consists of a waste treatment vault. This AOI is approximately 10 ft deep.

7.31.1 Historical and Current Operations

AOI 1-76 was associated with acid-alkali and cyanide wastes. Fluids were normally present during operations at this AOI.

7.31.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings SA-47-1 and SA-47-3 were installed within the footprint of the AOI. The field screening showed no evidence of staining or elevated PID readings. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.31.3 Current Status

AOI 1-76 ceased operations and was decommissioned prior to 1983. Based on the nature of the operations at this AOI, materials handled and the field screening results from the 2005 Site Assessment, it is unlikely that the chromium (total) was released from this AOI. However, detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.32 AOI 1-77 – Former Sulfuric Acid Tank

AOI 1-77 is located west of former Building 78AB and consists of a former 4,000 gallon UST. The UST contained sulfuric acid. This AOI is approximately 16 ft deep.

7.32.1 Historical and Current Operations

AOI 1-77 was used to store sulfuric acid. Fluids were normally present during operations at this AOI.

7.32.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings SA23-7 and SA23-8 were installed within the footprint of the AOI. Field screening showed elevated PID readings in SA23-7; however, there were no detections of oil in soil. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected were analyzed for TAL Metals and TCL VOCs. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (GSIP), cobalt (GSIP and DWP), ethylbenzene (GSIP), toluene (GSIP and DWP), and xylene (GSIP and DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 10-1 and 11-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.32.3 Current Status

AOI 1-77 was removed from ground prior to 1986. Based on the nature of the operations and materials handled at this AOI as well as the time the AOI was removed, it is unlikely that this AOI is the source of exceedances detected in soil samples from SA23-7. Exceedances detected in SA23-7 are believed to be a result from a release from AOI 1-74 (Truck Load/Unload Containment Sump) and they will be addressed as part of that AOI. Therefore, no further actions at this AOI are warranted

7.33 AOI 1-78 - Sulfuric Acid Tank

AOI 1-78 is located northwest of former Building 78 and consisted of a 12,000-gallon sulfuric acid tank located in a concrete vault. This AOI is approximately 16 ft deep.

7.33.1 Historical and Current Operations

AOI 1-78 was used to store sulfuric acid. The tank was removed from service prior to 1986 and was abandoned in place. In the summer of 2007 the tank was removed from the vault, the vault floor was fractured, and the vault was backfilled.

7.33.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings SA23-1, SA23-2, and SA23-8 were installed within the footprint of the AOI and adjacent to it. The field screening showed no evidence of staining or elevated PID readings. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected from each location were analyzed for TAL Metals. Laboratory analysis showed no exceedances of the screening levels within the foot print of the AOI and one exceedance of the screening levels for chromium (total) (GSIP) in the sample adjacent to the AOI. Analytical screening results are included in Appendix E and shown on Set 1, Figures 10-1 and 11-1. No remedial action has been conducted at this AOI.

7.33.3 Current Status

AOI 1-78 ceased operations and was decommissioned in 1986. As previously stated the tank was removed in the summer of 2007. Based on the nature of the operations at this AOI, materials handled and the field screening results from the 2005 Site Assessment, it is unlikely that the chromium (total) was released from this AOI. However, detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.34 AOI 1-79 - Acid Storage Vault

AOI 1-79 is located on the west side of Building 78 and consists of an acid storage vault. This AOI is approximately 10 ft deep.

7.34.1 Historical and Current Operations

AOI 1-79 was used to store acid. Fluids were not normally present during operations at this AOI.

7.34.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Two borings (SA-48-2 and SA-48-3) were installed in the immediate vicinity of the AOI. The field screening showed no evidence of staining or elevated PID readings. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected from each location were analyzed for TAL Metals. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.34.3 Current Status

AOI 1-79 ceased operations in 2005 and decommissioning is currently underway. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address the exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.35 AOI 1-80 - Abandoned Tank #144

AOI 1-80 is located in the southeast corner of former Building 156 and consists of abandoned Tank #144. This AOI is approximately 16 ft deep as determined from historical drawing review.

7.35.1 Historical and Current Operations

AOI 1-80 was identified on a historical GM drawing. Tank #144 was a 6,000-gallon gasoline tank. Fluids were normally present during operations at this AOI. The tank was not registered and it was abandoned prior to 1974.

7.35.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation. One soil boring (SA-44-1) was installed at one end of the Tank #144. Samples collected from the boring were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The screening showed evidence of staining but no odor and there were no elevated PID readings. Additionally, the Oil-in-Soil shake test identified no presence of oil; therefore, no sample was collected for laboratory analysis. Results of the initial investigation are summarized in Table F-1 included in Appendix F. No remedial action has been conducted at this AOI and none appears to be warranted.

7.35.3 Current Status

AOI 1-80 was taken out of service and decommissioned prior to 1974. Based on the absence of any documented releases, absence of any basis for suspecting a release as determined from the 2005 assessment, no further action is warranted at this AOI.

7.36 AOI 1-81 - Water Treatment Building

AOI 1-81 was located throughout former Building 78AB and consisted of a water treatment units and former RRIM bulk storage area. This AOI was at grade level.

7.36.1 Historical and Current Operations

AOI 1-81 was associated with water treatment operations in former Building 78AB. In addition, this AOI was formerly used as a storage area associated with former RRIM operations. Fluids were normally present during operations at this AOI. Polyol, isocyanate, and waste paint thinner were associated with operations at this AOI.

7.36.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). One boring (SA23-10) was installed within the footprint of the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). The screening showed no elevated PID readings but did show detections of oil in soil. Due to a field error, the soil boring was not sampled.

7.36.3 Current Status

AOI 1-81 ceased operations prior to 2005 and decommissioning is currently underway. Based on location of the soil boring SA23-10 and materials handled at AOI 1-81, the presence of oil in soil boring SA23-10 appears to be related to the operations at the adjacent AOI, AOI 1-74 (Truck Load/Unload Containment Sump), where further action has been recommended (Section 6.30). Based on the nature of the operations at AOI 1-81, the construction and the waste management practices employed there is no evidence that a release to the environment occurred from this AOI and, therefore, no further action at this AOI is warranted.

7.37 AOI 1-82 - Abandoned Tank #7

AOI 1-82 is located south of former Building 148 and consists of an abandoned UST (Tank #7). This AOI is approximately 10 ft deep.

7.37.1 Historical and Current Operations

The material that was stored in Tank #7 is unknown. The 1,000-gallon UST was abandoned in place in 1964. Fluids were normally present during operations at this AOI.

7.37.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Two borings (SA44-5 and SA44-6) were installed at each end of the tank. SA44-6 encountered refusal at two ft bgs. The screening showed elevated PID readings in both soil borings; however, there were no detections of oil in soil. A soil sample was analyzed from each location for TAL Metals and TCL VOCs. Results of the field screening are summarized in Table F-1 (Appendix F). Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (DWP and GSIP), lead (IDC, DWP, and RDC), thallium (DWP), ethylbenzene (DWP and GSIP), and xylene (DWP and GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17B-1. No remedial action has been conducted at this AOI.

7.37.3 Current Status

AOI 1-82 ceased operations and was decommissioned in 1964. Due to exceedances of the screening levels illustrated in Set 2, Figure 16-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.38 AOI 1-83 - Tank #147

AOI 1-83 is located south of the former Building 19 and consists of a 550-gallon used oil UST (Tank #147) that was removed. This AOI is approximately 16 ft deep as determined from historical drawing review.

7.38.1 Historical and Current Operations

AOI 1-83 stored used oil. Fluids were normally present during operations at this AOI.

7.38.2 Previous Investigations and Remedial Actions

Tank #147 was identified in the *RFAR* (URS, 2001) and is documented to have been closed. An undetermined quantity of soil was removed during closure from the Tank #147 area during closure. Results of the soil investigation (03BS003 through 03BS007) however, show exceedances of the GSIP screening levels for chromium (total).

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Two boring (SA42-1 and SA42-2) were installed and sampled for TAL Metals and TAL VOCs. The field screening showed no evidence of staining or elevated PID readings. Results of the field screening are summarized in Table F-1 (Appendix F). Laboratory analysis showed exceedances of the screening level for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 22-1 and 23A-1.

7.38.3 Current Status

AOI 1-83 ceased operations prior to 2001 and decommissioning is currently underway. Based on the nature of the operations at this AOI, materials handled and the field

screening results from the 2005 Site Assessment, it is unlikely that the chromium (total) was released from this AOI. However, detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.39 AOI 1-84 – Building 63 Tank Farm

AOI 1-84 is located north of former Building 63 and consists of four former 1,000-gallon gasoline tanks which were 4 feet in diameter. This AOI is approximately 10 feet deep.

7.39.1 Historical and Current Operations

The four USTs (Tank 95, Tank 96, Tank 97, and Tank 98) stored used gasoline. Fluids were normally present during operations at this AOI.

7.39.2 Previous Investigations and Remedial Actions

AOI 1-84 was identified in the *RFAR* (URS, 2001). The USTs and an undetermined quantity of soil was removed from the Building 63 Tank Farm as documented in the MDEQ approved RFAR.

7.39.3 Current Status

AOI 1-84 ceased operations and was removed in 1994. However, confirmation samples are not available; therefore further action at this AOI is recommended. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.40 AOI 1-88 - Former pits, trenches, and sumps (filled in with concrete)

AOI 1-88 is located in former Building 26 and consists of pits, trenches, and sumps filled with concrete. This AOI is no more than 10 ft deep based on knowledge of other similar types of trenches at the Facility.

7.40.1 Historical and Current Operations

Based on Facility operations, petroleum products were likely associated with this AOI. Fluids were not normally present during operations at this AOI. The trenches, pits, and

sumps were filled in with concrete prior to 2005 and new operations were present in the area. This AOI was identified during a Facility walk.

7.40.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation. Ten borings (SA51-1, SA51-2, SA51-3, SA51-4, SA51-5, SA51-6, SA51-7, SA51-8, SA51-9, and SA51-10) were installed adjacent to pits and sumps along the trenches where fluids would have collected as shown on Figure 10-1 and 11-1. The soil borings were placed in the most likely location that a release would occur. Samples collected from the soil borings were screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings. Since no evidence of a release was apparent, no samples were submitted for laboratory analysis. Results of the soil field screening are summarized in Table F-1 included in Appendix F.

7.40.3 Current Status

AOI 1-88 ceased operations and was decommissioned prior to 2005. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.41 AOI 1-90 - Former Press Pits, Trenches, and Sumps (filled in with concrete)

AOI 1-90 is located in central portion of the former Building 37 and consists of former press pits, trenches, and sumps filled with concrete. This AOI is approximately 16 ft deep based on knowledge of other similar types of pits at the Facility.

7.41.1 Historical and Current Operations

Based on Facility operations, hydraulic oils were likely associated with this AOI. Fluids were not normally present during operations at this AOI. The trenches, pits, and sumps were filled in with concrete prior to 2005 and new operations were present in the area. This AOI was identified during a Facility walk.

7.41.2 Previous Investigations and Remedial Actions

This AOI is located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 5.1.1.

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings (SA-21-2 , SA-21-3, SA 50-1, SA-50-2, SA-56-1, SA-56-2, SA-56-3, SA-56-4, SA-56-5, SA-56-6 , SA-56-7, SA-56-8, SA-56-9, and SA-56-10) were installed every 50 feet along perimeter of plating operation, in between former plating pits, and along the combined storm/process sewer line. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) and cobalt (GSIP and DWP), selenium (GSIP), and benzene (DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 18-1 and 19-1. No remedial action has been conducted at this AOI.

7.41.3 Current Status

AOI 1-90 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP and GSIP screening levels (specifically in the deepest samples collected above the perched unit or water table, respectively), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.42 AOI 1-91 - Former pits, trenches, and sumps (filled in with concrete)

AOI 1-91 is located in the northwest portion of the former Building 56 and consists of pits, trenches, and sumps filled with concrete. This AOI is approximately 10 ft deep based on knowledge of other similar types of trenches at the Facility.

7.42.1 Historical and Current Operations

Based on Facility operations, hydraulic oils were likely associated with this AOI. Fluids were not normally present during operations at this AOI. The trenches, pits, and

sumps were filled in with concrete prior to 2005 and new operations were present in the area. This AOI was identified during a Facility walk.

7.42.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil boring (SA57-1) was inadvertently located approximately 50 ft south west of the AOI. The field screening showed no evidence of staining or elevated PID readings. Results of the field screening are summarized in Table F-1 (Appendix F). Soil samples were analyzed for TAL Metals. Laboratory analysis showed exceedances of the screening levels for arsenic (DWP), chromium (total) (GSIP), and selenium (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 24-1 and 25-1. No remedial action has been conducted at this AOI.

7.42.3 Current Status

AOI 1-91 ceased operations and was decommissioned in 2005. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected) and the misplaced boring, further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.43 AOI 1-92 - Former SMC Paint Sludge Treatment Unit

AOI 1-92 is located in former Building 27A and consists of an UST used to collect wastewater containing paint over spray and associated pits, trenches, and sumps filled with concrete. This AOI is approximately 10 ft deep based on knowledge of other similar types of trenches at the Facility.

7.43.1 Historical and Current Operations

Based on Facility operations, paint sludge was likely associated with this AOI. Apparent containment trenches, pits, and sumps were filled in with concrete prior to 2005 and new operations were present in the area. This AOI was identified during a Facility walk.

7.43.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil boring SA-59-1 was installed in the immediate vicinity of the AOI. The field screening showed no evidence of staining but elevated PID readings. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals and TCL VOCs. Laboratory analysis showed exceedances of the screening levels for ethylbenzene (DWP and GSIP) and xylene (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 22-1 and 23B-1. No remedial action has been conducted at this AOI.

7.43.3 Current Status

AOI 1-92 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.44 AOI 1-93 - Former pits, trenches, and sumps (filled in with concrete)

AOI 1-93 is located in the southeast portion of the former Building 56 and consists of pits, trenches, and sumps filled with concrete. This AOI is approximately 10 ft deep based on knowledge of other similar types of trenches at the Facility

7.44.1 Historical and Current Operations

Based on Facility operations, hydraulic oil was likely associated with this AOI. Fluids were not normally present during operations at this AOI. The trenches, pits, and sumps were filled in with concrete prior to 2005 and new operations were present in the area. This AOI was identified during a Facility walk.

7.44.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation. Three borings (SA61-1, SA61-2, and SA61-3) were installed down to 10 ft bgs adjacent to pits and sumps along the trench where fluids would have collected, as shown on Figures 24-1 and 25-1. The soil borings were placed in the most likely location that a

release would occur. Samples collected from the soil borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The screening showed no evidence of staining or elevated PID readings and, therefore, no samples were collected for laboratory analysis. Results of the initial investigation are summarized in Table F-1 included in Appendix F. There have been no remedial actions at this AOI and none seems to be warranted.

7.44.3 Current Status

AOI 1-93 ceased operations and was decommissioned prior to 2005. Soil samples collected from soil borings strategically placed identified no evidence of a release. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.45 AOI 1-94 - Paint Spray Booth

AOI 1-94 is located in the central-east portion of the former Building 56 and consists of a 20 feet by 30 feet former paint spray booth. This AOI is approximately 10 feet deep.

