

*Description of Current
Conditions for Areas North
of Leith Street*

General Motors Corporation
NAO-Flint Operations
Flint, Michigan

November 26, 2000

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1. Introduction

1.1 Background

This *Description of Current Conditions for Areas North of Leith Street* (DOCC) was prepared by Blasland, Bouck & Lee, Inc. (BBL) on behalf of the General Motors Corporation (GM) for the northern portion of the GM North American Operations (NAO)-Flint Operations Facility (GM NAO-Flint) in Flint, Michigan (USEPA ID # MID 005 356 712). This report fulfills one of the tasks under RCRA Section 3008(h), Administrative Order on Consent (R8H-5-00-02) effective March 1, 2000.

The GM NAO-Flint Facility encompasses approximately 452 acres of land located in the northeast quadrant of the City of Flint. Refer to Figure 1 for an illustration of the general location of GM NAO-Flint. This report covers the areas north of Leith Street of GM NAO-Flint (approximately 194 acres), hereafter referred to as the Site. Refer to Figure 2 for an illustration of this area.

GM NAO-Flint began operations as an automobile parts producer in 1903, and since that time various types of automotive production activities have been conducted (except during World Wars I and II, when manufacturing conversions were made for war production).

In September 1987, A. T. Kearney, Inc. and K. W. Brown & Associates, Inc. prepared a report entitled *RCRA Facility Assessment (RFA), Preliminary Review/Visual Site Inspection (PR/VSI) Report, General Motors Corporation, Buick-Oldsmobile-Cadillac Facility, Flint, Michigan* (hereafter referred to as the PR/VSI Report). The PR/VSI Report, developed under contract to U.S. Environmental Protection Agency (USEPA) Region 5, identified a total of 78 Solid Waste Management Units (SWMUs) and other Areas of Concern (AOCs). A summary of SWMUs and AOCs for areas north of Leith Street is provided in Table 1.

GM has performed numerous investigations and remediations at GM NAO-Flint over the years to address various historical environmental issues. A historical review of Site activities resulted in the identification of a number of Areas of Interest (AOIs) that also incorporate the various SWMUs and AOCs identified in the PR/VSI Report. (A more detailed discussion on definition and delineation of AOIs is found in Section 3.1.) The locations of the various AOIs identified to date are shown on Figure 3.

1.2 Purpose

The purpose of this report is to provide the following:

- A brief overview of pertinent features of the Site (e.g., surrounding land use, topography, geology);
- A review of available information concerning the historical use of the Site for the treatment, storage, or disposal of hazardous waste or hazardous constituents;
- Identification of AOIs that warrant further investigation or evaluation in the RCRA Facility Investigation (RFI);
- A brief summary of Site-related environmental investigations and resulting analytical data; and
- A brief summary of Site-related Interim Measures (IMs) implemented to date.

For the purpose of this report and future investigations and evaluations concerning the Site, areas identified during prior investigations using terms such as SWMU and AOC have been reidentified herein using the single term AOI.

1.3 Document Organization

This document is organized into five main sections. Section 1 presents the background, purpose, and organization of the document. Section 2 presents a brief overview of the physical and environmental setting of the Site, including a brief description of the Site, surrounding land use, historical land use, related buildings, mapping and aerial photographs, topography, surface drainage, geology, and climatological and meteorological conditions. Section 3 presents an overview of the basis for identifying certain areas of the Site as AOIs and a description and summary of the various AOIs identified. Section 4 presents a brief overview of the various sampling and analysis activities performed at the Site over the years and a summary of the resulting analytical data. Finally, Section 5 presents a summary of IMs implemented to date at the Site.

In addition, various tables, figures, and appendices referenced throughout this document provide additional supporting information. Of particular note, a compact disk (CD) that is included as Appendix H compiles information from a geographic information system (GIS) database as well as a sampling and analysis database representing more than approximately 90,000 data records.

2. Physical and Environmental Setting

2.1 General

This section provides an overview of pertinent information on the physical and environmental setting of the Site. Section 2.2 provides a general description of the Site and surrounding land use. Section 2.3 describes historical land use, and Section 2.4 describes topography and surface drainage. Section 2.5 describes regional geologic conditions, and Section 2.6 provides climatological and meteorological information. Historical Site buildings are listed in Section 2.7. Section 2.8 presents information from historical mapping and aerial photographs. Finally, Section 2.9 lists existing Site buildings.

2.2 Site Description and Surrounding Land Use

Comprising approximately 194 acres, the Site is located in Flint, Michigan, in Genesee County (see Figure 2). Based on a review of the U.S. Geological Survey (USGS) Flint North Quadrangle map, the nearest surface water is the Flint River, which parallels the Site and is approximately 400 feet away at the south end of the Site and 2,400 feet away at the north end of the Site.

The Site is oriented in a north-to-south direction. It is bounded to the south by Leith Street, to the north by Stewart Avenue and Pierson Road, to the east by CSX Railroad and James P. Cole Boulevard, and to the west by Horton Street, Andrews Street, and Industrial Avenue. South of Leith Street is occupied by the remainder of GM NAO-Flint. Several industries are located between the Site and the Flint River, including Bell's Produce, PPG Industries, Kasle Steel/Auto Blankers, Flint Coatings, and Lockhart Chemicals. The remaining areas east, west, and north of the Site are generally occupied by residential neighborhoods and several other industries, including Universal Systems, Flint Plating, Associated Truck, and Unit Terminal (GM).

2.3 Historical and Current Land Use

Portions of the GM NAO-Flint Facility were originally developed in the late 1800s for the purpose of producing the "horseless carriage." In 1898, Billy Durant and J. Dallas Dort purchased the Imperial Wheel Company, making it a subsidiary of the Durant/Dort Carriage Company. After acquisition of the Imperial Wheel Company, manufacturing operations were relocated approximately 3,000 feet south of the Site, at the intersection of Hamilton Avenue and St. John Street (currently James P. Cole Boulevard).

The Buick Motor Company was first established in Flint when Flint Wagon Works purchased the company from David Buick in September 1903. In 1903, the Buick Motor Company was relocated from Detroit to the Site, and located on Hamilton Avenue between Industrial Avenue and St. John Street (now James P. Cole Boulevard). With David Buick as president, and Billy Durant as general manager, 16 experimental cars were produced by the end of 1903, and 37 cars were produced in 1904. The Buick Motor Company became a division of General Motors when the corporation was formed in 1908. The Buick Motor Company experienced very rapid growth and produced approximately 30,000 cars in 1910. By this time, the Buick Motor Company had expanded its facility to include the southern portion of the Site. By the end of 1923, the Buick Motor Company had produced 1 million cars, with the Buick complex continuing to grow northward from Hamilton Avenue toward Pierson Road.

In addition to the manufacturing of automobiles, in response to World War I, the Buick Motor Company began producing the Liberty Aircraft engine in 1918. Similarly, in response to World War II, the production of automobiles was stopped in 1942, and the Buick complex was converted for the production of military equipment.

Portions of the Site have recently become inactive, while others remain in full production. Recent and current manufacturing processes include:

- Machining of ferrous and nonferrous metals;
- Plating (discontinued);
- Painting;
- V-6 engine manufacturing;
- Coil spring manufacturing (discontinued);
- Torque converter manufacturing and assembly; and
- Transmission manufacturing and assembly.

These manufacturing processes include(d) activities or equipment with potential environmental significance as identified below:

- Storing/conveying/using/recycling numerous liquids, including gasolines, oils, solvents, and paints, etc., via sumps, vaults, underground storage tanks (USTs), aboveground storage tanks (ASTs), collection trenches, collection vessels, and materials recovery for various manufacturing operations;

-
- Degreasing parts;
 - Coal-fired steam generation; and
 - Industrial wastewater treatment.

2.4 Topography and Surface Drainage

The topography of the Site is fairly flat, although the regional topography slopes east to southeast toward the Flint River. Local surface drainage is collected by the Site storm sewer drainage system, which also services areas within the western portion of the City of Flint upstream of the Site. The storm sewer system at the Site includes outfalls 001 through 005, as shown on Figure 1 of Appendix A. This system discharges via outfalls 001 through 005, located along the Flint River, which are monitored by GM in accordance with GM's National Pollutant Discharge Elimination System (NPDES) permit.

2.5 Geologic/Hydrogeologic Conditions

Bedrock in the region consists primarily of sandstone and limestone formations characteristic of the eastern-central portion of the Michigan Basin. These Pennsylvanian and Mississippian Age formations include the Saginaw, Bay Port limestone, and Michigan formations. Pleistocene Age glacial deposits cover the bedrock in the area. These unconsolidated glacial sediments are generally classified as medium textured glacial till. Soils may appear as gray, grayish-brown, or reddish-brown, non-sorted glacial debris. The soil matrix is of a dominantly loam or silt loam texture with variable amounts of cobbles or boulders. Subsurface soils generally occur as ground moraine, till plain, or undifferentiated ground moraine-end moraine complexes. Small areas of coarser or finer textured tills as well as small areas of outwash are evident throughout the area. Generally, the soils are gently sloping and somewhat poorly drained. The region's glacial drift ranges from 100 feet to 200 feet in thickness (EnecoTech Midwest, Inc. [EnecoTech], 1996).

Glacial drift in the area does not generally constitute an aquifer, but thin interbedded aquifers may exist. A review of Michigan Department of Public Health potable water well records did not identify any registered wells within a one-half mile radius of the facility. A review of water wells on record in the Flint area indicates that potable water, when not obtained from a local publicly owned treatment works (POTW), is obtained from water supply wells at depths ranging from 120 feet to 200 feet below ground surface (bgs) from both confined and unconfined aquifers.

However, City of Flint ordinance requires that municipal water supplies (obtained from the Huron River) be utilized for all potable water within the city limits (EnecoTech, 1996).

A gray, silty clay appears to underly the entire Site at depths generally ranging from 10 to 30 feet bgs. The soil lithology encountered consists of a slightly moist, clay with sand and silt ranging from 0 feet to 5 feet in thickness. Underlying the clay is a moist to wet sand with varying amounts of silt to depths ranging from approximately 10 feet to 26 feet bgs: The saturated sand is underlain by a slightly moist to moist, gray silty clay to a maximum depth explored of about 30 feet bgs. In general, saturated sands and the associated underlying gray clay are encountered at shallower depths as soil boring locations progress from north to south. Saturated conditions are encountered within the sand unit at approximately 10 to 15 feet bgs (EnecoTech, 1996).

It is important to note that portions of the Site also contain several feet of fill materials that were used to construct some of the more than 5 million square feet of industrial facilities located at the Site.

In 1995, the depth to groundwater was measured in 56 wells at the Site (EnecoTech, 1996). The depth to groundwater at the Site ranged from about 4 feet to 13 feet bgs. In general, the groundwater flow direction of the Site is east toward the Flint River. The groundwater flow direction appears to be following the surface topography at the Site. The number of monitoring wells is limited at the Site; therefore, the flow direction information is generalized.

EnecoTech (1996) also calculated the horizontal groundwater hydraulic gradient, hydraulic conductivity, and groundwater velocity. These data are summarized as follows:

- Horizontal groundwater hydraulic gradient: 3.8×10^{-3} feet/foot, generally toward the northeast north of Building 20, and 3.6×10^{-3} feet/foot, generally toward the southeast south of Building 20.
- Hydraulic conductivity: 0.94 to 19.26 feet/day, based on slug testing at nine wells and the use of the Bouwer and Rice Method and the Aqtesolv computer program.
- Groundwater velocity: 0.08 feet/day, based on the above-summarized data and an estimated effective porosity of 31%.

2.6 Climatological and Meteorological Information

This area seldom experiences prolonged periods of hot, humid weather in the summer or extreme cold during the winter. The prevailing wind is southwesterly, averaging 10 mph. The average midday relative humidity varies from 54% for May to 73% for December, and averages 62% annually.

Summers are dominated by moderately warm temperatures with a 1964 to 1993 average of 6.6 days exceeding the 90°F mark. The lake influence is reflected in the minimum temperatures: an annual average of 139.3 days was 32°F or lower. The highest average monthly maximum temperature of 88.8°F was recorded July 1955, and the lowest average monthly minimum temperature of about 4°F was recorded February 1978.

Precipitation is generally well distributed throughout each year with the crop season (April through September) receiving an average of about 18 inches, or 60% of the average annual total, for 1964 to 1993. During this same period, the average wettest month was September, averaging 3.56 inches of precipitation, while the average driest month was February, averaging 1.28 inches of precipitation. Summer precipitation comes mainly in the form of afternoon showers and thundershowers.

The 1964 to 1993 average seasonal snowfall was about 45.1 inches. During this period, 14.3 days per season averaged 1 inch or more of snow on the ground, but this varied greatly from season to season.

2.7 Historical Site Buildings

Several buildings were historically present at the Site, but have since been demolished to facilitate the construction of newer facilities. The following table lists these historical buildings, and Figure 1 of Appendix B identifies their previous locations.

| Historical Buildings | | |
|----------------------|-----------------------------|-------------------|
| Building Number | Description | Year Built |
| 16 | Central Stores | 1909 |
| 19 | Housing | 1919 |
| 20 | Iron Foundry | 1916 |
| 22 | Pyralin Storage | 1919 |
| 23 | Heat Treat | Between 1916-1920 |
| 24 | Motor Block Test | 1920 |
| 25 | Transformer House | 1920 |
| 27 | Liberty Engine Plant | Between 1912-1919 |
| 33 | Housing | Between 1912-1919 |
| 44 | Auxiliary Power Plant | Between 1912-1919 |
| 45 | Sand Storage | Between 1912-1919 |
| 54 | Housing | Between 1912-1919 |
| 57 | Housing | Between 1912-1919 |
| 58 | Record Storage | Between 1922-1927 |
| 59 | Auxiliary Power Plant | Between 1922-1927 |
| 66 | Crankshaft Machine Shop | 1926 |
| 67 | Transformer House | 1923 |
| 68 | Transformer House | 1926 |
| 76 | Core Sand Knockout Building | Between 1926-1927 |
| 77 | Laboratory | Between 1926-1927 |

2.8 Historical Mapping and Aerial Photographs

After obtaining aerial photographs, Sanborn maps, and other maps, BBL completed a review of available maps and photographs related to the Site. A summary of this information is presented below in chronological order.

1912 Manufacturers Mutual Maps

A review of Manufacturers Mutual maps, dated 1912, indicated that the Site was located within the area bounded by Industrial Avenue to the west and Leith Street and the remaining portion of the Buick Motor Company to the south of the Site between Leith Street and Hamilton Avenue. Areas north and east of the Site were shown as vacant, and areas west of the Site were occupied by businesses and residences. Several industries were also located within or near the Site. These industries included the following:

-
- The remaining portion of the Buick Motor Company facility was located south of the Site, south of Leith Street;
 - Historical GM Building 16 (labeled as Building 14 on this 1912 map) was located within the existing Site boundary, at the corner of Industrial Avenue and Leith Street. This structure was built in 1909, and was used for Central Stores, Painting, Tops, and Construction & Maintenance. Refer to Figure 1 of Appendix B for the historical location of the former Building 16; and
 - Existing GM Building 11 (motors/powertrain) is located within the existing Site boundary, adjacent to Leith Street.

1919 Buick Motor Company Drawing

A comparison of Buick Motor Company Drawing No. A-2272, dated January 29, 1919, with the 1912 Manufacturers Mutual maps indicated the following changes within or near the Site:

- The northern boundary of the Site had expanded north to Stewart Avenue, encompassing the area between Grant Street and the Pere Marquette Railroad (presently CSX Railroad); and
- Several buildings/facilities were also constructed within the Site, including a gray iron foundry and pattern shop (Buildings 20 and 15, located on the north side of Leith Street, east of Building 11), an engine block testing facility (Building 11T, located north of Building 11), a brass and aluminum foundry (Building 30, located midway between Leith Street and Stewart Avenue, adjacent to Grant Street), an aircraft engine facility named the Liberty Motor Plant (Building 27, located on the south side of Stewart Avenue, adjacent to the Pere Marquette Railroad), and four housing units (Housing Units 2, 3, 4, and 27, located close to Buildings 27 and 30).

1928 Sanborn Map

A comparison of the Sanborn map dated 1928 with Buick Motor Company Drawing No. A-2272, dated January 29, 1919, indicated the following changes within or near the Site:

- The Site boundary did not change significantly between 1919 and 1928;

-
- The Armstrong Spring Company (Division of GM) was located on the north side of Stewart Avenue, between the former Newman Street (now area of Factory 36) and the Pere Marquette Railroad;
 - The Flint Brass Works, two fueling stations, and an auto repair and battery repair facility was located on the north side of Stewart Avenue, on the corners of Selby and Andrews streets and Stewart Avenue;
 - Building 15 (pattern shop), located east of historical Building 20, was constructed in 1920;
 - Building 61 (dining facilities and locker rooms), located between Building 15 and historical Building 20 was constructed in 1921;
 - Two additions to the sand house (Building 21) were constructed between 1919 and 1928;
 - Building 69 (machine shop and pattern shop) was constructed in 1927;
 - Historical Building 66 (crankshaft machine shop) was constructed in 1926;
 - An expansion/addition was constructed to the north end of Building 11;
 - A large foundry facility was constructed within the area between Buildings 20 and 30. The foundry facility consisted of several buildings, including a foundry (Building 70), cleaning building (Building 71), sand bin (Building 72), stock building (Building 73), sand dryer (Building 74), knockout building (Building 76), and a laboratory building (Building 77);
 - Historical Buildings 27, 58, and 59 (Liberty Motor Plant), located at the north end of the Site on the south side of Stewart Avenue, adjacent to the Pere Marquette Railroad, were no longer in operation and the buildings were used for general storage;
 - Historical Buildings 19, 33, 54, and 57 (bachelors' quarters located west of the Liberty Motor Plant) were no longer in use and the buildings were used for general storage; and

-
- Historical buildings associated with Housing Units 2, 3, 4, and 27 were no longer in use and the buildings served as general storage.

1941 Sanborn Map

A comparison of the 1941 and 1928 Sanborn maps indicated that several buildings within the existing Site boundary had been demolished and replaced with existing buildings. Review of the 1941 Sanborn map identified the following changes within the Site:

- Several buildings/facilities were demolished in the northern portion of the Site including a gray iron foundry (Building 20, located on the north side of Leith Street, east of Building 11), a heating plant and sand shed (Buildings 44 and 45, located at the south side of Building 30), the Liberty Motor Plant (Building 27, located at the north end of the Site on the south side of Stewart Avenue, on the west side of C & O Railroad [now CSX]), the four housing units (Housing Units 2, 3, 4, and 27, located close to the former Building 27 and Building 30), and the central store, a storage shed, and a heat treat building (Buildings 16, 22, and 23, respectively, located west and northwest of Building 11);
- The brass and aluminum foundry (Building 30) was no longer in operation and was used for machinery storage and a salvage department;
- Building 83 (powertrain components) was constructed in 1936, between Buildings 24 and 66;
- A factory engineering complex (Building 85, located in the former gray iron foundry area, and Building 20, east of Building 11), was constructed in 1937;
- A stock building (Building 86, located northeast of Buildings 85, 61, and 15), was constructed in 1937; and
- Building 66A was constructed in 1940 (located on the corner of Industrial Avenue and Leith Street, adjacent to the west side of Building 11), and Building 66 (machine shop, located northwest of Building 11) was expanded at the south end to connect to Building 66A.

1950 Sanborn Mapping

A comparison of 1950 and 1941 Sanborn maps indicated that the area within the existing Site boundary had not changed significantly since 1941. However, the 1950 Sanborn map did include an update of the areas near the Site, as well as additional detail for the eastern side within the existing Site boundary. In general, the 1950 Sanborn map indicated that areas west of the Site and west of Industrial Avenue consisted of densely populated residential properties and several small businesses (filling stations, repair garages, restaurants, small hotels, dry cleaners, and churches). The 1950 Sanborn map also indicated the area within the eastern portion of the Site between the CSX Railroad and the Flint River also consisted of densely populated residential properties and small businesses. In addition, the following changes in surrounding land use were noted:

- An auto repair and battery repair facility located on the north side of Stewart Avenue (on the corner of Andrew Street and Stewart Avenue) was no longer in operation and was occupied by a paper and rag recycling facility; and
- The Armstrong Spring Company (Division of GM), located on Stewart Avenue between Newman Street and the C & O Railroad (now CSX), was no longer in operation. The facility was now used by A. C. Spark Plug (Division of GM) for storage.

1966 U.S. Dept. of Housing and Urban Development and Genesee County, Michigan Aerial Photograph

A comparison of an aerial photograph from May 22, 1966, with the 1941 and 1950 Sanborn maps indicated that the Site boundaries for the southern portion of the Site (south of Building 66 and the foundry [Buildings 70 and 71]) had not been modified since 1941. The northern portion of the Site (north of Building 30) could not be evaluated using the 1966 aerial photograph since the aerial photograph did not depict the area north of Building 30.

A review of the 1966 aerial photograph resulted in the identification of the following Site buildings/facilities and industries close to the Site by 1966:

- Several buildings had been constructed in the vicinity of the foundry (Buildings 70 and 71) north of Leith Street (the aerial photograph does not depict the area north of Building 30). Buildings 69A, 69B, and 69C were constructed at the south and west sides of Building 69, Buildings 70A and 70B were constructed at the southeast

side of Building 70, Buildings 71A and 71B were constructed to the east side and west side of Building 71 respectively, and Building 97 had been constructed to the south of Building 21; and

- Building 24 (located at the north end of Building 11) had been demolished and replaced with Buildings 32 and 66C.

1971-City of Flint Aerial Photographs

A comparison of aerial photographs from 1971 to 1941 with 1950 Sanborn maps indicated that the Site's boundary for the northern portion of the Site had expanded from Stewart Avenue to as far north as Pierson Road and include areas previously occupied by residential properties. The Site had also expanded west in the vicinity of Stewart Avenue and Industrial Avenue. The peripheral areas surrounding the Site generally remained as residential areas.

A review of the 1971 aerial photographs resulted in the identification of the following Site buildings/facilities changes between the years 1941 and 1971:

- Several residential properties located directly to the east of C & O Railroad (now CSX), both north and south of Leith Street, had been demolished and replaced with parking areas or remained vacant. In addition, a majority of the residential properties (also located east of C & O Railroad [now CSX]), surrounded by Everett Street and Leith Street to the north and south, and by Michigan Avenue and St. John Street to the east and west, had been demolished and replaced with parking areas or remained vacant between 1950 and 1971;
- Former residential properties located to the east side of Industrial Avenue, surrounded by Stewart Avenue and Gillespie Avenue to the north and south, had been demolished and replaced with Building 43 and associated parking areas;
- Several buildings had been constructed between the north side of the foundry (Buildings 70 and 71) and Stewart Street. These buildings/facilities included several additions (Buildings 30A, 30B, 30C, 30D, and 30E to the north and east sides of Building 30, Building 20 [located north of Building 30], a wastewater treatment plant [WWTP] [located at the north side of Building 20 between Building 20 and Stewart Avenue], and Buildings 22 and 24 [located at the east side of Building 20]);

-
- Several material storage areas had been constructed surrounding the north and east sides of the foundry (Buildings 70 and 71), and to the north, south, and east of Buildings 20 and 30. The material storage areas appear to include tractor trailers, metal tote bins, railroad cars filled with raw and scrap materials, and piles of scrap materials; and
 - Building 36 had been constructed north of Stewart Avenue and extended to as far north as Baltimore Boulevard. Building 38 was constructed north of Building 36, extending to as far north as Pierson Road. Building 36 had been located between Andrews Street and C & O Railroad (now CSX) following the demolition of several residential properties and the William J. Quinlan Co. building that was formerly occupied by A.C. Spark Plug.

1977-Genesee County Metropolitan Planning Commission Aerial Photograph

A comparison of an aerial photograph from April 1977 with the 1971 aerial photographs indicated that the Site boundaries for the northern portion of the Site had not changed since 1971. In general, the areas west of the Site had remained as densely populated residential areas. The aerial photograph indicated that the areas east of the Site, north of Leith Street, consisted of former densely populated residential neighborhoods where a significant number of the residential homes had been demolished and left as vacant land between 1971 and 1977. The southern portion of the Site (south of the foundry [Buildings 70 and 71]), could not be evaluated using the 1977 aerial photograph, since the photograph did not depict the southern portion of the Site.

A review of the 1977 aerial photograph resulted in the identification of the following Site buildings/facilities changes to the Site and the surrounding areas between 1971 and 1977:

- Two wastewater aeration lagoons associated with the Site had been constructed within a former residential area located east of the Site, north of Leith Street; and
- A former vacant lot located east of the north end of the Site at Pierson Road, to the east side of Building 38 and the railroad tracks, indicated that the lot had been cleared and used for the deposit of dark “soil/sand” type materials.

1982 Genesee County Metropolitan Planning Commission Aerial Photograph

A comparison of an April 1982 aerial photograph with a 1966 aerial photograph indicated that several additional buildings had been demolished or constructed within the existing Site boundary between 1966 and 1982. Building changes within the existing Site and the surrounding areas between 1966 and 1982 are summarized below:

- The 1982 aerial photograph indicated that the UAW (I-475) highway had been constructed east of the Site; and
- The 1982 aerial photograph for the Site indicated that select buildings/facilities had been demolished or constructed. Building 07 (powerhouse, located on the north side of Leith Street, had been constructed east of the Leith Street overpass) and the northern portion of Building 21 had been removed between 1966 and 1982.

2.9 Existing Site Buildings

A list of the existing Site buildings is provided below. The locations of these buildings are illustrated on Figures 2 and 3.

| Existing Buildings | | |
|--------------------|--|------------|
| Building Number | Description | Year Built |
| 06 | North Primary Substation | 1967 |
| 07 | Powerhouse | 1973/1983 |
| 11 | Powertrain Components | 1909 |
| 15 | Facilities Engineering | 1919 |
| 20 | Transmission Machining and Subassemblies | 1942 |
| 21 | Central Tool Grinding and Heat Treat | 1917 |
| 22 | Compressor Station | 1942 |
| 24 | North Fire Protection Pump House | 1970 |
| 30 | Spring Plant | 1918 |
| 30A | Spring Plant Addition | 1946 |
| 30B | Spring Plant Addition | 1954 |
| 30C | Spring Plant Addition | 1964 |
| 30D | Spring Plant Addition | 1965 |
| 30E | Spring Plant Addition | 1967 |
| 30F | Spring Plant Addition | 1972 |
| 32 | Powertrain Components | 1966 |
| 36 | Engine Plant | 1952 |

| Existing Buildings | | |
|--------------------|---|------------|
| Building Number | Description | Year Built |
| 38 | New Car Conditioning and Delivery, Warehousing, and PEP Car Storage and Preparation | 1964 |
| 43 | Transmission Plant | 1952 |
| 55 | Waste Treatment | 1953 |
| 55A | Waste Treatment | 1955 |
| 55B | Waste Treatment | 1972 |
| 61 | Facilities Engineering | 1923 |
| 61A | Facilities Engineering | 1944 |
| 65 | Compressor Station | 1957 |
| 66 | Powertrain Components | 1926 |
| 66A | Powertrain Components | 1940 |
| 66B | Powertrain Components | 1940 |
| 66C | Powertrain Components | 1954 |
| 66D | Powertrain Components | 1966 |
| 69 | Torque Converter Plant | 1927 |
| 69A | Electrical Substation | 1949 |
| 69B | Compressor Station | 1951 |
| 69C | Torque Converter Plant | 1954 |
| 70 | Torque Converter Plant | 1927 |
| 70A | Torque Converter Plant | 1945 |
| 70B | Torque Converter Plant | 1954 |
| 70C | Torque Converter Plant | 1980 |
| 71 | Torque Converter Plant | 1926 |
| 71A | Torque Converter Plant | 1944 |
| 71B | Torque Converter Plant | 1952 |
| 72 | Torque Converter Plant | 1927 |
| 73 | Torque Converter Plant | 1927 |
| 73A | Torque Converter Plant | 1945 |
| 73B | Torque Converter Plant | 1955 |
| 74 | Torque Converter Plant | 1927 |
| 83 | Powertrain Components | 1936 |
| 83A | Powertrain Components | 1954 |
| 85 | Facilities Engineering | 1937 |
| 86 | Facilities Engineering | 1937 |
| 86A | Facilities Engineering | 1952 |
| 97 | Fire Department | 1943 |
| 99 | Construction Material Storage | 1985 |
| Not yet assigned | Fire Control Pumphouse | 2000 |

3. Summary of Areas of Interest (AOIs)

3.1 General

This section provides a description and summary of Site-related AOIs. These AOIs were identified based on a review of available Site records (including that summarized in Sections 2.7 and 2.8), interviews with Site personnel, Site reconnaissance, and knowledge of past or present Site processes. AOIs were identified on the basis of whether a release of hazardous waste and/or hazardous constituents to the environment had been determined to have occurred (i.e., prior documentation or Site personnel had indicated such) or could potentially have occurred (e.g., oil-saturated flooring or ground covering, pooling of oil on floor or ground surfaces, staining of floor or ground surfaces coupled with cracks and holes in floor or ground coverings).

This section is organized with respect to areas immediately near or around various buildings or building clusters associated with the Site (e.g., Building 38 Area and Factory 10 Area). These areas are illustrated on Figure 2.

A total of 37 Site-related AOIs have been identified, including various manufacturing processes and process components, process waste facilities, tanks, known areas of prior release of hazardous waste or hazardous constituents, etc. A brief overview of these AOIs is provided below. Table 2 summarizes these various AOIs, while the corresponding locations are illustrated on Figure 3. Table 3 summarizes information concerning UST/AST-related AOIs.

3.2 Building 38 Area

Building 38, constructed in 1964, is a single-story structure comprising slightly over 200,000 square feet. This building is used primarily for manufacturing warehousing for vehicle engines (i.e., Buick-V6) and engine parts (e.g., in-take manifolds, engine blocks, cylinder heads), new Product Evaluation Program (PEP) car conditioning (detergent washing and vehicle waxing), and light vehicle repair. The area immediately surrounding the exterior of this building is predominantly paved with asphalt and is used for new vehicle parking. A portion of this building was formerly used as a "climate-controlled soak room" for vehicle emissions testing. A remnant of this former climate-controlled soak room is a small cooling unit located in the northeastern portion of the building.

As illustrated on Figure 4, one AOI (AOI 38-1) has been identified related to the Building 38 Area. This area, involves the northern portion of Building 38, which houses several process waste sumps containing oil and/or oily sediment, several car wash trenches containing oily sediment, and several existing and former hydraulic car lifts. Additionally, as shown on historical Site records (i.e., Buick Motor Division Drawing No. B-43683-M, dated 1971 [included in Appendix C]), an 8,000-gallon fuel oil UST was located within this AOI near the northwest corner of Building 38. Also, as indicated on other historical Site records (i.e., Buick Motor Division Drawing No. 42361-M, dated 1973 [hereafter referred to as the 1973 Site drawing and included in Appendix D]), a 500-gallon fuel oil UST was also formerly located along the north side of Building 38. Table 3 provides additional information related to this former tank; however, closure documentation included in Appendix F indicates no releases occurred related to this tank (therefore, not identified as an AOI).

Additionally, two former gasoline oil USTs were identified south of Building 38 on historical Site records (i.e., the 1973 Site drawing and Flint Automotive Division Drawing No. C70444-M, dated 1991 [hereafter referred to as the 1991 Site drawing and included in Appendix E]). Table 3 provides additional information related to these former tanks; however, closure documentation included in Appendix F indicates no releases occurred related to these tanks (therefore, not identified as an AOI).

3.3 Factory 36 Area

Building 36 and related parking areas comprise the majority of the Factory 36 Area. Building 36 was constructed in 1952, with the exception of Bays 31 and 32 along the north side of the building; these bays were added in 1965. Bay 33 was added in 1976 to the north side of the building. Building 36, comprising approximately 1.1 million square feet, is predominantly a single-story building, with the exception of its central east and west portions, which have a second-story office mezzanine. Current and historical operations performed in Building 36 include the machining, assembly, and testing of vehicle engines and engine components. These operations require the use of various machining fluids, including both water-soluble and non-water-soluble petroleum and synthetic-based oils and fluids, as well as miscellaneous paints, greases, and solvents.

As illustrated on Figure 5, five AOIs have been identified related to the Factory 36 Area:

- AOI 36-1: This area includes the northern and central portions of Building 36 that house various active engine manufacturing processes. These processes include various “wet” (i.e., use of cutting and/or cooling oils) and “dry”

(i.e., no use of cutting and/or cooling oils) metal machining operations involving various metal chip conveyor trenches, process fluid (commonly cutting and/or cooling oils and/or hydraulic oils) recirculation and/or recovery sumps and pits, product (cutting and/or cooling oils and/or hydraulic oils) supply sumps and storage areas, and metal chip processing operations (filtration, oil recovery, and off-loading for disposal/recycling). Cutting and cooling oils and other process fluids (e.g., hydraulic oils) are present intermittently on floor surfaces throughout these process areas, and the various trenches, pits, and sumps routinely process relatively large volumes of these fluids. Due to the nature of the operations (i.e., full production), it is difficult to visually assess whether releases have occurred.

- AOI 36-2: This relatively small basement area is located along the east side of the central portion of Building 36. This basement area was formerly used for separating residual cutting and cooling oils from metal machining chips generated at various locations (AOI 36-1) throughout this building. This separation process primarily involved coarse screening of the metal chips. The residual oils were recovered and discharged to an adjacent oil/water separator. The recovered water was discharged to the Site's process wastewater system, and the recovered oils were also disposed of via the Site's process wastewater system or recycled.

As discussed further in Section 4.6, in 1995 a subsurface investigation was performed in this area involving the installation of various soil borings and monitoring wells. As a result of this investigation, free product was found on the groundwater surface immediately downgradient of this area. This free product is believed to exist as result of former releases associated with the former chip processing operations performed within this basement area. Semiannual groundwater monitoring of several wells in this area was initiated in 1997 and remains ongoing.

Additionally, as discussed further in Section 5.10, an IM recovery system is being designed for this area for the purpose of recovering this free product. Weekly manual bailing of the product found in this area was initiated (several wells) in January 1999 and remains ongoing.

- AOI 36-3: This basement area located beneath the southeast corner of Building 36, a final engine assembly area, and several ancillary operations (e.g., metal machining operations and former metal chip off-loading area). The basement area is used primarily for collection and processing of waste oil for discharge to the Site's process wastewater system. The primary components of this waste oil processing operation include five open-top steel ASTs, with one tank having the capacity of approximately 40,000 gallons and the remaining four tanks each having a capacity of approximately 8,000 gallons. Oil has historically been observed on the floor surfaces surrounding

these tanks and beneath the final engine assembly area (engine test turntable). This AOI also involves several former ASTs and USTs identified on the 1973 and 1991 Site drawings. Further information regarding these former tanks is provided in Table 3.