7.45.1 Historical and Current Operations

AOI 1-94 was associated with painting operations in former Building 56. Paint-related solvents and thinners were stored in and around the spray booth. Fluids were normally present during operations at this AOI.

7.45.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation. Two soil borings (SA60-1 and SA 60-2) were installed in the immediate vicinity of the footprint of the AOI, as shown on Figures 24-1 and 25-1. Samples collected from the borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings. Results of the soil field screening are summarized in Table F-1 included in Appendix F. Since no evidence of a release was apparent, no samples were submitted for laboratory analysis. No remedial action has been conducted at this AOI and none appears to be warranted.

7.45.3 Current Status

AOI 1-94 ceased operations and was decommissioned prior 2005. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.46 AOI 1-95 - Former Press Pits

AOI 1-95 is located in the northeast portion of the former Building 56 and consists of press pits and their associated trenches. This AOI is approximately 16 feet deep.

7.46.1 Historical and Current Operations

AOI 1-95 was associated with press operations in former Building 56. Hydraulic oil is associated with these operations. Fluids were normally present during operations at this AOI. This AOI was identified during a Facility walk.

7.46.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling. Five borings (SA63-1, SA63-2, SA63-4, SA63-5, and SA63-6) were installed down to 16 ft bgs in the vicinity of the sumps within each pit. The soil borings were placed in the most likely location that a release would occur. Samples collected from the soil borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1). A soil sample collected from SA63-1 was identified as having a hydrocarbon odor, however, there were no elevated PID readings and the Oil-in-Soil shake test did not identify the presence of oil in the sample. Therefore, no samples were collected for laboratory analysis. Screening results from the other four borings showed no evidence of staining or elevated PID readings. Results of the initial investigation are summarized in Table F-1 included in Appendix F. No remedial action has been completed at this AOI.

7.46.3 Current Status

AOI 1-95 ceased operations prior to 2005 and decommissioning is currently underway. Soil samples collected from the soil borings strategically placed identified no evidence of a release. Based on the absence of any documented releases and the absence of

apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.47 AOI 1-97 - Former trenches and sumps (filled in with concrete)

AOI 1-97 is located in former Building 34 and consists of former trenches and sumps for the former RRIM experimental area filled with concrete. This AOI is approximately 5 ft deep based on knowledge of other similar types of operations at the Facility.

7.47.1 Historical and Current Operations

Based on Facility operations, hydraulic oil, polyol, and reacted isocyanate were likely associated with this AOI. The trenches and sumps were filled in with concrete prior to 2005 and new operations were present in the area. This AOI was identified during a Facility walk.

7.47.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including soil screening and sampling. Two borings (SA72-1 and SA72-2) were installed adjacent to trenches and sumps to a depth of 16 feet bgs. The soil borings were placed in the most likely location that a release would occur. Samples collected from the soil borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings and, therefore, no samples were collected for laboratory analysis of TLC VOCs or TLC SVOCs. Samples were collected for TAL Metals analysis and there were no exceedances of screening levels. Results of the initial investigation are summarized in Table F-1 included in Appendix F and shown on Figures 18-1 and 19-1. No remedial action has been completed at this AOI.

7.47.3 Current Status

AOI 1-97 ceased operations and was decommissioned prior to 2005. Soil samples collected from soil borings strategically placed identified no evidence of a release. Furthermore, analytical results from soil samples obtained at this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.48 AOI 1-98 - Former pits, trenches, and sumps (filled in with concrete)

AOI 1-98 is located in former Building 34 and consists of former pits, trenches, and sumps filled with concrete. This AOI is approximately 10 ft deep based on knowledge of other similar types of operations at the Facility.

7.48.1 Historical and Current Operations

Based upon Facility operations, petroleum products were likely associated with this AOI, which was identified during a Facility walk. The trenches, pits, and sumps were filled in with concrete prior to 2005 and new operations were present in the area.

7.48.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including soil screening and sampling. Two borings (SA-58-1 and SA-58-2) were installed adjacent to pits and sumps in this area. The soil borings were placed in the most likely location that a release would occur. Samples collected from the soil borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1). The field screening showed no evidence of staining or elevated PID readings and, therefore, no samples were collected for laboratory analysis of TCL VOCs or TCL SVOCs. A sample from SA-58-1 was collected for TAL Metals analysis and there were no exceedances of screening levels. Results of the field screen investigation are summarized in Table F-1 included in Appendix F. Analytical results are summarized in Appendix E and shown on Figures 24-1 and 25-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.48.3 Current Status

AOI 1-98 ceased operations and was decommissioned prior to 2005. Soil samples collected from soil borings strategically placed identified no evidence of a release. Furthermore, analytical results from soil samples obtained at this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.49 AOI 1-101 - Former Injection Molding Containment Pits and Trenches

AOI 1-101 is located throughout former Building 52 and consists of containment pits and trenches associated with injection molding operations. This AOI is approximately 16 ft deep, based on knowledge of other similar types of pits at the Facility.

7.49.1 Historical and Current Operations

AOI 1-101 is part of the former press and stamping operations in former Building 52. Used hydraulic oil was associated with this AOI. Fluids were normally present during operations at this AOI. This AOI was identified during a Facility walk.

7.49.2 Previous Investigations and Remedial Actions

This AOI is located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 5.1.1.

Subsurface investigations conducted as part of the UST Investigations of 1989-1993 showed soil contamination around the AOI (04BS012 through 04BS022). Additional investigation was conducted in the area in 2000 in preparation for the LGR expansion (GP-21).

In November 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). Soil borings (SA-62-1 through SA-62-18) were installed throughout the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, and for Total PCBs, TCL VOCs, and TCL SVOCs where field screening required. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (IPSIC, DWP, GSIP, and RPSIC), lead (DWP, IDC, and RDC), mercury (GSIP), thallium (DWP), zinc (GSIP), fluoranthene (GSIP), fluorene (GSIP), tetrachloroethene (DWP), trichloroethene (DWP), and xylene (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 24-1, 25-1, 26-1, 27A-1, and 27B-1. No remedial action has been conducted at this AOI.

7.49.3 Current Status

AOI 1-101 ceased operations and was decommissioned prior to 2005. Due to exceedances of the screening levels illustrated in Set 2 Figures 24-2, and the GSIP and DWP (specifically in the deepest samples collected above the perched unit or water table, respectively), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.50 AOI 1-102 - Chemical Unloading Station

AOI 1-102 is located within the former Building 26A and consists of a former chemical unloading station along a rail road spur.

7.50.1 Historical and Current Operations

AOI 1-102 was associated with chemical unloading operations conducted from rail cars coming to the Facility. Polyol used in the RRIM process was handled at this AOI. Fluids were not normally present during operations at this AOI.

7.50.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation. Two borings (SA68-1 and SA68-2) were installed within the footprint of the AOI down to a depth of 16 feet, as shown on Figures 12-1 and 13-1. The soil borings were placed in the most likely location that a release would occur. Samples collected from the borings were field screened in accordance with the Site Assessment Soil Sampling Methodology (Figure F-1, Appendix F). The field screening showed no evidence of staining or elevated PID readings. Since no evidence of a release was apparent, no samples were submitted for laboratory analysis. Results of the soil field screening are summarized in Table F-1 included in Appendix F. No remedial action has been completed at this AOI and none appears to be warranted.

7.50.3 Current Status

AOI 1-102 ceased operations and was decommissioned prior to 2005. Based on the absence of any documented releases, absence of any basis for suspecting a release, and the absence of apparent evidence of a release from the 2005 assessment, no further action is warranted at this AOI.

7.51 AOI 1-103 - Welder Pit, Trench Sump with Sump Pump

AOI 1-103 is located in former Building 21 and consists of a former welder pit, and a trench sump equipped with a pump. This AOI is approximately 10 ft deep, as determined from historical drawing review.

7.51.1 Historical and Current Operations

This AOI was identified from a GM historical drawing. Fluids were normally present during operations at this AOI. AOI 1-103 was associated with a water-cooled welder and welding operations in former Building 21. Metals and cooling water were used in this area.

7.51.2 Previous Investigations and Remedial Actions

In November 2005, ARCADIS completed a site assessment phase of investigation including soil screening and sampling. Three borings (SA35-7, SA35-8 and SA35-9) were installed in the vicinity of the area down to a depth of 10 feet. The field screening showed no evidence of staining or elevated PID readings and, therefore, no samples were collected for laboratory analysis of TCL VOCs or TCL SVOCs. A sample from SA35-7 was collected for TAL Metals and ethylene glycol analysis. Laboratory results showed exceedances of the GSIP screening levels for chromium (total) and selenium. SA35-9 encountered refusal at two ft bgs and SA35-8 was inadvertently not sampled for metals. Field screen results are summarized in Table F-1 included in Appendix F. Analytical results are summarized in Appendix E and shown on Set 1, Figures 10-1, 11-1, 14-1, and 15-1. No remedial action has been conducted at this AOI.

7.51.3 Current Status

AOI 1-103 ceased operations and was decommissioned prior to 2005. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.52 AOI 1-104 - Chip Conveyor Trenches

AOI 1-104 is located east of the Body Shop, in former Building 22 and consists of former chip conveyor trenches, off-line chip trenches, and eight sumps.

7.52.1 Historical and Current Operations

AOI 1-104 was associated with chip trench operations in former Building 22, as determined from historical drawing review. Used oil and metal chips were associated with operations at this AOI. Fluids were not normally present during operations at this AOI.

7.52.2 Previous Investigations and Remedial Actions

This AOI is located in the immediate proximity of the perched water unit identified on the south east corner of the Facility (17MW001, 17MW002, and 17MW003) (Section 3.7.1).

Soil investigations were performed in the area in January 2005 (01SB-1, 01SB-2, 01SB-5, 01SB-6 and 01SB-7) as part of the Body Building Expansion project. Additional soil investigations were performed in the area in April 2005 (SB-1, SB-2 and SB-3) as part of the South Body Building Expansion project. Soil samples were analyzed for TAL Metals, TCL SVOCs, and TCL VOCs. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Results of these investigations are summarized in Appendix E and shown on Set 1, Figures 48-1, 49-1, 50-1 and 51-1. No remedial action has been conducted at this AOI.

7.52.3 Current Status

Operations at Building 22 ceased before 1999, in preparation for the construction of the LGR. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.53 AOI 1-106 - Coolant Filtration System

AOI 1-106 is located outside, northeast of the Body Shop, in the former Building 22 and consists of a former coolant filtration system with a 10 ft by 10 ft wide pit and 1 ft wide trenches. This AOI is approximately 10 ft deep as determined from historical drawing review.

7.53.1 Historical and Current Operations

AOI 1-106 operated as a coolant filtration system for operations in former Building 22. Coolants were associated with operations at this AOI. Fluids were normally present during operations at this AOI.

7.53.2 Previous Investigations and Remedial Actions

Soil investigations were performed in the area in January 2005 (01SB-1) as part of the Body Building Expansion project. Soil samples were analyzed for TAL Metals, Total PCBs, TCL SVOCs, and TCL VOCs. Laboratory analysis showed no exceedances of the screening levels. Results of the investigations are summarized in Appendix E and shown on Set 1, Figures 50-1 and 51-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.53.3 Current Status

AOI 1-106 ceased operations between 1985 and 1999. No releases to the environment from this AOI have been documented prior to and including after the visual inspections conducted during decommissioning in 1999. Furthermore, analytical results from soil samples obtained around this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.54 AOI 1-110 - Camshaft Grinding Line Coolant Tanks, Pits, and Sumps

AOI 1-110 is located outside, east of the Body Shop, in former Building 22 and consists of the former 6 ft long and 5 ft deep Camshaft Grinding Line consisting of coolant tanks, hydraulic units, and associated sumps, pits, and trenches. This AOI is approximately 5 ft deep as determined from historical drawing review.

7.54.1 Historical and Current Operations

AOI 1-110 was part of the Camshaft Grinding Line operations in former Building 22. The tanks led to a coolant filter which was connected to an 800-gallon, 2 ft by 2 ft sump at the north end. Used hydraulic oils and coolants were, therefore, associated with these operations. Fluids were normally present during operations at this AOI.

7.54.2 Previous Investigations and Remedial Actions

Soil investigations were performed in the area in January 2005 (01SB-3, 01SB-4, and 01SB-9) as part of the Body Building Expansion project. Soil samples were analyzed for TAL Metals, Total PCBs, TCL SVOCs, and TCL VOCs. Laboratory analysis showed no exceedances of the screening levels. Results of the investigations are summarized in Appendix E and shown on Set 1, Figures 50-1 and 51-1. No remedial action has been conducted at this AOI, and none appears to be warranted.

7.54.3 Current Status

AOI 1-110 ceased operations between 1986 and 1999. No releases to the environment from this AOI have been documented prior to and including after the visual inspections conducted during decommissioning in 1999. Furthermore, analytical results from soil samples obtained around this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.55 AOI 1-115 - Bulk Oil Handling Secondary Containment UST (8,000 gallon) & Trenches

AOI 1-115 is located outside, southeast of the General Assembly Building, at the dock of former Building 45 and consists of a former 8,000-gallon, 8 ft diameter UST, a sump, and associated trenches for the secondary containment for the bulk oil handling system. This AOI is approximately 16 ft deep, based on knowledge of other similar types of USTs at the Facility.

7.55.1 Historical and Current Operations

AOI 1-115 stored oily rain water. Fluids were normally present during operations at this AOI.

7.55.2 Previous Investigations and Remedial Actions

This AOI is located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 5.1.1.

Subsurface investigations were conducted as part of the UST Investigations of 1989-1993. Soil boring 08BS022, placed to assess the extent of the release from the Central

Tank Farm (AOI 1-23[1]), is near this AOI. Samples collected at this location were analyzed for TAL Metals, TCL VOCs and TCL SVOCs. Laboratory analysis showed no exceedances of the screening levels. Results of these investigations are shown on Set 1, Figures 42-1 and 43-1 and summarized in Appendix E. There have been no remedial actions at this AOI.

7.55.3 Current Status

AOI 1-115 ceased operations prior to 1999. Due to no exceedances of the screening levels, further actions at this AOI are not warranted.

7.56 AOI 1-116 - Heat-Treat Quench Operations

AOI 1-116 is located along the south end of the parking lot located south of the Body Shop. AOI 1-116 consists of former soluble oil quench pits (one pit 18 ft 4-in x 13 ft 10-in x 8 ft 11-in and the other one 15 ft 9-in x 8 ft 3-in x 4 ft 6-in), quench oil tanks, and associated sumps located in the south portion of the former Building 35. Operations at this AOI began prior to 1958. This AOI is approximately 12 ft deep as determined from historical drawing review.

7.56.1 Historical and Current Operations

The soluble oil quench pits were part of the R.T. Belt Hardening Line operations in former Building 35. The quench oil tanks ranged in capacity from 1,400-gallons to 20,000-gallons, and were connected to a 10-inch quench oil gravity drain line. Quench oil was associated with these operations. Fluids were normally present during operations at this AOI.

7.56.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI.

7.56.3 Current Status

AOI 1-116 ceased operations prior to 1999. Based on the age of this AOI, the materials managed and GM's knowledge of this type of operation at other facilities, further action is being recommended at this AOI. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.57 AOI 1-124 - Kerosene Clarification System for Honing Operations

AOI 1-124 is located in the east-center portion of the Body Shop, in the west side of former Building 36 and consists of a kerosene clarification system which included one 300-gallon “clean” tank, one 9 ft deep 1,750-gallon “dirty” tank, and one slurry tank. Operations at this AOI began prior to 1963. This AOI is approximately 10 ft deep as determined from historical drawing review.

7.57.1 Historical and Current Operations

AOI 1-124 operated as a kerosene clarification system for honing operations in former Building 36. Kerosene is, therefore, associated with this AOI. Fluids were normally present during operations at this AOI.

7.57.2 Previous Investigations and Remedial Actions

Subsurface investigations were conducted as part of the UST Investigations (1989-1993) around the AOI (12BS019 and 12BS023A). These soil borings were placed to assess the extent of the release from the Tanks #77 and #78 (AOI 1-23[5]). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP), ethylbenzene (GSIP), and xylene (GSIP and DWP). Results of these investigations are shown on Set 1, Figures 44-1 and 45A-1 and summarized in Appendix E.

Free product recovery operations were initiated in 1994 in this area. Free product was recovered via disposable bailers from wells 12MW020 and 12MW021D located in former Building 38. In 1996, 3-inch diameter, 8-inch long absorbent socks were used to recover the free product. Additional free product recovery wells PRW-1 through PRW-5 were installed in December 1995 to recover product from the eastern area of former Building 38. During the construction of the Body Shop in 1999, all PRW wells were abandoned with the exception of PRW-4, which continues to recover product using a modified skim-rite system. The product is pumped on a continuous basis directly to a 55-gallon drum for disposal. The CAP identifies that product recovery will continue until measurable free product (more than 0.01 feet) no longer is present in PRW-4 well for six consecutive months, as described in the quarterly *Free Product Recovery Status Reports* for the Facility that are submitted to the MDEQ under the Part 213 Leaking Underground Storage Tank (LUST) program..

A Restrictive Covenant was filed with the Ingham County Registrar of Deeds on August 11, 2003 (Area 5 in the figure included in Appendix C), to protect and mitigate against direct contact, volatilization to indoor air, and volatilization to ambient air.

7.57.3 Current Status

AOI 1-124 ceased operations prior to 1999. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.58 AOI 1-129 - Chip Trenches, Cooling Water Pit

AOI 1-129 is located in the east-central portion of the Body Shop, in former Building 38 and consists of chip trenches and a cooling water pit. This AOI is no more than 16 feet deep, based on knowledge of other similar types of pits at the Facility.

7.58.1 Historical and Current Operations

AOI 1-129 was part of the chip conveyor trench operations and cooling water operations at former Building 38. Coolant water and metal chips were managed at this AOI. Fluids were normally present during operations at this AOI.

7.58.2 Previous Investigations and Remedial Actions

Subsurface investigations were conducted as part of the UST Investigations (1989-1993) around the AOI (12BS005throgh 12BS023A). These soil borings were placed to assess the extent of the release from the Tanks #77 and #78 (AOI 1-23[5]). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (GSIP), ethylbenzene (DWP and GSIP), xylene (DWP and GSIP), benzo(a)pyrene (IDC, RDC), fluoranthene (GSIP), fluorene (GSIP), and naphthalene (DWP, GSIP, and RWC). Results of these investigations are shown on Set 1, Figures 44-1, 45A-1, 46-1, and 47-1 and summarized in Appendix E.

A Restrictive Covenant was filed with the Ingham County Registrar of Deeds on August 11, 2003 (Area 5 in the figure included in Appendix C) to protect and mitigate against direct contact, Volatilization to indoor air, and volatilization to ambient air. No remedial action has been conducted at this AOI.

7.58.3 Current Status

AOI 1-129 ceased operations prior to 1999. Due to exceedances of the screening levels illustrated in Set 2 Figure 45A-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.59 AOI 1-133 - Quench Oil Pit

AOI 1-133 is located in the central-north portion of the Body Shop, in former Building 28 and consists of a quench oil pit. This AOI is approximately 16 feet deep, based on knowledge of other pits at the Facility.

7.59.1 Historical and Current Operations

AOI 1-133 was part of the cast belt hardening line operations at former Building 28. Quench oil was managed at this AOI. Fluids were normally present during operations at this AOI.

7.59.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases to the environment from these units have been documented. In addition, when AOI 1-133 was removed in 1999 in preparation for the construction of LGR, decommissioning procedures were followed and included visual inspection of concrete, cleaning or scarifying of concrete in cases where determined to be necessary, and appropriate disposal of the derived waste. If the inspection had identified evidence of a potential release to the underlying soil, investigation of the potential release would have been undertaken at that time. However, no evidence of a release was reported.

Subsurface investigations were conducted as part of the UST Investigations (1989-1993) around the AOI (15BS015). The soil boring was placed to assess the extent of the release from the Building 28 Tank Farm (AOI 1-1[3]). Samples collected at this location were analyzed for TCL VOCs and TCL SVOCs. Laboratory analysis showed no exceedances of the screening levels. Results of these investigations are shown on Figures 44-1 and 45B-1 and summarized in Appendix E.

7.59.3 Current Status

AOI 1-133 is no longer in operation. No releases to the environment from this AOI have been documented prior to and including after the visual inspections conducted during decommissioning in 1999. Furthermore, analytical results from soil samples obtained around this AOI identified no exceedances of screening levels. Therefore, no further action is warranted at this AOI.

7.60 AOI 1-135 - Settling Tank, Sumps, and Kerosene Storage Pit

AOI 1-135 is located in the parking lot situated south of the Body Shop (Figures 46-1 and 47-1), in former Building 28 and consists of a former 12 ft wide settling tank, two associated sumps, and a kerosene storage pit. Operations at this AOI began prior to 1958. This AOI is approximately 16 feet deep, based on knowledge of other similar pits and USTs at the Facility.

7.60.1 Historical and Current Operations

AOI 1-135 was part of the cylinder block honing operations at former Building 28. Kerosene was one of the major materials handled at this AOI.

7.60.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI.

7.60.3 Current Status

AOI 1-135 ceased operations prior to 1999. Based on the age of this AOI, the materials managed and GM's knowledge of this type of operation at other facilities, further action is being recommended at this AOI. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.61 AOI 1-138 - Nitric Acid Sump and Tin Plate Storage Tank Pit

AOI 1-138 is located in the central portion of the Body Shop, in former Building 33, and consists of a former approximately 6 ft deep tin plate storage tank and associated 2 ft deep nitric acid sump. Operations at this AOI began prior to 1958. This AOI is approximately 8 ft deep as determined from historical drawing review.

7.61.1 Historical and Current Operations

AOI 1-138 was part of the tin plating operations at former Building 33. Nitric acid and tin electroplating solutions were managed at this AOI.

7.61.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI.

7.61.3 Current Status

AOI 1-138 ceased operations prior to 1967. Based on the age of this AOI, the materials managed and GM's knowledge of this type of operation at other facilities, further action is being recommended at this AOI. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.62 AOI 1-142 – 6 Sumps

AOI 1-142 is located in the Body Shop, in former Building 33 and consists of six sumps. Operations at this AOI began prior to 1956. This AOI is approximately 5 feet deep, based on knowledge of other types of sumps at the Facility.

7.62.1 Historical and Current Operations

One of the sumps was connected to a used oil line. The specific operation associated with this AOI is unknown. However, it is assumed that used oil would have been associated with this AOI and the operations conducted there.

7.62.2 Previous Investigations and Remedial Actions

Subsurface investigations were conducted in 2000 in preparation for the LGR construction and in 2005 during the expansion of the Body Building around the AOI. Soil boring SB-105 located within the footprint of the AOI was used to evaluate this AOI. Soil samples were analyzed for TAL Metals. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP) and manganese (DWP). Results of these investigations are shown on Set 1, Figures 46-1 and 47-1 and summarized in Appendix E. There have been no remedial actions at this AOI.

7.62.3 Current Status

AOI 1-142 ceased operations prior to 1999. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.63 AOI 1-144 - Immersion Tin Containment Pit and Sump

AOI 1-144 is located outside immediately south of the Body Shop, in former Building 33 and consists of an 11 ft wide and 8 ft deep immersion tin containment pit which drained to a standard sump. This AOI is approximately 10 ft deep as determined from historical drawing review and knowledge of other similar systems.

7.63.1 Historical and Current Operations

AOI 1-144 was part of the piston tin-plating machine operations in former Building 33. Tin plating solutions were associated with operations at this AOI.

7.63.2 Previous Investigations and Remedial Actions

Subsurface investigations were conducted in 2000 in preparation for the LGR construction and in 2005 during the expansion of the Body Building around the AOI. Soil boring SB-105 located within the footprint of the AOI was used to evaluate this AOI. Soil samples were analyzed for TAL Metals. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP) and manganese (DWP) in the deepest sample. Results of these investigations are shown on Figures 46-1 and 47-1 and summarized in Appendix E. There have been no remedial actions at this AOI.

7.63.3 Current Status

AOI 1-144 ceased operations prior to 1999. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.64 AOI 1-146 - Hydraulic Oil Drain Sumps and Associated Trenches/Sump

AOI 1-146 is located immediately south of the Body Shop, in former Buildings 33 and 33A and consists of four former hydraulic oil drain sumps, associated trenches, and a 2 ft by 2 ft by 2 ft tramp oil sump. This AOI is approximately 2 ft deep as determined from historical drawing review.

7.64.1 Historical and Current Operations

The four hydraulic oil drain sumps were removed in the early 1960s and covered with a new concrete floor. The tramp oil sump began operations prior to 1971. Used hydraulic oil was associated with operations at this AOI.

7.64.2 Previous Investigations and Remedial Actions

Subsurface investigations were conducted in 2000 in preparation for the LGR construction and in 2005 during the LGR Body Building Expansion. To assess potential impacts associated with the former operations at AOI 1-146, data from the following soil borings were evaluated: GP-22, SB-7, and SB-8. Soil samples were analyzed for TAL Metals, Total PCBs, TCL SVOCs, and TCL VOCs. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Results of these investigations are shown on Set 1, Figures 46-1 and 47-1 and are summarized in Appendix E. There have been no remedial actions at this AOI.

7.64.3 Current Status

AOI 1-146 ceased operations prior to 1999. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfalls to address these exceedances. , Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.65 AOI 1-147 - Former Work Pit

AOI 1-147 is located in the former Building 75A and consists of a former work pit. This AOI is approximately 16 ft deep.

7.65.1 Historical and Current Operations

AOI 1-147 was part of the chassis control arms operations in former Building 75A. Used oil was associated with the activities conducted at this AOI.

7.65.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil boring SA-5-2 was installed adjacent to the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP), 2-methylnaphthalene (RWC), and naphthalene (GSIP and RWC). The SVOCs exceedances, however, were only detected in the duplicate sample of the shallow sample and may indicate a potential for sampling or laboratory error. Analytical screening results are included in Appendix E and shown on Set 1, Figures 16-1 and 17A-1. No remedial action has been conducted at this AOI.

7.65.3 Current Status

AOI 1-147 ceased operations prior to 2005 and decommissioning is currently underway. Due to exceedances of the screening levels illustrated in Set 2 Figure 17A-2, and the GSIP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.66 AOI 1-148 - Hazardous Waste Accumulation Area

AOI 1-148 was located in former Building 41 and consisted of a hazardous waste accumulation area.

7.66.1 Historical and Current Operations

AOI 1-148 operated as a less than 90-day storage area for hazardous wastes generated throughout LCA after AOI 1-19 was closed in 1999. Hazardous waste stored at AOI 1-148 included: used oil, zinc phosphating sludge, paint residue, and baghouse dust.

7.66.2 Previous Investigations and Remedial Actions

The unit has been properly closed in accordance with a Closure Report dated February 2008 prepared by O'Brien and Gere Engineers Inc.

7.66.3 Current Status

AOI 1-148 ceased operations in 2005 and decommissioning is currently underway. The AOI is in process of being closed per MDEQ's requirements; therefore, no further action at this AOI is warranted.

7.67 AOI 1-151 - Company Car Fueling Area

AOI 1-151 was located northeast of former Building 49 and consisted of six USTs for the company car fueling area. The tanks ranged in capacity from 2,000 gallons to 20,000 gallons.

7.67.1 Historical and Current Operations

The tanks were associated with company car fueling operations and stored unleaded gasoline, premium gasoline, waste gasoline, ethanol blend, and methanol blend. Fluids were normally present during operations at this AOI.

7.67.2 Previous Investigations and Remedial Actions

In August 1999, all six USTs and their associated fill piping and vent lines were removed (URS, 2001). In addition, 25 cy of impacted soil and concrete were removed at that time. Soil and groundwater samples were collected at the time the USTs were removed for UST closure reporting. Samples collected were analyzed for TAL Metals, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for benzene (DWP), ethylbenzene (DWP and GSIP), and xylene (total) (DWP and GSIP). Analytical results from the investigation are summarized in Appendix E and shown on Set 1, Figures 36A-1, 36B-1, 37A-1, and 37B-1.

7.67.3 Current Status

The tanks were removed in August 1999. Due to detections above the DWP and GSIP screening levels (specifically in the deepest sample collected), further actions are

recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.68 AOI 1-152 - Tank #86 / Building 66 North Tank Farm

AOI 1-152 is located north of Building 66 and consists of Tank #86 and the Building 66 North Tank Farm.

7.68.1 Historical and Current Operations

The USTs at AOI 1-152 stored gasoline, diesel fuel, motor oils, automotives transmission fluid, motor oils, and used oil. The tanks were removed prior to 2001. Petroleum products and metals from this AOI had the potential to impact the area.

7.68.2 Previous Investigations and Remedial Actions

This AOI is located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 5.1.1.

Subsurface investigations were conducted as part of the UST Investigations of 1989-1993. To assess potential impacts associated with the former operations at AOI 1-152, data from the following soil borings were evaluated: 02BS001 through 02BS010, 02MW011, 02BS013 through 02BS016, and MW-36-04. Soil samples were analyzed for TAL Metals, TCL SVOCs, and TCL VOCs. Laboratory analysis showed exceedances of the screening levels for the following constituents: naphthalene (DWP, GSIP, and RWC), benzene (ISVIIC, IVSIC, DWP, RWC, GSIP, RSVIIC, and RVSIC), toluene (ISVIIC, IDC, DWP, GSIP, RSVIIC, and RDC), and xylene (total) (DWP, GSIP, and RWC). Additionally, Csat was exceeded in soil sample 02BS001 for toluene and xylene. Results of these investigations are shown on Set 1, Figures 30-1 and 31-1 and summarized in Appendix E.

USTs and approximately 3,158 cy of impacted soil were removed prior 2001, as documented in the RFAR (URS, 2001). Free product recovery operations at AOI 1-152 (recovery well 02MW011) were initiated in 1993. The system at Building 66 was designed to extract free product only and operated continuously until 1996, followed by passive recovery of minor quantities of free product observed after 1999 as described in the quarterly *Free Product Recovery Status Reports* for the Facility that are submitted to the MDEQ under the Part 213 Leaking Underground Storage Tank

(LUST) program. A Restrictive Covenant was filed with the Ingham County Registrar of Deeds on August 11, 2003 (Area 2 in the figure included in Appendix C) to protect and mitigate against direct contact, volatilization to indoor air, and volatilization to ambient air.