- AOI 36-4: This area involves a former manufacturing process line and several active engine assembly lines. The former manufacturing process line appears to have been a “wet” metal machining process involving a series of conveyor trenches and process oil recirculation/recovery sumps/pits. The active engine assembly lines involve over 1,500 linear feet (total) of trenches (with numerous relatively small collection pits) used to recover hydraulic oil leaking from the assembly process equipment. These trenches routinely contain standing hydraulic oil, and the integrity of these trenches is unknown.
- AOI 36-5: This area involves several former USTs related to a former UST farm. The former UST farm was replaced with an AST farm that was constructed in the early 1990s immediately south of the former UST farm. Table 3 provides additional information concerning the tanks related to these tanks farms. This area also includes a 6-foot-wide by 6-foot-high concrete tunnel previously used to route pipelines that conveyed process fluids from the former UST farm to Building 36. Floor staining was observed in portions of this tunnel, while other portions are inaccessible.

As discussed in Section 4.6.3, a release from the former UST farm was detected in 1989 and has been investigated as recently as 2000. Additionally, as further detailed in Section 5.2, IM activities were implemented in 1990 as part of initial release abatement measures. In general, these IM activities included the installation of gravel-filled trenches and a groundwater recovery well.

3.4 Buildings 55, 55A, and 55B Area

Buildings 55, 55A, and 55B (totaling approximately 20,000 square feet) and related adjacent process tanks and ancillary operations comprise the Site’s industrial process wastewater treatment facilities. Buildings 55, 55A, and 55B and related facilities were constructed in 1953, 1955, and 1972, respectively.

The major components of the Site’s industrial process wastewater treatment facilities includes two 750,000-gallon raw waste tanks, two 100,000-gallon primary clarifiers, two 200,000-gallon secondary clarifiers, two 100,000-gallon sludge treatment tanks, four 60,000-gallon lagoons, two 450,000-gallon raw waste tanks (temporary storage only used

when influent exceeds capacity of the 750,000-gallon raw waste tanks), one oil treatment tank, several small chemical feed tanks (chemical feed tanks contain lime, iron sulfate, alum, and acid), dissolved-air flotation equipment, and sludge-processing facilities.

Process wastes are conveyed to the Site's industrial process wastewater treatment facilities from the manufacturing facilities throughout the Site via pump stations and force mains. Process wastes received primarily include industrial wastewater, machining oils, hydraulic fluids, waste solvents, and waste paint by-products.

As summarized in Section 4.7, past investigations of this area have indicated impacts to underlying soil and groundwater, presumably resulting from a release(s) from these facilities; as a result, the overall area associated with these facilities has been identified as AOI 55-1 (see Figure 6 for a detailed illustration).

3.5 Factory 10 Area

Building 20 and related areas comprise the majority of the Factory 10 Area, while Buildings 22 and 24 and related areas comprise the remainder of this area. Building 20, constructed in 1942, is a single-story structure comprising approximately 700,000 square feet. This building also contains a relatively large basement area along the western side of the building and a relatively small basement area in the southeast corner. According to Site records, Building 20 was an aluminum foundry during World War II and was used to produce aluminum cylinder heads for aircraft. Later operations within Building 20 included the manufacturing of the Dyna-Flow transmission. According to Site personnel, hydraulic fluids containing polychlorinated biphenyls (PCBs) were used between 1968 and 1972 as part of hydraulic systems associated with die-cast operations. Current operations within Building 20 include metal cutting and shaping operations for the production of transmission and engine components.

Building 22, also constructed in 1942, is a single-story structure comprising approximately of 14,000 square feet. This building was formerly used as a steam-generation building and currently is used as a compressor station.

Building 24, constructed in 1970, is a single-story structure comprising approximately 1,000 square feet. The use of this building primarily involves fire pumps for Site fire protection operations.

The Factory 10 Area also includes the Site's solid waste transfer station located immediately east of Building 20 and immediately south of Building 22, as well as a scrapyard area located immediately south of Building 20.

As illustrated on Figure 7, four AOIs have been identified related to the Factory 10 Area:

- AOI 10-1: According to Site records, several Site investigations have been previously performed since 1987 within and in the vicinity of Building 20. These investigations are summarized in more detail in Section 4.8; however, in general, these investigations primarily involved the assessment of the subsurface presence of a free product containing PCBs, as well as 1,1,1-trichloroethane (TCA) and water-soluble hydraulic and cutting oils. The results of these investigations indicated the free product (thickness of approximately 3 to 6 inches) extends beyond the south end of Building 20 into the adjacent scrapyard area.

Based upon the results of these investigations, an IM groundwater treatment system was installed within Building 20 in 1996 and 1997. This IM is summarized in more detail in Section 5.3; however, in general, the treatment system recovers groundwater within or close to Building 20 and treats this groundwater using ultraviolet radiation and carbon adsorption.

As a result of the historical investigations performed in this area, the Building 20 area, including its basement areas, manufacturing operations (including current and former tanks, trenches, sumps, pits, etc.) and external areas surrounding the building (including current and former ancillary operations such as USTs and ASTs), has been identified as AOI 10-1.

- AOI 10-2: This area involves the Site's solid waste transfer station located immediately east of Building 20 and immediately south of Building 22. This facility includes several open-top concrete bunkers used for the temporary storage of Site construction rubble and debris. Residual oil draining from these materials occasionally collects on the concrete pavement of this area, which has numerous cracks and fissures. This residual oil is recovered via a centrally located pit that, according to Site personnel, is routinely emptied.

This area also includes two relatively large (more than 200,000-gallon capacity) former USTs (waste oil and fuel oil, respectively) identified on the 1973 Site drawing (refer to Table 3) and a covered salt storage shed.

- AOI 10-3: This area involves the basement area of Building 22 that houses two process waste sumps containing waste oil. These sumps collect oil leaks from compressor equipment via floor drains. This area also involves a former diesel fuel AST identified on the 1991 Site drawing (refer to Table 3).

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- AOI 10-4: This area includes the approximate 120,000-square-foot scrapyard area located immediately south the Building 20. According to Site personnel and a review of Site records, this area has been used since 1950 for scrap material storage, vehicle dismantling, and vehicle equipment storage before disposal. These materials include old machinery, vehicles, and miscellaneous vehicle parts (engines, cylinder heads, intake manifolds, etc.). According to Site personnel, this area was also historically used for scrap UST cleaning and activities. This scrapyard area is covered with concrete; however, according to Site personnel, prior to 1971 the area was gravel-covered. Past practices have reportedly included draining of motor oils or machinery oils directly to the ground surface.

As discussed further in Section 4.8, investigations of this area were performed in 1992 and 1993, involving the installation of various soil borings and monitoring wells. The results of these investigations indicated the presence of free product on the groundwater surface within the scrapyard area at a thickness of up to 6 inches and petroleum constituents in the subsurface soils of this area. Semiannual groundwater monitoring of several wells in this area was initiated in 1997 and remains ongoing.

Additionally, as discussed further in Section 5.11, an IM recovery system is being designed for this area for the purpose of recovering this free product. Weekly manual bailing of the free product found in this area was initiated (several wells) in January 1999 and remains ongoing.

3.6 Factory 05 Area

The Factory 05 Area is composed of Building 43 and its related parking area. Building 43, constructed in 1952, is a single-story structure comprising approximately 650,000 square feet. This building is used for manufacturing transmission components, including the machining and heat treating of vehicle shafts and gear carriers. Existing manufacturing operations include the use of several recessed process tanks and trenches used to hold, convey, and process metal cuttings and various machining fluids, including both water-soluble and non-water-soluble petroleum and synthetic oils and other mineral sealants, as well as miscellaneous greases and solvents.

As illustrated on Figure 8, six AOIs have been identified related to the Factory 05 Area:

- AOI 05-1: This area involves a small basement area located along the southeast portion of Building 43. This basement houses metal chip processing equipment and several related industrial process wastewater system sumps and tanks. This area also involves an inactive overhead metal chip loading operation. A railroad line was also

previously located in this area and was used to transport metal chips and shavings generated as a process waste from metal cutting and machining processes off site. The chips were temporarily stored in concrete bins and loaded into railcars for transportation off site.

According to Site records, and as further discussed in Section 4.9, an investigation of this area involving the installation of several soil borings and monitoring wells was performed in 1993. This investigation identified the presence of free product adjacent to the building ranging in thickness up to approximately 3.5 feet.

As discussed further in Section 5.4, this investigation resulted in the design and installation of a recovery trench system in this area for the purpose of recovering this free product. This system was installed in 1995 and consists of recovery wells, belt skimmers, and several gravel recovery trenches.

- AOI 05-2: This area involves a "Filtration Room," an "Oil Room," a below-grade vault, and an elevator pit located along the central east side of Building 43. The Filtration Room primarily contains a relatively large (approximately 10,000-gallon capacity) active process filtration sump containing CERFA-KLEEN and a relatively large (approximately 50,000-gallon capacity) inactive process waste oil sump. The Oil Room primarily contains three 8,000-gallon steel ASTs containing hydraulic oil and a number of drums of hinge grease and solvent. The below-grade vault is located on the exterior of Building 43 near the main entrance/lobby. Over 2 feet of oil material has been noted on occasion within this vault. The source of this oil is unknown; however, it may be associated with the adjacent Oil Room and/or Filtration Room.
- AOI 05-3: This area involves a basement area beneath transmission component heat treating operations. The area primarily contains a relatively large (more than 100,000-gallon capacity) process waste oil sump, various other smaller sumps and drains, and intermittent pools of oil on floor surfaces. The concrete floor of this basement is oil saturated, and the integrity of the various sumps and drains is unknown. This area also involves several former and existing ASTs and USTs located along the east side of the basement area for which closure documentation is not available or the present status of integrity is unknown. Additional information related to these tanks is provided in Table 3.
- AOI 05-4: This area involves a "Cold Former Room" containing various metal-forming operations using various process oils and other fluids (e.g., CERFA-KLEEN) and recirculation trenches and sumps.

- AOI 05-5 and AOI 05-6: These areas involve the southern and northern portions of Building 43, respectively. Various active process machinery, collection trenches, and sumps are located within these areas. Like the various metal machining operations identified above for the Factory 36 and Factory 10 areas, these machining processes include various “wet” and “dry” metal machining operations involving various metal chip conveyor trenches, process fluid (e.g., cutting and/or cooling oils and/or hydraulic oils) recirculation and/or recovery sumps and pits, product (cutting and/or cooling oils and/or hydraulic oils) supply sumps and storage areas, and metal chip processing operations (filtration, oil recovery, and off-loading for disposal/recycling). Cutting and cooling oils and other process fluids (e.g., hydraulic oils) are present intermittently on floor surfaces throughout these process areas, and the various trenches, pits, and sumps routinely process relatively large volumes of these fluids. Due to the nature of the operations (i.e., full production), it is difficult to assess whether releases have occurred.

As discussed further in Section 4.9, a subsurface investigation was performed in 1994 in Building 43 in response to a suspected prior release of approximately 2,000 gallons of cooling oil (Cimstar 50DF) at the southern end of the building and a prior release of approximately 5,000 gallons of machining oil (LCO 200) at the northern end of the building. This investigation collectively identified the presence of polynuclear aromatics (PNAs), ethylene glycol, PCBs, select metals, and chlorinated constituents in soil and/or groundwater of these areas.

3.7 Factory 03 Area

The Factory 03 Area comprises approximately 205,000 square feet of building space and an approximate 150,000-square-foot concrete and asphalt paved area east of these buildings used for miscellaneous storage. The various buildings included in this area and the corresponding dates of construction are presented below:

| Building No. | Year Constructed |
|--------------|------------------|
| 30 | 1918 |
| 30A | 1945 |
| 30B | 1954 |
| 30C | 1965 |
| 30D | 1965 |
| 30E | 1967 |
| 30F | 1972 |

These buildings were used until 1998 for manufacturing coil springs, which included metal forging, quenching, and cooling operations and the use of various quenching and cooling oil systems.

As illustrated on Figure 9, one AOI (AOI 03-1) has been identified related to the Factory 03 Area. This area encompasses Factory 03 building complex, which contains various quenching and cooling oil systems used for various metal forging, quenching, and cooling operations. This area also includes ancillary process waste sumps, process trenches, elevator pits, and process material storage areas containing oil or exhibiting oil staining.

According to Site personnel, the Factory 03 No. 5 Line Quench Pit was removed from Building 30F circa 1988. This quench oil pit was similar in construction to the several other quench pits used throughout the Factory 03 complex. As discussed further in Section 4.10, a soil boring and monitoring well investigation was performed in the vicinity of the Factory 03 No. 5 Line Quench Pit in 1990. The results of this investigation indicated the presence of petroleum hydrocarbons in underlying soils and groundwater in this area.

Additionally, a roof drain/storm sewer sump is located in the southern portion of Building 30A (east of Spring Line No. 2 high-heat furnace). This sump has been historically identified to accumulate free product determined to be S-7 quench oil. As a result, this sump was converted to a collection sump (with belt skimmer) to recover this subsurface free product. In 1991, a sample was collected from an oil layer floating on the surface of water within this collection sump and analyzed for PCBs. The results indicated the presence of PCBs at a concentration of 200 milligrams per kilogram (mg/kg). This resulted in further investigation of this area as discussed in Section 4.10.

Also, this area featured three former quench oil USTs identified north of Building 30 on the 1973 and 1991 Site drawings and three that were replaced in the early 1990s with quench oil ASTs (refer to Table 3). Closure documentation for these former USTs included in Appendix G indicates no prior releases likely occurred related to these tanks.

3.8 Buildings 65 and 99 Area

Building 65 was constructed in 1957 and comprises approximately 9,000 square feet. This building, which has a basement beneath much of the first floor, is used as an air compressor station for Site operations and a process waste pump station (Waste Station #5). Process wastes from the southern portions of the Site are collected in a below-grade vault and subsequently pumped to the Site's industrial process wastewater treatment facility. Due to the potential

for the below-grade vault to contain quantities of raw process wastes (soluble oils, machining oils, hydraulic fluids, waste solvents and paint by-products), and the presence of oil on floor surfaces of the basement areas of Building 65, the area related to Building 65 has been identified as AOI 65-1 (see Figure 3).

Building 99 was constructed in 1985 and comprises approximately 10,000 square feet. This building and the fenced area immediately surrounding it are used for storing construction materials. No AOIs have been identified related to Building 99.

3.9 Factory 81 Area

The Factory 81 Area comprises approximately 675,000 square feet of building space. The various buildings included in this area and the corresponding dates of construction are presented below:

| Building No. | Year Constructed |
|--------------|------------------|
| 69 | 1927 |
| 69A | 1949 |
| 69B | 1951 |
| 69C | 1954 |
| 70 | 1927 |
| 70A | 1945 |
| 70B | 1954 |

| Building No. | Year Constructed |
|--------------|------------------|
| 71 | 1926 |
| 71B | 1952 |
| 72 | 1927 |
| 73 | 1927 |
| 73A | 1945 |
| 73B | 1955 |
| 74 | 1927 |

According to Site personnel, prior to remodeling in 1981, this factory was formerly a gray iron foundry. Gray iron foundry operations within these buildings included the fabrication of wooden patterns, the mixing of core oil with sand for the fabrication of sand cores, the fabrication of sand molds, the heating of iron and scrap metals, the removal of sand core materials from iron castings, and the cooling and cleaning of iron castings. After remodeling in 1981, and to the current date, the primary operations performed at this factory include welding, machining, and assembly of torque converters for GM vehicles.

As illustrated in more detail on Figure 10, five AOIs have been identified related to the Factory 81 Area:

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- AOI 81-1: This area involves a basement area beneath the southern and central portions of Building 71B. This area primarily contains three metal chip/cooling and cutting oil filtration/processing operations. Two of these operations are active, while the third is inactive and partially dismantled. Cutting/cooling oils pool intermittently throughout the areas near these operations due primarily to leaks in the overhead conveyance ducts associated with these operations.

This basement area also contains an inactive hydraulic elevator, several process waste oil sumps and tanks of varying size (up to approximately 8,000 gallons), a drum storage area for lubricants with stained flooring, and an inactive hazardous waste storage area with stained flooring.

- AOI 81-2: This area involves active metal welding and machining and torque converter assembly operations performed within Buildings 70, 70B, 71, 72, 73, 73A, 73B, and 74. Like the various metal machining operations identified above for other factory areas, these processes include various “wet” and “dry” metal machining operations involving various trenches, process fluid (commonly cutting and/or cooling oils and/or hydraulic oils) recirculation and/or recovery sumps and pits, product (cutting and/or cooling oils and/or hydraulic oils) supply sumps and storage areas, metal chip processing operations (filtration, oil recovery, and off-loading for disposal/recycling), and process waste sumps. Cutting and cooling oils and other process fluids (e.g., hydraulic oils) are present intermittently on floor surfaces throughout these process areas, and the various trenches, pits, and sumps routinely process relatively large volumes of these fluids. Due to the nature of the operations (i.e., full production), it is difficult to assess whether releases have occurred.

According to Site personnel, historical operations within the northern portion of Building 70 included the production of sand cores for foundry molds. The core-making operations included the use of gas/oil-fired core ovens and various core making methods, with some including the use of “hot boxes” used to convey hot sand. According to Site personnel, in the 1960s and through to approximately 1972, PCB-containing fluids were used within hydraulic systems associated with these operations due to the potential for fire resulting from leaking hydraulic systems, and hydraulic systems often leak due to the typically high system pressures used.

This AOI also includes the areas immediately east of Buildings 70 and 73. According to Site personnel, the area east of Building 70 was historically used for storing “pig iron” generated as a scrap material from foundry operations. According to Site personnel, the pig iron historically contained significant quantities of oil-saturated

foundry sand (foundry sand containing oil binders). The pig iron and foundry sand would be stockpiled within this area before removal by rail, and oil would drain from these materials onto the surrounding ground surfaces.

The area east of Building 73 was historically used for the storage of scrap steel stockpiled within this area before removal by rail. The steel was then transported by rail to the foundry to be melted for reuse. As further described in Section 4.11, a "Fenceline Investigation" was performed in 1995 that included the installation of soil borings and monitoring wells along the eastern side of these buildings. As a result of this investigation, free product was identified on the surface of the groundwater in the area east of Building 73. A subsequent investigation was performed in February 1996 to evaluate the presence of this free product in this area. As further discussed in Section 5.6, these investigations resulted in the design and installation of a recovery trench system near the northeast corner of Building 73.

This AOI also includes an oil/water separator installed in November 1991 immediately east of Buildings 70B and 73 along the Storm Sewer 003 discharge to the Flint River. As discussed in more detail in Section 5.7, this oil/water separator was installed for the purpose of controlling oily sheen discharges to the Flint River.

- AOI 81-3: This area primarily encompasses the basement area of Building 70A (beneath most of Building 70A, except for the westernmost portion), an elevator pit along the west side of Building 70A, areas of "wet" metal machining operations performed in the eastern portion of Building 70C and southeastern portion of Building 70B, and a forklift battery-charging area in the northwestern portion of Building 69. Floor surfaces of these areas exhibited intermittent staining.

According to Site personnel, historical operations within Building 70A included the removal of hot foundry sands from molds. The hot foundry sands would drop into the basement area for screening and reuse. According to Site personnel, the hot sand contained various grades of oil for use as binders. Access to this basement area was limited; however, the floor surface exhibited intermittent staining. Also, the historical integrity of the basement floor is unknown.

- AOI 81-4: This area primarily encompasses the basement areas of Buildings 69A and 69B (beneath most of these buildings) containing three process waste oil sumps and oil-stained floor. Building 69A and 69B were historically used as air compressor buildings and continue to be used as such. According to Site personnel, past practices associated with the periodic changing of compressor oil involved the draining of compressor oil into basement

areas located beneath each compressor. The compressor oil would then drain into the process waste oil sumps located in the basement areas and be discharged to the Site's industrial process wastewater system. The historical integrity of the basement floor is unknown.

- AOI 81-5: This area has several former (removed) and existing (active) ASTs identified on the 1973 and 1991 Site drawings immediately south of Building 69A. The existing tanks in this area contain automatic transmission fluid and diesel fuel. Refer to Table 3 for more information concerning these tanks. The concrete secondary containment area associated with these tanks contains transmission fluid. The integrity of this containment is unknown.

3.10 Factory 83/84 Area

The Factory 83/84 Area comprises approximately 950,000 square feet of building space. The various buildings included in this area and the corresponding dates of construction are presented below:

| Building No. | Year Constructed |
|--------------|------------------|
| 11 | 1909 |
| 32 | 1966 |
| 66 | 1926 |
| 66A | 1940 |

| Building No. | Year Constructed |
|--------------|------------------|
| 66C | 1954 |
| 66D | 1966 |
| 83 | 1936 |
| 83A | 1954 |

According to Site personnel, former operations at the Factory 83/84 complex included the manufacture of automobile front- and rear-axle assemblies. The complex was renovated in 1981 for manufacturing "white metal" components, including pistons, water pumps, manifolds, etc.

As illustrated on Figure 11, seven AOIs have been identified related to the Factory 83/84 Area:

- AOIs 83/84-1, 83/84-2, and 83/84-3: These areas involve various former and existing machining operations within Buildings 11, 32 (including two basement areas), and 66A/66D, respectively. Like the various metal machining operations identified above for other factories at the Site, these machining processes generally include various "wet" and "dry" metal machining operations involving various metal chip conveyor trenches, process fluid (commonly cutting and/or cooling oils and/or hydraulic oils) recirculation and/or recovery sumps and pits, product

(cutting and/or cooling oils and/or hydraulic oils) supply sumps and storage areas, and metal chip processing (filtration, oil recovery, and off-loading for disposal/recycling). As further described in Section 5.8, a product recovery well is located toward the center of Building 32 (Bay/Column 4E) and was used to collect product from beneath the floor in Building 32 due to an apparent release.

- AOI 83/84-4: This area involves a former “wet” metal machining process in the central portion of Building 66 (oil staining and pooling on floor beneath equipment), including three process oil collection/recirculation sumps. This area also involves an inactive rail loading area and associated floor sumps located along the north side of Building 66C. The floor of this loading area is saturated with oil; the associated floor sumps still contain oil (integrity unknown).
- AOI 83/84-5: This area involves various inactive or former process trenches and pits and an inactive heat treating tunnel in Building 66. Many of these process units still contain various process fluids (e.g., hydraulic oil, heat treating fluid, washing fluid), and the integrity of these units is unknown.
- AOI 83/84-6: This area primarily involves a forklift battery-charging area in the central portion of Building 83A and an associated trench and pit (contains oil) and a drum storage area in the southern portion of Building 83 used for metal-working fluids and corrosion inhibitors (floor is stained).
- AOI 83/84-7: This area involves several former (removed or abandoned in-place) USTs identified on the 1973 and 1991 Site drawings. These former USTs were located immediately east of Buildings 66 and 66C and contained various process fluids such as gasoline, mineral spirits, hydraulic oil, etc. Refer to Table 3 for more information concerning these tanks. As discussed further in Section 4.12, this area has been subject to subsurface investigation as recently as 1999.

3.11 Buildings 21 and 97 Area

Building 21 was constructed in 1920, with two subsequent additions in 1923 and 1926 and a major renovation in 1981. This building comprises approximately 45,000 square feet. Although current uses of this building primarily involve tool-grinding operations, welding operations, and heat treatment laboratories, according to Site personnel and a review of historical Site drawings, metal machining chip-recycling operations began in the eastern portion of this building around 1929 and ceased in 1980. During this period, machining chips were recycled using a briquetting

press located in the northeastern corner of the building. Since the machining chips tended to be coated with residual oils as a result of the manufacturing processes, significant quantities of oils were pressed out of the machining chips during the briquetting operation.

A review of Site drawings indicated that machining chips were brought into Building 21 via railcar at the southeastern corner of the building. According to Site personnel, during routine production operations, approximately eight railcars were typically filled with oil-saturated machining chips and staged along a railroad spur southeast of Building 21 at the south end of Factory 81 before being brought into the building. Before processing, residual oils coating the machining chips were typically allowed to drip from the railcars onto the surrounding soil. Upon entering Building 21, the chips from the rail cars were unloaded and stored in piles within the building from the south end to the briquetting operation located at the north end. The chips were then loaded into hoppers and/or a weighing system.

According to Site personnel, the floor around the hoppers and the weighing system of Building 21 contained residual oils. Site drawings show an interceptor vault and an oil waste vault were installed at the southeastern corner of Building 21 to collect residual oils from the floor areas. Based on interviews with Site personnel, during the 1960s and 1970s residual oils resulting from the briquetting operations saturated the floor surfaces and subsurfaces of the building. While it is unknown how this equipment was operated from 1929 until the early 1960s, it is likely that a similar briquetting process was used and probably caused similar oil saturation of the floor and surrounding machinery areas.

Based on this information, the overall area of Building 21 and the area immediately to the southeast has been identified as AOI 21-1 (see Figure 3).

As for Building 97, it was constructed in 1943 and comprises approximately 3,600 square feet. This building, located immediately adjacent to the south side of Building 21, houses Site fire department and emergency response equipment. No AOIs have been identified specifically related to this building.

3.12 Buildings 15, 61, 61A, and 85 Area

Buildings 15, 61, 61A, and 85 together comprise approximately 225,000 square feet. Building 15 was constructed in 1919, with the subsequent additions of Buildings 61, 85, and 61A constructed in 1923, 1937, and 1944, respectively. The buildings contain the Site facilities engineering, maintenance, and construction groups and former

Powertrain laboratories. Current and historical operations related to these buildings include steel fabrication, several test labs (including a physical test lab, chemical lab, and a fatigue test lab), electrical motor repair, a tin shop, carpenter shop, instrument repair shop, a hospital, and security operations. Limited wastes are generated due to the nature of these operations. However, according to Site personnel, liquid wastes generated within these buildings are discharged to one of two process waste pump stations (one located in Building 86 with the second being located in Building 23, south of Leith Street.)

As illustrated on Figure 12, one AOI (AOI 85-1) has been identified related to these buildings. This area involves an elevator pit located along the north-central side of Building 85, trenches related to an engine test area containing oil in the eastern portion of Building 85, and a basement/vault area is located toward the center of Building 85. This basement/vault contains a process waste oil collection sump which, according to Site personnel, collects oil from an unknown source(s). The integrity of these facilities is unknown.

3.13 Buildings 86 and 86A Area

Buildings 86 and 86A together comprise approximately 21,000 square feet. These buildings were constructed in 1937 and 1952, respectively. Current operations at Building 86 include the collection, consolidation, and storage of small containers and drummed hazardous and PCB wastes. Current operations at Building 86A include the collection and storage of returnable drums, a paint booth area for Site maintenance, Site vehicle repair, Site maintenance equipment (e.g., hand mowers, riding mowers) and material storage (e.g., cases of housekeeping cleaning products, floor tile). According to Site personnel, historical operations at Buildings 86 and 86A included the filling and distribution of drums containing materials such as light machining oils, the storage of drummed materials, and the receipt and distribution of drummed chemicals.

As illustrated on Figure 13, one AOI (AOI 86-1) has been identified related to these buildings. This area involves hazardous waste (paints, solvents, and PCBs) drum storage rooms located in the southwestern corner of Building 86. Residual oil and oil-saturated flooring has been noted in and around the material collection trench located at the entrance of the paint and solvent drum storage area. According to Site personnel, this drum storage room was the former location of the drum filling operation. A process waste collection sump is also located in the southeastern corner of Building 86, directly outside the PCB drum storage area. This process waste pump station collects process wastes and other materials from Buildings 86 and 86A.

This AOI also includes an active waste transport vehicle storage area along the west side of Building 86 (oil-stained pavement), as well as an UST farm previously located between the south end of Building 86 and the Leith Street overpass (refer to Table 3 for additional information related to these tanks). This tank farm, containing five USTs, was removed in 1977, and a subsequent subsurface investigation resulted in the identification of free product on the surface of the groundwater in this area (refer to Section 4.13). As a result of this investigation, two recovery wells were installed adjacent to the overpass retaining wall and are currently in operation; however, product has historically been visually identified entering a drainage grate located directly adjacent to the northwest side of Leith Street overpass. Semiannual groundwater monitoring of several wells in this area was initiated in 1997 and remains ongoing. Additionally, as discussed further in Section 5.9, an IM recovery system is being designed for this area for the purpose of recovering this free product. Weekly manual bailing of the product found in this area was initiated (several wells) in January 1999 and remains ongoing.

3.14 Building 07 Area

Building 07, comprising approximately 170,000 square feet, was initially constructed in 1973, with additional construction occurring in 1983. This building is used as the main powerhouse for steam generation for the Site, and contains three coal/gas-fired boilers that generate steam and two compressors that generate compressed air used for Site manufacturing operations. Facility components primarily consist of two chimneys, three boiler systems (each with a capacity of 400,000 lb/hour at 200 pounds per square inch gage [psig]), two electrostatic precipitators, sulfur dioxide removal/baghouse system, water conditioning systems used for the conditioning of water and condensate prior to steam generation, a coal feed system (capacity of 300 tons per hour) including railcar unloading facilities, two ash storage silos (600-ton capacity), cooling tower, sludge/oil storage and feed systems, and two air compressors (16,000 cubic feet minute [cfm] capacity each). A large coal storage area, approximately 4 acres in size, is located to the north side of the facility.

As illustrated on Figure 14, three AOIs have been identified related to the Building 07 Area:

- AOI 07-1: This area involves the former coalyard (active until the beginning of 1996, when the facility was switched to natural gas as the primary fuel source) located immediately north of Building 07. This area is a former coalyard containing various quantities of residual coal, as well as several other process facilities along the north side of Building 07. These facilities include a process waste sludge unloading station and various process waste sludge sumps and storage tanks used for receiving waste sludge from the Site's wastewater treatment facility. (This

waste sludge was burned as auxiliary fuel in the steam generation boilers.) The coalyard was not lined; therefore, historical releases could have occurred as a result of the coal being in direct contact with soil in this area. Additionally, the integrity of the other process facilities in this area is unknown.

- AOI 07-2: This area involves an inactive lime “Slaker House” and an adjacent inactive approximately 15,000-gallon recessed lime slurry tank, both located immediately adjacent to the southwest corner of Building 07. The integrity of these facilities is unknown.
- AOI 07-3: This area involves two elevator pits in the north- and south-central portions of Building 07 and a bulk storage area for sulfuric acid located in the southeast corner of Building 07. Floor staining has been observed in these areas.

3.15 Inactive Wastewater Aeration Lagoons Area

The inactive wastewater aeration lagoons consist of two clay-lined lagoons with a total capacity of 12 million gallons (6 million gallons each) and are located between James P. Cole Boulevard and the former St. John Street on the eastern perimeter of the Site north of Leith Street. Created in 1976, the lagoons provided tertiary treatment of industrial wastewater from the Site’s wastewater treatment facility. The primary function of the lagoons was to reduce the biological oxygen demand (BOD) and chemical oxygen demand (COD) of the process water in preparation for discharge to the Flint River. The lagoons were taken off-line in 1988, and the discharge was redirected to the City of Flint sanitary sewer system under NPDES permit.

Although effluent from a nonproduction electroplating operation contributed less than 1% of the lagoon’s total influent, the sludge from the lagoons was originally classified as an F006 hazardous waste under the “Mixture Rule” defined in 40 CFR 261.3(b)(2). In 1986, GM submitted a delisting petition and provided data and justification to have the sludge considered nonhazardous. The State of Michigan issued a Redesignation Approval in 1994 to allow the nonhazardous lagoon sludge to be removed and disposed of in a Michigan Type II landfill.

The sludge was excavated from the lagoons and transported by rail to the ECDC Environmental, L.C, landfill located in East Carbon, Utah. After sludge removal was complete, soil in the area was tested in accordance with the Redesignation Authorization and Michigan Part 201 of Act 451. These activities are summarized in a report entitled *Environmental Oversight and Documentation for Wastewater Lagoon Cleanout* (The Traverse Group, 1996). The

results of the testing verified that the lagoons met the associated cleanup criteria; therefore, no AOIs are currently identified related to these lagoons.

Further, as described in Section 4.15, several rounds of groundwater data have been historically collected in association with the former aeration lagoons. These data indicate no impacts to this area.

3.16 Other Miscellaneous Areas North of Leith Street

The remaining areas of the Site include several small ancillary inactive parcels of land located along Industrial Avenue, as well as an electrical power distribution facility (Building 06 Area) located across the railroad tracks east of the Factory 36 Area. No AOIs were identified related to these areas.

4. Summary of Historical Investigations and Existing Analytical Data

4.1 General

This section summarizes the historical investigations performed at the Site and existing analytical data resulting from these investigations. These historical efforts were performed over the years on behalf of GM by various environmental consultants. Several of these investigations involved the assessment of potential soil and/or groundwater contamination either within various regions of the Site or along its perimeter (i.e., focusing on relatively large areas of the Site), while the remaining investigations involved more focused assessments of specific areas (e.g., UST areas, process areas) where constituents of interest were identified as being potentially released into the environment (e.g., UST releases). The perimeter and/or regional Site investigations included the following:

- Storm Sewer Outfall 003 Investigation;
- Site Investigation (Pierson Road to Leith Street);
- Fenceline Investigation; and
- Semiannual Groundwater Investigations.

These investigations are further discussed below in Sections 4.2 through 4.5, respectively.

The investigations involving specific, more focused areas of interest include the following areas:

- Factory 36 Area;
- Buildings 55, 55A, and 55B Area;
- Factory 10 Area;
- Factory 05 Area;
- Factory 03 Area;
- Factory 81 Area;
- Factory 83/84 Area;
- Building 86 Area/Leith Street Overpass;
- Building 07 Area; and
- Inactive Wastewater Aeration Lagoons Area.

These investigations are further discussed below in Sections 4.6 through 4.15, respectively.

Tables 4 and 5 summarize historical soil and groundwater samples collected as a result of the various investigations discussed below along with the associated sampling depths (as appropriate) and laboratory analyses performed. Figure 15 illustrates the soil boring and monitoring well locations from which these samples were collected. Throughout Sections 4.2 through 4.15, Tables 6 through 28 summarize the various analytical data resulting from these investigations, as appropriate.

It is important to note that in addition to the summaries of analytical data presented in this section, a geographic information system (GIS) has been developed for the Site using Arc View 3.2, current AutoCAD basemapping and aerial photography, and historical analytical data. The largest component of this GIS is the database compiling the historic analytical data. This database has been developed using Microsoft Access 97 and includes the majority of the historical analytical data. This GIS allows for queries to the analytical database and corresponding mapping, illustrating the results of such queries. A compact disk containing this GIS, including the associated database, is included in Appendix H.

4.2 Storm Sewer 003 Investigation

This investigation was performed in September and October 1991, and involved the installation of 40 soil borings in the vicinity of Storm Sewer 003. A total of 157 soil samples were collected from these soil borings and field screened for PCBs. As a result of this screening, 29 soil samples were submitted for laboratory analysis of PCBs, metals, and cyanide. One soil sample was also submitted for analysis of benzene, toluene, ethylbenzene, and xylene (BTEX). The results of these analyses indicated the presence of PCBs at five locations at concentrations up to 3.8 mg/kg, primarily along the southeastern side of Building 43. Various metals were also detected at varying concentrations in these samples. These data are further summarized in Table 6.