7.68.3 Current Status

The tanks were removed prior to 2001. Currently, passive free product recovery operations are conducted at Building #66 (in well 02MW001). Due to exceedances of the screening levels illustrated in Set 2, Figure 31-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected above the perched unit or water table, respectively), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.69 AOI 1-153 - Fluid Fill Operations

AOI 1-153 is located in the General Assembly Building and consists of a fluid fill area, including a containment pit used for collecting spillage of gasoline from the filling operations. This AOI is approximately 4 ft deep.

7.69.1 Historical and Current Operations

Fluid fill operations include a containment trench located beneath the main conveyor used for collecting spillage of gasoline from the filling operations. Spillage of gasoline from these operations is rinsed to the low end of the trench (approximately 4 ft bgs) and is then pumped to a gasoline and water separator. The gasoline is then pumped in a 55-gallon drum, placed on the concrete floor.

7.69.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases from this unit have been documented and there is no reason to suspect that a release to the environment has occurred.

7.69.3 Current Status

The unit began operations in 2001 and is currently operational. Based on the construction and waste management practices employed, the absence of any

documented releases, absence of any basis for suspecting a release, and the age of the facility, no further action at this AOI is warranted.

7.70 AOI 1-155 Less than 90-Day Hazardous Waste Storage Area

The area has a canopy and concrete floor with containment curbing and a blind sump. The storage area is located between General Assembly building and the Paint Building. This AOI is located at grade level.

7.70.1 Historical and Current Operations

Wastes managed at AOI 1-155 include the following: paints and thinners, phosphate sludge, aerosols, solvent rags, used oil, mixed flammable auto fluids, and non-hazardous waste solids. The wastes are stored in 55-gallon drums that are placed on pallets within the storage area. The building has containment curbing and a blind sump to collect any liquid in the event of a spill.

7.70.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases to the environment from these units have been documented and there is no reason to suspect that a release to the environment has occurred.

7.70.3 Current Status

The unit began operations in 2001 and is currently operational. Based on the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the age of the unit, no further action at this AOI is warranted.

7.71 AOI 1-157 Waist Paint Thinner AST

The waist paint thinner AST is associated with the paint operations and is used to accumulate used solvent for less than 90 days. The AST is placed on concrete floors and the secondary containment for the tank is provided by a 2-3 feet tall surrounding wall. This unit is located on the northeast corner of the paint department.

7.71.1 Historical and Current Operations

Wastes managed at AOI 1-157 include used paint solvent.

7.71.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases from this unit have been documented and there is no reason to suspect that a release to the environment has occurred.

7.71.3 Current Status

The unit began operations in 2001 and is currently operational. Based on the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the age of the unit, no further action at this AOI is warranted.

7.72 AOI 1-158 Paint Sludge Roll-Off Box

AOI 1-158 is located in the north-central part of the Paint Department building and consists of a metal roll-off located on a concrete pad. This AOI is located at grade level.

7.72.1 Historical and Current Operations

At this AOI, water associated with managing overspray from the paint operations is filtered and is then pumped back to the paint booths. The resulting paint sludge accumulates at this AOI. Wastes managed at AOI 1-158 include paint sludge.

7.72.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases from this unit have been documented and there is no reason to suspect that a release to the environment has occurred.

7.72.3 Current Status

The unit began operations in 2001 and is currently operational. Based on the construction and waste management practices employed, the absence of any

documented releases, absence of any basis for suspecting a release, and the age of the unit, no further action at this AOI is warranted.

7.73 AOI 1-160 Filter Cake Container

This AOI is located in the C.U.C. building.

7.73.1 Historical and Current Operations

The sludge generated by the wastewater treatment system is sent through a filter press, from which point the filter cake waste is placed in an aboveground rolloff box. Wastes managed at AOI 1-159 include wastewater and process waste filter cake. This waste was considered a F019 hazardous waste; however, it was delisted on May 16, 2000 (40 CFR Part 261, Appendix IX).

7.73.2 Previous Investigations and Remedial Actions

No investigation or remedial action has been conducted at this AOI and none appears to be warranted. No releases from this unit have been documented and there is no reason to suspect that a release to the environment has occurred.

7.73.3 Current Status

The unit began operations in 2001 and is currently operational. Based on the construction and waste management practices employed, the absence of any documented releases, absence of any basis for suspecting a release, and the age of the unit, no further action at this AOI is warranted.

7.74 AOI 1-161 Elm Street Area

This AOI is located along Elm Street located north of the Body Building on the LGR area of the Facility.

7.74.1 Historical and Current Operations

AOI 1-161 was not associated with specific operations at the Facility and the source of the exceeded constituents is unknown.

7.74.2 Previous Investigations and Remedial Actions

This AOI is located within an area of the Facility where perched water was investigated and identified (URS, 2001). A summary of the perched water unit data screening is discussed in Section 5.1.1.

In February 2000, during the redevelopment of the LGR portion of the facility, GM completed an investigation in this area. Soil borings GP-01 through GP-08, GP-12 through GP-15, and GP-19 were installed along part of the former utility corridor. Samples collected at each location were analyzed for TAL Metals, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP), selenium (GSIP and DWP), naphthalene (GSIP), 1,2,4-TMB (ISVIIC, IDC, DWP, GSIP), 1,3,5-TMB (DWP, GSIP), tetrachloroethene (DWP), n-propylbenzene (DWP), benzene (DWP, GSIP), ethylbenzene (DWP, GSIP) , toluene (DWP, GSIP), and xylene (ISVIIC, IDC, DWP, GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 42-1, 43-1, 44-1, and 45A-1. No remedial action has been conducted at this AOI.

7.74.3 Current Status

Due to exceedances of the screening levels illustrated in Set 2, Figure 43-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected above the perched unit or water table, respectively), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.75 AOI 1-162 Dynomometer - Roll Test Cell

AOI 1-162 was located on the east side of former Building 32A and was associated with the dynamometer roll test cells. This AOI is no more than 16 feet deep, based on knowledge of other similar types of pits at the Facility.

7.75.1 Historical and Current Operations

AOI 1-162 was part of the dynamometer testing operations at former Building 32A. Hydraulic oils were managed at this AOI. Fluids were not normally present during operations at this AOI.

7.75.2 Previous Investigations and Remedial Actions

In April 2005, ARCADIS completed a site assessment phase of investigation including field soil screening and sampling in accordance with the Site Assessment Soil Sampling Methodology described in Section 1.1.1 in Appendix F. Soil borings (SA-19-1 and SA-19-2) were installed around the AOI. Results of the field screening are summarized in Table F-1 (Appendix F). Samples collected at each location were analyzed for TAL Metals, Total PCBs, TCL VOCs, TCL SVOCs and ethylene glycol. Laboratory analysis showed exceedances of the screening levels for trichloroethene (DWP) in SA-19-2. Analytical screening results are included in Appendix E and shown on Set 1, Figures 14-1 and 15-1. No remedial action has been conducted at this AOI.

7.75.3 Current Status

AOI 1-162 ceased operations and was decommissioned prior to 2005. Due to detections above the DWP screening levels (specifically in the deepest sample collected), further actions on a Facility-wide basis is recommended. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.76 AOI 1-163 Building 23 - Bay C26

AOI 1-163 was identified on the east side of former Building 23, as a result of reported strong odors in geotechnical soil borings advanced in the area in 1999, in preparation for the redevelopment of the LGR area of the Facility.

7.76.1 Historical and Current Operations

The source of the contamination detected at this location is unknown.

7.76.2 Previous Investigations and Remedial Actions

On September 21, 1999, Soil and Material Engineering, Inc. (SME) completed four soil borings in or near former Building 23. Soil borings B-02S, B-02N, B-02E, and B-02NE were completed in Bay C-26, in the proximity of the former geotechnical boring B2, in order to identify the contaminants present and the vertical and horizontal extent of contamination. Samples collected at each location were analyzed for select TAL Metals, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP) at all locations and the following

constituents in sample B-02NE (26 ft bgs): 1,2,4-trimethylbenzene (DWP and GSIP); 1,3,5-trimethylbenzene (DWP and GSIP); 2-methylnaphthalene (RWC); 2-phenylbutane (sec-butylbenzene) (DWP); ethylbenzene (DWP and GSIP); naphthalene (RWC and GSIP); n-butylbenzene (DWP), n-propylbenzene (DWP); xylene (total) (DWP and GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 48-1 and 49-1. No remedial action has been conducted at this AOI.

7.76.3 Current Status

AOI 1-163 ceased operations prior to the decommissioning and demolition of former Building 23, in 1999. Due to exceedances of the screening levels illustrated in Set 2, Figure 49-2,and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.77 AOI 1-164 Building 33 - Bay B4/5

AOI 1-164 was identified in the former Building 33 (Bay B4/5), as a result of reported strong odors in geotechnical soil boring B11 advanced in the area in 1999, in preparation for the redevelopment of the LGR area of the Facility.

7.77.1 Historical and Current Operations

The source of the contamination detected at this location is unknown.

7.77.2 Previous Investigations and Remedial Actions

On September 11, 1999, SME completed two earth probes in close proximity of the former B11 soil boring. Earth probes EP-11N and EP-11S were completed in Bay B4/5. Samples collected at each location were analyzed for select TAL Metals, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for the following constituents: chromium (total) (GSIP), 1,1-dichloroethene (ISVIIC, IVSIC, DWP, GSIP, RSVIIC, and RVSIC), and trichloroethene (DWP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 44-1 and 45B-1. No remedial action has been conducted at this AOI.

7.77.3 Current Status

AOI 1-164 ceased operations prior to the decommissioning and demolition of former Building 33, in 1999. Due to exceedances of the screening levels illustrated in Set 2 Figure 45-2, and the GSIP and DWP exceedances (specifically in the deepest samples collected), further actions at this AOI are recommended. Further actions proposed are described in Table 1 and will be defined in more detail in the RFI Work Plan.

7.78 AOI 1-165 Building 33 - Bay B10/11

AOI 1-165 was identified in the former Building 33 (Bay B10/11), as a result of reported strong odors in geotechnical soil boring B6 advanced in the area in 1999, in preparation for the redevelopment of the LGR area of the Facility.

7.78.1 Historical and Current Operations

The source of the contamination detected at this location is unknown.

7.78.2 Previous Investigations and Remedial Actions

On September 11, 1999, SME completed two earth probes in close proximity of the former B6 soil boring. Earth probes EP-6N and EP-6S were completed in Bay B10/11. Samples collected at each location were analyzed for select TAL Metals, TCL VOCs and TCL SVOCs. Laboratory analysis showed exceedances of the screening levels for chromium (total) (GSIP). Analytical screening results are included in Appendix E and shown on Set 1, Figures 46-1 and 47-1. No remedial action has been conducted at this AOI.

7.78.3 Current Status

AOI 1-165 ceased operations prior to the decommissioning and demolition of former Building 33, in 1999. Detections above the GSIP screening levels (specifically in the deepest sample collected) were noted and sampling will be conducted at the outfall to address these exceedances. Further action proposed is described in Table 1 and will be defined in more detail in the RFI Work Plan.

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ARCADIS

Tables

TABLE 1
GM LANSING PLANT 1
AREAS OF INTEREST (AOI)

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

AOI #	Databox Figure #	Title	Description/Components	Location Building # Column/Bay	Reference Drawing ID[A]	AOI Source	Previous Investigations and Remedial Actions in addition to the site-wide land use restriction	AOI Approximate Depth Below Grade (ft)	Approximate Date AOI Ceased Operations	Materials Handled	CCR Conclusion	General Description of Further Action
1-1	44-1, 45B-1	SWMU 1 - Former Used Oil Treatment System & Building 28 Tank Farm	1-1(1) - ASTs associated with the treatment of used hydraulic oil, used soluble oil, and used motor oil; Building 28 - Steel ASTs (700-gal used hydraulic oil, (4) 750-gal oil heating tanks, (2) 5,000-gal used oil storage tanks, 250-gal used motor oil day tank.) and a 1,000-gal oil centrifuge located in this building were contained by a 5-ft tall epoxy sealed berm 40 ft by 80 ft. Building 128 - Steel ASTs (10,000-gal used oil accumulation tank; 10,000-gal used treated oil; (2) 10,000-gal sludge holding tanks). Secondary containment provided by the buildings floor and walls.	Former Building 28 and 128	28.060-A12 28.060-A15; 28.060-A19; 28.060-A45, 28.060-A13	PA/VSI	NA	0	1999	Used oil	**No Further Action**	**NA**
			1-1(2) - USTs associated with the Used Oil Treatment System (2) 50,000-gal USTs waste water containing soluble oil	Building 28	28.720-A22			15			**No Further Action**	**NA**
			1-1(3) - Building 28 Tank Farm (Tanks #123 - #126 and #128 - #132)	Former Building 28 Bays A-C/1-14	Figure 11 - RFAR	Drawing Review	USTs Investigations 1989-1993 Tanks #128, #129, #130, #131, #132 were closed in the ground. Approximately 420 cy of soil were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001). Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	15	1993		Further Action Required	- Collect water sample from Outfall 1-001 and Outfall 1-003 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-2	3	SWMU 2 - Used Oil Drip Pans	Drip pans were placed beneath wet grinding machines to collect the Used Oil from wet grinding machines; Collected oil was transferred to the Used Oil Treatment System (AOI 1-1) via a 700-gallon vac truck; began operations prior to 1960	Throughout former Building 22	NA	PA/VSI	NA	0	1999	Used Oil	**No Further Action**	**NA**
1-3	3	SWMU 3 - Former Used Oil Tanks	1,000-gallon steel AST surrounded by 4-foot concrete dike; replaced a former UST; stored non-hazardous waste soluble oil generated during engine cell testing; sumps pumped any releases to 10,000-gallon steel AST located adjacent as storage for a potential spill in the secondary containment	South of former Building 64	NA	PA/VSI	NA	0	1999	Used Oil	**No Further Action**	**NA**
1-4	14-1, 15-1	SWMU 4 - Used Hydraulic Oil Collection Pits	10 pits located beneath RRIM machines; ~ 2 ft deep with varying lengths and widths; trenches and sumps in the pits helped to collect oil	Throughout Building 78	NA	PA/VSI	Site Assessment 2005	2	Prior to 2005	Hydraulic Oil	**No Further Action**	**NA**
1-5	3	SWMU 5 - 300-Gallon Assembly Line Tank	300-gallon steel AST located on third floor; collected Used Oil, gasoline, and brake fluid generated from automobiles that did not pass final Quality Control procedures on the assembly line; began operations in 1983;	NW corner of Building 90 Third Floor	NA	PA/VSI	NA	0	2005	Used Oil, Waste Gasoline, Brake Fluid	**No Further Action**	**NA**
1-6	10-1, 11-1	SWMU 6 - Fluid Fill Area	Consists of one trench and one underground oil/water separator; The trench that accumulated small amounts of gasoline was sprayed with water and the water and fluid mixture accumulated in the tank. The mixture was then transported to the Used Oil treatment system (AOI 1-1) or shipped off-site for treatment.	SW corner of Building 90 Bay F21/22	MP1 90-716A	PA/VSI	Site Assessment 2005	10	2005	Gasoline	Further Action Required	- Collect water sample from Outfall 1-003 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-7	22-1, 23A-1	SWMU 7 - Former Building 32 Tank Farm	SWMU 7 - Former Tank 65; Accumulated waste gasoline, oil, and water from Building 90 fluid fill assembly line	South of Building 19, Southeast of Building 75, East of Building 32B	32.767-A101	PA/VSI	USTs Investigations 1989-1993 Site Assessment 2005 The USTs and approximately 2,200 cy of impacted soil were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001).	16	1992	Gasoline, Waste Gasoline, Windshield Washer Solvent, Used Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
			Four 15,000-gallon underground tanks containing gas, waste gas (Tank 65), & raw windshield washer solvent; began operations in 1984	Along the East side of Building 32	NA							
1-8	16-1, 17B-1	SWMU 8 - Tank #8	8,000-gallon steel UST; stored waste paint thinner from fascia painting activities for less than 90 days; became inactive in 1988;	North of Building 148	RFAR	PA/VSI	USTs Investigations 1989-1993 The USTs and approximately 160 cy of impacted soil were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001). Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	16	1992	Waste Paint Thinner, Solvents	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-9	3	SWMU 9 - Wastewater Treatment System	Consists of two concrete underground wet wells, bar screen, four sludge pumps, two underground API separators, and one 8,000 gal concrete oil/water separator tank; treated approximately 500,000 gallons of solids and oil process wastewater per day; treated water discharged to the City of Lansing sanitary sewer under a discharge permit	Throughout Building 69	NA	PA/VSI	Low-level PCBs detected in 2005 Building 69 thoroughly cleaned in 2005. The 8,000-gal separator tank was cleaned and removed from service in 2005.	16	Treatment System - active Separator tank out of service in 2005	Oily Water	Further Action Required	- Complete one soil boring next to the separator tank to the water table of bedrock, whichever is encountered first, and collect soil samples for field screening and laboratory analysis.

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1-10	3	SWMU 10 - Fascia 3,000-gallon Paint Thinner Tank	SWMU 10 - Former Fascia 3,000-gallon Paint Thinner Steel AST; stored paint thinner wastes from fascia painting activities for less than 90 days; began operations in 1991	West side of former Building 41	NA	PA/VSI	NA	0	2005	Waste Paint Thinner	**No Further Action**	**NA**
1-11	3	SWMU 11 - Fascia, Bumper, and Touch-Up Waste Paint Sludge Treatment Units	AOI 1-11 (1) - Fascia Waste Paint Sludge Treatment Unit 1,000-gallon concrete tanks; all units stored wastewater containing paint overspray and waste paint precipitate; sludge was transferred to Paint Roll-Off Boxes; units began operations in 1980;	South end of former Building 37A, Bays A, B, C 18-19.	NA	PA/VSI	NA	10	Prior to 2005	Paint Sludge	**No Further Action**	**NA**
	3		AOI 1-11 (2) - Bumper Waste Paint Sludge Treatment Unit 1,000-gallon steel tanks	Building 78	NA	PA/VSI		0			**No Further Action**	**NA**
	8-1, 9-1		AOI 1-11 (3) - Touch-Up Waste Paint Sludge Treatment Units 1,000-gallon steel tanks	Building 150 Bay 9AA	Site Utility and Sewer Drawings	Drawing Review PA/VSI	Site Assessment 2005	0			**No Further Action**	**NA**
1-12	3	SWMU 12 - Paint Sludge Roll-Off Box	20-cubic-yard metal roll-off box; stored waste paint generated during engine painting and routine heavy machine maintenance, as well as waste paint precipitate generated from bumper, fascia, and touch-up painting operations; began operations in 1980	Outside, between Building 156 and Building 41	NA	PA/VSI	NA	0	2005	Paint Sludge	**No Further Action**	**NA**
1-13	3	SWMU 13 - Former Dust Collectors	55-gallon drums; collected baghouse dust generated during gasoline tank assembly (bead blast), and during engine remanufacturing	SW corner of former Building 22A	NA	PA/VSI	NA	0	1999	Baghouse Dust	**No Further Action**	**NA**
1-14	3	SWMU 14 - Former Building 22 Roll-Off Box	20-cubic-yard plastic-lined metal roll-off box; stored non-hazardous residue and filter paper from wet machining operations; began operations in 1970	SE corner of former Building 22	NA	PA/VSI	NA	0	1999	Machining Residue	**No Further Action**	**NA**
1-17	3	SWMU 17 - Former Asbestos Rolloff Box	20-cubic-yard metal rollof box; stored 4-millimeter plastic bags of asbestos waste generated from remanufacturing of V-8 engines; began operations in 1991	Northwest of former Building 49 and adjacent to Former Hazardous Waste Storage Area (AOI 1-19)	NA	PA/VSI	NA	0	1999	Asbestos	**No Further Action**	**NA**
1-18	14-1, 15-1	SWMU 18 - RRIM Trenches	6 inch deep concrete, metal grated trenches; collected non-hazardous waste from the RRIM operations; Waste was pumped into 55-gallon drums, which were then transferred to the former Satellite Accumulation Areas; began operations in 1991	Throughout Building 78	NA	PA/VSI	Site Assessment 2005	0.5	2005	Polyol and isocyanate	**No Further Action**	**NA**
1-19	3	SWMU 19 - Former Hazardous Waste Storage Area	Outdoor, roofed, 36'x122' area enclosed by 3 epoxy-coated walls as well as a concrete epoxy-coated wall; stored various hazardous wastes such as baghouse dust , waste paint thinner, adhesive waste, non-hazardous waste solids, and wastewater treatment sludge; wastes were stored in 55-gallon drums and placed on pallets; one 1,000-gallon UST collected spills and runoff	Northwest of former Building 49 and adjacent to Former Asbestos Rollof Box (AOI 1-17)	NA	PA/VSI	NA	0	1999	Baghouse Dust , Waste Paint Thinner, Adhesive Waste, Non-Hazardous Waste Solids, and Wastewater Treatment Sludge	**No Further Action**	**NA**
1-20	16-1, 17B-1	SWMU 20 - Former Phosphating Operations Wastewater Treatment System and F006 Filter Cake Container	Managed wastewater and filter cake generated from zinc phosphating operations. Used zinc phosphating process waters were pumped to a 25,000-gallon concrete UST. The wastewater was then pumped to a reduction tank where sulfuric acid and sodium bisulfate were added. Next, the wastewater was pumped to a reaction tank where lime was added to remove the trivalent chromium, producing a hydroxide sludge. The sludge was sent through a filter press, from which point the filter cake waste (F006) was sent through a filter press placed in a container and then taken to AOI 1-19, while the filtrate was sent to the wastewater treatment system returned to the reaction tank; began operations in 1982.	Building 37 Bays G4-6, H4-6	NA	PA/VSI	Site Assessment 2005	16	1984	Zinc Phosphating Filter Cake	**No Further Action**	**NA**
1-21	NA	SWMU 21 - Former Satellite Accumulation Areas (SAA)	55-gallon drums and 2-cubic yard hoppers; stored various wastes (wet machining residue and filter paper, waste paint and paint thinner, dry machining chip waste, adhesive waste, non-hazardous waste solids, waste solvents, SMC purge resin) at the point of generation prior to storage and disposal	Northern Portion of Building 78, Throughout Building 27B, Throughout Building 22	NA	PA/VSI	NA	0	1999; 2005	Machining Residue, Waste Paint and Paint Thinner, Used Oil	**No Further Action**	**NA**
1-22	3	SWMU 22 - Former Bumper 300-Gallon Waste Paint Thinner AST and Associated Sump	300-gallon AST that stored waste paint thinner for less than 90 days, surrounded by 5-foot steel berm; and associated sump; began operations in 1991	Southeast Corner of Building 78AB Bay B6	NA	PA/VSI	NA	0	2005	Waste Paint Thinner	**No Further Action**	**NA**

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1-23	36A-1, 37A-1, 42-1, 43-1	(1) Central Tank Farm		West of Building 49	NA	PA/VSI	USTs Investigations 1989-1993 The USTs and approximately 9,526 cy of impacted soil and concrete were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001). Free product recovery operations at recovery wells 08MW019 and 08MW033 began in 1993. Free product has not been detected since January 1999. Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	Unknown	Prior to 1993	Gasoline, Transmission Fluid, Oil, Windshield Washing Fluid	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
	38-1, 39A-1	(2) Building 64 Dock Tank Farm		Northwest Corner of Building 64	NA		USTs Investigations 1989-1993 The USTs and approximately 58 cy of impacted soil and concrete were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001).	Unknown	Prior to 2001	Gasoline, Oil	Further Action Required	- Collect water sample from Outfall 1-003 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
	38-1, 39A-1	(3) Building 64 South Tank Farm		Southwest Corner of Building 64	NA		USTs Investigations 1989-1993 The USTs and approximately 3,198 cy of impacted soil and concrete were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001). Approximately 6,050 gallons of liquid including free product, water, and fire-retarding foam were additionally removed. Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	Unknown	Prior to 2001	Gasoline	Further Action Required	- Collect water samples from Outfall 1-001 and Outfall 1-003 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Install one temporary monitoring well at the 10BS012 location, if accessible, to monitor for the potential presence of LNAPL based on xylene soil concentrations greater than Csat observed in borings 10BS011, 10BS012 and 10BS018. If the 10BS012 location is not accessible, install wells to the west and north (near MW-12A) of the Paint Department building. The wells will be screened within the first saturated zone encountered below 22 feet.
	38-1, 39A-1	(4) Tank #45	500-gallon used oil UST	North of Building 64	NA		USTs Investigations 1989-1993 Closed in ground on December 22, 1989. Approximately 40 cubic yards of impacted soil were removed, as documented in the MDEQ approved RFAR (URS, 2001).	Unknown	Prior to 2001	Used Oil	**No Further Action**	**NA**
	42-1, 43-1, 44-1, 45A-1	(5) Tanks #77 and #78 (SWMU 16 - Former Outdoor Scrap Metal Bin UST) SWMU 15 - Former Outdoor Scrap Metal Bins	800-gallon and 1,230-gallon used oil USTs (Two concrete USTs; stored waste liquid-mostly oil-that drained from Former Outdoor Scrap Metal Bins; liquid was then pumped to Used Oil Treatment System; began operations prior to 1955) Ten 20'x20'x15' concrete bins; stored oily scrap metal generated from throughout the facility; began operations prior to 1955	Southwest Corner of Building 38, between former Building 36 and former Building 40	NA		USTs Investigations 1989-1993 LGR Construction 2000 Closed in place on October 31, 1990, as documented in the MDEQ approved RFAR (URS, 2001). Free product recovery operations at recovery wells PRW-04 began in 1993. The system at Tanks #77 and #78 was initially designed for total fluid recovery. Free product recovery operations are still ongoing in this area and it is believed to be associated with AOI 1-124. Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	16	Prior to 2001	Used Oil, Metals, PCBs	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Complete soil boring and install a temporary well northwest of 12BS004 to evaluate the possible presence of LNAPL based on free product detected in nearby PRW-04 and abandoned wells 12MW020 and 12MW021D, which are associated with AOI 1-124. In addition, the boring will be used to delineate the potential presence of a perched zone in that area.
	38-1, 39B-1, 44-1, 45B-1	(6) East Tank Farm		East of Building 24, North of Building 39	NA		USTs Investigations 1989-1993 The USTs and approximately 935 cy of impacted soil were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001). Restrictive Covenant in place protecting/mitigating against volatilization to indoor air exposure.	Unknown	Prior to 2001	Oil, Diesel Fuel	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
	26-1, 27-1	(7) Tanks #49 and #50	6,600-gallon and 20,000-gallon quench oil USTs	Southwest Corner of Building 39, West of Building 35	NA		USTs Investigations 1989-1993 USTs removed from ground on December 6, 1990, along with approximately 725 cy of impacted soil, as documented in the MDEQ approved RFAR (URS, 2001). The free product recovery system at 04MW009 and 04RW001 began in 1993. Passive recovery operations are still ongoing in this area. Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	Unknown	Prior to 2001	Quench Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances to storm sewers. The potential for leaching and direct discharge to the Grand River to the south will be addressed by collecting groundwater samples from the proposed well described above. - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Install one permanent perched zone monitoring well near the property line south of 04MW006 (near boring 04BS010) to evaluate the potential for off-site migration of impacted groundwater and/or LNAPL based on the presence of a perched water unit and observed LNAPL in that unit at wells 04MW009 and 04BW006.
	38-1, 39B-1	(8) Building 66 South Tank Farm		Southeast Corner of Building 66, North of Building 63	NA		USTs Investigations 1989-1993 The USTs and approximately 2,997 cy of impacted soil were removed, as documented in the MDEQ approved RFAR (URS, 2001).	Unknown	Prior to 2001	Gasoline	Further Action Required	- Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2).