A total of 32 monitoring wells were also installed in the vicinity of Storm Sewer 003 as part of this 1991 investigation, and 29 groundwater samples were collected and submitted for laboratory analysis of PCBs, metals, volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). PCBs were detected in four monitoring wells (Sec. 7/MW-4, Sec. 7/MW-5, Sec. 7/MW-8, and Sec. 9/MW-3) at total PCB concentrations ranging up to 32 micrograms per liter ($\mu\text{g/L}$). Cyanide and nine metals were detected at least once in all of the groundwater samples. Mercury was not detected in any of the samples, while selenium, silver, and cyanide were detected in less

than half of the samples collected. A number of VOCs, as well as several SVOCs, were also detected in the groundwater samples, primarily from sample Sec. 7/MW-5. These data are further summarized in Table 6.

Additionally, free product was detected in four groundwater wells (Sec.2/MW-3, Sec. 7/MW-4, Sec. 7/MW-5, and Sec. 7/MW-8) during this investigation, at thicknesses up to 3.49 feet. Free product samples were collected from these four wells and analyzed for PCBs. The results of these analyses indicated the presence of PCBs in wells Sec. 7/MW-4 (100 mg/kg), Sec. 7/MW-5 (43 mg/kg), and Sec. 7/MW-8 (420 mg/kg).

After evaluation of the data generated during this investigation, select areas of the Site were targeted for more focused investigations. Specific areas of the Site that were determined to warrant additional investigations are as follows:

- Free product was found in well Sec. 2/MW-3 (located near the former Tank Farm 37 in the Factory 36 Area) at a thickness of 2.2 feet, although soil, groundwater, and oil samples from this area did not exhibit detectable concentrations of PCBs. Further investigation of this area is summarized in Section 4.6.
- Laboratory analysis of soil collected in the scrapyard area east of Building 20 in the Factory 10 Area indicated the presence of relatively high levels of several metals and cyanide in the soils. No PCBs were detected in soil samples collected from this area; however, a sheen was also noted on groundwater samples collected from monitoring wells installed in this area. Further investigations of this area are summarized in Section 4.8.
- Laboratory analysis of soil collected near Building 43 in the Factory 05 Area indicated the presence of PCBs at concentrations up to 5.7 mg/kg. In addition, free product was detected in this area containing PCBs at concentrations up to 420 mg/kg at a thickness up to 3.49 feet. Further investigation of this area is summarized in Section 4.9.

4.3 Site Investigation (Pierson Road to Leith Street)

This investigation was performed in 1993 along the eastern boundary of the Site between Pierson Road and Leith Street. A total of 68 soil borings were installed as part of this investigation along the stretch of the eastern boundary of the Site, and up to two soil samples were collected at each boring location. A total of 94 groundwater samples were also collected using a hydropunch sampler. The soil and groundwater samples were analyzed for VOCs, PNAs,

PCBs, total petroleum hydrocarbons (TPH), metals, and cyanide. The results of these analyses indicated the presence of VOCs, TPH, and metals in soil and groundwater at various locations and varying concentrations. These data are further summarized in Table 7.

After evaluation of the data generated during this investigation, two areas of the Site were targeted for more focused investigations. Specifically, concentrations of VOCs and TPH were detected along the eastern side of Building 36, and concentrations of TPH were detected along the eastern side of Building 86. Further investigations of these areas are summarized in Sections 4.6 and 4.13.

4.4 Fenceline Investigation

The Fenceline Investigation was performed on behalf of GM by EnecoTech between August and November 1995 to assess the horizontal and vertical presence of organic and inorganic constituents in soil and groundwater along the perimeter of the Site. Details regarding this investigation are presented in a report entitled *Site Investigation and Hydrogeological Report, Fenceline/CSX Investigation* (EnecoTech, 1996). A summary of these activities and resulting data are presented below.

The investigation consisted of the installation of 47 soil borings and 17 monitoring wells (permanent and temporary) along the perimeter of the Site and the collection of soil and groundwater samples for laboratory analyses. A total of 91 soil samples and 93 groundwater samples were collected and analyzed for varying combinations of VOCs, SVOCs, PCBs, PNAs, BTEX (soil only), PCBs, and metals. The results of these analyses indicated the presence of various metals, VOCs, SVOCs, BTEX, and PNAs at varying concentrations in groundwater and/or soil at various locations. Additionally, free product was detected at three locations, including the areas south of Building 36 (Tank Farm 37 Area), south of Building 20, and east of Building 73. These data are further summarized in Table 8.

After evaluation of the data generated during the investigation, select areas of the Site were targeted for more focused investigations. Specific areas of the Site that were determined to warrant additional investigations are as follows:

- The results for the area on the east side of Building 36 (monitoring wells 36-100 and 36-160 and soil borings SBLF1-33 through SBLF1-39) indicated concentrations of SVOCs in the soil and groundwater and VOCs in the groundwater. Further investigation of this area is summarized in Section 4.13.

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- Monitoring well 86-100, north of Building 86A, indicated concentrations of VOCs, SVOCs, and metals in the soils. Further investigation of this area is summarized in Section 4.13.
 - Monitoring well 70-160, east of Building 70B, indicated concentrations of VOCs, SVOCs, and metals in soils. Further investigation of this area is summarized in Section 4.11.
 - Free product was detected in the following:
 - South of Building 36 (Tank Farm 37 Area) at monitoring wells 20-502 and 20-503;
 - Along the south side of Building 20 extending south to the scrapyard at monitoring wells 20-163, 20-164, 20-165, and 20-170; and
 - East of Building 73 at monitoring wells 70-101, 70-103, 70-105, and 70-108.

Further investigation of these areas is summarized in Sections 4.6, 4.8, and 4.11.

4.5 Semiannual Groundwater Investigations

Beginning in 1997, GM has conducted a Facilitywide semiannual groundwater monitoring program involving a total of 31 monitoring wells at the Site. In general, this program involves monitoring VOCs, PCBs, and metals at 22 wells associated with the perimeter of the Site and nine wells associated with two former UST areas (the Building 88 Tank Farm and the Building 86 Tank Farm). These former UST areas have also been the subject of focused investigations that are further summarized in Sections 4.12 and 4.13.

As for the perimeter wells included in these monitoring efforts, no PCBs have been detected above laboratory detection limits; however, VOCs and metals have been detected at varying concentrations and various locations. Table 9 provides a summary of these data.

4.6 Factory 36 Area Investigations

Several focused investigations have been conducted within the Factory 36 Area. These investigations were either associated with detection of free product in select monitoring wells or UST removals. Sections 4.6.1 through 4.6.3 summarize these investigations in more detail.

4.6.1 Monitoring Well 36-160 Area (AOI 36-2)

As noted in Section 4.3, relatively high levels of VOCs and TPH were identified in soil borings located east of Building 36. Additionally, free product was identified in monitoring well 36-160, located east of Building 36. To further delineate the extent of free product, a total of eight soil borings were installed in 1998 and 1999, all of which were converted into monitoring wells (36-FP1 through 36-FP8). Soil samples were collected at these locations and analyzed for VOCs, SVOCs, PCBs, and cyanide. Groundwater samples were collected and analyzed for PCBs (unfiltered), VOCs, SVOCs, and metals (lab-filtered). Free product was found to be present at measurable thicknesses in three monitoring wells (wells 36-FP3, 36-FP6, and 36-FP7). In general, the results of these analyses indicated the presence of VOCs, SVOCs, and metals in soil, and VOCs and metals in groundwater. These data are further summarized in Table 10.

Additionally, as discussed further in Section 5.10, an IM recovery system is being designed for this area for the purpose of recovering the free product. Weekly manual bailing of the free product from several wells was initiated in January 1999 and remains ongoing.

4.6.2 Building 36 (Southeast) Area USTs (AOI 36-3)

According to the *Initial Abatement Measures Report for Building 36* (WW Engineering & Science [WWES], 1991a), five USTs (Tanks 110, 111, QQ, RR, and SS) containing gasoline (four tanks) and waste (one tank) were located south of Building 36. These USTs were reportedly removed in 1988, and upon removal soil and groundwater associated with the USTs were sampled and analyzed for VOCs. Although the documentation related to these sampling analysis activities is incomplete, available information indicates the presence of BTEX and trichloroethylene (TCE) in groundwater in this area.

4.6.3 Tank Farm 37 Area (AOI 36-5)

According to the *Underground Storage Tank Removal Report for Tank Farm 37* (WWES, 1991b), seventeen 12,000-gallon USTs (Tanks 3 through 19) containing several different products (thinner, regular gasoline, hydraulic oil, motor oil, mineral seal, etc.) were associated with the Tank Farm 37 Area located south of Building 36. In November 1989, 11 monitoring wells were installed in the immediate vicinity of Tank Farm 37 for use as a release detection system. Analyses of samples collected in December 1989 suggested that a release had occurred. Following integrity testing of the tanks, it was determined that the release was most likely from tanks 8 and 13. These tanks were subsequently taken out of service, and a 30-inch-diameter recovery well was installed (refer to Section 5.2). In August 1990, a new AST farm was constructed immediately south of this area, and the remainder of the USTs were taken out of service. During 1991, the former USTs were removed, along with approximately 3,300 cubic yards (cy) of soil affected by the release.

In 1991, a subsurface investigation was performed in the vicinity of the Former Tank Farm 37 Area. This investigation was performed on behalf of GM by WWES, and detailed in a report entitled *Preliminary Subsurface Investigation for Former Tank Farm 37* (WWES, 1992a). As part of this investigation, a total of five soil borings and three monitoring wells were installed, and soil and groundwater samples were analyzed for lead (soil only) and BTEX. The results of this investigation indicated the presence of toluene, ethylbenzene, and xylene. These data are further summarized in Table 11.

Additionally, during the removal of the USTs in 1991, the presence of free product was also identified. To further delineate the free product, one soil boring (monitoring well 37-01) was installed in 2000. Soil from this boring was analyzed for VOCs, SVOCs, PCBs, and metals. The results of these analyses indicated the presence of various metals at varying concentrations. The data are further summarized in Table 12.

4.7 Buildings 55, 55A, and 55B Area (AOI 55-1)

To investigate potential release(s) from the Site's wastewater treatment facility, five soil borings were installed in 1999 in this area; all of the soil borings were converted into monitoring wells. Soil and groundwater samples were collected and analyzed for PCBs, VOCs, SVOCs, and metals. The results of these analyses indicated the presence of VOCs in soil at concentrations ranging up to 50 mg/kg (1,2-dichloropropane) and metals in soil at concentrations

ranging up to 28,000 mg/kg (calcium). VOCs, SVOCs, and metals in groundwater had concentrations ranging up to 320 $\mu\text{g/L}$ (barium). The data are further summarized in Table 13.

4.8 Factory 10 Area Investigations (AOI 10-1)

The Factory 10 Area (primarily the area of Building 20, proper) has been the focus of several investigations since the late 1980s. The first investigation, performed in 1987, investigated the presence of 1,1,1-trichloroethane (TCA). Only limited information is available concerning the investigation; however, it reportedly found the TCA contamination to extend approximately 600 feet downgradient of the northwest corner of the Building 20.

In the summer of 1991, accumulations of insoluble and soluble oils were observed adjacent to foundation drain clean-outs in the basement of Building 20. This led to an investigation of the oil, as well as soil and groundwater, beneath and around Building 20. Although only limited information is available concerning this investigation, it reportedly found the oil, as well as the underlying groundwater, to contain PCBs.

Later in 1991, the Building 20 area was also included in the Storm Sewer 003 Investigation, summarized in Section 4.2. As a result of these investigations, relatively high levels of metals and cyanide were detected in soil east of the building.

Between October and December 1992, a total of 37 soil borings and seven monitoring wells were installed in this area. This investigation was performed on behalf of GM by ASI Environmental Technologies (ASI), and detailed in a report entitled *GM Powertrain Plant 10, Building 20 Draft Remedial Investigation Activities Report* (ASI, 1993). As part of this investigation, a total of 36 soil and 18 groundwater samples were submitted for analysis for PCBs, PNAs, barium, and lead. The results of these analyses are further summarized in Table 14. Analyses indicated the presence of PCBs and select PNAs in soil, and PCBs, barium, and lead in groundwater. Additionally, this investigation indicated the presence of free product containing PCBs at a thickness of approximately 3 to 6 inches in the southeast corner of Building 20 extending into the adjacent scapyard.

As part of the 1995 Fenceline Investigation, free product was identified at thicknesses up to 3 inches within the Factory 10 Scrapyard Area. To further delineate the extent of free product, a total of 13 soil borings were installed in 1998 and 1999, and eight were converted into monitoring wells. Soil and groundwater samples were collected and analyzed. Soil samples were collected and analyzed for VOCs, SVOCs, PCBs, metals, and cyanide, while

groundwater samples were analyzed for PCBs (unfiltered), VOCs, SVOCs, and metals (lab-filtered). Free product was found to be present at measurable thicknesses at three new wells (wells 20-FP4, 20-FP7, and 20-FP8) and one historical well (well 20-170). The results of these analyses indicated the presence of VOCs, SVOCs (soil only), and metals in both soil and groundwater. These data are further summarized in Table 15.

As a result of these various investigations, an IM groundwater treatment system was installed within Building 20 in 1996 and 1997. This IM is summarized in more detail in Section 5.3.

An investigation of this groundwater treatment system was performed in 1998 by GZA GeoEnvironmental, Inc. (GZA). This investigation, detailed in a report entitled *Site Evaluation Report Groundwater Treatment System Plant 10* (GZA, 1998), consisted of the measurement of groundwater elevations and free-product thickness, groundwater sampling, and analysis of seven recovery wells and 14 monitoring wells. The groundwater samples were analyzed for PCBs, COD, BOD, total organic carbon (TOC), VOCs, PNAs, and dissolved metals. The results of the analyses indicated the presence of varying concentrations of PCBs, VOCs, PNAs, and dissolved metals. These data are further summarized in Table 16.

4.9 Factory 05 Area Investigations

Several focused investigations have been conducted in the Factory 05 Area. These investigations were associated with either reported releases of fluids within Building 43, detection of free product in monitoring wells, or UST removals. These investigations are summarized in more detail in Sections 4.9.1 through 4.9.3.

4.9.1 Building 43 East Area (AOI 05-1)

As part of the 1991 Storm Sewer 003 Investigation described in Section 4.2, free product was identified to be present along the east side of Building 43 at a thickness of up to 3.49 feet. This investigation led to the design and installation of a free-product recovery system in this area. As further summarized in Section 5.4, this system was installed in 1995 and consists of gravel-filled trenches connected to three recovery wells, and belt oil skimmers. Additionally, in 2000, five additional soil borings were installed in this area, all of which were converted to monitoring wells. The purpose of these borings/wells was to provide further assessment of the free-product presence in this area. Soil samples were collected from these borings and analyzed for VOCs, SVOCs, PCBs, and metals. The

results of these analyses indicated the presence of various levels of these constituents at these locations (see Table 17). Free product was detected in monitoring well 43-165.

4.9.2 Building 43 Interior Area (AOIs 05-5 and 05-6)

In 1994, subsurface investigations were performed at Building 43 within the Factory 05 Area in response to a suspected loss of approximately 2,000 gallons of coolant in the southern portion of Building 43 and a release of approximately 5,000 gallons of machining oil at the northern end of the building. Although only limited information is available concerning these investigations, they reportedly involved the collection of a total of 20 soil samples and 16 groundwater samples from 10 locations within Building 43. These investigations reportedly identified concentrations of PNAs, ethylene glycol, and barium in the soils beneath the floor of Building 43. In addition, select PNAs, PCBs, and metals were detected in groundwater samples collected from beneath the Building 43 floor (see Table 18).

4.9.3 Factory 05 UST Area (AOI 05-3)

An excavation zone assessment was conducted by GM for six 12,000-gallon USTs (tanks 27 through 32) containing various fluids (S-7 Quench, Hi Temp Quench, and Quenzene) along the northeast side of Building 43 (*Underground Storage Tank Closure Report, Factory 05 Tank Farm* [GM, 1990a]). Seven soil samples were collected from the excavation area associated with the removal of these tanks. These samples were analyzed for BTEX and TPH. The results of these analyses are further summarized in Table 19; these data indicated the presence of varying concentrations of TPH and toluene.

4.10 Factory 03 Area (AOI 03-1)

According to a report entitled *PCB Investigation Work Plan for BOC Flint Operations, Flint, Michigan* (WWES, 1991c), two monitoring wells were installed in March 1990 for the purpose of investigating subsurface contamination in the vicinity of quench pits within the southeast corner of Building 30. Soil and groundwater samples collected during this investigation indicated the presence of petroleum hydrocarbons. Subsequently, in May and June 1990, 10 additional soil borings were installed to further delineate the extent of these petroleum hydrocarbons. Varying TPH levels were detected in soils at each of the locations sampled during this investigation. These data are summarized in Table 20. Also, as summarized in a report entitled *Underground Storage Tank Closure Report*,

Factory 03 Tank Farm (GM, 1990b), an excavation zone assessment was conducted in 1990 for three 12,000-gallon USTs (tanks 35, 36, and 37) containing Quench Oil on the north side of Building 30. Four soil samples were collected from the bottom of the excavation associated with the removal of these three USTs and analyzed for TPH. These analyses indicated TPH levels to be less than 100 mg/kg in these samples.

In August 1991, an oil sample was collected from a roof drain/process water sump located in the southern portion of Building 30A. PCBs were detected in this sample at a concentration of 200 mg/kg. In December 1991, additional samples were collected for analysis of PCBs, including one sample of the wood block flooring in Building 30 (PCBs were detected at a concentration of 2 mg/kg) and two water samples (one from monitoring well MW-01, and the other from a storm sewer manhole located in Building 30A). No PCBs were detected in the sample collected from MW-01, while PCBs were detected in the storm sewer sample at a concentration of 46 $\mu\text{g/L}$.

In April 2000, three additional soil borings were installed southeast of Building 30. Each of these borings was converted to monitor wells to further assess the TPH levels detected previously in this area. The soil samples were analyzed for VOCs, SVOCs, PCBs, and metals. The results of these analyses indicated the presence of VOCs (benzene and ethylbenzene) at one location at concentrations of 0.14 mg/kg and 0.091 mg/kg, respectively, SVOCs ranging in concentration up to 7.1 mg/kg (phenanthrene), PCBs ranging up to 0.54 mg/kg, and metals ranging in concentration up to 29 mg/kg (zinc). These data are further summarized in Table 21.

4.11 Factory 81 Area (AOI 81-2)

The area northeast of the Factory 81 building complex was investigated as part of the 1995 Fenceline Investigation. A total of 12 soil borings and six monitoring wells were installed in the area east and northeast of the Factory 81 building complex. Free product was detected in several of the monitoring wells in this area at thicknesses up to 2.9 feet. One soil sample collected and analyzed for BTEX exhibited a total BTEX concentration of 7,000 mg/kg. In addition, relatively high lead concentrations were noted from soil samples collected from this area. In August 1992, a soil gas survey was conducted in this area. A total of 24 samples (18 water and six air samples) were collected and analyzed for BTEX. In addition, 24 soil samples were collected from 18 locations in this area and analyzed for PCBs, metals, and cyanide. Six of the soil boring locations were subsequently converted to monitoring wells, and four groundwater samples were collected and analyzed for BTEX, PNAs, metals, and cyanide. The results of these analyses indicated concentrations of BTEX, arsenic, and lead in soil samples, and arsenic in groundwater (see Table

22). As summarized further in Sections 5.4 and 5.6, a free-product recovery trench system is operating in this area as an IM.

4.12 Factory 83/84 Area (AOI 83/84-7)

According to a report entitled *Summary Report, Building 88, Tanks 050/88-058/88* (Global Environmental Engineering, Inc., 1997a), eight 12,000-gallon USTs and one 6,000-gallon UST were located at the northern end of the Factory 83/84 complex, east of Building 66C. These USTs contained several different process fluids (Oleum, S-7 Quench, used oil, LSC 110, LCO 231, LK 402, and regular gasoline). These USTs were reportedly installed in 1936 and removed in 1989 (with the exception of three USTs [050/88, 053/88, and 054/88], which were closed in place). A release was reported in July 1989, and a confirmed release number (C-324-89) was assigned to this UST farm.

Between July 1996 and June 1997, a total of five soil borings and six monitoring wells were installed within and near the former UST farm. Samples were analyzed for VOCs, PNAs, and metals. The results of these analyses indicated the presence of various VOCs, PNAs, and metals at varying concentrations in soil and groundwater. These data are further summarized in Table 23.

In addition, four soil borings were installed in this area in April 2000, all of which were converted to monitoring wells. Soil samples were collected and analyzed for VOCs, SVOCs, PCBs, and metals. The results of these analyses indicated the presence of one TCE at a concentration of 0.073 mg/kg, bis(2-ethylhexyl)phthalate detected at two locations at concentrations of 0.37 and 1.1 mg/kg, and various metals ranging in concentrations up to 190 mg/kg lead (see Table 24).

Additionally, GM has conducted groundwater monitoring in this area since 1997 as part of a Facilitywide semiannual groundwater monitoring program. As a component of this program, semiannual groundwater samples have been collected for VOCs, PNAs, and BTEX analysis from all six monitoring wells in this area. Various VOCs and naphthalene were detected at varying concentrations (see Table 9). The most recent semiannual groundwater monitoring activities resulted in the removal of one monitoring well (88-3) from this program due to the fact that the well had been destroyed.

4.13 Building 86 Area (AOI 86-1)

Several focused investigations have been conducted within the Building 86 Area. These investigations were performed either in response to prior investigations or in association with UST removals. Sections 4.13.1 through 4.13.3 summarize these investigations in more detail.

4.13.1 Building 86 (East) Area (AOI 86-1)

A 1993 Site investigation (Pierson Road to Leith Street) detected TPH along the eastern side of Building 86. As follow-up to this investigation, a focused investigation was performed east of Building 86 in 1994. The 1994 investigation consisted of the installation of 10 additional soil borings, with the collection of two soil samples from each boring. A total of four groundwater samples were collected from borings which yielded a suitable quantity of water using a hydropunch sampling method. The soil and groundwater samples were analyzed for BTEX, VOCs, PNAs, PCBs, and metals. The results of these analyses indicated the presence of various BTEX, PNAs, and metals at varying concentrations in both soil and groundwater. These data are further summarized in Table 25.

4.13.2 Building 86, Tank 59 (AOI 86-1)

According to the *Summary Report, Building 86, Tank 059/86* (Global Environmental Engineering, Inc., 1997b), a 6,000-gallon UST containing gasoline was located on the west side of Building 86. The UST was reported as being installed in 1964 and removed in 1988. According to the report, soils excavated during UST removal activities were screened using photoionization detector (PID). An unknown quantity of soil that exhibited elevated PID readings was excavated and taken to Grand Blanc Landfill for disposal. A confirmed release number (C-434-97) was assigned to the former UST location.

During July 1996, a total of five soil borings were installed close to the former UST area. A total of 10 soil samples and four groundwater samples were collected and analyzed for BTEX. In June 1997, three additional soil borings were installed and converted into monitoring wells, and six soil samples and three groundwater samples were collected and analyzed for BTEX and lead. The results of these analyses indicated concentrations of BTEX and lead in soils, and BTEX in groundwater. These data are further summarized in Table 26.

Additionally, as summarized in Section 4.5, GM has conducted groundwater monitoring in this area since 1997 as part of a Facilitywide semiannual groundwater monitoring program. As a component of this program, semiannual groundwater samples have been collected for BTEX from three monitoring wells (86-1, 86-2, and 86-30). In 1999, these monitoring wells were removed from the semiannual program because either the wells could not be located or samples could not be collected (wells bailed dry). Historically, the results of the program indicated the presence of BTEX.

4.13.3 Former Building 87/Leith Street Overpass Area (AOI 86-1)

According to a report entitled *Preliminary Subsurface Investigation for Former Tank Farm South of Building No. 87/Overpass* (WWES, 1992b), five USTs were located between the former Building 87 and the Leith Street railroad overpass. These tanks were reportedly in use from 1936 until about 1977, when they were removed. At the time of removal, some soils were excavated and disposed of along with the tanks. In 1991, seven soil borings were installed in the area of the former tank farm, with soil samples collected and analyzed for BTEX, lead, and PNAs. In addition, one soil sample was analyzed for PCBs. Two temporary monitoring wells were also installed in this area, and two groundwater samples (one from each well) were collected and analyzed for BTEX, total lead, PNAs, and PCBs. Laboratory analyses of these samples suggested that a release of hydrocarbon product(s) had occurred.

In 1996, free product was discovered in a catch basin within this area. To further delineate the extent of this free product, a total of seven soil borings were installed in 1998, all of which were converted to monitoring wells. Soil and groundwater samples were collected and analyzed for PCBs, VOCs, SVOCs, and metals. Measurable thicknesses of free product were not present within any of these monitoring wells during this investigation. The results of the soil analyses indicated the presence of VOCs and metals, and results of the groundwater analyses indicated the presence of PCBs (in one well), VOCs, SVOCs, and metals (see Table 27).

In addition, as further summarized in Section 5.9, two recovery wells have been installed in this area, and additional measures for recovery of free product from this area are under development.

4.14 Building 07 Area

As discussed in Section 3.14, the presence of elevated concentrations of VOCs was identified in 1993 along the west portion of the Building 07 Area. To further delineate the VOCs found in this area, two additional soil borings were

installed in April 2000 and converted to monitoring wells. Soils were collected and analyzed for VOCs, SVOCs, PCBs, and metals. The results of these analyses indicated the presence of one SVOC (bis[2-ethylhexyl phthalate]) at a concentration of 9.1 mg/kg and various metals at varying concentrations. These data are further summarized in Table 28.

4.15 Inactive Wastewater Aeration Lagoons Area

As discussed in Section 3.15, the former wastewater aeration lagoons were taken offline in 1988, and GM subsequently cleaned sludges from the lagoons. Related to the closure of these lagoons, 17 groundwater monitoring wells were installed in the vicinity of this area. Groundwater samples were collected from four wells (GM-1, GM-3, GM-4, and GM-9) quarterly between August 1986 to July 1989. Three additional monitoring wells (GM-10, GM-11, and GM-12) were added to this monitoring program in August 1989. Groundwater samples were analyzed for VOCs (methylene chloride, toluene, and 1,1,1-trichloroethane) and inorganics (cadmium, chromium, nickel, and cyanide). The results of these analyses showed no impacts to the aeration lagoons area, and the quarterly monitoring was discontinued in 1994.

5. Summary of Interim Measures (IMs)

5.1 General

This section summarizes the IMs performed by GM at the Site. This section also summarizes several current Site-related IMs either being maintained or designed. The general locations of these IMs are illustrated on Figure 16. These IM activities involve pumping and treating oil and groundwater at one location, and the recovery of free product at two other locations. Three additional IMs are under development for the purpose of recovering free product. These IMs collectively involve the following:

- Former Tank Farm 37 product recovery system;
- Factory 10 Area groundwater treatment system;
- Factory 05 Area product recovery trench;
- Factory 03 Area product recovery sump;
- Factory 81 Area product recovery system;
- Storm Sewer 003 oil/water separators;
- Building 32 product recovery system;
- Former Building 87/Leith Street Overpass Area recovery system;
- Factory 36 Monitoring Well 36-160 Area product recovery system; and
- Factory 10 Scrapyard Area product recovery system.

These IM efforts are described further below.

5.2 Former Tank Farm 37 Product Recovery System

As noted in Sections 3.3 and 4.6.3, a release attributed to USTs located in the Former Tank Farm 37 Area was confirmed as part of the removal of these tanks and the construction of replacement ASTs in 1990. As part of initial abatement measures in February 1990, groundwater and free-product recovery trenches were installed along the east and south sides of the excavation area. These trenches are 3 feet wide and filled with gravel from approximately 2 feet bgs to approximately 14 feet bgs and are sloped toward a 30-inch-diameter recovery well/sump located along the south side of the excavation area. This recovery well/sump was installed to a depth of 13 feet bgs with screen placement at 6 to 13 feet bgs. Collected fluids are routed to the Site's industrial wastewater treatment facilities.

5.3 Factory 10 Area Groundwater Treatment System

As noted in Sections 3.5 and 4.8, free product was detected on the surface of groundwater beneath and to the south of Building 20 within the Factory 10 Area. Fractions of this product included both water-soluble and insoluble phases of oil. Analyses of the product indicated the presence of PCBs and TCA. In May 1997, GM constructed and installed a groundwater collection and treatment system designed to collect and treat product and affected groundwater from this area. The system consists of seven groundwater extraction wells and associated distribution pipelines connected to a series of treatment components, including acidification, coalescing filtration, ultraviolet light oxidation, precipitation, clarification, and carbon adsorption. The treated groundwater is discharged via the local storm sewer system under NPDES permit.

5.4 Factory 05 Area Product Recovery Trenches

As noted in Sections 3.6 and 4.9, investigations performed in 1994 in response to suspected releases in Building 43 within the Factory 05 Area detected free product on the surface of groundwater along the eastern side (southern portion) of Building 43. These investigations indicated the presence of PCBs and lead in soils and groundwater, and 1,1,1-trichloroethane in groundwater. To address this occurrence of product, three recovery trenches were installed in the Building 43 area in early 1995. These recovery trenches were each approximately 14 feet deep, 3 feet wide, 100 feet long, and backfilled with gravel. Product is recovered from these trenches via 30-inch-diameter recovery wells installed near the midpoint of each recovery trench. Automated belt skimming devices in the recovery wells collect product from the recovery trenches (with approximately 60% groundwater and 40% product) and transfer it to a temporary storage tank.

5.5 Factory 03 Product Recovery Sump

As noted in Section 3.7, a roof drain/storm sewer sump located in the southern portion of Building 30A has been historically identified to accumulate free product determined to be S-7 quench oil. As a result, this sump was converted to a collection sump (with belt skimmer) for recovering this subsurface oil contamination. Only limited information is available concerning this sump and its construction and operation. It is currently inactive after product recovery had diminished to the extent that it was not practical to continue operation.

5.6 Factory 81 Area Product Recovery System

As noted in Sections 3.9 and 4.11, free product was detected during the 1995 Fenceline Investigation near the northeast corner of Factory 81. Subsequent subsurface investigations in this area indicated the presence of product on the surface of groundwater and PCBs in groundwater. A product recovery trench was installed in the area in 1996. This recovery trench is constructed similar to the Factory 05 Area recovery trenches; it is approximately 9 feet deep, 3 feet wide, 200 feet long, and backfilled with gravel. Product is recovered from the trenches via a 4-foot-diameter recovery well installed near the midpoint of the recovery trench. An automated belt skimming device in the recovery well collects product from the recovery trench (with approximately 60% groundwater and 40% product) and transfers it to a temporary storage tank. The collected product is then transferred to the groundwater treatment facility located within Building 20.

5.7 Storm Sewer 003 Oil/Water Separators

As noted in Section 3.9, an oil/water separator was installed in November 1991 immediately east of Buildings 70B and 73 along the Storm Sewer 003 discharge to the Flint River. This oil/water separator is constructed of reinforced concrete and steel. It is rectangular and is equipped with an overflow weir, an underflow weir, and a skimming system. Oils that accumulate on the upstream side of the underflow weir are skimmed and pumped into a 500-gallon AST and disposed of as needed.

An additional oil/water separator system was installed in 1994 east of the coalyard adjacent to Building 07. This system consists of a subsurface vault within the main storm sewer branch (approximately 9 feet wide by 9 feet long by 6 feet deep) containing four pumps (approximately 200 gallons per minute [gpm] total capacity) that pump storm water during low-flow periods to an aboveground oil/water separator system. This system includes a debris screen, an 8,000-gallon settling tank, and two parallel 200 gpm-capacity oil/water separators. Recovered oil is collected in a 275-gallon tote that is periodically emptied. This system has been historically plagued with debris problems and as a result is inactive.

These systems are designed to control oily discharges from runoff and infiltration within the associated drainage area. The storm sewer branch is a 66-inch-diameter reinforced concrete pipe, and the entire drainage system consists of several miles of pipe. The overall storm sewer system capacity is estimated at 50 million gallons per day.

5.8 Building 32 Product Recovery System

In April 1990, free product was encountered beneath the floor of Building 32 during excavations of the floor and subsurface soils as part of the installation of a new process system. This free product was estimated to exist over an area of approximately 30 feet by 75 feet within the eastern central portion of the building within Bays/Columns 3D, 3E, 4D, and 4E, and identified to possibly be motor oil or crankcase oil.

Although it is now inactive, a recovery well was installed later in 1990 for the purpose of recovering this subsurface product contamination (within Bay/Column 4E). Only limited information is available concerning the actual construction and operation of this recovery well. Site records indicate the proposed design involves the installation of 24-inch-diameter recovery well such that a 10-foot well screen (slot size of 0.020-inch) would be submerged approximately 8 feet below the local water table. A submersible pump was proposed to be installed within this recovery well such that it would draw down the local water table approximately 4 feet. An oil-skimming device was also proposed to be installed to remove oils accumulating in the well. The discharge from this recovery well was proposed to be routed overhead to the Site's process waste system.

5.9 Former Building 87/Leith Street Overpass Area Product Recovery System

As noted in Sections 3.13 and 4.13, five former USTs installed in 1936 were located south of Buildings 86/86A and Building 87 and east of Building 15. These five former USTs were removed in 1977. The discovery of an oily sheen on the water in a nearby catch basin connecting to Storm Sewer Outfall 005 indicated that further investigations in the vicinity of the former UST area would be required. The results of the investigation indicated that a release of product from the former UST area had affected areas east, south, and west of the former UST area. Two product recovery wells were installed adjacent to the Leith Street overpass retaining wall in an attempt to eliminate the migration of product into the catch basin connecting to Storm Sewer Outfall 005. These wells are currently in operation. Additions and/or enhancements to the current recovery well system at the Former Building 87/Leith Street Overpass Area are under design. Weekly manual bailing of the free product found in this area was initiated (several wells) in January 1999 and remains ongoing.

5.10 Factory 36 Monitoring Well 36-160 Area Product Recovery System

As noted in Sections 3.3 and 4.6, free product has been detected on the surface of the groundwater immediately downgradient of a basement area in the southeastern portion of Building 36 within the Factory 36 Area. This free product is believed to result from former releases associated with the former chip processing operations performed within this basement area.

A product recovery program is being designed for this area. This design will consist of a recovery trench and pumps for both product recovery and groundwater drawdown. The proposed recovery trench will be approximately 20 feet deep, 3 feet wide, 160 feet long, and backfilled with gravel. Product and groundwater will be recovered from the trench via product recovery pump(s) and groundwater submersible pump(s), respectively, installed in a 4-foot-diameter recovery manhole located near the midpoint of the recovery trench. It is estimated that a drawdown of 2 to 6.5 feet at the proposed trench location will effectively control and collect the product. Collected fluids will be transferred to a process waste sump in Building 36, and ultimately discharged to the Site's wastewater treatment facility. Weekly manual bailing of the product found in this area was initiated (several wells) in January 1999 and remains ongoing.