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1-24	14-1, 15-1	Former Plating Department	Associated with chrome and nickel plating operations	Building 78 Bay EF1-EF19	78946-A2	Drawing Review	Site Assessment 2005	10	Prior to 1983	Plating solutions	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-25	20-1, 21-1, 22-1, 23A-1	Fluid Fill Operations	Gas Fluid Fill Area; Spill Deck; Underground Gasoline Separator Tank; Operated as fluid fill area for vehicles	Building 32 Bay A39-41 and B39-41	UG SEW C1	Drawing Review	Site Assessment 2005	16	2005	Gasoline, Used Oil, Antifreeze, Windshield Washer Solvent, Brake Fluid	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
			Fluid Fill Area (other than gasoline)	Building 32 Bays A36-38 and B36-38	UG SEW C1	Drawing Review						
1-26	16-1, 17A-1	Former Paper Bailer	17' deep with 4' deep sump in southwest corner; Hydraulic elevator and trash compactor in area	Building 75 Bay A40	75.002-A6; UG SEW C1	Drawing Review	Site Assessment 2005	21	Prior to 2005	Hydraulic Oils	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Based on the Csat exceedances, reoccupy the SA-4-1 location and continue the boring from 16 feet bgs to water table or bedrock, whichever is encountered first. Install one temporary monitoring well to be screened in the first saturated zone encountered below 16 feet to monitor for presence of LNAPL. - Install four borings around the SA-4-1 location to horizontally delineate the DC, PSIC and SVIIC exceedances. Collect samples from each boring.
1-27	16-1, 17A-1	Former West Tank Farm	7 tanks; stored gasoline, alcohol, naphthalene, windshield washer solvent, and antifreeze; Removed in 1982; soil around tank farm was over excavated	Along the North Side of Building 82	M 710-A2	Drawing Review	Site Assessment 2005	16	1982	gasoline, alcohol, naphthalene, windshield washer solvent, and antifreeze	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
1-28	20-1, 21-1	Former Oil Pit and Former Paint Mix Room	Oil pit was ~ 11' deep; sump was associated with paint mix room; drum storage area associated with operations;	Building 32 Bays G43-45	32.110-A1	Drawing Review	Site Assessment 2005	11	Prior to 2005	Used Oil and Used Paint	**No Further Action**	**NA**
1-29	20-1, 21-1, 22-1, 23A-1	Former Engine Repair Pit	Associated with engine repair operations	Building 32 Bays E36-4 and D37-42	32.408-A1; 32.408-A2	Drawing Review	Site Assessment 2005	16	Prior to 2005	Used Oil	**No Further Action**	**NA**
1-30	20-1, 21-1	Former Acid Demineralization Pit and Acid Tank Pit	Associated with car wash activities in former wash mobile area: one 3'x6'x4' acid demineralization pit with associated sump in southwest corner; and one 3'x6'x5' A acid tank pit.	Building 32 Bay E41	32.421-A1	Drawing Review	Site Assessment 2005	5	Prior to 2005	Acidic Solution	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-31	14-1, 15-1, 20-1, 21-1, 22-1, 23A-1	South Assembly Process Sewer Lines	Former process sewer sumps throughout South Assembly	Building 32 Bay C33-D33; South of Building 78 along Bay I-12; North of Building 74 Bay A-6; Building 75 Bay C-5	Utility Drawings	Drawing Review	Site Assessment 2005	<16	Prior to 2005	Process Waste	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-32	20-1, 21-1	Former Final Assembly Motor Repair Pit	3' deep; Associated with Motor Repair Pit operations	Building 32 Bays F35-41	32.437-A1	Drawing Review	Site Assessment 2005	3	Prior to 2005	Used Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances to storm sewers. - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Complete one boring south of SA-9-6 near the property boundary to delineate the PSIC and DC exceed aces. Collect one sample from the 10-12 foot depth interval for analysis of manganese.
1-33	22-1, 23A-1	Former Brake Repair Pit	6' deep; Associated with brake repair operations	Building 32 Bay E46	32.438-A1	Drawing Review	Site Assessment 2005	6	Prior to 2005	Brake Fluids	**No Further Action**	**NA**
1-34	14-1, 15-1, 20-1, 21-1	Fluid Fill Area	~5-6 feet deep pit associated with fluid fill operations	Building 32 Bays B22-26	32.229-A1	Drawing Review	Site Assessment 2005	6	2005	Gasoline, Used Oil, Antifreeze, Windshield Washer Solvent, Brake Fluid	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Based on ethylbenzene, toluene and xylene soil concentrations greater than Csat, reoccupy the boring SA-13-1 location and continue the boring to bedrock/water table, whichever is encountered first. Install a temporary monitoring well to be screened across the first saturated zone deeper than 14 feet to monitor for the possible presence of LNAPL. No soil samples will be collected.
1-35	14-1, 15-1	Former Chassis Paint Spray Booth	Two pits and two sumps associated with booth; sumps were 3'-4' deep; Associated with chassis paint spray operations	Building 75 Bays C17-20	74.411-A1	Drawing Review	Site Assessment 2005	4	Prior to 2005	Paint Solvents	**No Further Action**	**NA**
1-36	14-1, 15-1	Former Deck Sumps	Associated with oil and grease dispensing area operations	Building 75 Bays C20-27	75.413-A1; 75.416-A1	Drawing Review	Site Assessment 2005	5	Prior to 2005	Oil and Grease	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Based on ethylbenzene, toluene and xylene soil concentrations greater than Csat, reoccupy the boring SA-13-1 location and continue the boring to bedrock/water table, whichever is encountered first. Install a temporary monitoring well to be screened across the first saturated zone deeper than 14 feet to monitor for the possible presence of LNAPL. No soil samples will be collected.
1-37	22-1, 23A-1	Former Steering Gear Paint Spray Booth	2'-3' deep sump associated with booth	Building 75 Bays C41-42	75.415-A1	Drawing Review	Site Assessment 2005	3	Prior to 2005	Used Paint	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
1-38	14-1, 15-1	Former Differential Fill Area	Two sumps (4'-4.5' deep) associated with fluid fill operations	Building 75 Bays B17-20	75.419-A1	Drawing Review	Site Assessment 2005	5	Prior to 2005	Differential Fluids	Further Action Required	- Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2).
1-39	14-1, 15-1	Former Caster and Camber Fixture Pit	Associated with caster and camber fixture operations	Building 75 Bays A21-23	75.420-A2	Drawing Review	Site Assessment 2005	16	Prior to 2005	Used Oil and Grease	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances

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1-40	16-1, 17A-1	Historic Fluid Fill Deck Area	4'-5' deep sump associated with area	Building 75 Bays A31-A38	75.424-A1	Drawing Review	Site Assessment 2005	5	Prior to 2005	Gasoline, Used Oil, Antifreeze, Windshield Washer Solvent, Brake Fluid	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-41	14-1, 15-1	Former Differential Fill Area	Two sumps (4'-4.5' deep) associated with area	Building 75 Bays A24-26	75.427-A1	Drawing Review	Site Assessment 2005	5	Prior to 2005	Differential Fluids	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-42	16-1, 17A-1	Former Rear Suspension Torque Pits	Associated with Chassis control arms and rear suspension operations	Building 75A Bays A39-40	75A.407-A1	Drawing Review	Site Assessment 2005	16	Prior to 2005	Used Oil and Grease	**No Further Action**	**NA**
1-43	14-1, 15-1	Tank	12,000-gallon tank; gasoline	Doc Area west of Building 82	82.001-A2	Drawing Review	Site Assessment 2005	15	Prior to 2005	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Reoccupy the SA-1-7 location and continue drilling to the water table/bedrock and complete one additional boring north of SA-1-7, due to the xylene concentrations observed above Csat. Install one monitoring well to be screened across the water table to monitor for presence of LNAPL. - Collect additional samples from the proposed boring described above to horizontally define the RWC, SVIIC and DC exceedances to the north of SA-1-7.
1-45	16-1, 17A-1	Former Press Pits	Presses were removed and pits were capped and filled with concrete	Throughout Building 21A	21A.404-A1	Drawing Review	Site Assessment 2005	16	Prior to 2005	Hydraulic Oils	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-47	32-1, 33-1	Tank #90 and #91	15,000-gallon gasoline USTs	Northwest of Building 70	RFAR	RFAR	USTs Investigations 1989-1993 USTs were removed from ground on September 18, 1991 along with an unknown quantity of impacted soil, as documented in the MDEQ approved RFAR (URS, 2001).	16	Prior to 2001	Gasoline	**No Further Action**	**NA**
1-50	16-1, 17B-1	Three Former Dump Tanks	Three tanks were removed and filled/capped with concrete in 5/84	Building 37 Bays 7H, 11H, and 12H	37.0118-A18*	Drawing Review	Site Assessment 2005	16	1984	Unknown	**No Further Action**	**NA**
1-54	3	Pump Pit	NA	60' north of Building 78, 170' west of Building 77	220L	Drawing Review	Site Assessment 2005	15	1983	Petroleum Products	**No Further Action**	**NA**
1-60	8-1, 9-1	Paint Mix Room Containment System and Sump	NA	Building 150 Bays A/BB-11	MP3 150 718-A1	Drawing Review	Site Assessment 2005	5	2005	Paint and Paint Thinners	**No Further Action**	**NA**
1-61	8-1, 9-1	Hydraulic Pump Room	NA	Building 150 Bay E9	MP3 150 739-A2	Drawing Review	Site Assessment 2005	10	2005	Hydraulic Oils	**No Further Action**	**NA**
1-62	10-1, 11-1	Former Building 90 Tank Farm	Tanks stored power steering fluid, transmission fluid, antifreeze, gasoline, windshield washer solvent, and used oil;	South of Building 90	90.702-A22 RFAR	Drawing Review RFAR	USTs Investigations 1989-1993 The USTs and approximately 9,201 cy of impacted soil and concrete were removed during closure. MDEQ approved RFAR and CAP.	16	Prior to 1994	Steering Fluid, Gasoline, Windshield Washer Solvent, Used Oil	Further Action Required	- Collect water sample from Outfall 1-009 to evaluate GSIP exceedances
1-63	16-1, 17A-1	Solder Booths, Hydraulic Oil AST, Floor Sumps, and Soluble Oil Pump Back Unit	Associated with solder booth operations; AST stored hydraulic oil	Building 21 Bay A16, D16, C16, B16, A-F16/17	21.715-A1 & 21-715A	Drawing Review	Site Assessment 2005	5	Prior to 2005	Used oil, Hydraulic Oil, Metals	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
1-72	24-1, 25-1	Pit	Unknown dimensions; identified from historical GM drawing.	Building 37 Bay B25	21.131-A3	Drawing Review	Site Assessment 2005	10	Prior to 2005	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
1-74	10-1, 11-1	Truck Load/Unload Containment Sump	Consists of a containment sump approximately 5 ft deep	West of Building 78AB, Bays B1	Site Utility and Sewer Drawings	Drawing Review	Site Assessment 2005	5	Prior to 2005	Petroleum Products	Further Action Required	- Collect water sample from Outfall 1-009 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Reoccupy the SA-23-10 location, due to positive oil-in-soil tests in the 5-10 depth interval soil sample, and collect a sample from the 2-foot interval within the 5-10 foot interval sample that shows the greatest evidence of impact.
1-76	14-1, 15-1	Waste Treatment Vault	Associated with acid-alkali and cyanide wastes	Building 78 Bays H12-13	Site Utility and Sewer Drawings	Drawing Review	Site Assessment 2005	10	Prior to 2005	Acid-alkali and Cyanide Wastes	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
1-77	10-1, 11-1	Abandoned Sulfuric Acid Tank	Stored sulfuric acid	West of Building 78AB	Site Utility and Sewer Drawings	Drawing Review	Site Assessment 2005	16	Prior to 1986	Sulfuric Acid	**No Further Action**	**NA**

TABLE 1
GM LANSING PLANT 1
AREAS OF INTEREST (AOI)

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

AOI #	Databox Figure #	Title	Description/Components	Location Building # Column/Bay	Reference Drawing ID[A]	AOI Source	Previous Investigations and Remedial Actions in addition to the site-wide land use restriction	AOI Approximate Depth Below Grade (ft)	Approximate Date AOI Ceased Operations	Materials Handled	CCR Conclusion	General Description of Further Action
1-78	10-1, 11-1	Abandoned Sulfuric Acid Tank	Stored sulfuric acid	Northwest Corner of Building 78	Site Utility and Sewer Drawings	Drawing Review	Site Assessment 2005	16	Prior to 2005	Sulfuric Acid	Further Action Required	- Collect water sample from Outfall 1-009 to evaluate GSIP exceedances
1-79	14-1, 15-1	Acid Storage Vault	Stored acids	Building 78 Bay D/E	Site Utility and Sewer Drawings	Drawing Review	Site Assessment 2005	10	2005	Acids	Further Action Required	- Collect water sample from Outfall 1-009 to evaluate GSIP exceedances
1-80	3	Abandoned Tank #144	6,000-gallon gasoline tank	Southeast Corner of Building 156	RFAR	Drawing Review	Site Assessment 2005	16	Prior to 2005	Gasoline	**No Further Action**	**NA**
1-81	3	Water Treatment Building	Water Treatment Building / Former RRIM Bulk Storage Area	Throughout Building 78AB	Field Locate	NA	Site Assessment 2005	0	Prior to 2005	Waste Paint Thinner, Isocyanate, Polyol	**No Further Action**	**NA**
1-82	16-1, 17B-1	Abandoned Tank #7	It is unknown what was stored in the tank. 1,000 gallon UST abandoned in place in 1964.	South of Building 148 Outside of Building 16B	RFAR	RFAR	Site Assessment 2005	10	1964	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Complete step out soil borings to the west, east, south, and north of SA-44-6 to horizontally define the DC exceedance. Collect a sample from the 0-2 foot depth interval from each boring to be analyzed for lead.
1-83	22-1, 23A-1	Tank #147	550-gallon used oil UST	Southwest Corner of Building 19	RFAR	RFAR	USTs Investigations 1989-1993 Site Assessment 2005	16	Prior to 2001	Used Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
1-84	3	Building 63 Tank Farm	(4) 1,000-gallon tanks (Tank 95, Tank 96, Tank 97, and Tank 98); 4' diameter; stored used gasoline	North of Building 63A	RFAR	RFAR	USTs Investigations 1989-1993 The USTs and an unknown quantity of impacted soil were removed during closure, as documented in the MDEQ approved RFAR.	10	1994	Used Gasoline	Further Action Required	- If original verfication samples cannot be found, advance two soil borings to the water table or bedrock, whichever is encountered first, and collect soil samples from the 16-18 foot depth interval (approximate bottom of the AOI) and also from direclty above the water table or bedrock, whichever is encountered first.
1-88	10-1, 11-1	Former pits, trenches, and sumps (filled in with concrete)	Filled in with concrete prior to 2005 and new operations were in the area.	Building 26 Bays B2-12	Field Locate	Site Walk	Site Assessment 2005	10	2005	Hydraulic Oil	**No Further Action**	**NA**
1-90	18-1, 19-1	Former press pits, trenches, and sumps (filled in with concrete)	Filled in with concrete prior to 2005 and new operations were in the area.	Building 37 Bays E/F-5-23	Field Locate	Site Walk	USTs Investigations 1989-1993 Site Assessment 2005	16	2005	Hydraulic Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-91	24-1, 25-1	Former pits, trenches, and sumps (filled in with concrete)	Filled in with concrete prior to 2005 and new operations were in the area.	Building 56 Bays A7-8	Field Locate	Site Walk	Site Assessment 2005	5	2005	Hydraulic Oil	Further Action Required	- Complete one boring to water table or bedrock, whichever is encountered first, and collect soil samples for field screening and laboratory analysis.
1-92	22-1, 23B-1	Former SMC Paint Sludge Treatment Unit	Filled in with concrete prior to 2005 and new operations were in the area.	Building 27A Bays D6-7	Field Locate	Site Walk	Site Assessment 2005	10	2005	Paint sludge	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-93	24-1, 25-1	Former pits, trenches, and sumps (filled in with concrete)	Filled in with concrete prior to 2005 and new operations were in the area.	Building 56 Bays B33-34	Field Locate	Site Walk	Site Assessment 2005	10	2005	Hydraulic Oil	**No Further Action**	**NA**
1-94	24-1, 25-1	Paint Spray Booth	20'x30'; associated with painting operations in Building 56; paint related solvents and thinners were stored in and around the spray booth	Building 56 Bays A23-24	Field Locate	Site Walk	Site Assessment 2005	10	2005	Paint, Paint Thinner, Solvents	**No Further Action**	**NA**
1-95	3	Former Press Pits	Associated with press pit operations in Building 56	Throughout Building 56 Bays A27-35	Field Locate	Site Walk	Site Assessment 2005	16	Prior to 2005	Hydraulic Oil	**No Further Action**	**NA**
1-97	18-1, 19-1	Former trenches and sumps (filled in with concrete)	Filled in with concrete prior to 2005 and new operations were in the area.	Building 34 Bays B4-9	Field Locate	Site Walk	Site Assessment 2005	5	Prior to 2005	Hydraulic oil, polyol, and reacted isocyanate	**No Further Action**	**NA**
1-98	24-1, 25-1	Former pits, trenches, and sumps (filled in with concrete)	Filled in with concrete prior to 2005 and new operations were in the area.	Building 34 Bays A14-16	Field Locate	Site Walk	Site Assessment 2005	10	Prior to 2005	Petroleum Products	**No Further Action**	**NA**
1-101	24-1, 25-1, 26-1, 27A-1, 27B-1	Former Injection Molding Containment Pits and Trenches	Associated with former press and stamping operations in Building 52.	Throughout Building 52	Field Locate	Site Walk	USTs Investigations 1989-1993 LGR Construction Site Assessment 2005	16	Prior to 2005	Used Hydraulic Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Complete four borings to the east, west, north and south of SA-62-14 to delineate the DC and PSIC exceedances. Collect a sample from the 2-4 foot depth interval from each boring to be analyzed for lead and chromium. - Determine if the GSI pathway is relevant in the vicinity of SA-62-14 to evaluate the applicability of the mercury GSIP exceedance. The mercury GSIP exceedance will not be addressed by sampling the outfall since this is the sole GSIP exceedance for mercury at the facility.
1-102	12-1, 13-1	Chemical Unloading Station	Associated with chemical unloading operations conducted from rail cars coming to the plant	Building 26A Bay A21	NA	Site Walk	Site Assessment 2005	Unknown	2005	Polyol and Isocyanate	**No Further Action**	**NA**
1-103	10-1, 11-1, 14-1, 15-1	Welder Pit, Trench Sump with Sump Pump	Associated with water-cooled welder and welding operations	Building 21 Bay A8-10	21.723-A1	Drawing Review	Site Assessment 2005	10	2005	Metals, Cooling Water	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
1-104	48-1, 49-1, 50-1, 51-1	Chip Conveyor Trenches	Chip Conveyor Trenches; 8 sumps	Building 22 Bays G5-G14; CD14-CD25; and C17-20	22.437-A16; 22.437-A1; 22-437-A3A; 22-437-A8A	Drawing Review	LGR Body Building Expansion 2005	10	1986-1999	Used Oil and Metal Chips	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances indirect discharge. The potential for direct discharge to the Grand River by direct discharge through the perched zone present directly east of boring SB-1 has been addressed by the groundwater samples collected from borings 17MW001, 17MW002 and 17MW003 in which chromium was not detected.
			Off-Line Chip Charge Trenches; operations ceased when Body Shop was built	Building 22 Bays C17-18	22.437-A29; 22.437-A 1 A	Drawing Review	LGR Body Building Expansion 2005					
1-106	50-1, 51-1	Coolant Filtration System	10' wide, 10' deep pit; 1' wide trenches	Building 22 Bays D5-6	22.440-A1	Drawing Review	LGR Body Building Expansion 2005	10	1985-1999	Coolant	**No Further Action**	**NA**