5.11 Factory 10 Scrapyard Area Product Recovery System

As noted in Sections 3.5 and 4.8, several subsurface investigations have been performed in and around the Factory 10 Scrapyard Area since 1991. These investigations identified the presence of free product on the surface of groundwater outside of the southeast corner of Factory 10 and in the scrapyard area. Analyses of this product indicated the presence of PCBs.

A product recovery program for this area is being designed. This program will consist of a recovery trench and pumps for both product recovery and groundwater drawdown. The proposed recovery trench will be approximately 20 feet deep, 3 feet wide, 300 feet long, and backfilled with gravel. Product and groundwater will be recovered from the trench via product recovery pump(s) and groundwater submersible pump(s), respectively, installed in a 4-foot-diameter recovery manhole located near the midpoint of the recovery trench. It is estimated that a drawdown of 2 to 6.5 feet at the proposed trench will effectively control and collect the product. Collected fluids will be transferred to the groundwater treatment facility located within Building 20. Weekly manual bailing of the product found in this area was initiated (several wells) in January 1999 and remains ongoing.

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Tables

BLASLAND, BOUCK & LEE, INC.
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**TABLE 1
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN**

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF USEPA SOLID WASTE MANAGEMENT UNITS (SWMUs) AND AREAS OF CONCERN (AOCs)

| USEPA SWMU/AOC Id. | Building Association (unless otherwise noted) | Description Summary | Current AOI Association |
|----------------------|---|---|---|
| USEPA SWMUs | | | |
| 2 | 36 | Engine Plant North Dock Hazardous Waste Storage Area - also identified as AOC 31 | 36-1 |
| 8 through 30 | 55/55A/55B | Process dump station and various process tanks related to the Site's process wastewater treatment operations | 55-1 |
| 31 and 32 | 55/55A/55/B | Aeration lagoons | None; subject to prior RCRA closure |
| 33 through 35 | 07 | Coal-fired boilers #1 through #3 | 07-3 |
| 36 and 37 | 07 | Sludge receiving tanks #1 and #2 | 07-1 |
| 38 and 39 | 07 | Transfer tanks # 1 and #2 | 07-1 |
| 40 | 86 | Hazardous waste transport vehicle storage area | 86-1 |
| 44 | 22 | Former 12,000-gallon waste paint AST | 36-5 and 10-3 |
| 45 | 20 | Former 1,000-gallon solvent tank | 10-1 |
| 46 | 65 | Drum storage area - empty oil drums | 65-1 |
| 50 | 36 | Drum storage area - waste oils and solvents | 36-1 |
| 51 | 30 | Drum storage area - <90-day hazardous waste; also identified as AOC 7 | 03-1 |
| 52 | 43 | Drum storage area - <90-day hazardous waste and product oils; also identified as AOC 8 | 05-5 |
| 53 | 20 | Drum storage area - <90-day waste and product oils; also identified as AOC 10 | 10-1 |
| 54 | 20 | "Painter's Crib" drum storage area - <90-day paint waste and product | 10-1 |
| 55 | 83 | Drum storage area - product oils and machining coolants | 83/84-6 |
| 56 | 66C | Drum storage area (inactive) - <90-day waste waxes | 83/84-4 |
| 62 | 86 | Process waste sump | 86-1 |
| 70 through 73 | 20 | Process waste sumps | 10-1 |
| 77 | 43 | Process waste sump | 05-5 |
| 74 through 76 | 11 and 83 | Process waste sumps | 83/84-1 and 83/84-6 |
| 82 | 71/71A | Process waste sump | 81-1 |
| 83 | 71B | Process waste sump | 81-1 |
| USEPA AOCs | | | |
| 7 | 30 | Same as SWMU 51 | 03-1 |
| 8 | 43 | Same as SWMU 52 | 05-5 |
| 9 | 43 | Drum storage area - new products (inactive; no details available) | 05-1 through 05-6 (precise location unknown) |
| 10 | 20 | Same as SWMU 53 | 10-1 |
| 12 and 13 | Factory 83/84 | Drum storage area - new paint thinner and hydraulic oil and drum storage area - hazardous waste (PCBs and asbestos) (no details available) | 83/84-1 through 83/84-7 (precise locations unknown) |
| 14 | 36 | Drum storage area - new oils, coolants, and cleaners | 36-2 |
| 15 | Factory 81 | Drum storage area - alkaline cleaners and hydraulic oils (inactive; no details available) | 81-1 through 81-4 (precise location unknown) |
| 16 through 19 | 20 | 15,000-gallon transmission fluid tanks #1 through #4 | 10-1 |
| 22 | 20 | Solid waste transfer area | 10-2 |
| 23 | 20 | Former 265,000-gallon waste oil tank | 10-2 |
| 24 and 25 through 30 | Factory 31 (now Factory 83/84) | 1,200-gallon AST for storing new product hydraulic and cutting oils and USTs #1 through #6 for storing new product hydraulic and cutting oils (10,000 to 12,000 gallons each) | 83/84-1 through 83/84-7 (precise locations unknown) |
| 31 | 36 | Same as SWMU 2 | 36-1 |
| 32 | 36 | Chip bins for processing metal chips | 36-1 |

Note: Solid Waste Management Units (SWMUs) and Areas of Concern (AOCs) were identified based on the USEPA's 1987 "Preliminary Review and Visual Site Inspection (PR/VS) Report."

TABLE 2
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF AREAS OF INTEREST (AOIs)

| AOI Id. | AOI Summary Description |
|--|--|
| Building 38 Area | |
| 38-1 | Northern portion of Building 38, including several process waste sumps, trenches, former car lifts, and a former 8,000-gallon fuel oil UST. |
| Factory 36 Area | |
| 36-1 | Northern and central portions of Building 36, involving various active engine manufacturing process, including various "wet" (i.e., use of cutting and/or cooling oils) and "dry" (i.e., no use of cutting and/or cooling oils) metal machining operations. Due to the nature of the operations (i.e., full production), it is difficult to visually assess whether releases have occurred. |
| 36-2 | Basement area located along the east side of the central portion of Building 36, involving a former metal chip processing operation used to separate residual cutting and cooling oils from metal machining chips. Free-floating product is located immediately downgradient of this basement area. |
| 36-3 | Basement area located beneath the southeastern corner of Building 36, involving a final engine assembly area, several ancillary, main process waste oil collection/processing operations, and several former ASTs and USTs identified on the 1973 and 1991 Site Drawings. Oil has been historically observed on the floor of the basement at various locations. |
| 36-4 | Southcentral and southeastern portions of the Building 36, involving a former "wet" (i.e., use of cutting and/or cooling oils) metal machining operation and several active engine assembly operations. Trenches associated with these operations routinely contain standing oil, and the integrity of such trenches is unknown. |
| 36-5 | Area located immediately south of AOI 36-5 involving a former UST farm and active AST farm, as well as a 6' wide x 6' high subsurface tunnel which connected the former UST farm with Building 36. A prior release(s) from the UST farm in this area has been documented, and floor staining has been observed in the tunnel. |
| Buildings 55, 55A, and 55B Area | |
| 55-1 | Overall area of the Site's process wastewater treatment facilities, involving various waste oil storage facilities, clarifiers, mixing tanks, etc. Past investigations of this area have indicated impacts to underlying soil and groundwater, presumably resulting from a release(s) from these facilities. |
| Factory 10 Area | |
| 10-1 | Overall area of Building 20, including its basement areas, manufacturing operations, external areas immediately surrounding the building, and several tanks identified on the 1973 and 1991 Site Drawings. Past investigations of the Building 20 Area have indicated impacts to underlying soil and groundwater resulting from releases from associated operations. |
| 10-2 | Solid waste transfer station located immediately east of Building 20 and immediately south of Building 22 and Tanks 24 and 25 identified on the 1973 Site Drawing. Residual oil draining from solid waste stored in the solid waste transfer station occasionally collects on the concrete pavement of this area, which has numerous cracks and fissures. Residual oil is recovered via a centrally located pit that is routinely emptied. |
| 10-3 | Basement area of Building 22, including two process waste oil sumps which collect oil leaks from compressors via floor drains, and Tank 24-1 identified on the 1991 Site Drawing. |
| 10-4 | Scrapyard area located immediately south of Building 20 used since 1950 for scrap material storage, vehicle dismantling, and vehicle equipment storage. Past investigations of this area have indicated impacts to underlying soil and groundwater resulting from releases from associated operations. |
| Factory 05 Area | |
| 05-1 | Basement area located along the southeast portion of Building 43, involving a metal machining chip processing operation and several process wastewater system sumps and tanks. Free-floating product is located immediately adjacent to this basement area. |
| 05-2 | Central east portion of Building 43, involving a "Filtration Room," an "Oil Room," a below-grade vault, and an elevator pit. Over 2 feet of oil material has been noted on occasion within the below-grade vault in this area. The source of this material is unknown; however, it may be associated with the adjacent Oil Room and/or Filtration Room. |

TABLE 2
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF AREAS OF INTEREST (AOIs)

| AOI Id. | AOI Summary Description |
|---------------------------------|---|
| 05-3 | Basement area of Building 43 beneath transmission component heat treating operations, containing a relatively large process waste oil sump, various other smaller sumps and drains, and intermittent pooling of oil on floor surfaces, as well as several former and existing ASTs and USTs located along the east side of the basement area. |
| 05-4 | "Cold Former Room," involving various metal forming operations utilizing various process oils and other fluids and recirculation trenches and sumps. |
| 05-5 and 05-6 | Southern and northern portions of Building 43 (respectively), involving various active process machinery, collection trenches, and sumps (both "wet" and "dry" operations). Due to the nature of the operations (i.e., full production), it is difficult to visually assess whether releases have occurred. |
| Factory 03 Area | |
| 03-1 | Overall area of the Factory 03 building complex, including various quenching and cooling oil systems utilized for various metal forging, quenching, and cooling operations, as well as various ancillary process waste sumps, process trenches, elevator pits, and process material storage areas. Past investigations of this area have indicated impacts to underlying soil and groundwater resulting from releases from associated operations. |
| Buildings 65 and 99 Area | |
| 65-1 | Overall area of Building 65, involving a main process waste pump station (Waste Station #5) for the Site's process wastewater treatment system. Oil has been historically observed on the floor of the basement at various locations. |
| Factory 81 Area | |
| 81-1 | Basement area beneath the southern and central portions of Building 71B, involving three metal machining chip/cooling and cutting oil filtration/processing operations, as well as an inactive hydraulic elevator, several process waste oil sumps and tanks, a drum storage area, and an inactive hazardous waste storage area. Oils intermittently pool throughout the basement area. |
| 81-2 | Area of active metal welding and machining and torque converter assembly operations performed in Buildings 70, 70B, 71, 72, 73, 73A, 73B, and 74 (both "wet" and "dry" operations), as well as area of former foundry operations performed in northern portion of Building 70 and areas of former "pig iron" and scrap steel storage immediately east of Buildings 70 and 73, respectively. Free-floating product is located immediately adjacent to Building 73. |
| 81-3 | Basement area of Building 70, involving former foundry operations, as well as an elevator pit along the west side of Building 70A, areas of "wet" metal machining operations in eastern portion of Building 73, and a forklift battery charging area in the northwest portion of Building 69. Floor staining noted within basement area; the integrity of basement floor is unknown. |
| 81-4 | Basement areas of Buildings 69A and 69B, involving facility air compressor operations. Past operations within this basement involved the draining of oils from compressors onto the floor; the integrity of basement floor is unknown. |
| 81-5 | Tanks 69A-1 through 69A-4 and 116, 117, 118, and 142 identified on the 1973 and 1991 Site Drawings and Tanks 86-1 through 86-5 identified on the 1991 Site Drawing. The concrete secondary containment area associated with these tanks contain standing transmission fluid, and the integrity of this containment is unknown. |
| Factory 83/84 Area | |
| 83/84-1 through 83/84-3 | Areas of various former and existing machining operations in Buildings 11, 32 (including two basements), and 66A/66D (both "wet" and "dry" operations). A prior release within Building 32 has been documented. |
| 83/84-4 | Former "wet" metal machining operation in central portion of Building 66, including three process oil collection/recirculation sumps, and an inactive rail loading area and associated floor sumps along the north side of Building 66C. The floor of the loading area is saturated with oil, and the associated floor sumps still contain oil (integrity unknown). |
| 83/84-5 | Various inactive or former process trenches and pits and an inactive heat treating tunnel, all in Building 66. Many of these units still contain various oils and/or other process fluids, and the integrity of these units is unknown. |
| 83/84-6 | Forklift battery charging area and associated trench and pit in central portion of Building 83A (contain oil) and drum storage area in the southern portion of Building 83 used for metal-working fluids and corrosion inhibitors (floor staining). |

TABLE 2
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF AREAS OF INTEREST (AOIs)

| AOI Id. | AOI Summary Description |
|---|---|
| 83/84-7 | Tanks 50 through 58 identified on the 1973 Site Drawing and Tanks 88-1 through 88-4 and 88-11 identified on the 1991 Site Drawing. A prior release(s) from these tanks has been documented. |
| Buildings 21 and 97 Area | |
| 21-1 | Overall area of Building 21 and area immediately to the southeast of Building 21, involving former metal machining chip briquetting operations and current metal welding and tool grinding operations and heat treatment laboratories. The former briquetting operations purportedly involved the release of oils to soil surfaces in this area. |
| Buildings 15, 61, 61A, and 85 Area | |
| 85-1 | Elevator pit along the north-central side of Building 85, trenches related to engine test area in the eastern portion of Building 85, and a basement/vault area toward the center of Building 85. The integrity of these units is unknown. |
| Buildings 86 and 86A Area | |
| 86-1 | Overall area of Building 86 and areas immediately southeast and west of Building 86, collectively involving a hazardous waste drum storage area, a process waste oil pump station (integrity unknown), a waste transport vehicle storage area (pavement staining; integrity unknown), and Tanks 59 through 65 identified on the 1973 Site Drawing (documented release). |
| Building 07 Area | |
| 07-1 | Former coal yard immediately north of Building 07 (unlined) and several other process facilities (e.g., waste sludge dump station and waste sludge storage tanks) along north side of Building 07 (integrity unknown). |
| 07-2 | Inactive lime "Slaker House" and adjacent inactive lime slurry tank adjacent to the southwest corner of Building 07 (integrity unknown). |
| 07-3 | Two elevator pits in the northcentral and southcentral portions of Building 07 and bulk sulfuric acid storage area in the southeast corner of Building 07 (integrity unknown). |

Notes:

- 1: AST: Aboveground Storage Tank; refer to Table 3 for additional information.
- 2: UST: Underground Storage Tank; refer to Table 3 for additional information.
- 3: 1973 Site Drawing and 1991 Site Drawing: Refer to GM's Buick Motor Division Drawing No. 42361-M, dated 1973 and Flint Automotive Division Drawing No. C70444-M, dated 1991, respectively.

TABLE 3
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

UNDERGROUND AND ABOVEGROUND STORAGE TANK SUMMARY

| Identification | | Current AOI/SWMU/AOC Designation | Building Association | Date Installed | Type | Capacity (gals., unless noted otherwise) | Materials Stored | Registration Status (see Notes 4 and 5) | Operational Status | | |
|----------------|----------------|----------------------------------|----------------------|----------------|-------------------|--|-------------------|---|---|--|----------------------------------|
| 1991 Site Dwg. | 1973 Site Dwg. | | | | | | | | | | |
| --- | --- | 38-1 | 38 | 1971 | | 8,000 | Fuel Oil | Removed, but timeframe unknown; closure documentation not available; registration status unknown. | | | |
| --- | 2 | None | 38 | 1964 | UST | 3,000 | Gasoline | | Removed in 1988; Closed: Global, 1997a. | | |
| --- | 1 | | | 1969 | UST | 500 | Fuel Oil | | | | |
| --- | 123 | | | Unknown | UST | 6,000 | Gasoline | | | | |
| 36-1 | B | None | 36 | 1982 | AST | 88,000 cu. ft. | Argon | N/A | Removed, but time frame unknown. | | |
| 36-2 | C | | | Unknown | AST | 8,600 lbs. | Carbon Dioxide | | | | |
| 36-3 | 130 | AOI 36-2 | | 1979 | AST | 6,530 | Propane | | | | |
| --- | JU | | | Unknown | AST | 300 | Gasoline | | | | |
| --- | VV | | | Unknown | AST | 300 | Waste | | | | |
| --- | D | AOI 36-3 | | Unknown | AST | 275 | Diesel Fuel | | | | |
| 36-9 | --- | | | Unknown | AST | Unknown | Unknown | | | | |
| --- | 110 | | | 1981 | UST | 12,000 | Unleaded Gasoline | | | Removed in 1988; WWES, 1991a. Documentation indicates the presence of BTEX and TCE in soil and groundwater. | |
| --- | 111 | | | 1981 | UST | 12,000 | Unleaded Gasoline | | | | |
| --- | QQ | | | Unknown | UST | 300 | Gasoline | | | N/A | Removed, but time frame unknown. |
| --- | SS | | | Unknown | UST | 1,000 | Waste | | | | |
| --- | RR | | | Unknown | UST | 300 | Gasoline | | | | |
| --- | TT | Unknown | AST | 300 | Waste | | | | | | |
| 36-15 | --- | None | Unknown | AST | 500 | Carbon Dioxide | | | | | |
| 36-14 | --- | AOI 36-4 | Unknown | AST | Unknown | Unknown | Existing; active. | | | | |
| T37-1 | --- | AOI 36-5 | 36/37 | 1990 | AST | 15,000 | Hydraulic Oil | N/A | Existing; active. | | |
| T37-2 | --- | | | 1990 | AST | 15,000 | Hydraulic Oil | | | | |
| T37-3 | --- | | | 1990 | AST | 15,000 | Motor Oil | | | | |
| T37-4 | --- | | | 1990 | AST | 15,000 | Motor Oil | | | | |
| T37-5A | --- | | | 1990 | AST | 7,500 | Gasoline | | | | |
| T37-5B | --- | | | 1990 | AST | 7,500 | Indolene | | | | |
| T37-6A | --- | | | 1990 | AST | 7,500 | Unleaded Gasoline | | | | |
| T37-6B | --- | | | 1990 | AST | 7,500 | Unleaded Gasoline | | | | |
| T37-7A | --- | | | 1990 | AST | 7,500 | Unleaded Gasoline | | | | |
| T37-7B | --- | | | 1990 | AST | 7,500 | Unleaded Gasoline | | | | |
| T37-8 | --- | | | Unknown | AST | Unknown | Fire Suppression | | | | |
| --- | 3 | | | 1950 | UST | 12,000 | VMP Naphtha | | | Removed in 1991; WWES, 1991b. Tank farm 37 Area. Release reported from tanks during excavation activities. Interim Measure currently installed (recovery trench and well). | |
| --- | 4 | | | 1950 | UST | 12,000 | Gasoline | | | | |
| --- | 5 | | | 1950 | UST | 6,000 | Reg. Gasoline | | | | |
| --- | 6 | | | 1950 | UST | 12,000 | Hydraulic Oil | | | | |
| --- | 7 | | | 1950 | UST | 12,000 | Hydraulic Oil | | | | |
| --- | 8 | | | 1950 | UST | 12,000 | Hydraulic Oil | | | | |
| --- | 9 | 1950 | UST | 12,000 | Motor Oil | | | | | | |
| --- | 10 | 1950 | UST | 12,000 | Motor Oil | | | | | | |
| --- | 11 | 1950 | UST | 12,000 | Motor Oil | | | | | | |
| --- | 12 | 1950 | UST | 12,000 | Motor Oil | | | | | | |
| --- | 13 | 1950 | UST | 12,000 | Motor Oil | | | | | | |
| --- | 14 | 1950 | UST | 12,000 | Min Seal | | | | | | |
| --- | 15 | 1950 | UST | 12,000 | Min Seal | | | | | | |
| --- | 16 | 1950 | UST | 12,000 | P-47 Way Oil | | | | | | |
| --- | 17 | 1950 | UST | 12,000 | EIray Soluble Oil | | | | | | |
| --- | 18 | 1950 | UST | 12,000 | EIray Soluble Oil | | | | | | |
| --- | 19 | 1950 | UST | 12,000 | Motor Oil | | | | | | |
| --- | 20 | 1950 | UST | 12,000 | A-50 Oil | | | | | | |
| --- | V | None | 1956 | AST | 30,000 | Propane | N/A | Removed, but time frame unknown. | | | |
| --- | --- | | 1982 | AST | 9,000 | Liquid Oxygen | | | | | |

TABLE 3
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN
DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET
UNDERGROUND AND ABOVEGROUND STORAGE TANK SUMMARY

| Identification | | Current AOI/SWMU/AOC Designation | Building Association | Date Installed | Type | Capacity (gals., unless noted otherwise) | Materials Stored | Registration Status (see Notes 4 and 5) | Operational Status |
|---|-------------------|--|-------------------------|------------------------------|------|--|--|---|--|
| 1991 Site Dwg. | 1973 Site Dwg. | | | | | | | | |
| T55-1/-2 | 147 | AOI 55-1/SWMUs 23 through 21 and 23 through 30 | 55/55A/55B | Post 1956 (majority 1957) | AST | ~ 500 to 750,000 | Various waste oil storage, clarifiers, mixing tanks, etc. | N/A | Existing and non-existing/active and inactive. |
| T55-3 | 148 | | | | | | | | |
| 55A-1 | 161 | | | | | | | | |
| 55A-2 | 162 | | | | | | | | |
| 55A-3 | 159 | | | | | | | | |
| 55A-4 | 165 | | | | | | | | |
| 55A-5 | 157 | | | | | | | | |
| 55A-6 | 156 | | | | | | | | |
| 55A-7 | 155 | | | | | | | | |
| 55A-8 | 154 | | | | | | | | |
| 55A-9 | 153 | | | | | | | | |
| 55A-10 | --- | | | | | | | | |
| 55A-11 | --- | | | | | | | | |
| 55A-12 | --- | | | | | | | | |
| 55A-13 | --- | | | | | | | | |
| 55A-15 | 151 | | | | | | | | |
| 55A-15 | 152 | | | | | | | | |
| 55A-16 | 149 | | | | | | | | |
| 55A-17 | 168 | | | | | | | | |
| 55A-18 | --- | | | | | | | | |
| 55A-19 | --- | | | | | | | | |
| 55A-20 | 167 | | | | | | | | |
| 55A-21 | 150 | | | | | | | | |
| 55A-22 | 158 | | | | | | | | |
| 55A-23 | --- | | | | | | | | |
| 55A-24 | --- | | | | | | | | |
| 55A-25 | --- | | | | | | | | |
| 55A-26 | --- | | | | | | | | |
| 55A-27 | 166 | | | | | | | | |
| 55A-28 | 160 | | | | | | | | |
| 55A-29/-30 | 163 | | | | | | | | |
| 55A-31 | 164 | | | | | | | | |
| 55A-33 | --- | | | | | | | | |
| 55A-34 | --- | | | | | | | | |
| Several other tanks not identified on drawings | | | | | | | | | |
| 20-3 | 122 | AOIs 10-1, 10-2, and 10-3/SWMUs 44 and 45/AOCs 16 through 19 and 23 | 20 | Unknown | AST | 20,000 | Auto. Trans. Fluid | N/A | Removed, but time frame unknown. |
| 20-4 | 21 | | | Unknown | AST | 20,000 | Auto. Trans. Fluid | | |
| 20-5 | 22 | | | Unknown | AST | 20,000 | Auto. Trans. Fluid | | |
| 20-7 | 183 | | | 1982 | AST | 15,000 | 5 Star 40 | | |
| 20-6 | 184 | | | 1982 | AST | 15,000 | 496 | | |
| 20-9 | 185 | | | 1982 | AST | 15,000 | LP 700 | | |
| 20-8 | 186 | | | 1982 | AST | 15,000 | 48-A | | |
| 20-11 | 187 | | | 1982 | AST | 15,000 | Unknown | | |
| 20-10 | 188 | | | 1982 | AST | 15,000 | 5252 | | |
| 20-16 | 189 | | | 1982 | AST | 15,000 | LCO 200 | | |
| | | | | | | | | | |

TABLE 3
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN
DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET
UNDERGROUND AND ABOVEGROUND STORAGE TANK SUMMARY

| Identification | | Current AOI/SWMU/AOC Designation | Building Association | Date Installed | Type | Capacity (gals., unless noted otherwise) | Materials Stored | Registration Status (see Notes 4 and 5) | Operational Status | | |
|--|----------------|----------------------------------|----------------------|-----------------|----------------|--|----------------------------------|--|--|-----------------------|---|
| 1991 Site Dwg. | 1973 Site Dwg. | | | | | | | | | | |
| 20-17 | 190 | | | 1982 | AST | 15,000 | LCO 224 | N/A | Existing; active. | | |
| 20-14 | 191 | | | 1982 | AST | 9,000 | 95/5 | | | | |
| 20-15 | 192 | | | 1982 | AST | 9,000 | Gear Lube | | | | |
| 20-12 | 193 | | | 1982 | AST | 9,000 | C-60 | | | | |
| 20-13 | 194 | | | 1982 | AST | 9,000 | Wey Lube | | | | |
| 20-19/19A | --- | | | Unknown | AST | 6,000/6,000 | Process Paint/Waste Solvent | Existing; inactive. | | | |
| 20-20/20A | --- | | | Unknown | AST | 6,000/6,000 | Process Paint/Waste Solvent | | | | |
| 20-21/21A | --- | | | Unknown | AST | 6,000/6,000 | Process Paint/Waste Solvent | | | | |
| --- | A | | | Unknown | AST | 275 | Diesel Fuel | Removed, but time frame unknown. | | | |
| 22-1 | E | | | 22 | Unknown | AST | 200 | | Diesel Fuel | | |
| 24-1 | --- | | | 24 | 1980 | AST | 250 | #2 Diesel Fuel | Existing; active. | | |
| --- | 24 | | | southwest of 24 | 1942 | UST | 200,000 | Waste Oil | Removed, but time frame unknown; closure documentation not available; registration status unknown. | | |
| --- | 25 | | | southwest of 24 | 1942 | UST | 200,000 | #2 Fuel Oil | | | |
| Other tanks not identified on drawings | | | | | north of 22 | Unknown | AST | 12,000 | Waste Paint Thinner | N/A | Removed in 1987; closure documentation not available. |
| | | | 20 | Unknow | AST | 265,000 | Waste Oil | | Removed in 1985; closure documentation not available. | | |
| | | | 20 | Unknown | AST | 1,000 | Waste Chloroethane | | | | |
| T43-1 | --- | AOI 05-3 | 43 | Unknown | AST | 11,650 | New S-7 Quench Oil | N/A | Existing; active. | | |
| T43-2 | --- | | | Unknown | AST | 6,750 | Used High Temp. Quench Oil | | | | |
| T43-3 | --- | | | Unknown | AST | 6,750 | Used S-7 Quench Oil | | | | |
| T43-4 | --- | | | Unknown | AST | 11,650 | New High Temp. Quench Oil | | | | |
| T43-5 | --- | | | Unknown | AST | 6,750 | Metal Work Lub. S7-103 | | | | |
| --- | F | | | Unknown | AST | 925 | Mapp. Gas/High-Temp. New Oil | | | | |
| --- | G | | | Unknown | AST | 925 | Mapp. Gas/High-Temp. New Oil | | | | |
| 43-9 | GG | AOI 05-3 | 43 | 1952 | AST | 5,000 | Ammonia | N/A | Existing; active. | | |
| 43-10 | HH | | | 1982 | AST | 10,000 | Methanol | | | | |
| 43-11 | EE | | | None | Unknown | AST | 5,900 | | | Nitrogen | |
| 43-13 | --- | | | AOI 05-2 | Unknown | AST | 8,000 | | | Hydraulic Oil | |
| 43-14 | --- | | | Unknown | AST | 8,000 | Hydraulic Oil | | | | |
| 43-15 | --- | | | Unknown | AST | 8,000 | Hydraulic Oil | | | | |
| 43-17 | --- | | | None | Unknown | AST | Unknown | | | Helium | |
| --- | 27 | | | AOI 05-3 | 1956 | UST | 12,000 | | | S-7 Quench Oil | Removed in 1990; closed; GM, September 1990a. |
| --- | 28 | | | | 1956 | UST | 12,000 | | | S-7 Quench Oil | |
| --- | 29 | | | | 1956 | UST | 12,000 | | | High-Temp. Quench Oil | |
| --- | 30 | 1956 | UST | | 12,000 | S-7/Quinzine | | | | | |
| --- | 31 | 1956 | UST | | 12,000 | S-7 Quench Oil | | | | | |
| --- | 32 | 1956 | UST | 12,000 | S-7 Quench Oil | N/A | Removed, but time frame unknown. | | | | |
| --- | 33 | AOI 05-2 | 1956 | UST | 12,000 | | | LCO-200 | | | |
| --- | AA | AOI 05-1 | Unknown | AST | 275 | | | Diesel Fuel | | | |
| --- | 49 | | 1951 | UST | 3,000 | Reg. Gasoline | N/A | Removed in 1988; closure documentation not available; registration status unknown. | | | |

TABLE 3
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN
DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET
UNDERGROUND AND ABOVEGROUND STORAGE TANK SUMMARY

| Identification | | Current AOI/SWMU/AOC Designation | Building Association | Date Installed | Type | Capacity (gals., unless noted otherwise) | Materials Stored | Registration Status (see Notes 4 and 5) | Operational Status | |
|---|-------------------|--|-------------------------|------------------------------------|---------------------------|--|---------------------|--|---|--|
| 1991 Site Dwg. | 1973 Site Dwg. | | | | | | | | | |
| 30-1 | BB | None | 30 | Unknown | AST | Unknown | Diesel Fuel | N/A | Removed, but time frame unknown. No staining or other indications of release noted. Existing: active. Existing: inactive. | |
| 30-5 | --- | AOI 30-2 | | Unknown | AST | 500 | Carbon Dioxide | Removed in 1990; closed: GM, September 1990b. | | |
| T30B-1 | --- | | | Unknown | AST | 12,000 | S-7 Quench Oil | | | |
| T30B-2 | --- | | | Unknown | AST | 12,000 | S-7 Quench Oil | | | |
| | 35 | | | 1945 | UST | 12,000 | S-7 Quench Oil | | | |
| | 36 | 1945 | UST | 12,000 | S-7 Quench Oil | | | | | |
| | --- | 1945 | UST | 12,000 | S-7 Quench Oil | | | | | |
| 69A-1 | 116 | AOI 81-5 | 69A | Unknown | AST | 20,000 | Auto. Trans. Fluid | N/A | Existing: active. Removed, but time frame unknown. | |
| 69A-2 | 117 | | | Unknown | AST | 20,000 | Auto. Trans. Fluid | | | |
| 69A-3 | 118 | | | Unknown | AST | 20,000 | Auto. Trans. Fluid | | | |
| 69A-4 | 142 | | | Unknown | AST | 20,000 | Auto. Trans. Fluid | | | |
| 86-1 | --- | | | 1989 | AST | 2,500 | #2 Diesel Fuel | | | |
| 86-2 | --- | | | Unknown | AST | Unknown | Unknown | | | |
| 86-3 | --- | | | Unknown | AST | Unknown | Unknown | | | |
| 86-4 | --- | | | Unknown | AST | Unknown | Unknown | | | |
| 86-5 | --- | | | Unknown | AST | Unknown | Unknown | | | |
| 70-4 | J | | | None | 70 | Unknown | AST | | | Unknown |
| 70-5 | I | 1982 | AST | | | 7500 lbs. | Carbon Dioxide | | | |
| 70-6 | H | 1982 | AST | | | 5500 lbs. | Carbon Dioxide | | | |
| 32-1 | --- | AOI 83/84-2 | 32 | Unknown | Unknown | Unknown | Unknown | Status unknown; appears to have been filled in-place. | Status unknown | |
| 88-1 | --- | AOI 83/84-7 | 66/66C | Unknown | UST | Unknown | Unknown | | | |
| 88-2 | --- | | | Unknown | UST | Unknown | Unknown | | | |
| 88-3 | --- | | | Unknown | UST | Unknown | Unknown | | | |
| 88-4 | --- | | | Unknown | UST | Unknown | Unknown | | | |
| --- | 50 | AOI 83/84-7 | 66/66C | 1936 | UST | 12,000 | OLEM Spirits | Release reported: Global, 1997d. Tanks 50, 51, 52, 55, 56, 57, and 58 removed in 1990. Tanks 53 and 54 closed in-place. Further investigations have been proposed. | | |
| --- | 51 | | | 1936 | UST | 12,000 | LS 900 | | | |
| --- | 52 | | | 1936 | UST | 12,000 | Used S-7 Quench Oil | | | |
| --- | 53 | | | 1936 | UST | 12,000 | S-7 Quench Oil | | | |
| --- | 54 | | | 1936 | UST | 12,000 | Used LCO-200 | | | |
| --- | 55 | | | 1936 | UST | 12,000 | LCS 110 | | | |
| --- | 56 | | | 1936 | UST | 12,000 | LCO 231 | | | |
| --- | 57 | | | 1936 | UST | 12,000 | LK 402 | | | |
| 88-11 | 58 | | | 1936 | UST | 3,000 | Reg. Gasoline | | | |
| One other tank not identified on drawings | | | | AOI 83/84-1 through 83/84-7/AOC 24 | Precise locations unknown | Unknown | AST | | Unknown | New Lubricants and Cutting Oils |
| 97-1 | 145 | None | 21/97 | Unknown | AST | Unknown | Helium | N/A | Existing: active Removed, but time frame unknown. Existing: active. | |
| 97-2 | 119 | | | Unknown | AST | Unknown | Helium | | | |
| 97-3 | 121 | | | Unknown | AST | Unknown | Carbon Dioxide | | | |
| 97-4 | 120 | | | Unknown | AST | Unknown | Argon | | | |
| --- | 59 | AOI 86-1 | 86 | 1964 | UST | 6,000 | Reg. Gasoline | Removed in 1989; Global, 1997e. Release reported; soil delineation complete. | | |
| --- | 60 | | | Unknown | AST | 2,000 | #2 Diesel Fuel | | N/A | Removed, but time frame unknown. Tanks removed in 1977: WWES, 1992. Release reported. Interim Measure currently in operation (recovery wells). Further investigations proposed. |
| --- | 61 | | | 1936 | UST | 12,000 | A-5 | | | |
| --- | 62 | | | 1936 | UST | 12,000 | Unknown | | | |
| --- | 63 | | | 1936 | UST | 12,000 | Unknown | | | |
| --- | 64 | | | 1936 | UST | 12,000 | Mineral Seal Oil | | | |
| --- | 65 | | | 1936 | UST | 12,000 | LS 900 | | | |

TABLE 3
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN
DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET
UNDERGROUND AND ABOVEGROUND STORAGE TANK SUMMARY

| Identification | | Current AOI/SWMU/AOC Designation | Building Association | Date Installed | Type | Capacity (gals., unless noted otherwise) | Materials Stored | Registration Status (see Notes 4 and 5) | Operational Status |
|---|-------------------|--|-------------------------|----------------|------|--|--|---|--|
| 1991 Site Dwg. | 1973 Site Dwg. | | | | | | | | |
| 07-4 | --- | AOI 07-1, 07-2, and 07-3/SWMUs 36 through 39 | 07 | Post 1972 | AST | up to 22,000 | Various waste oil receiving/transfer and other process tanks | N/A | Existing and non-existing/active and inactive. |
| 07-5 | --- | | | | | | | | |
| 07-6 | --- | | | | | | | | |
| 07-7 | --- | | | | | | | | |
| 07-8 | --- | | | | | | | | |
| 07-9 | --- | | | | | | | | |
| 07-10 | --- | | | | | | | | |
| 07-11 | --- | | | | | | | | |
| 07-12 | --- | | | | | | | | |
| 07-13 | --- | | | | | | | | |
| 07-14 | --- | | | | | | | | |
| 07-15 | --- | | | | | | | | |
| 07-16 | --- | | | | | | | | |
| 07-17 | --- | | | | | | | | |
| 07-18 | --- | | | | | | | | |
| 07-19 | --- | | | | | | | | |
| 07-20 | --- | | | | | | | | |
| 07-21 | --- | | | | | | | | |
| 07-22 | --- | | | | | | | | |
| 07-23 | --- | | | | | | | | |
| 07-2 | R | | | | | | | | |
| 07-3 | S | | | | | | | | |
| 07-24 | JJ | | | | | | | | |
| Several other tanks not identified on drawings | | | | | | | | | |

Notes:

1. AOI: Area of Interest. AOI location references are approximate.
2. SWMU and AOC: Solid Waste Management Unit and Area of Concern, respectively.
3. AST and UST: Aboveground Storage Tank and Underground Storage Tank, respectively.
4. N/A: Not Applicable. Aboveground storage tanks are not addressed.
5. Registration status refers to the status of the the UST pursuant to Michigan Leaking Underground Storage Tank (LUST) rules.
6. 1973 Site Drawing and 1991 Site Drawing: Refer to GM's Buick Motor Division Drawing No. 42361-M, dated 1973 and Flint Automotive Division Drawing No. C70444-M, dated 1991, respectively.
7. References:
 - Global 1997a "Summary Report, GM NAO Flint Operations, Building 38 - Tank 001/38", Global Environmental Engineering, Inc., January 3, 1997.
 - Global 1997b "Closure Report, NAO Flint Operations, Building 38 - Tank 002/38", Global Environmental Engineering, Inc., January 8, 1997.
 - Global 1997c "Summary Report, GM NAO Flint Operations, Building 38 - Tank 123/38", Global Environmental Engineering, Inc., January 3, 1997.
 - Global 1997d "Summary Report, Building 88 Tank 050/88 - 058/88, GM-CLCD North NAO Flint Operations, Flint, Michigan", Global Environmental Engineering, Inc., August 22, 1997.
 - Global 1997e "Summary Report, Building 86 Tank 059/86, GM-CLCD North NAO Flint Operations, Flint, Michigan", Global Environmental Engineering, Inc., August 25, 1997.
 - GM 1990a "Underground Storage Tank Closure Report, Factory 03 Tank Farm", General Motors Corporation, September 1990.
 - GM 1990b "Underground Storage Tank Closure Report, Factory 05 Tank Farm", General Motors Corporation, September 1990.
 - WWES 1991a "Initial Abatement Measures Report for Building 36 Site at BOC Flint Automotive Division", WW Engineering & Science, Inc., April 1991.
 - WWES 1991b "Underground Storage Tank Removal Report for Tank Farm 37", WW Engineering & Science, Inc., December 1991.
 - WWES 1992 "Preliminary Subsurface Investigation for Former Tank Farm South of Building No. 87/Overpass", WW Engineering & Science, Inc., February 1992.

TABLE 4

**GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS**

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---|------------------|------------------|----------------|-------------|---------------|------|------|-------|--------|-------------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Factory 03, Building 30 Investigation | | | | | | | | | | |
| 03-109 | MW-9 | 12 | 12.5 | 5/3/90 | x | | | | | |
| 03-110 | MW-10 | 11 | 11.8 | 5/3/90 | x | | | | | |
| 03-110 | MW-10 | 11.8 | 12.5 | 5/3/90 | x | | | | | |
| 03-111 | MW-11 | 11.3 | 11.8 | 5/3/90 | x | | | | | |
| 03-112 | MW-12 | 8.5 | 10 | 5/3/90 | x | | | | | |
| 03-113 | MW-13 | 14.5 | 15 | 5/3/90 | x | | | | | |
| 03-114 | MW-14 | 11 | 12 | 5/4/90 | x | | | | | |
| Building 87/Leith St. Overpass Investigation | | | | | | | | | | |
| 87-101 | OP/TB-1 (SS-5) | 10 | 12.5 | 10/29/91 | | | x | | | |
| 87-101 | OP/TB-1 (SS-6) | 12.5 | 15 | 10/29/91 | | | | x | x | Metals: Lead only |
| 87-102 | OP/TB-2B (SS-6) | 13 | 15.5 | 10/29/91 | | | x | | | |
| 87-102 | OP/TB-2B (SS-7) | 15.5 | 18 | 10/29/91 | | | | x | x | Metals: Lead only |
| 87-102 | OP/TB-2B (SS-11) | 25.5 | 28 | 10/30/91 | | | x | | | |
| 87-102 | OP/TB-2B (SS-12) | 28 | 30.5 | 10/30/91 | | | | x | x | Metals: Lead only |
| 87-102 | OP/TB-2B (SS-19) | 45.5 | 48 | 10/30/91 | | | x | | | |
| 87-102 | OP/TB-2B (SS-20) | 48 | 50 | 10/30/91 | | | | x | x | Metals: Lead only |
| 87-103 | OP/TB-3 (SS-6) | 13 | 15.5 | 10/31/91 | | | | x | x | Metals: Lead only |
| 87-103 | OP/TB-3 (SS-7) | 15.5 | 18 | 10/31/91 | | | x | | | |
| 87-104 | OP/TB-4 (SS-6) | 13 | 15.5 | 10/31/91 | | | | x | x | Metals: Lead only |
| 87-104 | OP/TB-4 (SS-7) | 15.5 | 18 | 10/31/91 | | | x | | | |
| 87-105 | OP/TB-5C (SS-6) | 12.5 | 15 | 11/4/91 | | x | x | | | Metals: Lead only |
| 87-106 | OP/TB-6 (SS-9) | 20.5 | 23 | 11/5/91 | | | | | x | Metals: Lead only |
| Storm Sewer Outfall 003 Investigation | | | | | | | | | | |
| 20-701 | Sec.2/TB-1 | 20 | 22.5 | 9/24/91 | | x | | | | x |
| 20-101 | Sec.2/TB-2 | 7.5 | 10 | 10/14/91 | | x | | | | x |
| 20-209 | Sec.4/TB-1 | 7.5 | 10 | 9/23/91 | | x | | | | x |
| 20-209 | Sec.4/TB-1 | 25 | 27.5 | 9/23/91 | | x | | | | x |
| 20-220 | Sec.4/TB-2 | 12.5 | 15 | 9/24/91 | | x | | | | x |
| 43-100 | Sec.5/TB-1 | 2.5 | 5 | 9/25/91 | | x | | | | x |
| 20-121 | Sec.6/TB-1 | 7.5 | 10 | 9/26/91 | | x | | | | x |
| 43-160 | Sec.7/TB-1 | 2.5 | 5 | 10/1/91 | | x | | | | x |
| 43-160 | Sec.7/TB-1 | 7.5 | 10 | 10/1/91 | | x | | | | x |
| 43-161 | Sec.7/TB-4 | 10 | 12.5 | 10/3/91 | | x | | | | x |
| 43-162 | Sec.7/TB-5 | 7.5 | 10 | 10/3/91 | | x | | | | x |
| 20-141 | Sec.7/TB-7 | 5 | 7.5 | 10/10/91 | | x | | | | x |
| 43-163 | Sec.7/TB-8 | 0 | 2.5 | 10/16/91 | | x | | | | x |
| 20-144 | Sec.8/TB-1 | 7.5 | 10 | 10/7/91 | | x | | | | x |
| 20-145 | Sec.8/TB-2B | 7.5 | 10 | 10/8/91 | | x | | | | x |
| 20-161 | Sec.9/TB-2 | 2.5 | 5 | 10/15/91 | | x | | | | x |
| 20-161 | Sec.9/TB-2 | 7.5 | 10 | 10/15/91 | | x | | | | x |
| 20-170 | Sec.9/TB-3 | 5 | 7.5 | 10/22/91 | | x | | | | x |
| 20-262 | Sec.10/TB-1 | 15 | 17.5 | 9/19/91 | | x | | | | x |
| 20-104 | Sec.11/TB-1 | 5 | 7.5 | 10/11/91 | | x | | | | x |
| 20-202 | Sec.12/TB-1 | 2.5 | 5 | 10/10/91 | | x | | | | x |
| 43-164 | Sec.13/TB-1 | 5 | 7.5 | 10/21/91 | | x | | | | x |
| 70-100 | Sec.17/TB-1 | 7.5 | 10 | 9/18/91 | | x | | | | x |
| 70-108 | Sec.17/TB-2 | 5 | 7.5 | 9/19/91 | | x | | | | x |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---|---------------|------------------|----------------|-------------|---------------|-------|-------|-------|--------|----------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Storm Sewer Outfall 003 Investigation | | | | | | | | | | |
| 70-106 | Sec.17/TB-3 | 2.5 | 5 | 10/17/91 | | x | | | x | |
| 30-100 | Sec.18/TB-1 | 10 | 12.5 | 10/9/91 | | x | | | x | |
| 30-201 | Sec.18/TB-2 | 5 | 7.5 | 10/9/91 | | x | | | x | |
| 70-260 | Sec.20/TB-1 | 2.5 | 5 | 9/16/91 | | x | | | x | |
| 70-107 | Sec.20/TB-2 | 10 | 12.5 | 9/17/91 | | x | | | x | |
| Tank Farm 37 Area Investigation | | | | | | | | | | |
| 20-500 | MW-5 (SS-1) | 16 | 16 | 7/17/92 | | x | x | x | x | |
| 20-501 | MW-6 (SS-4) | 10.5 | 10.5 | 7/23/92 | | x | x | x | x | |
| 20-502 | MW-7 (SS-4) | 10.5 | 10.5 | 7/22/92 | | x | x | x | x | |
| 20-503 | MW-8 (SS-4) | 10.5 | 10.5 | 7/20/92 | | x | x | x | x | |
| 20-506 | MW-9 (SS-4) | 10.5 | 10.5 | 7/23/92 | | x [x] | x [x] | x [x] | x [x] | |
| 20-505D | MW-10D (SS-4) | 10.5 | 10.5 | 7/23/92 | | x | x | x | x | |
| 37-101 | TB-5 (SS-5) | 13 | 13 | 7/15/92 | | x | x | x | x | |
| 37-101 | TB-5 (SS-10) | 25.5 | 25.5 | 7/15/92 | | x | x | x | x | |
| 37-102 | TB-6 (SS-1) | 16 | 16 | 7/16/92 | | x | x | x | x | |
| 37-102 | TB-6 (SS-5) | 26 | 26 | 7/16/92 | | x | x | x | x | |
| 37-103 | TB-7 (SS-1) | 16 | 16 | 7/16/92 | | x | x | x | x | |
| 37-103 | TB-7 (SS-5) | 26 | 26 | 7/16/92 | | x | x | x | x | |
| 37-104 | TB-8 (SS-4) | 10.5 | 10.5 | 7/16/92 | | x | x | x | x | |
| 37-105 | TB-9 (SS-4) | 10.5 | 10.5 | 7/21/92 | | x | x | x | x | |
| 37-106 | TB-10 (SS-1) | 16 | 16 | 7/21/92 | | x | x | x | x | |
| 37-106 | TB-10 (SS-5) | 26 | 26 | 7/21/92 | | x | x | x | x | |
| Storm Sewer Outfall 003 Section 17 Investigation | | | | | | | | | | |
| 70-105 | Sec.17/MW-A4 | 3 | 5 | 8/19/92 | | | x | x | x | |
| 70-105 | Sec.17/MW-A4 | 18 | 20 | 8/19/92 | | | x | x | x | |
| 70-102 | Sec.17/MW-A5 | 3 | 5 | 8/19/92 | | | x | x | x | |
| 70-102 | Sec.17/MW-A5 | 13 | 15 | 8/19/92 | | | x | x | x | |
| 70-101 | Sec.17/MW-A6 | 3 | 5 | 8/19/92 | | | x | x | x | |
| 70-101 | Sec.17/MW-A6 | 13 | 15 | 8/19/92 | | | x | x | x | |
| 70-103 | Sec.17/MW-A7 | 3 | 5 | 8/19/92 | | | x | x | x | |
| 70-103 | Sec.17/MW-A7 | 13 | 15 | 8/19/92 | | | x | x | x | |
| 70-109 | Sec.17/MW-A8 | 3 | 5 | 8/19/92 | | | x | x | x | |
| 70-109 | Sec.17/MW-A8 | 13 | 15 | 8/19/92 | | | x | x | x | |
| 70-104 | Sec.17/MW-A9 | 3 | 5 | 8/19/92 | | | x | x | x | |
| 70-104 | Sec.17/MW-A9 | 13 | 15 | 8/19/92 | | | x | x | x | |
| 70-222 | HB-1 | 2 | 3 | 8/10/92 | | x | | | x | |
| 70-221 | HB-2 | 2 | 3 | 8/11/92 | | x | | | x | |
| 70-220 | HB-3 | 2 | 3 | 8/10/92 | | x | | | x | |
| 70-219 | HB-4 | 2 | 3 | 8/10/92 | | x | | | x | |
| 70-218 | HB-5 | 2 | 3 | 8/11/92 | | x | | | x | |
| 70-226 | HB-6 | 2 | 3 | 8/11/92 | | x | | | x | |
| 70-225 | HB-7 | 2 | 3 | 8/11/92 | | x | | | x | |
| 70-224 | HB-8 | 2 | 3 | 8/10/92 | | x | | | x | |
| 70-214 | HB-9 | 2 | 3 | 8/11/92 | | x | | | x | |
| 70-223 | HB-10 | 2 | 3 | 8/10/92 | | x | | | x | |
| 70-212 | HB-11 | 2 | 3 | 8/10/92 | | x | | | x | |
| 70-210 | HB-12 | 2 | 3 | 8/10/92 | | x | | | x | |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|--|-------------|------------------|----------------|-------------|---------------|------|------|-------|--------|------------------------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Factory 10, Building 20 Investigation | | | | | | | | | | |
| 20-279 | SB-1 | 0 | 0 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-279 | SB-1 (pipe) | 0 | 0 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-471 | SB-2 | 2.5 | 2.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-471 | SB-2 | 7.5 | 7.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-463 | SB-3 | 5 | 5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-462 | SB-4 | 0 | 0 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-462 | SB-4 | 10 | 10 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-206 | SB-5 | 5 | 7 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-206 | SB-5 | 11 | 13 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-460 | SB-6 | 6 | 10 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-460 | SB-6 | 12.5 | 14.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-278 | SB-7 | 5 | 12 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-278 | SB-7 | 13 | 15 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-248 | SB-8 | 7.5 | 9.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-248 | SB-8 | 12.5 | 14.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-274 | SB-9 | 10 | 12 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-274 | SB-9 | 12.5 | 14.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-167 | SB-11 | 2.5 | 7 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-167 | SB-11 | 12.5 | 14.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-249 | SB-12 | 0 | 2 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-249 | SB-12 | 10 | 12 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-247 | SB-13 | 5 | 7 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-247 | SB-13 | 13 | 15 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-210 | SB-14 | 7.5 | 9.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-210 | SB-14 | 10 | 12 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-168 | SB-15 | 0 | 2 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-168 | SB-15 | 13 | 15 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-472 | SB-16 | 10 | 10 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-169 | SB-17 | 12.5 | 14.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-169 | SB-17 | 14.5 | 16.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-466 | SB-18 | 0 | 0 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-466 | SB-18 | 7.5 | 7.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-467 | SB-19 | 0 | 2 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-467 | SB-19 | 5 | 7 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-275 | SB-20 | 0 | 0 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| 20-275 | SB-20 | 7.5 | 7.5 | 10/1/92 | | x | | x | x | Metals: Lead and barium only |
| Eastern Property Boundary Investigation | | | | | | | | | | |
| SB-1 | SB-1N | 18 | 20 | 6/14/93 | x | x | x | x | x | |
| SB-1 | SB-1N | 23 | 25 | 6/14/93 | x | x | x | x | x | |
| SB-2 | SB-2N | 18 | 20 | 6/14/93 | x | x | x | x | x | |
| SB-2 | SB-2N | 25 | 27 | 6/14/93 | x | x | x | x | x | |
| SB-3 | SB-3N | 20 | 22 | 6/15/93 | x | x | x | x | x | |
| SB-3 | SB-3N | 25 | 27 | 6/15/93 | x | x | x | x | x | |
| SB-4 | SB-4N | 18 | 20 | 6/15/93 | x | x | x | x | x | |
| SB-4 | SB-4N | 23 | 25 | 6/15/93 | x | x | x | x | x | |
| SB-5 | SB-5N | 18 | 20 | 6/15/93 | x | x | x | x | x | |
| SB-5 | SB-5N | 23 | 25 | 6/15/93 | x | x | x | x | x | |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|--|-----------|------------------|----------------|-------------|---------------|------|------|-------|--------|-----------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Eastern Property Boundary Investigation (continued) | | | | | | | | | | |
| SB-6 | SB-6N | 17 | 19 | 6/15/93 | x | x | x | x | x | |
| SB-6 | SB-6N | 25 | 27 | 6/15/93 | x | x | x | x | x | |
| SB-6A | SB-6N(A) | 15 | 17 | 10/5/93 | | x | x | x | x | Pesticides also |
| SB-6A | SB-6N(A) | 25 | 27 | 10/5/93 | | x | x | x | x | Pesticides also |
| SB-7 | SB-7N | 15 | 17 | 6/15/93 | x | x | x | x | x | |
| SB-7 | SB-7N | 23 | 25 | 6/15/93 | x | x | x | x | x | |
| SB-8 | SB-8N | 15 | 17 | 6/15/93 | x | x | x | x | x | |
| SB-8 | SB-8N | 25 | 27 | 6/15/93 | x | x | x | x | x | |
| SB-8A | SB-8N(A) | 15 | 17 | 10/5/93 | | x | x | x | x | Pesticides also |
| SB-8A | SB-8N(A) | 25 | 27 | 10/5/93 | | x | x | x | x | Pesticides also |
| SB-9 | SB-9N | 13 | 15 | 6/15/93 | x | x | x | x | x | |
| SB-9 | SB-9N | 20 | 22 | 6/15/93 | x | x | x | x | x | |
| SB-10 | SB-10N | 13 | 15 | 6/16/93 | x | x | x | x | x | |
| SB-10 | SB-10N | 20 | 22 | 6/16/93 | x | x | x | x | x | |
| SB-11 | SB-11N | 12 | 14 | 6/16/93 | x | x | x | x | x | |
| SB-11 | SB-11N | 22 | 24 | 6/16/93 | x | x | x | x | x | |
| SB-12 | SB-12N | 12 | 14 | 6/16/93 | x | x | x | x | x | |
| SB-12 | SB-12N | 23 | 25 | 6/16/93 | x | x | x | x | x | |
| SB-13 | SB-13N | 11 | 13 | 6/16/93 | x | x | x | x | x | |
| SB-13 | SB-13N | 18 | 20 | 6/16/93 | x | x | x | x | x | |
| SB-14 | SB-14N | 11 | 13 | 6/16/93 | x | x | x | x | x | |
| SB-14 | SB-14N | 18 | 20 | 6/16/93 | x | x | x | x | x | |
| SB-15 | SB-15N | 10 | 12 | 6/16/93 | x | x | x | x | x | |
| SB-15 | SB-15N | 18 | 20 | 6/16/93 | x | x | x | x | x | |
| SB-16 | SB-16N | 12 | 14 | 6/16/93 | x | x | x | x | x | |
| SB-16 | SB-16N | 18 | 20 | 6/16/93 | x | x | x | x | x | |
| SB-17 | SB-17N | 8 | 10 | 6/16/93 | x | x | x | x | x | |
| SB-17 | SB-17N | 18 | 20 | 6/16/93 | x | x | x | x | x | |
| SB-18 | SB-18N | 10 | 12 | 6/16/93 | x | x | x | x | x | |
| SB-18 | SB-18N | 18 | 20 | 6/16/93 | x | x | x | x | x | |
| SB-19 | SB-19N | 12 | 14 | 6/17/93 | x | x | x | x | x | |
| SB-19 | SB-19N | 18 | 20 | 6/17/93 | x | x | x | x | x | |
| SB-20 | SB-20N | 10 | 12 | 6/17/93 | x | x | x | x | x | |
| SB-20 | SB-20N | 15 | 17 | 6/17/93 | x | x | x | x | x | |
| SB-21 | SB-21N | 10 | 12 | 6/17/93 | x | x | x | x | x | |
| SB-22 | SB-22N | 8 | 10 | 6/17/93 | x | x | x | x | x | |
| SB-22 | SB-22N | 20 | 22 | 6/17/93 | x | x | x | x | x | |
| SB-23 | SB-23N | 8 | 10 | 6/17/93 | x | x | x | x | x | |
| SB-23 | SB-23N | 13 | 15 | 6/17/93 | x | x | x | x | x | |
| SB-24 | SB-24N | 10 | 12 | 6/17/93 | x | x | x | x | x | |
| SB-24 | SB-24N | 18 | 20 | 6/17/93 | x | x | x | x | x | |
| SB-25 | SB-25N | 3 | 4 | 6/23/93 | x | x | x | x | x | |
| SB-26 | SB-26N | 6 | 7 | 6/23/93 | x | x | x | x | x | |
| SB-27 | SB-27N | 7 | 8 | 6/23/93 | x | x | x | x | x | |
| SB-28 | SB-28N | 9 | 10 | 6/23/93 | x | x | x | x | x | |
| SB-29 | SB-29N | 9 | 10 | 6/23/93 | x | x | x | x | x | |
| SB-1A | SB-1S | 10 | 12 | 6/18/93 | x | x | x | x | x | |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---|-----------|------------------|----------------|-------------|---------------|------|------|-------|--------|----------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Eastern Property Boundary Investigation (continued) | | | | | | | | | | |
| SB-1A | SB-1S | 18 | 20 | 6/18/93 | x | x | x | x | x | |
| SB-2A | SB-2S | 10 | 12 | 6/18/93 | x | x | x | x | x | |
| SB-2A | SB-2S | 13 | 15 | 6/18/93 | x | x | x | x | x | |
| SB-3A | SB-3S | 8 | 10 | 6/18/93 | x | x | x | x | x | |
| SB-3A | SB-3S | 18 | 20 | 6/18/93 | x | x | x | x | x | |
| SB-4A | SB-4S | 10 | 12 | 6/18/93 | x | x | x | x | x | |
| SB-4A | SB-4S | 18 | 20 | 6/18/93 | x | x | x | x | x | |
| SB-5A | SB-5S | 10 | 12 | 6/18/93 | x | x | x | x | x | |
| SB-5A | SB-5S | 18 | 20 | 6/18/93 | x | x | x | x | x | |
| SB-6A | SB-6S | 8 | 10 | 6/18/93 | x | x | x | x | x | |
| SB-6A | SB-6S | 15 | 17 | 6/18/93 | x | x | x | x | x | |
| SB-7A | SB-7S | 10 | 12 | 6/18/93 | x | x | x | x | x | |
| SB-7A | SB-7S | 15 | 17 | 6/18/93 | x | x | x | x | x | |
| SB-8A | SB-8S | 10 | 12 | 6/18/93 | x | x | x | x | x | |
| SB-8A | SB-8S | 15 | 17 | 6/18/93 | x | x | x | x | x | |
| SB-9A | SB-9S | 10 | 12 | 6/18/93 | x | x | x | x | x | |
| SB-9A | SB-9S | 15 | 17 | 6/18/93 | x | x | x | x | x | |
| SB-10A | SB-10S | 10 | 12 | 6/21/93 | x | x | x | x | x | |
| SB-10A | SB-10S | 15 | 17 | 6/21/93 | x | x | x | x | x | |
| SB-11A | SB-11S | 9 | 11 | 6/21/93 | x | x | x | x | x | |
| SB-11A | SB-11S | 14 | 16 | 6/21/93 | x | x | x | x | x | |
| SB-12A | SB-12S | 9 | 11 | 6/21/93 | x | x | x | x | x | |
| SB-12A | SB-12S | 14 | 16 | 6/21/93 | x | x | x | x | x | |
| SB-13A | SB-13S | 8 | 10 | 6/21/93 | x | x | x | x | x | |
| SB-13A | SB-13S | 13 | 15 | 6/21/93 | x | x | x | x | x | |
| SB-14A | SB-14S | 8 | 10 | 6/21/93 | x | x | x | x | x | |
| SB-14A | SB-14S | 13 | 15 | 6/21/93 | x | x | x | x | x | |
| SB-15A | SB-15S | 8 | 10 | 6/21/93 | x | x | x | x | x | |
| SB-15A | SB-15S | 13 | 15 | 6/21/93 | x | x | x | x | x | |
| SB-16A | SB-16S | 5 | 7 | 6/21/93 | x | x | x | x | x | |
| SB-16A | SB-16S | 12 | 14 | 6/21/93 | x | x | x | x | x | |
| SB-17A | SB-17S | 5 | 7 | 6/21/93 | x | x | x | x | x | |
| SB-17A | SB-17S | 10 | 12 | 6/21/93 | x | x | x | x | x | |
| SB-18A | SB-18S | 5 | 7 | 6/21/93 | x | x | x | x | x | |
| SB-18A | SB-18S | 10 | 12 | 6/21/93 | x | x | x | x | x | |
| SB-19A | SB-19S | 8 | 10 | 6/21/93 | x | x | x | x | x | |
| SB-19A | SB-19S | 13 | 15 | 6/21/93 | x | x | x | x | x | |
| SB-20A | SB-20S | 5 | 7 | 6/21/93 | x | x | x | x | x | |
| SB-20A | SB-20S | 10 | 12 | 6/21/93 | x | x | x | x | x | |
| SB-21A | SB-21S | 5 | 7 | 6/21/93 | x | x | x | x | x | |
| SB-21A | SB-21S | 10 | 12 | 6/21/93 | x | x | x | x | x | |
| SB-22A | SB-22S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-22A | SB-22S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-23A | SB-23S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-23A | SB-23S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-24A | SB-24S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-24A | SB-24S | 10 | 12 | 6/22/93 | x | x | x | x | x | |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---|--------------|------------------|----------------|-------------|---------------|------|------|-------|--------|----------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Eastern Property Boundary Investigation (continued) | | | | | | | | | | |
| SB-25A | SB-25S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-25A | SB-25S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-26A | SB-26S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-26A | SB-26S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-27A | SB-27S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-27A | SB-27S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-28A | SB-28S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-28A | SB-28S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-29A | SB-29S | 10 | 12 | 6/23/93 | x | x | x | x | x | |
| SB-30A | SB-30S | 9 | 10 | 6/23/93 | x | x | x | x | x | |
| SB-31A | SB-31S | 5 | 7 | 6/23/93 | x | x | x | x | x | |
| SB-31A | SB-31S | 13 | 15 | 6/23/93 | x | x | x | x | x | |
| SB-32A | SB-32S | 6 | 8 | 6/23/93 | x | x | x | x | x | |
| SB-33A | SB-33S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-33A | SB-33S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-34A | SB-34S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-34A | SB-34S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-35A | SB-35S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-35A | SB-35S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-36A | SB-36S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-36A | SB-36S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-37A | SB-37S | 5 | 7 | 6/23/93 | x | x | x | x | x | |
| SB-37A | SB-37S | 10 | 12 | 6/23/93 | x | x | x | x | x | |
| SB-38A | SB-38S | 5 | 7 | 6/22/93 | x | x | x | x | x | |
| SB-38A | SB-38S | 10 | 12 | 6/22/93 | x | x | x | x | x | |
| SB-39A | SB-39S | 5 | 7 | 6/23/93 | x | x | x | x | x | |
| SB-39A | SB-39S | 10 | 12 | 6/23/93 | x | x | x | x | x | |
| Storm Sewer Outfall 003 Section 7&13 Investigation | | | | | | | | | | |
| 30-120 | Sec.13/MW-A3 | 8 | 10 | 8/12/93 | | | x | | x | |
| 30-120 | Sec.13/MW-A3 | 18 | 20 | 8/12/93 | | | x | | x | |
| 30-121 | Sec.13/MW-A4 | 8 | 10 | 8/12/93 | | | x | | x | |
| 30-121 | Sec.13/MW-A4 | 18 | 20 | 8/12/93 | | | x | | x | |
| 30-140 | Sec.13/MW-A6 | 8 | 10 | 8/12/93 | | | x | | x | |
| 30-140 | Sec.13/MW-A6 | 16 | 18 | 8/12/93 | | | x | | x | |
| 43-102 | Sec.7/MW-A10 | 7 | 9 | 8/12/93 | | x | | | x | |
| 43-102 | Sec.7/MW-A10 | 21 | 23 | 8/12/93 | | x | | | x | |
| Eastern Property Boundary Additional Investigation | | | | | | | | | | |
| 07-142 | PH-1 | 10 | 12 | 3/14/94 | | x | x | x | x | |
| 07-142 | PH-1 | 23 | 25 | 3/14/94 | | x | x | x | x | |
| 07-141 | PH-2 | 8 | 10 | 3/14/94 | | x | x | x | x | |
| 07-141 | PH-2 | 23 | 25 | 3/14/94 | | x | x | x | x | |
| 07-140 | PH-3 | 8 | 10 | 3/14/94 | | x | x | x | x | |
| 07-140 | PH-3 | 23 | 25 | 3/14/94 | | x | x | x | x | |
| 07-120 | PH-4 | 23 | 25 | 3/15/94 | | x | x | x | x | |
| 07-120 | PH-4 | 31 | 33 | 3/15/94 | | x | x | x | x | |
| 07-121 | PH-5 | 8 | 10 | 3/15/94 | | x | x | x | x | |
| 07-121 | PH-5 | 31 | 33 | 3/15/94 | | x | x | x | x | |