TABLE 1
GM LANSING PLANT 1
AREAS OF INTEREST (AOI)

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

AOI #	Databox Figure #	Title	Description/Components	Location Building # Column/Bay	Reference Drawing ID[A]	AOI Source	Previous Investigations and Remedial Actions in addition to the site-wide land use restriction	AOI Approximate Depth Below Grade (ft)	Approximate Date AOI Ceased Operations	Materials Handled	CCR Conclusion	General Description of Further Action
1-110	50-1, 51-1	Camshaft Grinding Line Coolant Tanks, Pits, and Sumps	6' long, 5' deep tank, leads to coolant filter; 800-gallon sump connected to coolant filter	Building 22 Bays 7B	22.747-A1; 22.415-A9	Drawing Review	LGR Body Building Expansion 2005	5	1986-1999	Used Hydraulic Oil, and Coolants	**No Further Action**	**NA**
			2'x2' sump at north end	Building 22 Bays A7-8	22.418-A31	Drawing Review						
			Pit, trenches, hydraulic units	Building 22 Bays B7-10	22.427-A13	Drawing Review						
1-115	42-1, 43-1	Bulk Oil Handling Secondary Containment UST (8,000 gallon) & Trenches	8' diameter tank; sump	South of former Building 45 Dock	45.002-A1A; 45.002-A2; 45.002-A5	Drawing Review	USTs Investigations 1989-1993	16	Prior to 1999	Oil	**No Further Action**	**NA**
1-116	3	Heat-Treat Quench Operations	Soluble Oil Quench Pits - One 18' 4"x13' 10"x8' 11" pit and one 15' 9"x8' 3"x4' 6" pit; associated with R.T. Belt Hardening Line; Began operations prior to 1958	Building 35 Bays B/C-2-5	98452	Drawing Review	NA	12	Prior to 1999	Quench Oil	Further Action Required	- Complete three borings to water table or bedrock, whichever comes first, and collect collect soil samples from the 12-14 foot depth interval (approximate bottom of the AOI) and also from direclty above the water table or bedrock , whichever is encountered first.
			Quench Oil Tanks/Operations - 2100-gallon (2), 1400-gallon, and unknown capacity oil quench tanks and associated trenches; connected to 10" quench oil gravity drain line	South of Buildings 28 & 35	35.416-A2; 35.416-A9	Drawing Review						
			Quench Oil Tank; 20,000-gallon; 10' 8" diameter	South of 35	35.416-A10	Drawing Review						
			Quench Oil Tank/Sumps - 8' 11" deep tank; (1) standard sump	Building 35 Bays B7-9	35.418-A1	Drawing Review						
1-124	44-1, 45A-1	Kerosene Clarification System for Honing Operations	300-gallon "clean" tank; 9' 2" deep 1750-gallon "dirty" tank; slurry tank; Began operations prior to 1963	Building 36 Bays E11-12	36.729-A8, 38.486-A1	Drawing Review	USTs Investigations 1989-1993 Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	10	Prior to 1999	Kerosene, Metals	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Complete soil boring and install a temporary well northwest of 12BS004 to evaluate the possible presence of LNAPL based on free product detected in nearby PRW-04 and abandoned wells 12MW020 and 12MW021D, which are associated with AOI 1-124. In addition, the boring will be used to delineate the potential presence of a perched zone in that area.
1-129	44-1, 45A-1, 46-1, 47-1	Chip Trenches, Cooling Water Pit	Chip Trenches; associated with chip conveyor operations	Building 38 Bays A-D/15-23	38.486-A1	Drawing Review	USTs Investigations 1989-1993 Restrictive Covenant in place protecting/mitigating against direct contact (DC), volatilization to indoor air exposure, and volatilization to ambient air exposure.	10	Prior to 1999	Coolant Water, Metals Chips	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) . - Complete soil boring and install a temporary well northwest of 12BS004 to evaluate the possible presence of LNAPL based on free product detected in nearby PRW-04 and abandoned wells 12MW020 and 12MW021D, which are associated with AOI 1-124. In addition, the boring will be used to delineate the potential presence of a perched zone in that area.
			Cooling Water Pit			Drawing Review						
1-133	44-1, 45B-1	Quench Oil Pit	Associated with Cast Belt Hardening Line	Building 28 Bay C5	28.064-A2	Drawing Review	USTs Investigations 1989-1993	< 16	Prior to 1999	Quench Oil	**No Further Action**	**NA**
1-135	3	Settling Tank, Sumps, and Kerosene Storage Pit	2 sumps; 12' wide settling tank; kerosene storage pit; part of cylinder block honing operations; began operations prior to 1958	Building 28 Bays B-C/24-26	28.802-A1	Drawing Review	NA	< 16	Prior to 1999	Kerosene	Further Action Required	- Complete one boring to water table or bedrock, whichever comes first, and collect soil samples from the 16-18 foot depth interval (approximate bottom of the AOI) and also from direclty above the water table or bedrock , whichever is encountered first.
1-138	3	Nitric Acid Sump and Tin Plate Storage Tank Pit	2' deep sump; 6' wide, 5' 10.5" deep tin plate storage tank; Associated with tin plating operations; Began operations prior to 1958	Building 33 Bay B10	33.448-A1, 33.728-A3	Drawing Review	NA	6	Prior to 1967	Nitric Acid, Tin Electroplating Solutions	Further Action Required	- Complete one boring to water table or bedrock, whichever comes first, and collect soil samples from the 6-8 foot depth interval (approximate bottom of the AOI) and also from direclty above the water table or bedrock , whichever is encountered first.
1-142	46-1, 47-1	6 sumps	(1) sump connected to Used Oil line; began operations prior to 1956	Building 33 Bays B9-15	33.720-A10	Drawing Review	LGR Body Building Expansion 2005	< 5	Prior to 1999	Used Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-144	46-1, 47-1	Immersion Tin Containment Pit and Sump	11' wide, 8' deep pit; drains to standard sump; associated with Piston Tin Plating Machine	Building 33 Bays B-C14	33.4104-A3	Drawing Review	LGR Construction 2000 LGR Body Building Expansion 2005	10	Prior to 1999	Tin Plating Solutions	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-146	46-1, 47-1	Hydraulic Oil Drain Sumps and Associated Trenches	4 hydraulic oil drain sumps; removed ~1962 and covered with new concrete floor	Building 33A Bays A-C/19-20 and A15	33.474-A1	Drawing Review	LGR Construction 2000 LGR Body Building Expansion 2005	2	Prior to 1999	Used Hydraulic Oil	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances
			2'x2'x2' tramp oil sump	Building 33A Bays A-C/19-21	33A.437-A1	Drawing Review						
1-147	16-1, 17A-1	Former Work Pit	Associated with Chassis control arms	Building 75A Bays C35-36	75A.408-A1	Drawing Review	Site Assessment 2005	16	Prior to 2005	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Complete two additional borings to the west and north to horizontally delineate the RWC exceedance. Collect samples from the 0.7-2.7 foot depth interval.
1-148	3	Hazardous Waste Accumulation Area	Less than 90 Day Storage Area for hazardous wastes generated throughout LCA	Building 41	NA	Drawing Review	NA	0	2005	Used Oil, Zinc Phosphating Sludge, Paint Residue, Baghouse Dust	**No Further Action**	**NA**
1-151	36A-1, 36B-1, 37A-1, 37B-1	Company Car Fueling Area	6 USTs; capacities ranged from 2,000-20,000 gallons; stored unleaded gasoline, premium gasoline, waste gasoline, ethanol blend, and methanol blend; all tanks and associated fill piping and vent lines were removed in 1999	Northeast of former Building 49	Figure 11 - RFAR	Drawing Review	USTs Investigation 1999 The USTs and approximately 25 cy of impacted soil and concrete were removed during closure, as documented in the MDEQ approved RFAR (URS, 2001).	16	1999	Gasoline, Waste Gasoline, Ethanol Blend, Methanol Blend	Further Action Required	- Collect water sample from Outfall 1-001 and Outfall 1-003 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-152	30-1, 31-1	Tank #86 / Building 66 North Tank Farm	Stored gasoline, diesel fuel, motor oils, automotive transmission fluid, motor oils, and used oil; 1,000-gallon UST removed	North of Building 66	Figure 11 - RFAR	Drawing Review	USTs Investigations 1989-1993 Removed from ground on October 31, 1990, along with approximately 3,158 cy of impacted soil. Restrictive Covenant in place. Free product recovery operations (recovery well 02MW011) began in 1993. The system operated until 1996, followed by passive recovery of minor quantities after 1999.	16	Prior to 2001	Gasoline, Diesel Fuel, Oil, Used Oil	Further Action Required	- Collect water sample from Outfall 1-003 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .

TABLE 1
GM LANSING PLANT 1
AREAS OF INTEREST (AOI)

CURRENT CONDITIONS REPORT
GENERAL MOTORS CORPORATION
LANSING, MICHIGAN

AOI #	Databox Figure #	Title	Description/Components	Location Building # Column/Bay	Reference Drawing ID[A]	AOI Source	Previous Investigations and Remedial Actions in addition to the site-wide land use restriction	AOI Approximate Depth Below Grade (ft)	Approximate Date AOI Ceased Operations	Materials Handled	CCR Conclusion	General Description of Further Action
1-153	3	Fluid Fill Operations	Mixed Flammable Auto Fluids; Operated as fluid fill area for vehicles	LGR - General Assembly Building Bay 9.5B	NA	Site Visit	NA	< 6	Operational	Gasoline, Used Oil, Antifreeze, Windshield Washer Solvent, Brake Fluid	**No Further Action**	**NA**
1-155	3	Less than 90 Day Hazardous Waste Storage Area	Stores hazardous waste generated throughout LGR for less than 90 days.	LGR - between General Assembly building and the Paint Department	NA	Site Visit	NA	0	Operational	Hazardous waste	**No Further Action**	**NA**
1-157	3	Waste Paint Thiner AST	The waste paint thiner tank is associated with the paint operations and is used to accumulate used solvent for less than 90 days. The AST is placed on concrete floors. The secondary containment for the tank is provided by a 2-3 feet tall surrounding wall.	LGR -Paint Department, northeast corner, Bay A29	NA	Site Visit	NA	0	Operational	Used solvent	**No Further Action**	**NA**
1-158	3	Paint Sludge Roll-Off Box	Paint sludge accumulates in this tank. The tank is placed on a concrete pad surrounded by a 2-3 ft tall concrete wall.	LGR -Paint Department, Bay B22	NA	Site Visit	NA	0	Operational	Phosphate Sludge	**No Further Action**	**NA**
1-160	3	Filter Cake Container	Sludge generated by the wastewater treatment system is sent through a filter press. The resulting filter cake is placed in an above ground rolloff box.	LGR - east central part of the U.C.U. Building	NA	Site Visit	NA	0	Operational	Wastewater filter cake	**No Further Action**	**NA**
1-161	42-1, 43-1, 44-1, 45A-1	Elm Stret Area	This AOI is located along Elm Street located north of the Body Building, on LGR area of the Facility.	North of Elm Street	NA	Site Data	LGR Construction 2000	< = 30	Prior to 1999	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 and 1-003 to evaluate GSIP exceedances. - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-162	14-1, 15-1	Dynomometer - Roll Test Cell	AOI 1-162 was part of the test cell operations at former Building 32A. Hydraulic oils were managed at this AOI. Fluids were normally not present during operations at this AOI.	Former Building 32A D7-D8 and D12	NA	Site Data	Site Assessment 2005	16	Prior to 2005	Hydraulic Oil	Further Action Required	- Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2).
1-163	48-1, 49-1	Building 23 - C26	AOI 1-163 was identified on the east side of former Building 23, as a result of reported strong odors in geotechnical soil borings advanced in the area in 1999, in preparation for the redevelopment of the LGR area of the Facility.	Former Building 23 Bays C23, C26, C27, and Former Building 22A Bay 1A	NA	Site Data	LGR Construction 2000	20	Prior to 1999	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2) .
1-164	44-1, 45B-1	Building 33- Bay B4/5	AOI 1-164 was identified in the former Building 33 (Bay B4/5), as a result of reported strong odors in geotechnical soil boring B11 advanced in the area in 1999, in preparation for the redevelopment of the LGR area of the Facility.	Building 33 Bay B4/5	NA	Site Data	LGR Construction 2000	20	Prior to 1999	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances - Collect site-wide monitoring well levels to evaluate the capture zone created by the extraction well network (see Footnote 2). - Reoccupy the EP-11S location, if accessible, to collect a sample from the 16-18 foot depth interval to confirm the SVIIC and VSIC exceedances.
1-165	46-1, 47-1	Building 33 - Bay B10/11	AOI 1-165 was identified in the former Building 33 (Bay B10/11), as a result of reported strong odors in geotechnical soil boring B6 advanced in the area in 1999, in preparation for the redevelopment of the LGR area of the Facility.	Building 33 Bay B10/11	NA	Site Data	LGR Construction 2000	20	Prior to 1999	Unknown	Further Action Required	- Collect water sample from Outfall 1-001 to evaluate GSIP exceedances

Footnotes:

(1) The outfall samples will be analyzed for all the constituents that showed a soil concentration above GSIP criteria at one or more locations which consists of : TCL VOCs, TCL SVOCs, chromium (total), cobalt, copper, cyanide (total), lead , manganese, mercury, nickel, selenium and zinc.
(2) Since the drinking water pathway cannot be completed on the Facility property, the only potential for ingestion of drinking water impacted by soil with concentrations greater than DWP screening levels is through off-site groundwater migration. Therefore, to ensure that the Facility extraction well system captures groundwater across the Facility and prevents off-site migration, the capture zone extent will be routinely evaluated by collecting water levels at all accessible Facility monitoring wells.