TABLE 4

**GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS**

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---|-----------|------------------|----------------|-------------|---------------|-------|-------|-------|--------|----------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Eastern Property Boundary Additional Investigation (continued) | | | | | | | | | | |
| 07-122 | PH-6 | 13 | 15 | 3/16/94 | | x | x | x | x | |
| 07-122 | PH-6 | 16 | 18 | 3/16/94 | | x | x | x | x | |
| 07-123 | PH-7 | 8 | 10 | 3/16/94 | | x | x | x | x | |
| 07-123 | PH-7 | 15 | 17 | 3/16/94 | | x | x | x | x | |
| 07-124 | PH-8 | 8 | 10 | 3/16/94 | | x | x | x | x | |
| 07-124 | PH-8 | 13 | 15 | 3/16/94 | | x | x | x | x | |
| 07-125 | PH-9 | 8 | 10 | 3/16/94 | | x | x | x | x | |
| 07-125 | PH-9 | 13 | 15 | 3/16/94 | | x | x | x | x | |
| 07-126 | PH-10 | 13 | 15 | 3/16/94 | | x | x | x | x | |
| 07-126 | PH-10 | 15 | 17 | 3/16/94 | | x | x | x | x | |
| Factory 05, Building 43 Investigation | | | | | | | | | | |
| 43-241 | SB-43-1 | 11.5 | 13.5 | 5/9/94 | | x | x | x | x | |
| 43-241 | SB-43-1 | 23 | 25 | 5/9/94 | | x [x] | x | x [x] | x | |
| 43-242 | SB-43-2 | 12 | 14 | 5/10/94 | | x | x | x [x] | x | |
| 43-242 | SB-43-2 | 24 | 26 | 5/10/94 | | x | x | x | x | |
| 43-243 | SB-43-3 | 12 | 14 | 5/10/94 | | x | x [x] | x | x | |
| 43-243 | SB-43-3 | 24 | 26 | 5/10/94 | | x | x | x | x | |
| 43-244 | SB-43-4 | 14 | 16 | 5/11/94 | | x | x | x | x | |
| 43-244 | SB-43-4 | 19 | 21 | 5/11/94 | | x | x | x | x | |
| 43-267 | SB-43-5 | 13 | 15 | 5/11/94 | | x | x | x | x | |
| 43-267 | SB-43-5 | 23 | 25 | 5/11/94 | | x | x | x | x | |
| 43-268 | SB-43-6 | 14 | 16 | 5/12/94 | | x | x | x | x | |
| 43-268 | SB-43-6 | 21 | 23 | 5/12/94 | | x [x] | x [x] | x | x | |
| 43-269 | SB-43-7 | 14 | 16 | 5/12/94 | | x | x | x | x | |
| 43-269 | SB-43-7 | 23 | 25 | 5/12/94 | | x | x | x | x | |
| 43-208 | SB-43-8 | 13 | 15 | 5/13/94 | | x | x | x | x | |
| 43-208 | SB-43-8 | 23 | 25 | 5/13/94 | | x | x [x] | x | x | |
| 43-207 | SB-43-9 | 13 | 15 | 5/13/94 | | x | x | x | x | |
| 43-207 | SB-43-9 | 23 | 25 | 5/13/94 | | x | x | x | x | |
| 43-220 | SB-43-10 | 12 | 14 | 5/13/94 | | x | x | x | x | |
| 43-220 | SB-43-10 | 21 | 23 | 5/13/94 | | x | x | x | x | |
| Factory 05, Building 43 Recovery Trench Installation Investigation | | | | | | | | | | |
| 43-301 | GB-1 | 6 | 8 | 7/20/94 | | x | x | x | x | |
| 43-301 | GB-1 | 15.5 | 17.5 | 7/20/94 | | x | x | x | x | |
| 43-302 | GB-2 | 3 | 5 | 7/20/94 | | x | x | x | x | |
| 43-302 | GB-2 | 14 | 16 | 7/20/94 | | x | x | x | x | |
| 43-303 | GB-3 | 9 | 11 | 7/20/94 | | x | x | x | x | |
| 43-303 | GB-3 | 15 | 17 | 7/20/94 | | x | x | x | x | |
| 43-304 | GB-4 | 4 | 6 | 7/21/94 | | x | x | x | x | |
| 43-304 | GB-4 | 15 | 17 | 7/21/94 | | x | x | x | x | |
| 43-305 | GB-5 | 11.5 | 13.5 | 7/21/94 | | x | x | x | x | |
| 43-305 | GB-5 | 16 | 18 | 7/21/94 | | x | x | x | x | |
| 43-306 | GB-6 | 2 | 4 | 7/21/94 | | x | x | x | x | |
| 43-306 | GB-6 | 15 | 17 | 7/21/94 | | x | x | x | x | |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes | |
|--------------------------------|-----------|------------------|----------------|-------------|---------------|------|------|-------|--------|----------------|--|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | | |
| Fenceline Investigation | | | | | | | | | | | |
| 11-120 | 11-120 | 0 | 0.5 | 10/4/95 | | | | | | x | |
| 11-120 | 11-120 | 10 | 12 | 10/4/95 | | x | x | x | | x | |
| 11-120 | 11-120 | 16 | 18 | 10/4/95 | | x | x | x | | x | |
| 11-140 | 11-140 | 0 | 0.5 | 10/4/95 | | | | | | x | |
| 11-140 | 11-140 | 6 | 8 | 10/4/95 | | x | x | x | | x | |
| 11-140 | 11-140 | 20 | 22 | 10/4/95 | | x | x | x | | x | |
| 32-101 | 32-101 | 6 | 8 | 10/11/95 | | x | x | x | | x | |
| 32-101 | 32-101 | 11 | 14 | 10/11/95 | | x | x | x | | x | |
| 36-100 | 36-100 | 0 | 0.5 | 10/6/95 | | | | | | x | |
| 36-100 | 36-100 | 12 | 14 | 10/6/95 | | x | x | x | | x | |
| 36-100 | 36-100 | 24 | 26 | 10/6/95 | | x | x | x | | x | |
| 36-101 | 36-101 | 0 | 0.5 | 10/6/95 | | | | | | x | |
| 36-101 | 36-101 | 14 | 16 | 10/6/95 | | x | x | x | | x | |
| 36-101 | 36-101 | 22 | 24 | 10/6/95 | | x | x | x | | x | |
| 36-120 | 36-120 | 0 | 0.5 | 10/5/95 | | | | | | x | |
| 36-120 | 36-120 | 14 | 16 | 10/5/95 | | x | x | x | | x | |
| 36-120 | 36-120 | 24 | 26 | 10/5/95 | | x | x | x | | x | |
| 36-121 | 36-121 | 0 | 0.5 | 10/5/95 | | | | | | x | |
| 36-121 | 36-121 | 16 | 18 | 10/5/95 | | x | x | x | | x | |
| 36-121 | 36-121 | 26 | 28 | 10/5/95 | | x | x | x | | x | |
| 36-160 | 36-160 | 4 | 4.5 | 10/9/95 | | | x | x | | x | |
| 36-160 | 36-160 | 12 | 14 | 10/9/95 | | x | x | x | | x | |
| 36-160 | 36-160 | 20 | 22 | 10/9/95 | | x | x | x | | x | |
| 36-161 | 36-161 | 0.25 | 0.75 | 10/9/95 | | | | | | x | |
| 36-161 | 36-161 | 4 | 6 | 10/9/95 | | x | x | x | | x | |
| 36-161 | 36-161 | 20 | 22 | 10/9/95 | | x | x | x | | x | |
| 38-120 | 38-120 | 0 | 0.5 | 10/6/95 | | | | | | x | |
| 38-120 | 38-120 | 14 | 16 | 10/6/95 | | x | x | x | | x | |
| 38-120 | 38-120 | 14 | 16 | 10/9/95 | | | x | | | | |
| 38-120 | 38-120 | 24 | 26 | 10/6/95 | | x | x | x | | x | |
| 43-103 | 43-103 | 0 | 0.5 | 10/5/95 | | | | | | x | |
| 43-103 | 43-103 | 10 | 12 | 10/5/95 | | x | x | x | | x | |
| 43-103 | 43-103 | 18 | 20 | 10/5/95 | | x | x | x | | x | |
| 43-120 | 43-120 | 0 | 0.5 | 10/3/95 | | | | | | x | |
| 43-120 | 43-120 | 10 | 12 | 10/3/95 | | x | x | x | | x | |
| 43-120 | 43-120 | 22 | 24 | 10/3/95 | | x | x | x | | x | |
| 43-140 | 43-140 | 0.5 | 1 | 10/10/95 | | | | | | x | |
| 43-140 | 43-140 | 10 | 12 | 10/10/95 | | x | x | x | | x | |
| 43-140 | 43-140 | 14 | 16 | 10/10/95 | | x | x | x | | x | |
| 43-141 | 43-141 | 0 | 0.5 | 10/4/95 | | | | | | x | |
| 43-141 | 43-141 | 14 | 16 | 10/4/95 | | x | x | x | | x | |
| 70-160 | 70-160 | 0.25 | 0.75 | 10/9/95 | | | | | | x | |
| 70-160 | 70-160 | 8 | 10 | 10/9/95 | | x | x | x | | x | |
| 70-160 | 70-160 | 16 | 18 | 10/9/95 | | x | x | x | | x | |
| 70-161 | 70-161 | 4 | 6 | 10/19/95 | | x | x | x | | x | |
| 70-161 | 70-161 | 12 | 14 | 10/19/95 | | x | x | x | | x | |
| 86-100 | 86-100 | 0.5 | 5 | 10/10/95 | | | | | | x | |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---|-----------|------------------|----------------|-------------|---------------|------|------|-------|--------|----------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Fenceline Investigation (continued) | | | | | | | | | | |
| 86-100 | 86-100 | 8 | 10 | 10/10/95 | | x | x | x | x | |
| 86-100 | 86-100 | 20 | 22 | 10/10/95 | | x | x | x | x | |
| SBFL1-36 | SBFL1-36 | 12 | 14 | 10/11/95 | | | | x | | |
| SBFL1-36 | SBFL1-36 | 22 | 24 | 10/11/95 | | | | x | | |
| SBFL1-37 | SBFL1-37 | 12 | 14 | 10/12/95 | | | | x | | |
| SBFL1-37 | SBFL1-37 | 20 | 22 | 10/12/95 | | | | x | | |
| SBFL1-38 | SBFL1-38 | 12 | 14 | 10/12/95 | | | x | x | x | |
| SBFL1-38 | SBFL1-38 | 20 | 22 | 10/12/95 | | | x | x | x | |
| SBFL1-39 | SBFL1-39 | 10 | 12 | 10/12/95 | | | x | x | x | |
| SBFL1-39 | SBFL1-39 | 22 | 24 | 10/12/95 | | | x | x | x | |
| SBFL1-40 | SBFL1-40 | 10 | 12 | 10/13/95 | | | | | x | |
| SBFL1-40 | SBFL1-40 | 18 | 20 | 10/13/95 | | | | | x | |
| SBFL1-41 | SBFL1-41 | 18 | 20 | 10/13/95 | | | | | x | |
| SBFL1-41 | SBFL1-41 | 8 | 10 | 10/13/95 | | | | | x | |
| SBFL2-40 | SBFL2-40 | 18 | 20 | 10/16/95 | | | | | x | |
| SBFL2-40 | SBFL2-40 | 8 | 10 | 10/16/95 | | | | | x | |
| SBFL2-41 | SBFL2-41 | 16 | 18 | 10/16/95 | | | | | x | |
| SBFL2-41 | SBFL2-41 | 8 | 10 | 10/16/95 | | | | | x | |
| SBFL2-47 | SBFL2-47 | 12 | 14 | 10/17/95 | | | | x | | |
| SBFL2-47 | SBFL2-47 | 8 | 10 | 10/17/95 | | | | x | | |
| SBFL2-48 | SBFL2-48 | 10 | 12 | 10/17/95 | | | | x | | |
| SBFL2-48 | SBFL2-48 | 4 | 6 | 10/17/95 | | | | x | | |
| SBFL2-49 | SBFL2-49 | 10 | 12 | 10/18/95 | | | | x | | |
| SBFL2-49 | SBFL2-49 | 4 | 6 | 10/18/95 | | | | x | | |
| SBFL2-50 | SBFL2-50 | 10 | 12 | 10/18/95 | | | | | x | |
| SBFL2-50 | SBFL2-50 | 4 | 6 | 10/18/95 | | | | | x | |
| SBFL2-51 | SBFL2-51 | 10 | 12 | 10/18/95 | | | | | x | |
| SBFL2-51 | SBFL2-51 | 4 | 6 | 10/18/95 | | | | | x | |
| SBFL2-52 | SBFL2-52 | 12 | 14 | 10/18/95 | | | | | x | |
| SBFL2-52 | SBFL2-52 | 4 | 6 | 10/18/95 | | | | | x | |
| SBFL2-53 | SBFL2-53 | 4 | 6 | 9/14/95 | | | | | x | |
| SBFL2-53 | SBFL2-53 | 6 | 8 | 9/14/95 | | | | | x | |
| SBFL2-55 | SBFL2-55 | 10 | 12 | 9/13/95 | | | | | x | |
| SBFL2-55 | SBFL2-55 | 8 | 10 | 9/13/95 | | | | | x | |
| SBFL3-1 | SBFL3-1 | 12 | 14 | 9/20/95 | | x | x | x | x | |
| SBFL3-1 | SBFL3-1 | 16 | 18 | 9/20/95 | | x | x | x | x | |
| SBFL3-2 | SBFL3-2 | 10 | 12 | 9/20/95 | | x | x | x | x | |
| SBFL3-2 | SBFL3-2 | 22 | 24 | 9/20/95 | | x | x | x | x | |
| SBFL3-3 | SBFL3-3 | 8 | 10 | 9/26/95 | | x | x | x | x | |
| SBFL3-4 | SBFL3-4 | 8 | 10 | 9/26/95 | | x | x | x | x | |
| Building 86, Tank 059/86 Investigation | | | | | | | | | | |
| 86-101 | BLD 86-1 | 8 | 9 | 7/23/96 | | | x | | | |
| 86-101 | BLD 86-1 | 9 | 10 | 7/23/96 | | | x | | | |
| 86-102 | BLD 86-2 | 11 | 15 | 7/23/96 | | | x | | | |
| 86-102 | BLD 86-2 | 17 | 19 | 7/23/96 | | | x | | | |
| 86-103 | BLD 86-3 | 15 | 17 | 7/23/96 | | | x | | | |
| 86-103 | BLD 86-3 | 19 | 21 | 7/23/96 | | | x | | | |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---|-----------|------------------|----------------|-------------|---------------|------|------|-------|--------|--|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| Building 86, Tank 059/86 Investigation (continued) | | | | | | | | | | |
| 86-104 | BLD 86-4 | 15 | 17 | 7/23/96 | | | x | | | |
| 86-104 | BLD 86-4 | 21 | 23 | 7/23/96 | | | x | | | |
| 86-105 | BLD 86-5 | 13 | 15 | 7/23/96 | | | x | | | |
| 86-105 | BLD 86-5 | 19 | 21 | 7/23/96 | | | x | | | |
| Building 86, Tank 059/86 Additional Investigation | | | | | | | | | | |
| 86-1(SB1/MW1) | SB1/MW1 | 7 | 9 | 6/3/97 | | | x | | x | |
| 86-1(SB1/MW1) | SB1/MW1 | 9 | 11 | 6/3/97 | | | x | | x | |
| 86-2(SB2/MW2) | SB2/MW2 | 5 | 7 | 6/3/97 | | | x | | x | |
| 86-2(SB2/MW2) | SB2/MW2 | 9 | 11 | 6/3/97 | | | x | | x | |
| 86-3(SB3/MW3) | SB3/MW3 | 15 | 17 | 6/3/97 | | | x | | x | |
| 86-3(SB3/MW3) | SB3/MW3 | 19 | 21 | 6/3/97 | | | x | | x | |
| Building 88, Tanks 050/88 - 058/88 Investigation | | | | | | | | | | |
| 88-101 | Bldg 88-1 | 7 | 8 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-102 | Bldg 88-2 | 7 | 9 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-102 | Bldg 88-2 | 15 | 17 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-103 | Bldg 88-3 | 7 | 9 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-103 | Bldg 88-3 | 13 | 15 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-103 | Bldg 88-3 | 19 | 21 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-104 | Bldg 88-4 | 7 | 9 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-104 | Bldg 88-4 | 11 | 13 | 7/22/96 | | x | | x | x | Metals: Cadmium, chromium, and lead only |
| 88-106 | Bldg 88-6 | 7 | 9 | 11/12/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-106 | Bldg 88-6 | 11 | 13 | 11/12/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-1(SB1/MW1) | SB1/MW1 | 5 | 7 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-1(SB1/MW1) | SB1/MW1 | 13 | 15 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-2(SB2/MW2) | SB2/MW2 | 4 | 6 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-2(SB2/MW2) | SB2/MW2 | 14 | 16 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-3(SB3/MW3) | SB3/MW3 | 4 | 6 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-3(SB3/MW3) | SB3/MW3 | 13 | 15 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-4(SB4/MW4) | SB4/MW4 | 8 | 10 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-4(SB4/MW4) | SB4/MW4 | 10 | 12 | 11/7/96 | | | x | x | x | Metals: Chromium and lead only |
| 88-5(SB/MW5) | SB5/MW5 | 2 | 4 | 6/2/97 | | | x | x | x | Metals: Chromium and lead only |
| 88-5(SB/MW5) | SB5/MW5 | 8 | 10 | 6/2/97 | | | x | x | x | Metals: Chromium and lead only |
| 88-6(SB6/MW6) | SB6/MW6 | 7 | 9 | 6/2/97 | | | x | x | x | Metals: Chromium and lead only |
| 88-6(SB6/MW6) | SB6/MW6 | 9 | 11 | 6/2/97 | | | x | x | x | Metals: Chromium and lead only |

TABLE 4

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL SOIL SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Start Depth (ft) | End Depth (ft) | Sample Date | Analysis Type | | | | | Analysis Notes |
|---------------------------------------|-----------|------------------|----------------|-------------|---------------|-------|-------|-------|--------|----------------|
| | | | | | TPH | PCBs | VOCs | SVOCs | Metals | |
| 1998 Subsurface Investigations | | | | | | | | | | |
| 20-FP1 | 20-FP1 | 6 | 8 | 8/7/98 | | x [x] | x [x] | x [x] | x [x] | |
| 20-FP1A | 20-FP1A | 3 | 5 | 7/30/98 | | x | x | x | x | |
| 20-FP2 | 20-FP2 | 9 | 11 | 7/30/98 | | x | x | x | x | |
| 20-FP3 | 20-FP3 | 3 | 5 | 7/30/98 | | x | x | x | x | |
| 20-FP4 | 20-FP4 | 5 | 7 | 7/31/98 | | x | x | x | x | |
| 20-FP5 | 20-FP5 | 3 | 5 | 7/30/98 | | x | x | x | x | |
| 20-FP6 | 20-FP6 | 5 | 7 | 7/29/98 | | x | x | x | x | |
| 20-FP7 | 20-FP7 | 5 | 7 | 7/30/98 | | x | x | x | x | |
| 20-FP8 | 20-FP8 | 3 | 5 | 7/30/98 | | x | x | x | x | |
| 20-FP9 | 20-FP9 | 4 | 6 | 8/6/98 | | x | x | x | x | |
| 20-FP10 | 20-FP10 | 4 | 6 | 8/6/98 | | x | x | x | x | |
| 36-FP1 | 36-FP1 | 9 | 11 | 8/5/98 | | x | x | x | x | |
| 36-FP2 | 36-FP2 | 9 | 11 | 8/5/98 | | x | x | x | x | |
| 36-FP3 | 36-FP3 | 9 | 11 | 8/5/98 | | x | x | x | x | |
| 36-FP4 | 36-FP4 | 11 | 13 | 8/3/98 | | x | x | x | x | |
| 36-FP5 | 36-FP5 | 9 | 11 | 8/5/98 | | x | x | x | x | |
| 36-FP6 | 36-FP6 | 6 | 8 | 8/6/98 | | x | x | x | x | |
| 36-FP7 | 36-FP7 | 7 | 9 | 8/7/98 | | x [x] | x [x] | x [x] | x [x] | |
| 87-FP2 | 87-FP2 | 9 | 11 | 8/4/98 | | x | x | x | x | |
| 87-FPD2 | 87-FPD2 | 22 | 24 | 8/12/98 | | x | x | x | x | |
| 87-FP3 | 87-FP3 | 7 | 9 | 8/3/98 | | x | x | x | x | |
| 87-FP4 | 87-FP4 | 13 | 15 | 8/12/98 | | x | x | x | x | |
| 87-FP5 | 87-FP5 | 7 | 9 | 8/12/98 | | x | x | x | x | |
| 1999 Subsurface Investigations | | | | | | | | | | |
| 55-1 | 55-1 | 11 | 13 | 5/5/99 | | x | x | x | x | |
| 55-2 | 55-2 | 9 | 11 | 5/5/99 | | x | x | x | x | |
| 55-3 | 55-3 | 3 | 5 | 5/5/99 | | x [x] | x [x] | x [x] | x [x] | |
| 55-4 | 55-4 | 9 | 11 | 5/5/99 | | x | x | x | x | |
| 55-5 | 55-5 | 12 | 14 | 5/5/99 | | x | x | x | x | |
| 2000 Subsurface Investigations | | | | | | | | | | |
| 03-01 | 03-01 | 4 | 6 | 3/16/00 | | x | x | x | x | |
| 03-02 | 03-02 | 6 | 8 | 3/16/00 | | x | x | x | x | |
| 03-03 | 03-03 | 14 | 16 | 3/17/00 | | x | x | x | x | |
| 07-01 | 07-01 | 10 | 12 | 3/8/00 | | x | x | x | x | |
| 07-02 | 07-02 | 10 | 12 | 3/8/00 | | x | x | x | x | |
| 37-01 | 37-01 | 8 | 10 | 3/16/00 | | x | x | x | x | |
| 43-165 | 43-165 | 2 | 4 | 3/20/00 | | x | x | x | x | |
| 43-166 | 43-166 | 6 | 8 | 3/21/00 | | x | x | x | x | |
| 43-167 | 43-167 | 6 | 8 | 3/20/00 | | x | x | x | x | |
| 43-168 | 43-168 | 6 | 8 | 3/21/00 | | x | x | x | x | |
| 43-169 | 43-169 | 2 | 4 | 3/21/00 | | x | x | x | x | |
| 88-7 | 88-7 | 14 | 16 | 3/15/00 | | x | x | x | x | |
| 88-8 | 88-8 | 4 | 6 | 3/13/00 | | x | x | x | x | |
| 88-9 | 88-9 | 6 | 8 | 3/14/00 | | x | x | x | x | |
| 88-10 | 88-10 | 14 | 16 | 3/13/00 | | x | x | x | x | |

Notes:

1. TPH: Total Petroleum Hydrocarbons
2. PCBs: Polychlorinated Biphenyls
3. VOCs: Volatile Organic Compounds
4. SVOCs: Semivolatile Organic Compounds
5. Metals analyses include the Michigan-10 metals, unless otherwise noted.
6. Bracketed checks indicate duplicate analyses.

TABLE 5

**GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS**

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|---|-------------|-------------|---------------|------|------|-------|------|--------|-------------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Factory 03, Building 30 Investigation | | | | | | | | | |
| 03-101 | MW-1 | 5/21/90 | x | | | | | | |
| 03-101 | MW-1 | 12/4/91 | | | | | | x | |
| 03-102 | MW-2 | 5/21/90 | x | | | | | | |
| 03-104 | MW-4 | 5/21/90 | x | | | | | | |
| 03-105 | MW-5 | 5/21/90 | x | | | | | | |
| 03-106 | MW-6 | 5/21/90 | x | | | | | | |
| 03-109 | MW-9 | 5/21/90 | x | | | | | | |
| 03-110 | MW-10 | 5/21/90 | x | | | | | | |
| 03-111 | MW-11 | 5/21/90 | x | | | | | | |
| 03-112 | MW-12 | 5/21/90 | x | | | | | | |
| 03-113 | MW-13 | 5/21/90 | x | | | | | | |
| 03-114 | MW-14 | 5/21/90 | x | | | | | | |
| Building 87/Leith St. Overpass Investigation | | | | | | | | | |
| 87-103 | OP/TB-3 | 10/31/91 | | x | | x | x | x | Metals: Lead only |
| 87-107 | OP/TB-7 | 11/6/91 | | x | | | | | |
| Storm Sewer Outfall 003 Investigation | | | | | | | | | |
| 20-100 | Sec.1/MW-2 | 11/1/91 | | x | | | | | |
| 20-101 | Sec.2/MW-2 | 11/7/91 | | | x | x | x | x | |
| 20-120 | Sec.4/MW-3 | 11/4/91 | | | x | x | x | x | |
| 43-100 | Sec.5/MW-1 | 11/6/91 | | | x | x | x | x | |
| 20-121 | Sec.6/MW-1 | 11/5/91 | | | x | x | x | x | |
| 43-101 | Sec.6/MW-2 | 11/13/91 | | | x[x] | x[x] | x[x] | x[x] | |
| 43-301 | Sec.6/TB-3 | 10/1/91 | | | | | x | x | |
| 20-122 | Sec.6/MW-4 | 11/7/91 | | | x | x | x | x | |
| 43-160 | Sec.7/MW-1 | 11/14/91 | | | x[x] | x[x] | x[x] | x[x] | |
| 20-140 | Sec.7/MW-3 | 11/8/91 | | | x | x | x | x | |
| 43-161 | Sec.7/MW-4 | 11/13/91 | | | x | x | x | x | |
| 43-162 | Sec.7/MW-5 | 11/12/91 | | | x | x | x | x | |
| 20-143 | Sec.7/MW-6 | 10/31/91 | | | x | x | x | x | |
| 20-141 | Sec.7/MW-7 | 11/1/91 | | | x | x | x | x | |
| 43-163 | Sec.7/MW-8 | 11/14/91 | | | x | x | x | x | |
| 20-142 | Sec.7/MW-9 | 11/1/91 | | | x | x | x | x | |
| 20-144 | Sec.8/MW-1 | 10/30/91 | | | x | x | x | x | |
| 20-145 | Sec.8/MW-2 | 10/30/91 | | | x | x | x | x | |
| 20-171 | Sec.9/MW-1 | 11/7/91 | | | x[x] | x[x] | x[x] | x[x] | |
| 20-161 | Sec.9/MW-2 | 11/12/91 | | | x | x | x | x | |
| 20-170 | Sec.9/MW-3 | 11/12/91 | | | x | x | x | x | |
| 20-104 | Sec.11/MW-1 | 10/29/91 | | | x | x | x | x | |
| 20-105 | Sec.12/MW-2 | 10/29/91 | | | x | x | x | x | |
| 20-103N | Sec.12/MW-4 | 11/1/91 | | x | | | | | |
| 43-164 | Sec.13/MW-1 | 11/14/91 | | | x | x | x | x | |
| 70-100 | Sec.17/MW-1 | 10/30/91 | | | x | x | x | x | |
| 70-108 | Sec.17/MW-2 | 11/6/91 | | | x | x | x | x | |
| 70-106 | Sec.17/MW-3 | 11/6/91 | | | x | x | x | x | |
| 30-100 | Sec.18/MW-1 | 10/31/91 | | | x | x | x | x | |
| 30-201 | Sec.18/MW-2 | 10/15/91 | | | x[x] | x[x] | x[x] | x[x] | |
| 70-107 | Sec.20/MW-2 | 11/5/91 | | | x | x | x | x | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|---------------------|-------------|---------------|------|------|-------|------|--------|-----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Tank Farm 37 Area Investigation | | | | | | | | | |
| 20-100 | Sec.1/MW-2 | 7/28/92 | | | x | x | x | x | |
| 20-103N | MW-4S | 7/28/92 | | | x | x | x | x | |
| 20-103S | MW-4D | 7/28/92 | | | x | x | x | x | |
| 20-500 | MW-5 | 7/28/92 | | | x | x | x | x | |
| 20-501 | MW-6 | 7/28/92 | | | x | x | x | x | |
| 20-502 | MW-7 | 7/28/92 | | | x | x | x | x | |
| 20-503 | MW-8 | 7/28/92 | | | x[x] | x[x] | x[x] | x[x] | |
| 20-506 | MW-9 | 7/28/92 | | | x | x | x | x | |
| 20-505D | MW-10D | 7/28/92 | | | x | x | x | x | |
| 20-505S | MW-10S | 7/28/92 | | | x | x | x | x | |
| Storm Sewer Outfall 003 Section 17 Investigation | | | | | | | | | |
| 70-102 | Sec.17/MW-A5 | 9/3/92 | | x | | x | | x | |
| 70-101 | Sec.17/MW-A6 | 9/3/92 | | x | | x | | x | |
| 70-109 | Sec.17/MW-A8 | 9/3/92 | | x | | x | | x | |
| 70-104 | Sec.17/MW-A9 | 9/3/92 | | x | | x | | x | |
| Storm Sewer Outfall 003 Section 17 Additional Investigation | | | | | | | | | |
| 70-104 | Sec.17/MW-A9 | 3/31/93 | | | x | x | x | x | Pesticides also |
| Storm Sewer Outfall 003 Section 7&13 Investigation | | | | | | | | | |
| 43-102 | Sec.7/HP-A10 (13') | 3/12/93 | x | | x | | x | | |
| 43-102 | Sec.7/HP-A10 (19') | 3/12/93 | | | x | | | | |
| 20-147 | Sec.13/HP-A2 (9') | 3/12/93 | | | x | | | | |
| 20-147 | Sec.13/HP-A2 (14') | 3/12/93 | x | | x | | x | | |
| 30-120 | Sec.13/HP-A3 (13') | 3/12/93 | x | | x | | x | | |
| 30-120 | Sec.13/HP-A3 (19') | 3/12/93 | | | x | | | | |
| 30-121 | Sec.13/HP-A4 (13') | 3/12/93 | x | | x | | x | | |
| 30-121 | Sec.13/HP-A4 (18') | 3/12/93 | | | x | | | | |
| 30-140 | Sec.13/HP-A6 (9') | 3/12/93 | x | | x | | x | | |
| 30-140 | Sec.13/HP-A6 (15') | 3/12/93 | | | x | | | | |
| 30-202 | Sec.13/HP-A11 (10') | 3/12/93 | x | | x | | x | | |
| 30-202 | Sec.13/HP-A11 (15') | 3/12/93 | | | x | | | | |
| 30-222 | Sec.13/HP-A7 (10') | 3/12/93 | x | | x | | x | | |
| 30-222 | Sec.13/HP-A7 (18') | 3/12/93 | | | x | | | | |
| 30-223 | Sec.13/HP-A8 (10') | 3/12/93 | x | | x | | x | | |
| 30-223 | Sec.13/HP-A8 (18') | 3/12/93 | | | x | | | | |
| 30-224 | Sec.13/HP-A12 (10') | 3/12/93 | x | | x | | x | | |
| 30-224 | Sec.13/HP-A12 (18') | 3/12/93 | | | x | | | | |
| 30-241 | Sec.13/HP-A9 (9') | 3/12/93 | x | | x | | x | | |
| 30-241 | Sec.13/HP-A9 (18') | 3/12/93 | | | x | | | | |
| 30-242 | Sec.13/HP-A10 (10') | 3/12/93 | x | | x | | x | | |
| 30-242 | Sec.13/HP-A10 (18') | 3/12/93 | | | x | | | | |
| 30-243 | Sec.13/HP-A5 (10') | 3/12/93 | x | | x | | x | | |
| 30-243 | Sec.13/HP-A5 (18') | 3/12/93 | | | x | | | | |
| 30-120 | Sec.13/MW-A3S | 3/31/93 | | | x | | | x | |
| 30-120 | Sec.13/MW-A3D | 3/31/93 | | | x | | | x | |
| 30-121 | Sec.13/MW-A4S | 3/31/93 | | | x | | | x | |
| 30-121 | Sec.13/MW-A4D | 3/31/93 | | | x | | | x | |
| 30-140 | Sec.13/MW-A6S | 3/31/93 | | | x | | | x | |
| 30-140 | Sec.13/MW-A6D | 3/31/93 | | | x | | | x | |
| 43-102 | Sec.7/MW-A10S | 3/31/93 | | | x | | | x | |
| 43-102 | Sec.7/MW-A10D | 3/31/93 | | | x | | | x | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|--------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Factory 10, Building 20 Investigation | | | | | | | | | |
| 20-279 | SB-1 | 10/1/92 | | | | x | x | x | |
| 20-471 | SB-2 | 10/1/92 | | | | x | x | x | |
| 20-463 | SB-3 | 10/1/92 | | | | x | x | x | |
| 20-462 | SB-4 | 10/1/92 | | | | x | x | x | |
| 20-206 | SB-5 | 10/1/92 | | | | x | x | x | |
| 20-460 | SB-6 | 10/1/92 | | | | x | x | x | |
| 20-278 | SB-7 | 10/1/92 | | | | x | x | x | |
| 20-248 | SB-8 | 10/1/92 | | | | x | x | x | |
| 20-274 | SB-9 | 10/1/92 | | | | x | x | x | |
| 20-246 | SB-10 | 10/1/92 | | | | x | x | x | |
| 20-249 | SB-12 | 10/1/92 | | | | x | x | x | |
| 20-247 | SB-13 | 10/1/92 | | | | x | x | x | |
| 20-210 | SB-14 | 10/1/92 | | | | x | x | x | |
| 20-168 | SB-15 | 10/1/92 | | | | x | x | x | |
| 20-472 | SB-16 | 10/1/92 | | | | x | x | x | |
| 20-169 | SB-17 | 10/1/92 | | | | x | x | x | |
| 20-466 | SB-18 | 10/1/92 | | | | x | x | x | |
| 20-467 | SB-19 | 10/1/92 | | | | x | x | x | |
| 20-275 | SB-20 | 10/1/92 | | | | x | x | x | |
| 20-470 | SB-21 | 10/1/92 | | | | | x | x | |
| 20-468 | SB-22 | 10/1/92 | | | | | x | x | |
| 20-276 | SB-23 | 10/1/92 | | | | x | x | x | |
| SB-24(ASI) | SB-24 | 10/1/92 | | | | x | x | x | |
| 20-273 | SB-25 | 10/1/92 | | | | | x | x | |
| 20-277 | SB-26 | 10/1/92 | | | | | x | x | |
| 20-205 | SB-27 | 10/1/92 | | | | | x | x | |
| 20-207 | SB-28 | 10/1/92 | | | | | x | x | |
| 20-208 | SB-29 | 10/1/92 | | | | | x | x | |
| 20-256 | SB-30 | 10/1/92 | | | | x | x | x | |
| 20-255 | SB-31 | 10/1/92 | | | | x | x | x | |
| 20-254 | SB-32 | 10/1/92 | | | | x | x | x | |
| 20-253 | SB-33 | 10/1/92 | | | | x | x | x | |
| 20-252 | SB-34 | 10/1/92 | | | | x | x | x | |
| 20-251 | SB-35 | 10/1/92 | | | | x | x | x | |
| SB-36(ASI) | SB-36 | 10/1/92 | | | | | x | x | |
| 20-465 | SB-37 | 10/1/92 | | | | | x | x | |
| 20-167 | MW-1 (SB-11) | 10/9/92 | | | | | x | x | |
| 20-145 | MW-2 (1991) | 10/9/92 | | | | | x | x | |
| 20-120 | MW-3 (1990) | 10/9/92 | | | | | x | x | |
| 20-169 | MW-3 (SB-17) | 10/9/92 | | | | | x | x | |
| 20-168 | MW-4 (SB-15) | 10/9/92 | | | | | x | x | |
| 20-166 | MW-6 (1988) | 10/9/92 | | | | | x | x | |
| 20-207 | MW-8 (1988) | 10/9/92 | | | | | x | x | |
| 20-702 | MW-9 (1988) | 10/9/92 | | | | | x | x | |
| 20-144 | Sec.8/MW-1 | 11/6/92 | | | | | | x | |
| 20-171 | Sec.9/MW-1 | 11/6/92 | | | | | x | x | |
| 20-161 | Sec.9/MW-2 | 11/6/92 | | | | | x | x | |
| 20-170 | Sec.9/MW-3 | 11/6/92 | | | | | x | x | |
| 30-100 | Sec.18/MW-1 | 11/6/92 | | | | | x | x | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|---------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Factory 10, Building 20 Investigation (continued) | | | | | | | | | |
| 20-146 | MW-5 | 12/23/92 | | | | | x | | |
| 20-163 | MW-6 | 12/23/92 | | | | | x | | |
| 20-164 | MW-7 | 12/23/92 | | | | | x | | |
| 20-162 | MW-8 | 12/23/92 | | | | | x | | |
| 20-106 | MW-9 | 12/23/92 | | | | | x | | |
| 20-165 | MW-11 | 12/23/92 | | | | | x | | |
| 20-160 | MW-12 | 12/23/92 | | | | | x | | |
| 20-163 | MW-6 | 1/19/93 | | | | | x | | |
| 20-164 | MW-7 | 1/19/93 | | | | | x | | |
| 20-162 | MW-8 | 1/19/93 | | | | | x | | |
| 20-165 | MW-11 | 1/19/93 | | | | | x | | |
| 20-160 | MW-12 | 1/19/93 | | | | | x | | |
| Eastern Property Boundary Investigation | | | | | | | | | |
| SB-1 | HP-1 (20-22) | 6/14/93 | x | | x | x | x | x | |
| SB-1 | HP-1 (24-26) | 6/14/93 | x | | x | x | x | x | |
| SB-2 | HP-2 (18-20) | 6/14/93 | x | | x | x | x | x | |
| SB-2 | HP-2 (25-27) | 6/14/93 | x | | x | x | x | x | |
| SB-3 | HP-3 (20-22) | 6/15/93 | x | | x | x | x | x | |
| SB-3 | HP-3 (25-27) | 6/15/93 | x | | x | x | x | x | |
| SB-4 | HP-4 (18-20) | 6/15/93 | x | | x | x | x | x | |
| SB-4 | HP-4 (23-25) | 6/15/93 | x | | x | x | x | x | |
| SB-5 | HP-5 (18-20) | 6/15/93 | x | | x | x | x | x | |
| SB-5 | HP-5 (23-25) | 6/15/93 | x | | x | x | x | x | |
| SB-6 | HP-6 (17-19) | 6/15/93 | x | | x | x | x | x | |
| SB-6 | HP-6 (25-27) | 6/15/93 | x | | x | x | x | x | |
| SB-7 | HP-7 (17-19) | 6/15/93 | x | | x | x | x | x | |
| SB-7 | HP-7 (23-25) | 6/15/93 | x | | x | x | x | x | |
| SB-8 | HP-8 (15-17) | 6/15/93 | x | | x | x | x | x | |
| SB-8 | HP-8 (25-27) | 6/15/93 | x | | x | x | x | x | |
| SB-9 | HP-9 (16-18) | 6/15/93 | x | | x | x | x | x | |
| SB-9 | HP-9 (23-25) | 6/15/93 | x | | x | x | x | x | |
| SB-10 | HP-10 (15-17) | 6/16/93 | x | | x | x | x | x | |
| SB-10 | HP-10 (22-24) | 6/16/93 | x | | x | x | x | x | |
| SB-11 | HP-11 (14-16) | 6/16/93 | x | | x | x | x | x | |
| SB-11 | HP-11 (22-24) | 6/16/93 | x | | x | x | x | x | |
| SB-12 | HP-12 (13-15) | 6/16/93 | x | | x | x | x | x | |
| SB-12 | HP-12 (20-22) | 6/16/93 | x | | x | x | x | x | |
| SB-13 | HP-13 (13-15) | 6/16/93 | x | | x | x | x | x | |
| SB-13 | HP-13 (20-22) | 6/16/93 | x | | x | x | x | x | |
| SB-14 | HP-14 (12-14) | 6/16/93 | x | | x | x | x | x | |
| SB-14 | HP-14 (22-24) | 6/16/93 | x | | x | x | x | x | |
| SB-15 | HP-15 (13-15) | 6/16/93 | x | | x | x | x | x | |
| SB-15 | HP-15 (21-23) | 6/16/93 | x | | x | x | x | x | |
| SB-16 | HP-16 (13-15) | 6/16/93 | x | | x | x | x | x | |
| SB-16 | HP-16 (20-22) | 6/16/93 | x | | x | x | x | x | |
| SB-17 | HP-17 (12-14) | 6/16/93 | x | | x | x | x | x | |
| SB-17 | HP-17 (21-23) | 6/16/93 | x | | x | x | x | x | |
| SB-18 | HP-18 (12-14) | 6/16/93 | x | | x | x | x | x | |
| SB-18 | HP-18 (22-24) | 6/16/93 | x | | x | x | x | x | |