AOI =Area of Interest
(A) =Drawings referenced herein are avalable in GM's archives
ft = feet
SWMU = Solid waste management unit
UST = Underground storage tank
AST = Above ground storage tank
NA = Not available
PA/VSI = Preliminary Assessment/Visual Site
CAP = Corrective Action Plan
MDEQ = Michigan Department of Environmental Quality
NA = Not Available
PCBs = Polychlorinated Biphenyl
RFAR = Revised Final Site Assessment Report
SVOCs = Semi-Volatile Organic Compounds
VOCs = Volatile Organic Compounds
DC - Direct Contact
DWP - Drinking Water Protection
GSIP - Groundwater Surface Water Interface Protection
SVIIC - Soil Volatilization to Indoor Air Inhalation Criteria
VSIC - Infinite Source Volatile Soil Inhalation Criteria
PSIC - Particulate Soil Inhalation Criteria

Exceedance Codes

A MDEQ Industrial SVIIC
B MDEQ Industrial VSIC
C MDEQ Industrial PSIC
D MDEQ Industrial DC
E MDEQ Residential DWP
F Risk-based redevelopement worker contact
G MDEQ GSIP
H MDEQ Residential SVIIC
I MDEQ Residential VSIC
J MDEQ Residential PSIC
K MDEQ Residential DC

Table 2: SCENARIOS FOR POTENTIAL HUMAN EXPOSURE
GENERAL MOTORS LANSING PLANT 1, LANSING, MICHIGAN

Receptor Population	Exposure Medium	Exposure Route	Possible Currently	Possible in Future	Comments
On-Facility					
Routine Workers	surface soil (0 - 2 ft bgs)	ingestion, dermal contact, and inhalation of airborne particulates and vapors	Yes	Yes	Exposure to surface soil may be possible in areas without cover or where cover may be removed in the future. Routine worker activities do not involve direct contact with subsurface soil. Exposure to soil vapors via inhalation of ambient air is possible. Exposure via vapor intrusion through cracks in building foundations into indoor air may be possible where volatile constituents are identified in soil and occupied buildings exist or may exist in the future.
		inhalation of vapors that migrate through building foundations	Yes	Yes	
	subsurface soil (unsaturated soils > 2 ft bgs)	ingestion and dermal contact	No	No	
		inhalation of soil vapors in ambient air	Yes	Yes	
		inhalation of vapors that migrate through building foundations	Yes	Yes	
	groundwater	ingestion, dermal contact, and inhalation of vapors during potable use	No	No	Drinking water is currently provided to the facility by the municipal water supply, there are no on-facility withdrawal wells for nonpotable uses, and a Restrictive Covenant has been filed by GM with Ingham County precluding installation of new wells on the facility.
		incidental ingestion, dermal contact, and inhalation of vapors during nonpotable use	No	No	
		inhalation of vapors that migrate through building foundations	Yes	Yes	Exposure via vapor intrusion through cracks in building foundations into indoor air may be possible where volatile constituents are identified in shallow groundwater and occupied buildings exist or may exist in the future.
	NAPL (including residual soil)	ingestion and dermal contact	No	No	Routine worker activities do not involve direct contact with NAPL.
		inhalation of NAPL vapors in ambient air	Yes	Yes	Exposure via inhalation of ambient air is possible in areas where volatile constituents are identified in NAPL.
		inhalation of NAPL vapors in indoor air	Yes	Yes	Exposure via vapor intrusion through cracks in building foundations into indoor air may be possible where volatile constituents are identified in NAPL and occupied buildings exist or may exist in the future.

Table 2: SCENARIOS FOR POTENTIAL HUMAN EXPOSURE GENERAL MOTORS LANSING PLANT 1, LANSING, MICHIGAN					
Receptor Population	**Exposure Medium**	**Exposure Route**	**Possible Currently**	**Possible in Future**	**Comments**
On-Facility (Continued)					
Maintenance Workers	surface and subsurface soil	ingestion, dermal contact, and inhalation of airborne particulates and vapors	Yes	Yes	Exposure to surface and shallow subsurface soil may occur during occasional excavations.
	groundwater	incidental ingestion and dermal contact	Yes	Yes	Exposure to shallow groundwater via direct contact may occur during occasional excavations that extend into the water table.
		inhalation of vapors	Yes	Yes	Exposure to shallow groundwater via inhalation may occur during occasional excavations in areas where volatile constituents are identified in shallow groundwater.
	NAPL (including residual soil)	incidental ingestion (residual soil only) and dermal contact	Yes	Yes	Exposure via direct contact may occur during occasional excavations in areas where NAPL has been identified.
		inhalation of vapors	Yes	Yes	Exposure via vapor inhalation may occur during occasional excavations in areas where volatile constituents are identified in NAPL.
	sediment (in storm drains)	ingestion and dermal contact	Yes	Yes	Exposure may occur in storm water management drains and/or ditches.
	water (in storm drains)	ingestion, dermal contact, and inhalation of vapors	Yes	Yes	
Construction Workers	surface and subsurface soil	ingestion, dermal contact, and inhalation of airborne particulates and vapors	Yes	Yes	Exposure to surface and shallow subsurface soil may be possible in areas which are being demolished and/or decommissioned or may be redeveloped in the future.
	groundwater	incidental ingestion and dermal contact	Yes	Yes	Exposure to shallow groundwater via direct contact may occur in areas that may be developed in the future and in which subsurface intrusive activities are conducted below the water table.
		inhalation of vapors	Yes	Yes	Exposure via vapor inhalation may occur in areas where volatile constituents are identified in shallow groundwater and in which demolition, decommissioning, or redevelopment occurs in the future.
	NAPL (including residual soil)	incidental ingestion (residual soil only) and dermal contact	Yes	Yes	Exposure via direct contact may occur in areas which may be developed in the future and subsurface intrusive activities are conducted.
		inhalation of vapors	Yes	Yes	Exposure via vapor inhalation may occur in areas where volatile constituents are identified in NAPL which are being demolished and/or decommissioned or may be redeveloped in the future.

Table 2: SCENARIOS FOR POTENTIAL HUMAN EXPOSURE
GENERAL MOTORS LANSING PLANT 1, LANSING, MICHIGAN

Receptor Population	Exposure Medium	Exposure Route	Possible Currently	Possible in Future	Comments
On-Facility (Continued)					
Trespassers	surface soil (0 - 2 ft bgs)	ingestion, dermal contact, and inhalation of airborne particulates and vapors	Yes	Yes	Exposure to surface soil may occur in areas without cover or where cover may be removed in the future. Trespasser activities do not involve direct contact with subsurface soil. Exposure to surface and subsurface soil vapors via inhalation of ambient air is possible.
	subsurface soil (unsaturated soils > 2 ft bgs)	ingestion and dermal contact	No	No	
		inhalation of soil vapors	Yes	Yes	
	NAPL (including residual soil)	ingestion and dermal contact	No	No	Trespasser activities do not involve direct contact with NAPL. Exposure via vapor inhalation may occur in areas where volatile constituents are identified in NAPL.
		inhalation of NAPL vapors in ambient air	Yes	Yes	
	sediment (in storm drains)	ingestion and dermal contact	Yes	Yes	Exposure may occur in storm water management drains and/or ditches.
	water (in storm drains)	ingestion, dermal contact, and inhalation of vapors	Yes	Yes	
Residents	surface soil (0 - 2 ft bgs)	ingestion, dermal contact, and inhalation of airborne particulates and vapors	No	Yes	Residents are not currently present at the facility. Exposure to surface soil may occur in areas which may be used for residential purposes in the future (e.g., area west of Martin Luther King Blvd) and are without cover. Resident activities do not involve direct contact with subsurface soil. Exposure via inhalation of soil vapors in ambient air may occur in the future in areas where volatile constituents are identified in soil. Exposure via vapor intrusion through cracks in building foundations into indoor air may occur where volatile constituents are identified in soil and occupied residential buildings may exist in the future.
		inhalation of vapors that migrate through building foundations	No	Yes	
	subsurface soil (unsaturated soils > 2 ft bgs)	ingestion and dermal contact	No	Yes	
		inhalation of soil vapors in ambient air	No	Yes	
		inhalation of vapors that migrate through building foundations	No	Yes	
	groundwater	ingestion, dermal contact, and inhalation of vapors during household/potable use	No	No	Drinking water is currently provided to the facility by the municipal water supply, there are no on-facility withdrawal wells for nonpotable uses, and a Restrictive Covenant has been filed by GM with Ingham County precluding installation of new on-site wells. Exposure via vapor intrusion through cracks in building foundations into indoor air may occur where volatile constituents are identified in shallow groundwater and occupied residential buildings may exist in the future.
		incidental ingestion, dermal contact, and inhalation of vapors during nonpotable use.	No	No	
		inhalation of vapors that migrate through building foundations	No	Yes	
	NAPL (including residual soil)	ingestion and dermal contact	No	No	Future resident activities would not involve direct contact with NAPL.
		inhalation of NAPL vapors in ambient air and indoor air	No	Yes	Exposure via ambient air inhalation may occur in areas where volatile constituents are identified in NAPL. Exposure may occur via vapor intrusion through cracks in building foundations into indoor air where volatile constituents are identified in NAPL in areas where future residential buildings may be present.

Table 2: SCENARIOS FOR POTENTIAL HUMAN EXPOSURE
GENERAL MOTORS LANSING PLANT 1, LANSING, MICHIGAN

Receptor Population	Exposure Medium	Exposure Route	Possible Currently	Possible in Future	Comments
Off-Facility					
Residents	surface and subsurface soil	ingestion and dermal contact	No	No	No facility-related soil contamination is expected off-facility. Residents may be exposed to windblown dust and vapors emanating from on-facility areas currently without cover or from areas which may be uncovered in the future.
		inhalation of airborne particulates and vapors	Yes	Yes	
	groundwater	ingestion, dermal contact, and inhalation of vapors during household/potable use	No	Yes	Off-facility residents adjacent to and near the facility are not expected to be exposed via potable or non-potable use of on-facility groundwater, because a municipal water supply is available for these locations. In addition, groundwater within the deep ("basal sandstone aquifer") and intermediate ("upper shaly sandstone unit") groundwater units fall within the capture zone of an existing on-facility groundwater treatment system. As a result, the likelihood of off-facility migration of on-facility contaminated groundwater is low. Potential future potable and nonpotable use of off-facility groundwater is possible given the absence of institutional and/or regulatory controls that otherwise preclude such uses off-facility.
		incidental ingestion, dermal contact, and inhalation of vapors during nonpotable use	No	Yes	
		inhalation of vapors that migrate through building foundations	Yes	Yes	Exposure via vapor intrusion through cracks in building foundations into indoor air may be possible where facility-related volatile constituents are identified in shallow off-facility groundwater and occupied residential buildings exist or may exist in the future.
Routine Workers	surface and subsurface soil	ingestion and dermal contact	No	No	No facility-related soil contamination is expected off-facility. Routine workers may be exposed to windblown dust and vapors emanating from on-facility areas currently without cover or from areas which may be uncovered in the future.
		inhalation of airborne particulates and vapors	Yes	Yes	
	groundwater	ingestion, dermal contact, and inhalation of vapors during potable use	No	Yes	Off-facility workers adjacent to and near the Facility are not expected to be exposed via potable or non-potable use of on-facility groundwater, because a municipal water supply is available for these locations. In addition, groundwater within the deep ("basal sandstone aquifer") and intermediate ("upper shaly sandstone unit") groundwater units fall within the capture zone of an existing on-facility groundwater treatment system. As a result, the likelihood of off-facility migration of on-facility contaminated groundwater is low. Potential future potable and nonpotable use of off-facility groundwater is possible given the absence of institutional and/or regulatory controls that otherwise preclude such uses off-facility.
		incidental ingestion, dermal contact, and inhalation of vapors during nonpotable use	No	Yes	
		inhalation of vapors that migrate through building foundations	Yes	Yes	Exposure via vapor intrusion through cracks in building foundations into indoor air may be possible where facility-related volatile constituents are identified in shallow off-facility groundwater and occupied commercial/industrial buildings exist or may exist in the future.

Table 2: SCENARIOS FOR POTENTIAL HUMAN EXPOSURE GENERAL MOTORS LANSING PLANT 1, LANSING, MICHIGAN					
Receptor Population	**Exposure Medium**	**Exposure Route**	**Possible Currently**	**Possible in Future**	**Comments**
Off-Facility (Continued)					
Maintenance Workers	surface and subsurface soil	ingestion and dermal contact	No	No	No facility-related soil contamination is expected off-facility. Maintenance workers may be exposed to windblown dust and vapors emanating from on-facility areas currently without cover or from areas which may be uncovered in the future.
		inhalation of airborne particulates and vapors	Yes	Yes	
	groundwater	incidental ingestion and dermal contact	Yes	Yes	Exposure to shallow groundwater via direct contact may occur during occasional excavations that extend into the water table in areas where facility-related constituents are identified off-facility. Exposure to shallow groundwater via inhalation may occur during occasional excavations in areas where facility-related volatile constituents are identified in shallow groundwater off-facility. Given the presence of an existing on-facility groundwater treatment system, which currently prevents off-site migration of groundwater contamination, the likelihood of off-facility migration of contaminated groundwater is low.
		inhalation of vapors	Yes	Yes	
Recreational Users	sediment	ingestion and dermal contact	Yes	Yes	Off-facility recreational users may be exposed to the segment of Grand River adjacent to the southern and eastern boundaries of the Plant. Potential for groundwater discharge to surface water would be from perched water either directly by discharging where in hydraulic communication with the River, or indirectly by discharging through a sewer line located beneath a perched water unit that ultimately discharges to the River. Groundwater within the deep ("basal sandstone aquifer") and intermediate ("upper shaly sandstone unit") groundwater units is not believed to have the potential to discharge to the Grand River.
	surface water	incidental ingestion, dermal contact and inhalation of vapors	Yes	Yes	
	fish	ingestion	Yes	Yes	