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GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

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HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|---------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Eastern Property Boundary Investigation (continued) | | | | | | | | | |
| SB-19 | HP-19 (12-14) | 6/17/93 | x | | x | x | x | x | |
| SB-19 | HP-19 (20-22) | 6/17/93 | x | | x | x | x | x | |
| SB-20 | HP-20 (12-14) | 6/17/93 | x | | x | x | x | x | |
| SB-20 | HP-20 (18-20) | 6/17/93 | x | | x | x | x | x | |
| SB-21 | HP-21 (9-11) | 6/17/93 | x | | x | x | x | x | |
| SB-22 | HP-22 (10-12) | 6/17/93 | x | | x | x | x | x | |
| SB-22 | HP-22 (16-18) | 6/17/93 | x | | x | x | x | x | |
| SB-23 | HP-23 (12-14) | 6/17/93 | x | | x | x | x | x | |
| SB-24 | HP-24 (9-11) | 6/17/93 | x | | x | x | x | x | |
| SB-24 | HP-24 (18-20) | 6/17/93 | x | | x | x | x | x | |
| SB-25 | HP-25 (3-4) | 6/23/93 | x | | x | x | x | x | |
| SB-26 | HP-26 (8-9) | 6/23/93 | x | | x | x | x | x | |
| SB-27 | HP-27 (9-10) | 6/23/93 | x | | x | x | x | x | |
| SB-28 | HP-28 (9-10) | 6/23/93 | x | | x | x | x | x | |
| SB-29 | HP-29 (9-10) | 6/23/93 | x | | x | x | x | x | |
| SB-1A | HP-1 (9-11) | 6/18/93 | x | | x | x | x | x | |
| SB-2A | HP-2 (9-11) | 6/18/93 | x | | x | x | x | x | |
| SB-2A | HP-2 (16-18) | 6/18/93 | x | | x | x | x | x | |
| SB-3A | HP-3 (10-12) | 6/18/93 | x | | x | x | x | x | |
| SB-4A | HP-4 (10-12) | 6/18/93 | x | | x | x | x | x | |
| SB-5A | HP-5 (10-12) | 6/18/93 | x | | x | x | x | x | |
| SB-6A | HP-6 (9-11) | 6/18/93 | x | | x | x | x | x | |
| SB-6A | HP-6 (15-17) | 6/18/93 | x | | x | x | x | x | |
| SB-7A | HP-7 (10-12) | 6/18/93 | x | | x | x | x | x | |
| SB-7A | HP-7 (16-18) | 6/18/93 | x | | x | x | x | x | |
| SB-8A | HP-8 (10-12) | 6/18/93 | x | | x | x | x | x | |
| SB-9A | HP-9 (10-12) | 6/18/93 | x | | x | x | x | x | |
| SB-9A | HP-9 (15-17) | 6/18/93 | x | | x | x | x | x | |
| SB-10A | HP-10 (10-12) | 6/21/93 | x | | x | x | x | x | |
| SB-11A | HP-11 (9-11) | 6/21/93 | x | | x | x | x | x | |
| SB-12A | HP-12 (9-11) | 6/21/93 | x | | x | x | x | x | |
| SB-13A | HP-13 (9-11) | 6/21/93 | x | | x | x | x | x | |
| SB-14A | HP-14 (9-11) | 6/21/93 | x | | x | x | x | x | |
| SB-15A | HP-15 (8-10) | 6/21/93 | x | | | x | x | x | |
| SB-15A | HP-15 (9-11) | 6/21/93 | | | x | | | | |
| SB-16A | HP-16 (6-8) | 6/21/93 | x | | x | x | x | x | |
| SB-17A | HP-17 (6-8) | 6/21/93 | x | | x | x | x | x | |
| SB-18A | HP-18 (6-8) | 6/21/93 | x | | x | x | x | x | |
| SB-19A | HP-19 (8-10) | 6/21/93 | x | | | x | x | x | |
| SB-19A | HP-19 (8-10) | 6/21/93 | | | x | | | | |
| SB-20A | HP-20 (5-7) | 6/21/93 | x | | | x | x | x | |
| SB-20A | HP-20 (10-12) | 6/21/93 | x | | | x | x | x | |
| SB-20A | HP-20 (5-7) | 6/21/93 | | | x | | | | |
| SB-20A | HP-20 (10-12) | 6/21/93 | | | x | | | | |
| SB-21A | HP-21 (5-7) | 6/21/93 | x | | | x | x | x | |
| SB-21A | HP-21 (10-12) | 6/21/93 | x | | | x | x | x | |
| SB-21A | HP-21 (5-7) | 6/21/93 | | | x | | | | |
| SB-21A | HP-21 (10-12) | 6/21/93 | | | x | | | | |
| SB-22A | HP-22 (6-8) | 6/22/93 | x | | x | x | x | x | |

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| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|---|----------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Eastern Property Boundary Investigation (continued) | | | | | | | | | |
| SB-23A | HP-23 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-24A | HP-24 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-25A | HP-25 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-26A | HP-26 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-27A | HP-27 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-28A | HP-28 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-29A | HP-29 (6-8) | 6/23/93 | x | | x | x | x | x | |
| SB-30A | HP-30 (9-10)) | 6/23/93 | x | | x | x | x | x | |
| SB-32A | HP-32 (6-8) | 6/23/93 | x | | x | x | x | x | |
| SB-33A | HP-33 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-34A | HP-34 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-35A | HP-35 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-36A | HP-36 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-37A | HP-37 (6-8) | 6/23/93 | x | | x | x | x | x | |
| SB-38A | HP-38 (6-8) | 6/22/93 | x | | x | x | x | x | |
| SB-39A | HP-39 (9-11) | 6/23/93 | x | | x | x | x | x | |
| SB-39A | HP-39 (15-17) | 6/23/93 | x | | x | x | x | x | |
| Eastern Property Boundary Additional Investigation | | | | | | | | | |
| 07-142 | HP-PH-1 | 3/14/94 | | x | x | x | x | x | |
| 07-120 | HP-PH-4 | 3/15/94 | | x | x | x | x | x | |
| 07-124 | HP-PH-8 | 3/16/94 | | x | x | x | x | x | |
| 07-125 | HP-PH-9 | 3/16/94 | | x | x | x | x | x | |
| 07-126 | HP-PH-10 | 3/16/94 | | x | x | x | x | x | |
| Factory 05, Building 43 Investigation | | | | | | | | | |
| 43-241 | HP-43-1(13.5) | 5/9/94 | | | x | x | x | x | |
| 43-241 | HP-43-1(21) | 5/9/94 | | | x | x | x | x | |
| 43-242 | HP-43-2(13) | 5/10/94 | | | x | x | x | x | |
| 43-242 | HP-43-2(26) | 5/10/94 | | | x | x | x | x | |
| 43-243 | HP-43-3(13) | 5/10/94 | | | x | x | x | x | |
| 43-244 | HP-43-4 (20) | 5/11/94 | | | x | x | x | x | |
| 43-267 | HP-43-5 (16) | 5/13/94 | | | x | x | x | x | |
| 43-268 | HP-43-6 (16) | 5/12/94 | | | x | x | x | x | |
| 43-268 | HP-43-6 (20) | 5/12/94 | | | x | x | x | x | |
| 43-269 | HP-43-7 (16) | 5/12/94 | | | x | x | x | x | |
| 43-269 | HP-43-7 (24) | 5/12/94 | | | x | x | x | x | |
| 43-208 | HP-43-8 (16) | 5/13/94 | | | x | x | x | x | |
| 43-208 | HP-43-8 (24) | 5/13/94 | | | x | x | x | x | |
| 43-207 | HP-43-9 (16) | 5/13/94 | | | x | x | x | x | |
| 43-207 | HP-43-9 (23) | 5/13/94 | | | x | x | x | x | |
| 43-220 | HP-43-10 (13) | 5/13/94 | | | x | x | x | x | |
| 43-220 | HP-43-10 (23) | 5/13/94 | | | x | x | x | x | |
| Factory 05, Building 43 Recovery Trench Installation Investigation | | | | | | | | | |
| 43-301 | GB-1 (12.5-14) | 7/20/94 | | | x | x | x | x | |
| 43-302 | GB-2 (12.5-14) | 7/20/94 | | | x | x | x | x | |
| 43-303 | GB-3 (12.5-14) | 7/20/94 | | | x | x | x | x | |
| 43-304 | GB-4 (13-14.5) | 7/21/94 | | | x | x | x | x | |
| 43-305 | GB-5 (13-14.5) | 7/21/94 | | | x | x | x | x | |
| 43-306 | GB-6 (13-14.5) | 7/21/94 | | | x | x | x | x | |

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| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--------------------------------|---------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Fenceline Investigation | | | | | | | | | |
| 11-120 | 11-120(7-12) | 10/4/95 | | | x | x | x | x | |
| 11-120 | 11-120(15-20) | 10/4/95 | | | x | x | x | x | |
| 11-140 | 11-140(7-12) | 10/4/95 | | | x | x | x | x | |
| 11-140 | 11-140(17-22) | 10/4/95 | | | x | x | x | x | |
| 20-103 | 20-103 | 10/18/95 | | | x | x | x | x | |
| 20-504 | 20-504(7-12) | 10/19/95 | | | x | x | x | x | |
| 20-504 | 20-504(15-20) | 10/19/95 | | | x | x | x | x | |
| 20-160 | 20-160 | 10/18/95 | | | x | x | x | x | |
| 20-101 | 20-101 | 10/23/95 | | | x | x | x | x | |
| 20-105 | 20-105 | 10/18/95 | | | x | x | x | x | |
| 20-120 | 20-120 | 10/18/95 | | | x | x | x | x | |
| 20-121 | 20-121 | 10/18/95 | | | x | x | x | x | |
| 20-122 | 20-122 | 10/18/95 | | | x | x | x | x | |
| 20-140 | 20-140 | 10/18/95 | | | x | x | x | x | |
| 20-141 | 20-141 | 10/17/95 | | | x | x | x | x | |
| 20-142 | 20-142 | 10/17/95 | | | x | x | x | x | |
| 20-143 | 20-143 | 10/18/95 | | | x[x] | x[x] | x[x] | x[x] | |
| 20-144 | 20-144 | 10/17/95 | | | x | x | x | x | |
| 20-145 | 20-145 | 10/17/95 | | | x | x | x | x | |
| 30-100 | 30-100 | 10/17/95 | | | x | x | x | x | |
| 30-120 | 30-120 | 10/18/95 | | | x | x | x | x | |
| 30-121 | 30-121 | 10/18/95 | | | x | x | x | x | |
| 30-140 | 30-140 | 10/18/95 | | | x | x | x | x | |
| 43-100 | 43-100 | 10/18/95 | | | x | x | x | x | |
| 43-101 | 43-101 | 10/18/95 | | | x | x | x | x | |
| 43-102 | 43-102 | 10/18/95 | | | x | x | x | x | |
| 70-100 | 70-100 | 10/17/95 | | | x | x | x | x | |
| 70-102 | 70-102 | 10/17/95 | | | x | x | x | x | |
| 70-107 | 70-107 | 10/17/95 | | | x | x | x | x | |
| 70-109 | 70-109 | 10/17/95 | | | x[x] | x[x] | x[x] | x[x] | |
| 20-100 | 20-100 | 10/18/95 | | | x | x | x | x | |
| 20-500 | 20-500 | 10/18/95 | | | x | x | x | x | |
| 20-501 | 20-501 | 10/18/95 | | | x | x | x | x | |
| 32-101 | 32-101(9-14) | 10/11/95 | | | x | x | x | x | |
| 36-100 | 36-100(11-16) | 10/6/95 | | | x | x | x | x | |
| 36-100 | 36-100(19-24) | 10/6/95 | | | x | x | x | x | |
| 36-101 | 36-101(11-16) | 10/6/95 | | | x | x | x | x | |
| 36-120 | 36-120(11-16) | 10/5/95 | | | x | x | x | x | |
| 36-120 | 36-120(19-24) | 10/5/95 | | | x | x | x | x | |
| 36-121 | 36-121(15-20) | 10/5/95 | | | x | x | x | x | |
| 36-121 | 36-121(21-26) | 10/5/95 | | | x | x | x | x | |
| 36-160 | 36-160(11-16) | 10/9/95 | | | x | x | x | x | |
| 36-160 | 36-160(17-22) | 10/9/95 | | | x | x | x | x | |
| 36-161 | 36-161(3-8) | 10/9/95 | | | x | x | x | x | |
| 36-161 | 36-161(17-22) | 10/9/95 | | | x | x | x | x | |
| 38-120 | 38-120(11-16) | 10/6/95 | | | x | x | x | x | |
| 38-120 | 38-120(19-24) | 10/6/95 | | | x | x | x | x | |
| 43-103 | 43-103(9-14) | 10/5/95 | | | x | x | x | x | |
| 43-120 | 43-120(11-16) | 10/3/95 | | | x | x | x | x | |

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| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|-----------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Fenceline Investigation (continued) | | | | | | | | | |
| 43-120 | 43-120(19-24) | 10/3/95 | | | x | x | x | x | |
| 43-140 | 43-140(9-14) | 10/10/95 | | | x | x | x | x | |
| 43-141 | 43-141(11-16) | 10/4/95 | | | x | x | x | x | |
| 70-160 | 70-160(15-20) | 10/9/95 | | | x | x | x | x | |
| 70-161 | 70-161(3-8) | 10/19/95 | | | x | x | x | x | |
| 70-161 | 70-161(11-16) | 10/19/95 | | | x | x | x | x | |
| 86-100 | 86-100(7-12) | 10/10/95 | | | x[x] | x[x] | x[x] | x[x] | |
| SBFL1-30 | SBFL1-30(14-19) | 9/14/95 | | | x | | | | |
| SBFL1-30 | SBFL1-30(20-25) | 9/14/95 | | | x | | | | |
| SBFL1-31 | SBFL1-31(14-19) | 9/14/95 | | | x | | | | |
| SBFL1-31 | SBFL1-31(19-24) | 9/14/95 | | | x | | | | |
| SBFL1-32 | SBFL1-32(14-19) | 9/15/95 | | | x | | | | |
| SBFL1-32 | SBFL1-32(20-25) | 9/15/95 | | | x | | | | |
| SBFL1-33 | SBFL1-33(12-13) | 9/15/95 | | | x | | | | |
| SBFL1-33 | SBFL1-33(17-22) | 9/15/95 | | | x | | | | |
| SBFL1-34 | SBFL1-34(14-15) | 9/15/95 | | | x | | | | |
| SBFL1-34 | SBFL1-34(19-24) | 9/15/95 | | | x | | | | |
| SBFL1-35 | SBFL1-35(11-16) | 10/11/95 | | | x | | | | |
| SBFL1-35 | SBFL1-35(19-24) | 10/11/95 | | | x | | | | |
| SBFL1-36 | SBFL1-36(11-16) | 10/11/95 | | | x | | | | |
| SBFL1-36 | SBFL1-36(19-24) | 10/11/95 | | | x | | | | |
| SBFL1-37 | SBFL1-37(11-16) | 10/12/95 | | | x[x] | x[x] | | x[x] | |
| SBFL1-37 | SBFL1-37(17-22) | 10/12/95 | | | x | x | | x | |
| SBFL1-38 | SBFL1-38(11-16) | 10/12/95 | | | x | x | | x | |
| SBFL1-38 | SBFL1-38(17-22) | 10/12/95 | | | x | x | | x | |
| SBFL1-39 | SBFL1-39(11-16) | 10/12/95 | | | x | x | | x | |
| SBFL1-39 | SBFL1-39(17-22) | 10/12/95 | | | x | x | | x | |
| SBFL1-40 | SBFL1-40(9-14) | 10/13/95 | | | | x | | x | |
| SBFL1-40 | SBFL1-40(17-22) | 10/13/95 | | | | x | | x[x] | |
| SBFL1-41 | SBFL1-41(7-12) | 10/13/95 | | | | | | x | |
| SBFL1-41 | SBFL1-41(17-22) | 10/13/95 | | | | | | x | |
| SBFL2-40 | SBFL2-40(7-12) | 10/16/95 | | | | | | x | |
| SBFL2-40 | SBFL2-40(15-20) | 10/16/95 | | | | | | x | |
| SBFL2-41 | SBFL2-41(5-10) | 10/16/95 | | | | | | x | |
| SBFL2-41 | SBFL2-41(13-18) | 10/16/95 | | | | | | x | |
| SBFL2-42 | SBFL2-42(5-10) | 10/16/95 | | | x | | | | |
| SBFL2-43 | SBFL2-43(5-10) | 10/17/95 | | | x | | | | |
| SBFL2-43 | SBFL2-43(13-18) | 10/17/95 | | | x | | | | |
| SBFL2-44 | SBFL2-44(5-10) | 10/17/95 | | | x | | | | |
| SBFL2-44 | SBFL2-44(11-16) | 10/17/95 | | | x | | | | |
| SBFL2-45 | SBFL2-45(5-10) | 10/17/95 | | | x | | | | |
| SBFL2-45 | SBFL2-45(11-16) | 10/17/95 | | | x | | | | |
| SBFL2-46 | SBFL2-46(5-10) | 10/18/95 | | | x | | | | |
| SBFL2-46 | SBFL2-46(11-16) | 10/18/95 | | | x | | | | |
| SBFL2-47 | SBFL2-47(3-8) | 10/17/95 | | | x | | x | | |
| SBFL2-47 | SBFL2-47(9-14) | 10/17/95 | | | x | | x | | |
| SBFL2-48 | SBFL2-48(3-8) | 10/17/95 | | | x | | x | | |
| SBFL2-48 | SBFL2-48(9-14) | 10/17/95 | | | x | | x | | |
| SBFL2-49 | SBFL2-49(3-8) | 10/18/95 | | | x | | x | | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|---|----------------|-------------|---------------|------|------|-------|------|--------|--|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Fenceline Investigation (continued) | | | | | | | | | |
| SBFL2-49 | SBFL2-49(9-14) | 10/18/95 | | | x | | x | | |
| SBFL2-50 | SBFL2-50(308) | 10/18/95 | | | x[x] | | x[x] | x[x] | |
| SBFL2-50 | SBFL2-50(9-14) | 10/18/95 | | | x | | x | x | |
| SBFL2-51 | SBFL2-51(3-8) | 10/18/95 | | | x | | x | x | |
| SBFL2-51 | SBFL2-51(9-14) | 10/18/95 | | | x | | x | x | |
| SBFL2-52 | SBFL2-52(3-8) | 10/18/95 | | | x | | x | x | |
| SBFL2-52 | SBFL2-52(9-14) | 10/18/95 | | | x | | x | x | |
| SBFL2-53 | SBFL2-53(6-8) | 9/14/95 | | | | | | x | |
| SBFL3-4 | SBFL3-4(5-10) | 9/26/95 | | | x | x | x | x | |
| Factory 81 Recovery Trench Design Investigation | | | | | | | | | |
| 36-161 | 36-161 | 2/28/96 | | | x | x | x | x | |
| 70-100 | 70-100 | 2/28/96 | | | x[x] | x[x] | x[x] | x[x] | |
| 70-102 | 70-102 | 2/28/96 | | | x | x | x | x | |
| 70-107 | 70-107 | 2/28/96 | | | x | x | x | x | |
| 70-160 | 70-160 | 2/28/96 | | | x | x | x | x | |
| 70-162 | 70-162 | 2/28/96 | | | x | x | x | x | |
| 70-163 | 70-163 | 2/28/96 | | | x | x | x | x | |
| 70-164 | 70-164 | 2/28/96 | | | x[x] | x[x] | x[x] | x[x] | |
| 70-165 | 70-165 | 2/28/96 | | | x | x | x | x | |
| Building 86, Tank 059/86 Investigation | | | | | | | | | |
| 86-102 | BLD-86-2 | 7/23/96 | | | x | | | | |
| 86-103 | BLD-86-3 | 7/23/96 | | | x | | | | |
| 86-104 | BLD-86-4 | 7/23/96 | | | x | | | | |
| 86-105 | BLD-86-5 | 7/23/96 | | | x | | | | |
| Building 86, Tank 059/86 Additional Investigation | | | | | | | | | |
| 86-1(SB1/MW1) | SB1/MW1 | 6/1/97 | | x | | | | x | Metals: Lead only |
| 86-2(SB2/MW2) | SB2/MW2 | 6/1/97 | | x | | | | x | Metals: Lead only |
| 86-3(SB3/MW3) | SB3/MW3 | 6/1/97 | | x | | | | x | Metals: Lead only |
| Building 88, Tanks 050/88 - 058/88 Investigation | | | | | | | | | |
| 88-101 | Bldg 88-1 | 7/22/96 | | | x | | x | x | Metals: Cadmium, Chromium, and Lead only |
| 88-102 | Bldg 88-2 | 7/22/96 | | | x | | x | x | Metals: Cadmium, Chromium, and Lead only |
| 88-103 | Bldg 88-3 | 7/22/96 | | | x | | x | x | Metals: Cadmium, Chromium, and Lead only |
| 88-104 | Bldg 88-4 | 7/22/96 | | | x | | x | x | Metals: Cadmium, Chromium, and Lead only |
| 88-106 | Bldg 88-6 | 11/12/96 | | | x | x | | x | Metals: Chromium and lead only |
| 88-1 (MW1) | MW-1 | 11/12/96 | | | x | x | | x | Metals: Chromium and lead only |
| 88-2 (MW2) | MW-2 | 11/12/96 | | | x | x | | x | Metals: Chromium and lead only |
| 88-3 (MW3) | MW-3 | 11/12/96 | | | x | x | | x | Metals: Chromium and lead only |
| 88-4 (MW4) | MW-4 | 11/12/96 | | | x | x | | x | Metals: Chromium and lead only |
| 88-5 (MW5) | MW-5 | 6/10/97 | | | x | x | | x | Metals: Chromium and lead only |
| 88-6 (MW6) | MW-6 | 6/10/97 | | | x | x | | x | Metals: Chromium and lead only |
| Factory 10, Building 20 Groundwater Treatment System Evaluation (1998) | | | | | | | | | |
| 20-167 | MW-1 | 7/22/98 | | | x | x | x | x | |
| 20-169 | MW-3 | 7/22/98 | | | x | x | x | x | |
| 20-122 | MW-4 (Sec. 6) | 7/22/98 | | | x | x | x | x | |
| 20-163 | MW-6 | 7/23/98 | | | x | x | x | x | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|---|---------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Factory 10, Building 20 Groundwater Treatment System Evaluation (1998) (continued) | | | | | | | | | |
| 20-164 | MW-7 | 7/23/98 | | | x | x | x | x | |
| 20-601 | P-1 | 7/23/98 | | | x | x | x | x | |
| 20-602 | P-2 | 7/23/98 | | | x | x | x | x | |
| | RW-1 | 7/23/98 | | | x | x | x | x | |
| | RW-2 | 7/24/98 | | | x | x | x | x | |
| 20-603 | RW2-P1 | 7/23/98 | | | x | x | x | x | |
| | RW-3 | 7/22/98 | | | x | x | x | x | |
| 20-604 | RW3A-P1 | 7/22/98 | | | x | x | x | x | |
| 20-605 | RW3A-P2 | 7/22/98 | | | x | x | x | x | |
| | RW-4 | 7/23/98 | | | x | x | x | x | |
| | RW-5 | 7/22/98 | | | x | x | x | x | |
| | RW6-P1 | 7/22/98 | | | x | x | x | x | |
| | RW-7 | 7/22/98 | | | x | x | x | x | |
| 20-607 | RW7-P1 | 7/22/98 | | | x | x | x | x | |
| Factory 10, Building 20 Groundwater Treatment System Evaluation (1999) | | | | | | | | | |
| 20-167 | MW-1 | 11/19/99 | | | x | x | x | x | |
| 20-169 | MW-3 | 11/19/99 | | | x | x | x | x | |
| 20-168 | MW-4 | 11/19/99 | | | x | x | x | x | |
| 20-122 | MW-4 (Sec. 6) | 11/16/99 | | | x | x | x | x | |
| 20-164 | MW-7 | 11/18/99 | | | x | x | x | x | |
| 20-165 | MW-11 | 11/19/99 | | | x | x | x | x | |
| 20-601 | P-1 | 11/18/99 | | | x | x | x | x | |
| | RW-1 | 11/18/99 | | | x | x | x | x | |
| | RW-2 | 11/18/99 | | | x | x | x | x | |
| 20-603 | RW2-P1 | 11/18/99 | | | x | x | x | x | |
| | RW3A | 11/16/99 | | | x | x | x | x | |
| | RW3A-P1 | 11/16/99 | | | x | x | x | x | |
| | RW3A-P2 | 11/16/99 | | | x | x | x | x | |
| | RW-4 | 11/19/99 | | | x | x | x | x | |
| | RW-5 | 11/19/99 | | | x | x | x | x | |
| | RW-6 | 11/19/99 | | | x | x | x | x | |
| | RW6A-P1 | 11/16/99 | | | x | x | x | x | |
| | RW-7 | 11/19/99 | | | x | x | x | x | |
| 20-607 | RW7-P1 | 11/16/99 | | | x | x | x | x | |
| 1999 Subsurface Investigations | | | | | | | | | |
| 20-FP1 | 20-FP1 | 10/27/99 | | | x | x | x | x | |
| 20-FP5 | 20-FP5 | 10/27/99 | | | x | x | x | x | |
| 20-FP6 | 20-FP6 | 10/27/99 | | | x | x | x | x | |
| 20-FP9 | 20-FP9 | 10/27/99 | | | x | x | x | x | |
| 20-FP10 | 20-FP10 | 10/27/99 | | | x | x | x | x | |
| 20-FP11 | 20-FP11 | 10/27/99 | | | x | x | x | x | |
| 20-FP12 | 20-FP12 | 10/27/99 | | | x | x | x | x | |
| 36-FP1 | 36-FP1 | 10/28/99 | | | x | x | x | x | |
| 36-FP2 | 36-FP2 | 10/28/99 | | | x | x | x | x | |
| 36-FP4 | 36-FP4 | 10/28/99 | | | x | x | x | x | |
| 36-FP5 | 36-FP5 | 10/28/99 | | | x | x | x | x | |
| 36-FP8 | 36-FP8 | 10/28/99 | | | x | x | x | x | |
| 55-1 | 55-1 | 10/27/99 | | | x | x | x | x | |
| 55-2 | 55-2 | 10/27/99 | | | x | x | x | x | |
| 55-3 | 55-3 | 10/27/99 | | | x | x | x | x | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|-----------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| 1999 Subsurface Investigations (continued) | | | | | | | | | |
| 55-4 | 55-4 | 10/27/99 | | | x | x | x | x | |
| 55-5 | 55-5 | 10/27/99 | | | x | x | x | x | |
| 87-FP1 | 87-FP1 | 10/26/99 | | | x | x | x | x | |
| 87-FP2 | 87-FP2 | 10/26/99 | | | x | x | x | x | |
| 87-FP2D | 87-FP2D | 10/26/99 | | | x | x | x | x | |
| 87-FP3 | 87-FP3 | 10/26/99 | | | x | x | x | x | |
| 87-FP3D | 87-FP3D | 10/26/99 | | | x | x | x | x | |
| 87-FP4 | 87-FP4 | 10/27/99 | | | x | x | x | x | |
| 87-FP5 | 87-FP5 | 10/27/99 | | | x | x | x | x | |
| Semiannual Groundwater Sampling Event - February 1997 | | | | | | | | | |
| 11-120 | 11-120 | 2/5/97 | | | x | x | x | x | |
| 20-100 | 20-100 | 2/4/97 | | | x | x | x | x | |
| 20-103N | 20-103N | 2/4/97 | | | x | x | x | x | |
| 20-103S | 20-103S | 2/4/97 | | | x | x | x | x | |
| 20-504 | 20-504 | 2/10/97 | | | x | x | x | x | |
| 36-100 | 36-100 | 2/5/97 | | | x | x | x | x | |
| 36-101 | 36-101 | 2/5/97 | | | x | | x | x | |
| 36-120 | 36-120 | 2/5/97 | | | x | x | x | x | |
| 36-121 | 36-121 | 2/5/97 | | | x | x | x | x | |
| 36-161 | 36-161 | 2/10/97 | | | x | x | x | x | |
| 38-120 | 38-120 | 2/5/97 | | | x[x] | x[x] | x[x] | x[x] | |
| 43-103 | 43-103 | 2/10/97 | | | x | x | x | x | |
| 43-120 | 43-120 | 2/5/97 | | | x | x | x | x | |
| 43-141 | 43-141 | 2/10/97 | | | x | x | x | x | |
| 70-102 | 70-102 | 2/4/97 | | | x | x | x | x | |
| 70-162 | 70-162 | 2/5/97 | | | x | x | x | x | |
| 70-163 | 70-163 | 2/10/97 | | | x | x | x | x | |
| 70-164 | 70-164 | 2/10/97 | | | x | x | x | x | |
| 70-165 | 70-165 | 2/5/97 | | | x | x | x | x | |
| 86-100 | 86-100 | 2/4/97 | | | x | x | x | x | |
| Semiannual Groundwater Sampling Event - August 1997 | | | | | | | | | |
| 11-120 | 11-120 | 8/6/97 | | | x | x | x | x | |
| 11-140 | 11-140 | 8/6/97 | | | x | x | x | x | |
| 20-100 | 20-100 | 8/6/97 | | | x | x | x | x | |
| 20-103N | 20-103N | 8/6/97 | | | x | x | x | x | |
| 20-103S | 20-103S | 8/6/97 | | | x | x | x | x | |
| 20-504 | 20-504 | 8/5/97 | | | x | x | x | x | |
| 36-100 | 36-100 | 8/5/97 | | | x | x | x | x | |
| 36-101 | 36-101 | 8/5/97 | | | x | | x | x | |
| 36-120 | 36-120 | 8/6/97 | | | x | x | x | x | |
| 36-121 | 36-121 | 8/6/97 | | | x | x | x | x | |
| 36-160 | 36-160 | 8/6/97 | | | | | | x | |
| 36-161 | 36-161 | 8/6/97 | | | x | x | x | x | |
| 38-120 | 38-120 | 8/5/97 | | | x | x | x | x | |
| 43-103 | 43-103 | 8/6/97 | | | x | x | x | x | |
| 43-120 | 43-120 | 8/6/97 | | | x | x | x | x | |
| 43-140 | 43-140 | 8/6/97 | | | x | x | x | x | |
| 43-141 | 43-141 | 8/6/97 | | | x | x | x | x | |
| 70-102 | 70-102 | 8/6/97 | | | x | x | x | x | |
| 70-162 | 70-162 | 8/5/97 | | | x | x | x | x | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|---------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Semiannual Groundwater Sampling Event - February 1998 | | | | | | | | | |
| 70-163 | 70-163 | 8/6/97 | | | X | X | X | X | |
| 70-165 | 70-165 | 8/5/97 | | | X | X | X | X | |
| 11-120 | 11-120 | 2/3/98 | | | X | X | | X | |
| 11-140 | 11-140 | 2/2/98 | | | X | X | | X | |
| 20-100 | 20-100 | 2/3/98 | | | X | X | | | |
| 20-103N | 20-103N | 2/3/98 | | | X | X | | X | |
| 20-103S | 20-103S | 2/3/98 | | | X | X | | X | |
| 20-504 | 20-504 | 2/3/98 | | | X | X | | X | |
| 36-100 | 36-100 | 2/4/98 | | | X | X | | X | |
| 36-101 | 36-101 | 2/2/98 | | | X | | | X | |
| 36-120 | 36-120 | 2/3/98 | | | X | X | | X | |
| 36-121 | 36-121 | 2/3/98 | | | X | X | | X | |
| 36-161 | 36-161 | 2/3/98 | | | X | X | | X | |
| 38-120 | 38-120 | 2/2/98 | | | X | X | | X | |
| 43-103 | 43-103 | 2/2/98 | | | X | X | | | |
| 43-120 | 43-120 | 2/2/98 | | | X | X | | X | |
| 43-140 | 43-140 | 2/2/98 | | | X | X | | X | |
| 43-141 | 43-141 | 2/2/98 | | | X | X | | X | |
| 70-102 | 70-102 | 2/4/98 | | | X | X | | X | |
| 70-161 | 70-161 | 2/4/98 | | | X | X | X | X | |
| 70-163 | 70-163 | 2/2/98 | | | X | X | | X | |
| 70-164 | 70-164 | 2/2/98 | | | X | X | | X | |
| 70-165 | 70-165 | 2/4/98 | | | X | X | | X | |
| 86-100 | 86-100 | 2/3/98 | | | X | X | | X | |
| 86-3(SB3/MW3) | 86-3(SB3/MW3) | 2/4/98 | | | X | X | | | |
| 88-1(SB1/MW1) | 88-1(SB1/MW1) | 2/6/98 | | | X | X | | | |
| 88-2(SB2/MW2) | 88-2(SB2/MW2) | 2/6/98 | | | X | X | | | |
| 88-3(SB3/MW3) | 88-3(SB3/MW3) | 2/6/98 | | | X | X | | | |
| 88-4(SB4/MW4) | 88-4(SB4/MW4) | 2/6/98 | | | X | X | | | |
| 88-5(SB5/MW5) | 88-5(SB5/MW5) | 2/6/98 | | | X | X | | | |
| 88-6(SB6/MW6) | 88-6(SB6/MW6) | 2/6/98 | | | X | X | | | |
| Additional Groundwater Sampling Event - March 1998 | | | | | | | | | |
| 11-120 | 11-120 | 3/17/98 | | | | | X | | |
| 11-140 | 11-140 | 3/17/98 | | | | | X | | |
| 20-100 | 20-100 | 3/17/98 | | | | | X | | |
| 20-103N | 20-103N | 3/17/98 | | | | | X | | |
| 20-103S | 20-103S | 3/17/98 | | | | | X | | |
| 20-504 | 20-504 | 3/17/98 | | | | | X | | |
| 36-100 | 36-100 | 3/17/98 | | | | | X | | |
| 36-101 | 36-101 | 3/17/98 | | | | | X | | |
| 36-120 | 36-120 | 3/17/98 | | | | | X | | |
| 36-121 | 36-121 | 3/17/98 | | | | | X | | |
| 43-103 | 43-103 | 3/17/98 | | | | | X | | |
| 43-120 | 43-120 | 3/17/98 | | | | | X | | |
| 43-140 | 43-140 | 3/17/98 | | | | | X | | |
| 43-141 | 43-141 | 3/17/98 | | | | | X | | |
| 70-102 | 70-102 | 3/17/98 | | | | | X | | |
| 70-163 | 70-163 | 3/17/98 | | | | | X | | |
| 70-164 | 70-164 | 3/17/98 | | | | | X | | |
| 70-165 | 70-165 | 3/17/98 | | | | | X | | |
| 86-100 | 86-100 | 3/17/98 | | | | | X | | |

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HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|---------------|-------------|---------------|------|------|-------|------|--------|----------------|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Semiannual Groundwater Sampling Event - August 1998 | | | | | | | | | |
| 11-120 | 11-120 | 8/4/98 | | | x | x | x | x | |
| 11-140 | 11-140 | 8/4/98 | | | x | x | x | x | |
| 20-100 | 20-100 | 8/4/98 | | | x | x | x | | |
| 20-103N | 20-103N | 8/4/98 | | | x | x | x | x | |
| 20-103S | 20-103S | 8/4/98 | | | x | x | x | x | |
| 36-100 | 36-100 | 8/4/98 | | | x | x | x | x | |
| 36-101 | 36-101 | 8/4/98 | | | x | | x | x | |
| 36-120 | 36-120 | 8/4/98 | | | x | x | x | x | |
| 36-121 | 36-121 | 8/4/98 | | | x | x | x | x | |
| 36-161 | 36-161 | 8/4/98 | | | x | x | | x | |
| 38-120 | 38-120 | 8/4/98 | | | x | x | | x | |
| 43-103 | 43-103 | 8/4/98 | | | x | x | x | | |
| 43-120 | 43-120 | 8/4/98 | | | x | x | x | x | |
| 43-140 | 43-140 | 8/4/98 | | | x | x | x | x | |
| 43-141 | 43-141 | 8/4/98 | | | x | x | x | x | |
| 70-161 | 70-161 | 8/4/98 | | | x | x | x | x | |
| 70-163 | 70-163 | 8/3/98 | | | x | x | x | x | |
| 70-165 | 70-165 | 8/4/98 | | | x | x | x | x | |
| 86-100 | 86-100 | 8/4/98 | | | x | x | x | x | |
| 88-2(SB2/MW2) | 88-2(SB2/MW2) | 8/5/98 | | | x | x | | | |
| 88-3(SB3/MW3) | 88-3(SB3/MW3) | 8/5/98 | | | x | x | | | |
| 88-4(SB4/MW4) | 88-4(SB4/MW4) | 8/5/98 | | | x | x | | | |
| 88-5(SB5/MW5) | 88-5(SB5/MW5) | 8/5/98 | | | x | x | | | |
| 88-6(SB6/MW6) | 88-6(SB6/MW6) | 8/5/98 | | | x | x | | | |
| Semiannual Groundwater Sampling Event - February 1999 | | | | | | | | | |
| 11-120 | 11-120 | 2/4/99 | | | x | x | x | x | |
| 11-140 | 11-140 | 2/8/99 | | | | | x | | |
| 20-100 | 20-100 | 2/1/99 | | | x | x | | x | |
| 20-103N | 20-103N | 2/1/99 | | | x | x | x | x | |
| 20-103S | 20-103S | 2/1/99 | | | x | x | x | x | |
| 20-504 | 20-504 | 2/1/99 | | | x | x | x | x | |
| 36-101 | 36-101 | 2/4/99 | | | | | x | x | |
| 36-101 | 36-101 | 2/8/99 | | | x | | | | |
| 36-121 | 36-121 | 2/4/99 | | | x | x | x | x | |
| 36-161 | 36-161 | 2/4/99 | | | | | | x | |
| 36-161 | 36-161 | 2/8/99 | | | x | x | | | |
| 43-103 | 43-103 | 2/4/99 | | | x | x | x | | |
| 43-120 | 43-120 | 2/4/99 | | | x | x | x | x | |
| 43-140 | 43-140 | 2/4/99 | | | x | x | x | x | |
| 43-141 | 43-141 | 2/4/99 | | | x | x | x | x | |
| 43-142 | 43-142 | 2/4/99 | | | | | | x | |
| 70-160 | 70-160 | 2/8/99 | | | x | x | x | x | |
| 70-161 | 70-161 | 2/8/99 | | | x | x | x | x | |
| 70-162 | 70-162 | 2/8/99 | | | x | x | x | x | |
| 70-163 | 70-163 | 2/4/99 | | | x | x | x | x | |
| 70-164 | 70-164 | 2/4/99 | | | x | x | x | x | |
| 70-165 | 70-165 | 2/4/99 | | | | | | x | |
| 70-165 | 70-165 | 2/8/99 | | | x | x | x | | |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|--|-------------------------------|--|---------------|------|------|-------|------|--------|---|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| Semiannual Groundwater Sampling Event - February 1999 (continued) | | | | | | | | | |
| 86-100 | 86-100 | 2/1/99 | | | x | x | x | x | |
| 86-1(SB1/MW1) | 86-1(SB1/MW1) | 2/1/99 | | | x | | | | |
| 86-2(SB2/MW2) | 86-2(SB2/MW2) | 2/1/99 | | | x | | | | |
| 86-3(SB3/MW3) | 86-3(SB3/MW3) | 2/1/99 | | | x | | | | |
| 88-2(SB2/MW2) | 88-2(SB2/MW2) | 2/2/99 | | | x | x | | | |
| 88-3(SB3/MW3) | 88-3(SB3/MW3) | 2/2/99 | | | x | x | | | |
| 88-4(SB4/MW4) | 88-4(SB4/MW4) | 2/2/99 | | | x | x | | | |
| 88-5(SB5/MW5) | 88-5(SB5/MW5) | 2/2/99 | | | x | x | | | |
| 88-6(SB6/MW6) | 88-6(SB6/MW6) | 2/2/99 | | | x | x | | | |
| Semiannual Groundwater Sampling Event - August 1999 | | | | | | | | | |
| 11-120 | 11-120 | 8/9/99 | | | x[x] | x[x] | x[x] | x[x] | |
| 11-140 | 11-140 | 8/9/99 | | | x | x | x | x | |
| 20-100 | 20-100 | 8/9/99 | | | x | x | | x | |
| 20-103N | 20-103N | 8/9/99 | | | x | x | x | x | |
| 20-103S | 20-103S | 8/9/99 | | | x | x | x | x | |
| 20-504 | 20-504 | 8/6/99 | | | x | x | x | x | |
| 36-100 | 36-100 | 8/9/99 | | | x | x | x | | |
| 36-101 | 36-101 | 8/9/99 | | | x | x | | x | |
| 36-120 | 36-120 | 8/9/99 | | | x | x | x | x | |
| 36-121 | 36-121 | 8/9/99 | | | x | x | x | x | |
| 36-161 | 36-161 | 8/6/99 | | | x | x | | | |
| 36-161 | 36-161 | 8/9/99 | | | | | | x | |
| 38-120 | 38-120 | 8/9/99 | | | x | x | | x | |
| 43-103 | 43-103 | 8/9/99 | | | x | x | x | | |
| 43-140 | 43-140 | 8/6/99 | | | x[x] | x[x] | x[x] | x[x] | |
| 43-141 | 43-141 | 8/9/99 | | | x | x | x | x | |
| 43-142 | 43-142 | 8/9/99 | | | | | | x | |
| 43-161 | 43-161 | 8/9/99 | | | | | | x | |
| 43-162 | 43-162 | 8/9/99 | | | | | | x | |
| 70-102 | 70-102 | 8/4/99 | | | x | x | x | x | |
| 70-160 | 70-160 | 8/4/99 | | | x | x | | x | |
| 70-160 | 70-160 | 8/6/99 | | | | | x | | |
| 70-161 | 70-161 | 8/4/99 | | | x[x] | x[x] | | x[x] | |
| 70-161 | 70-161 | 8/13/99 | | | | | x | | |
| 70-162 | 70-162 | 8/4/99 | | | x | x | x | x | |
| 70-163 | 70-163 | 8/5/99 | | | x | x | x | x | |
| 70-165 | 70-165 | 8/4/99 | | | x | x | x | x | |
| 86-100 | 86-100 | 8/4/99 | | | x | x | x | x | |
| 88-1(SB1/MW1) | 88-1(SB1/MW1) | 8/4/99 | | | x | x | | | |
| 88-2(SB2/MW2) | 88-2(SB2/MW2) | 8/4/99 | | | x | x | | | |
| 88-4(SB4/MW4) | 88-4(SB4/MW4) | 8/4/99 | | | x | x | | | |
| 88-5(SB5/MW5) | 88-5(SB5/MW5) | 8/4/99 | | | x | x | | | |
| 88-6(SB6/MW6) | 88-6(SB6/MW6) | 8/4/99 | | | x | x | | | |
| GM-1, GM-3, GM-4, and GM-9 | GM-1, GM-3, GM-4, and GM-9 | Quarterly, July 1986 through August 1989 | | | | | | | Samples analyzed for dissolved inorganics (cadmium, chromium, nickel, and cyanide) and VOCs (methylene chloride, toluene, and 1,1,1-trichloroethane). |

TABLE 5

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

HISTORICAL GROUNDWATER SAMPLE COLLECTION SUMMARY

| Location ID | Sample ID | Sample Date | Analysis Type | | | | | | Analysis Notes |
|---|---|--|---------------|------|------|-------|------|--------|---|
| | | | TPH | BTEX | VOCs | SVOCs | PCBs | Metals | |
| GM-1, GM-3, GM-4, GM-9, GM-10, GM-11, and GM-12 | GM-1, GM-3, GM-4, GM-9, GM-10, GM-11, and GM-12 | Quarterly, August 1989 through July 1994 | | | | | | | Samples analyzed for dissolved inorganics (cadmium, chromium, nickel, and cyanide) and VOCs (methylene chloride, toluene, and 1,1,1-trichloroethane). |

Notes:

1. TPH: Total Petroleum Hydrocarbons
2. BTEX: Benzene, Toluene, Ethylbenzene, Xylene
3. PCBs: Polychlorinated Biphenyls
4. VOCs: Volatile Organic Compounds
5. SVOCs: Semivolatile Organic Compounds
6. Metals analyses include the Michigan-10 metals, unless otherwise noted.
7. Bracketed checks indicate duplicate analyses.

TABLE 6
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - STORM SEWER 003 INVESTIGATION

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|-----------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Benzene | 1 | 600 | 600 |
| Ethylbenzene | 1 | 900 | 900 |
| Toluene | 1 | 1,100 | 1,100 |
| Xylenes (total) | 1 | 4,400 | 4,400 |
| PCBs | | | |
| Aroclor-1016 | 1 | 2.7 | 2.7 |
| Aroclor-1242 | 2 | 2.7 | 3.8 |
| Aroclor-1248 | 2 | 0.52 | 2.4 |
| Aroclor-1254 | 1 | 1.2 | 1.2 |
| Aroclor-1260 | 5 | 0.23 | 2.7 |
| Metals | | | |
| Arsenic | 29 | 2.10 | 92.0 |
| Barium | 29 | 6.60 | 583 |
| Cadmium | 18 | 0.040 | 9.40 |
| Chromium | 29 | 4.33 | 211 |
| Copper | 29 | 4.40 | 3,030 |
| Cyanide | 10 | 0.120 | 2.76 |
| Lead | 29 | 3.13 | 4,760 |
| Mercury | 22 | 0.0052 | 1.79 |
| Selenium | 18 | 0.052 | 0.754 |
| Silver | 9 | 0.210 | 2.70 |
| Zinc | 29 | 20 | 1,140 |

TABLE 6
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - STORM SEWER 003 INVESTIGATION

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 13 | 2.0 | 5,500 |
| 1,1-Dichloroethane | 12 | 1.0 | 1,600 |
| 1,1-Dichloroethene | 5 | 1.0 | 260 |
| 1,2-Dichloroethane | 1 | 15 | 15 |
| 1,2-Dichloroethene (total) | 9 | 2.0 | 82 |
| Acetone | 3 | 5.0 | 16 |
| Benzene | 3 | 2.0 | 53 |
| Ethylbenzene | 1 | 7.0 | 7.0 |
| Methylene chloride | 15 | 1.0 | 10 |
| Toluene | 3 | 2.0 | 4.0 |
| Trichloroethene | 6 | 2.0 | 250 |
| Vinyl chloride | 7 | 3.0 | 34 |
| Xylenes (total) | 1 | 47 | 47 |
| Semivolatile Organic Compounds | | | |
| 2-Methylnaphthalene | 1 | 4.0 | 4.0 |
| Acenaphthene | 2 | 3.0 | 16 |
| Benzo(a)anthracene | 1 | 30 | 30 |
| Benzo(b&k)fluoranthene | 1 | 25 | 25 |
| Benzo(g,h,i)perylene | 1 | 13 | 13 |
| bis(2-ethylhexyl)phthalate | 2 | 12 | 56 |
| Butylbenzylphthalate | 1 | 7.0 | 7.0 |
| Chlorobenzene | 1 | 2.0 | 2.0 |
| Chloroethane | 6 | 1.0 | 530 |
| Chrysene | 1 | 37 | 37 |
| Fluoranthene | 1 | 55 | 55 |
| Naphthalene | 1 | 63 | 63 |
| Phenanthrene | 1 | 63 | 63 |
| Pyrene | 1 | 44 | 44 |
| PCBs | | | |
| Aroclor-1242 | 1 | 4.0 | 4.0 |
| Aroclor-1248 | 1 | 13 | 13 |
| Aroclor-1254 | 3 | 3.0 | 32 |
| Aroclor-1260 | 2 | 0.15 | 0.22 |
| Metals | | | |
| Arsenic | 29 | 2.1 | 173 |
| Barium | 33 | 60 | 4,500 |
| Cadmium | 26 | 0.20 | 44 |
| Chromium | 26 | 0.12 | 83 |
| Copper | 24 | 10 | 560 |
| Cyanide | 13 | 5.0 | 580 |
| Lead | 28 | 3.4 | 5,180 |
| Selenium | 2 | 2.0 | 2.0 |
| Silver | 2 | 0.4 | 1.4 |
| Zinc | 29 | 50 | 3,700 |

TABLE 7
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - SITE INVESTIGATION (PIERSON RD. TO LEITH ST.)

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 17 | 0.005 | 0.69 |
| 1,1-Dichloroethane | 19 | 0.006 | 0.19 |
| 1,1-Dichloroethene | 9 | 0.005 | 0.034 |
| 1,2-Dichloroethane | 1 | 0.005 | 0.005 |
| Acetone | 57 | 0.007 | 0.24 |
| Benzene | 2 | 0.010 | 0.36 |
| Carbon disulfide | 4 | 0.008 | 0.015 |
| Chloroethane | 2 | 0.016 | 0.060 |
| Ethylbenzene | 1 | 0.007 | 0.007 |
| Methylene chloride | 121 | 0.005 | 0.16 |
| Tetrachloroethene | 2 | 0.013 | 0.023 |
| Toluene | 2 | 0.010 | 0.031 |
| trans-1,2-Dichloroethene | 5 | 0.005 | 10 |
| Trichloroethene | 3 | 0.016 | 0.70 |
| Vinyl chloride | 1 | 0.33 | 0.33 |
| Xylenes (total) | 1 | 0.015 | 0.015 |
| Semivolatile Organic Compounds | | | |
| Anthracene | 5 | 0.63 | 3.6 |
| Benzo(a)anthracene | 4 | 0.80 | 2.4 |
| Benzo(a)pyrene | 2 | 0.70 | 0.82 |
| Benzo(b)fluoranthene | 1 | 0.48 | 0.48 |
| Benzo(k)fluoranthene | 2 | 0.46 | 0.54 |
| Chrysene | 3 | 0.85 | 2.9 |
| Fluoranthene | 5 | 0.55 | 21 |
| Fluorene | 1 | 0.50 | 0.50 |
| Phenanthrene | 3 | 0.34 | 3.1 |
| Pyrene | 3 | 1.0 | 1.9 |
| Total Petroleum Hydrocarbons | | | |
| Total Petroleum Hydrocarbons | 34 | 17 | 60,000 |
| PCBs | | | |
| Aroclor-1016 | 1 | 0.037 | 0.037 |
| Aroclor-1248 | 2 | 0.13 | 4.3 |
| Aroclor-1254 | 3 | 0.048 | 2.6 |
| Metals | | | |
| Arsenic | 126 | 0.85 | 17.2 |
| Barium | 127 | 2.40 | 110 |
| Cadmium | 7 | 0.20 | 3.40 |
| Chromium | 115 | 2.00 | 15.0 |
| Copper | 126 | 1.20 | 300 |
| Lead | 127 | 1.40 | 1,100 |
| Mercury | 2 | 0.10 | 0.10 |
| Silver | 1 | 0.84 | 0.84 |
| Zinc | 127 | 7.30 | 590 |

TABLE 7
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - SITE INVESTIGATION (PIERSON RD. TO LEITH ST.)

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|-----------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 30 | 1.0 | 9,100 |
| 1,1,2-Trichloroethane | 2 | 1.0 | 2.0 |
| 1,1-Dichloroethane | 34 | 1.0 | 1,200 |
| 1,1-Dichloroethene | 17 | 1.0 | 180 |
| 1,2,3-Trichloropropane | 1 | 20 | 20 |
| 1,2-Dichloroethane | 4 | 3.0 | 10 |
| 1,2-Dichloroethene (total) | 22 | 1.0 | 1,200 |
| Acetone | 13 | 2.0 | 25 |
| Benzene | 18 | 1.0 | 2,600 |
| Carbon disulfide | 15 | 4.0 | 250 |
| Dichlorodifluoromethane | 1 | 20 | 20 |
| Ethyl methacrylate | 1 | 20 | 20 |
| Ethylbenzene | 1 | 29 | 29 |
| Iodomethane | 1 | 20 | 20 |
| Methylene chloride | 63 | 1.0 | 98 |
| Tetrachloroethene | 1 | 1.0 | 1.0 |
| Toluene | 3 | 2.0 | 76 |
| trans-1,4-Dichloro-2-butene | 1 | 20 | 20 |
| Trichloroethene | 18 | 1.0 | 110 |
| Trichlorofluoromethane | 3 | 3.0 | 5.0 |
| Vinyl chloride | 4 | 5.0 | 230 |
| Xylenes (total) | 2 | 2.0 | 55 |
| Semivolatile Organic Compounds | | | |
| Acenaphthylene | 2 | 6.3 | 11 |
| Anthracene | 2 | 6.7 | 83 |
| Benzo(a)anthracene | 2 | 9.2 | 34 |
| Chloroethane | 16 | 8.0 | 1,000 |
| Chloroform | 3 | 1.0 | 2.0 |
| Chrysene | 3 | 5.6 | 21 |
| Fluoranthene | 4 | 8.3 | 65 |
| Fluorene | 2 | 17 | 110 |
| Naphthalene | 1 | 18 | 18 |
| Phenanthrene | 1 | 59 | 59 |
| Pyrene | 1 | 71 | 71 |
| Total Petroleum Hydrocarbons | | | |
| Total Petroleum Hydrocarbons | 30 | 1,200 | 2,000,000 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 12 | 5.0 | 130 |
| Barium | 19 | 120 | 860 |
| Cyanide | 1 | 92 | 92 |
| Lead | 31 | 3.0 | 300 |
| Mercury | 3 | 0.29 | 1.30 |
| Selenium | 4 | 5.0 | 26.0 |
| Silver | 3 | 8.0 | 26.0 |
| Zinc | 20 | 20 | 650 |

TABLE 8
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FENCELINE INVESTIGATION

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,2,4-Trimethylbenzene | 9 | 0.010 | 6.6 |
| 1,2-Dichlorobenzene | 1 | 0.050 | 0.050 |
| 1,2-Dichloroethane | 2 | 0.030 | 0.070 |
| 1,3,5-Trimethylbenzene | 7 | 0.020 | 1.9 |
| Benzene | 8 | 0.020 | 2.6 |
| cis-1,2-Dichloroethene | 2 | 0.060 | 0.54 |
| Ethylbenzene | 3 | 0.020 | 0.24 |
| Isopropylbenzene | 4 | 0.030 | 1.6 |
| Methylene chloride | 2 | 0.020 | 0.070 |
| n-Butylbenzene | 4 | 0.010 | 1.3 |
| n-Propylbenzene | 4 | 0.030 | 1.6 |
| p-Isopropyltoluene | 5 | 0.010 | 1.9 |
| sec-Butylbenzene | 3 | 0.020 | 0.9 |
| Tetrachloroethene | 1 | 2.2 | 2.2 |
| Toluene | 3 | 0.010 | 0.040 |
| trans-1,2-Dichloroethene | 1 | 0.030 | 0.030 |
| Trichloroethene | 6 | 0.010 | 0.50 |
| Xylenes (total) | 10 | 0.010 | 0.75 |
| Semivolatile Organic Compounds | | | |
| bis(2-ethylhexyl)phthalate | 9 | 0.40 | 1.6 |
| Di-n-Butylphthalate | 2 | 0.40 | 0.40 |
| Naphthalene | 6 | 0.01 | 1.1 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 127 | 0.55 | 13.9 |
| Barium | 143 | 2.00 | 169 |
| Cadmium | 62 | 0.090 | 7.70 |
| Chromium | 127 | 1.00 | 165 |
| Copper | 138 | 1.00 | 117 |
| Cyanide | 1 | 0.900 | 0.900 |
| Lead | 142 | 1.10 | 956 |
| Mercury | 4 | 0.090 | 1.77 |
| Selenium | 5 | 0.520 | 7.60 |
| Silver | 5 | 0.220 | 1.89 |
| Zinc | 141 | 1.60 | 1,100 |

TABLE 8
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FENCELINE INVESTIGATION

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 23 | 1.0 | 921 |
| 1,1-Dichloroethane | 29 | 1.0 | 524 |
| 1,1-Dichloroethene | 9 | 3.0 | 456 |
| 1,2-Dichloroethane | 7 | 6.0 | 22 |
| Benzene | 15 | 1.0 | 6,400 |
| Chloroethane | 8 | 3.0 | 810 |
| Chloroform | 3 | 1.0 | 4.0 |
| cis-1,2-Dichloroethene | 1 | 3.0 | 3.0 |
| Ethylbenzene | 2 | 3.0 | 23 |
| Tetrachloroethene | 1 | 1.0 | 1.0 |
| Toluene | 20 | 1.0 | 80 |
| trans-1,2-Dichloroethene | 5 | 1.0 | 34 |
| Trichloroethene | 16 | 1.0 | 1,380 |
| Trichlorofluoromethane | 1 | 5.0 | 5.0 |
| Vinyl Chloride | 16 | 1.0 | 16 |
| Xylenes (total) | 9 | 1.0 | 131 |
| Semivolatile Organic Compounds | | | |
| 4-Bromophenyl-phenylether | 1 | 30 | 30 |
| Benzo(a)pyrene | 2 | 20 | 20 |
| Benzo(g,h,i)perylene | 2 | 10 | 20 |
| bis(2-ethylhexyl)phthalate | 13 | 10 | 200 |
| Butylbenzylphthalate | 1 | 10 | 10 |
| Chrysene | 3 | 10 | 10 |
| Diethylphthalate | 1 | 20 | 20 |
| Di-n-Butylphthalate | 8 | 50 | 130 |
| Phenanthrene | 3 | 10 | 400 |
| Phenol | 1 | 10 | 10 |
| Pyrene | 1 | 20 | 20 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 90 | 2.00 | 320 |
| Barium | 130 | 10.0 | 2,900 |
| Cadmium | 7 | 1.20 | 2.90 |
| Chromium | 48 | 10.0 | 20 |
| Copper | 42 | 10.0 | 50 |
| Cyanide | 13 | 7.0 | 194 |
| Lead | 7 | 2.0 | 57.0 |
| Selenium | 1 | 10.0 | 10.0 |
| Silver | 4 | 1.3 | 3.4 |
| Zinc | 108 | 10.0 | 2,050 |

TABLE 9
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - SEMIANNUAL GROUNDWATER INVESTIGATIONS

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|-----------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 9 | 1.0 | 3,480 |
| 1,1-Dichloroethane | 13 | 2.0 | 5,940 |
| 1,1-Dichloroethene | 13 | 2.0 | 1,330 |
| 2-Methylnaphthalene | 7 | 8.0 | 18 |
| Benzene | 26 | 1.0 | 2,500 |
| Carbon Tetrachloride | 3 | 113 | 350 |
| Chloroethane | 6 | 3.0 | 850 |
| Chloroform | 2 | 3.1 | 5.0 |
| cis-1,2-Dichloroethene | 28 | 1.1 | 320 |
| Dichlorodifluoromethane | 4 | 1.0 | 2.0 |
| Ethylbenzene | 28 | 2.0 | 10,700 |
| Methyl tert-butyl ether | 4 | 10 | 60 |
| Methylene Chloride | 14 | 1.4 | 3.0 |
| Naphthalene | 14 | 7.0 | 39 |
| Tetrachloroethene | 2 | 2.0 | 2.1 |
| Toluene | 30 | 1.0 | 67,700 |
| trans-1,2-Dichloroethene | 16 | 1.8 | 11 |
| Trichloroethene | 36 | 1.0 | 2,070 |
| Vinyl Chloride | 28 | 1.0 | 870 |
| Xylenes (total) | 29 | 2.0 | 43,200 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 68 | 1.0 | 36 |
| Barium | 176 | 10 | 2,270 |
| Cadmium | 9 | 0.60 | 2.0 |
| Chromium | 19 | 0.8 | 50 |
| Copper | 65 | 1.7 | 320 |
| Lead | 19 | 1.7 | 40 |
| Selenium | 9 | 3.6 | 8.6 |
| Silver | 11 | 1.7 | 16 |
| Zinc | 149 | 4.6 | 230 |

TABLE 10
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - MONITORING WELL 36-160 AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|---------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Volatile Organic Compounds | None detected | -- | -- |
| Semivolatile Organic Compounds | | | |
| Chrysene | 1 | 4.6 | 4.6 |
| Naphthalene | 1 | 0.60 | 0.60 |
| Phenanthrene | 3 | 1.6 | 5.7 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 8 | 0.82 | 2.65 |
| Barium | 8 | 3.80 | 34.5 |
| Cadmium | 5 | 0.060 | 0.170 |
| Chromium | 8 | 1.30 | 8.00 |
| Copper | 8 | 2.50 | 18.8 |
| Lead | 8 | 2.30 | 17.4 |
| Zinc | 8 | 9.30 | 23.1 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|--------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 4 | 2.9 | 320 |
| 1,1-Dichloroethane | 4 | 2.3 | 450 |
| 1,2-Dichloroethane | 1 | 1.0 | 1.0 |
| 1,1-Dichloroethene | 1 | 2.0 | 2.0 |
| Benzene | 4 | 10 | 2,700 |
| Trichloroethene | 1 | 69 | 69 |
| Semivolatile Organic Compounds | | | |
| Semivolatile Organic Compounds | None detected | -- | -- |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Barium | 5 | 130 | 530 |
| Cadmium | 2 | 1.20 | 1.40 |

TABLE 11
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - TANK FARM 37 AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|---------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Benzene | 3 | 0.032 | 31 |
| Ethylbenzene | 3 | 0.062 | 190 |
| Toluene | 2 | 0.056 | 260 |
| Xylenes (total) | 3 | 1.4 | 680 |
| Semivolatile Organic Compounds | | | |
| Acenaphthene | 1 | 0.84 | 0.84 |
| Acenaphthylene | 2 | 0.33 | 0.38 |
| Anthracene | 2 | 0.33 | 1.3 |
| Benzo(a)anthracene | 4 | 0.33 | 2.5 |
| Benzo(a)pyrene | 3 | 0.33 | 2.6 |
| Benzo(b)fluoranthene | 3 | 0.33 | 2.1 |
| Benzo(g,h,i)perylene | 2 | 0.33 | 1.7 |
| Benzo(k)fluoranthene | 2 | 0.33 | 2.2 |
| Chrysene | 4 | 0.33 | 2.9 |
| Dibenzo(a,h)anthracene | 2 | 0.33 | 0.38 |
| Fluoranthene | 4 | 0.33 | 4.7 |
| Fluorene | 3 | 0.33 | 1.1 |
| Indeno(1,2,3-cd)pyrene | 2 | 0.33 | 1.5 |
| Naphthalene | 4 | 0.33 | 6.4 |
| Phenanthrene | 4 | 0.33 | 4.5 |
| Pyrene | 4 | 0.33 | 4.3 |
| Metals | | | |
| Lead | 15 | 3.20 | 41.0 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|--------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 3 | 28.0 | 62 |
| 1,1-Dichloroethane | 3 | 6.0 | 24 |
| 1,1-Dichloroethene | 1 | 2.4 | 2 |
| Benzene | 1 | 1.5 | 2 |
| cis-1,2-Dichloroethene | 3 | 42.0 | 200 |
| Ethylbenzene | 1 | 16.0 | 16 |
| Toluene | 1 | 2.9 | 2.9 |
| Trichloroethene | 1 | 39.0 | 39.0 |
| Vinyl chloride | 1 | 6.2 | 6 |
| Xylenes (total) | 2 | 1.9 | 56.0 |
| Semivolatile Organic Compounds | | | |
| Acenaphthene | 2 | 5.0 | 5.0 |
| Fluorene | 2 | 5.0 | 5.0 |
| Phenanthrene | 2 | 5.0 | 6.0 |
| Metals | | | |
| Lead | 3 | 3.00 | 6.40 |

TABLE 12
 GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - MONITORING WELL 37-01

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Volatile Organic Compounds | None detected | -- | -- |
| Semivolatile Organic Compounds | | | |
| Semivolatile Organic Compounds | None detected | -- | -- |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 1 | 5.70 | 5.70 |
| Barium | 1 | 9.60 | 9.60 |
| Cadmium | 1 | 0.160 | 0.160 |
| Chromium | 1 | 4.50 | 4.50 |
| Copper | 1 | 12.0 | 12.0 |
| Lead | 1 | 5.20 | 5.20 |
| Selenium | 1 | 0.430 | 0.430 |
| Silver | 1 | 0.310 | 0.310 |
| Zinc | 1 | 34.0 | 34.0 |

TABLE 13
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - BUILDINGS 55, 55A, and 55B AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1-Dichloroethane | 3 | 0.047 | 12 |
| 1,2-Dichloroethene (total) | 3 | 0.21 | 0.67 |
| 1,2-Dichloropropane | 1 | 50 | 50 |
| Benzene | 1 | 0.051 | 0.051 |
| Carbon disulfide | 1 | 0.11 | 0.11 |
| Chloroform | 1 | 1.0 | 1.0 |
| cis-1,2-Dichloroethene | 3 | 1.9 | 5.3 |
| Ethylbenzene | 1 | 0.038 | 0.038 |
| m&p-Xylene | 1 | 0.084 | 0.084 |
| o-Xylene | 1 | 0.036 | 0.036 |
| Toluene | 1 | 0.11 | 0.11 |
| trans-1,2-Dichloroethene | 1 | 1.5 | 1.5 |
| Trichloroethene | 5 | 0.025 | 14 |
| Vinyl chloride | 2 | 0.69 | 10 |
| Semivolatile Organic Compounds | | | |
| Bis(2-chloroethyl)ether | 1 | 8.6 | 8.6 |
| n-Nitroso-di-n-propylamine | 1 | 5.0 | 5.0 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Aluminum | 6 | 1,500 | 5,300 |
| Arsenic | 6 | 1.80 | 6.80 |
| Barium | 10 | 6.80 | 320 |
| Beryllium | 6 | 0.150 | 0.500 |
| Cadmium | 3 | 0.080 | 0.140 |
| Calcium | 6 | 3,900 | 28,000 |
| Chromium | 7 | 2.70 | 71.0 |
| Cobalt | 6 | 1.80 | 4.80 |
| Copper | 6 | 5.50 | 47.0 |
| Iron | 6 | 3,400 | 20,000 |
| Lead | 6 | 3.20 | 41.0 |
| Magnesium | 6 | 870 | 13,000 |
| Manganese | 6 | 100 | 550 |
| Mercury | 1 | 0.020 | 0.020 |
| Nickel | 6 | 4.10 | 28.0 |
| Potassium | 6 | 120 | 520 |
| Selenium | 4 | 0.440 | 1.30 |
| Silver | 6 | 0.290 | 2.30 |
| Sodium | 6 | 190 | 780 |
| Thallium | 3 | 0.100 | 0.190 |
| Vanadium | 6 | 6.00 | 20.0 |
| Zinc | 6 | 15.0 | 51.0 |

TABLE 13
 GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - BUILDINGS 55, 55A, and 55B AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1-Dichloroethane | 3 | 34 | 34 |
| 1,2-Dichloropropane | 1 | 50 | 50 |
| Benzene | 1 | 2.9 | 2.9 |
| Chloroethane | 1 | 9.4 | 9.4 |
| cis-1,2-Dichloroethene | 4 | 1.7 | 5.3 |
| trans-1,2-Dichloroethene | 1 | 1.5 | 1.5 |
| Trichloroethene | 2 | 7.3 | 14 |
| Vinyl chloride | 2 | 10 | 83 |
| Semivolatile Organic Compounds | | | |
| bis(2-Chloroethyl)ether | 1 | 8.6 | 8.6 |
| n-Nitroso-di-n-propylamine | 1 | 5.0 | 5.0 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Barium | 5 | 100 | 320 |
| Chromium | 1 | 2.7 | 2.7 |

TABLE 14
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 10, BUILDING 20 INVESTIGATION

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|---------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Semivolatile Organic Compounds | | | |
| Acenaphthalene | 1 | 0.30 | 0.30 |
| Fluorene | 1 | 0.14 | 0.14 |
| Phenanthrene | 3 | 0.20 | 0.39 |
| Pyrene | 1 | 0.47 | 0.47 |
| PCBs | | | |
| Aroclor-1242 | 8 | 0.040 | 7.5 |
| Aroclor-1254 | 4 | 0.16 | 12 |
| Aroclor-1260 | 5 | 0.050 | 3.0 |
| Metals | | | |
| Barium | 36 | 7.30 | 5,600 |
| Lead | 36 | 5.00 | 14,500 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|--------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Semivolatile Organic Compounds | | | |
| Benzo(a)anthracene | 1 | 6.0 | 6.0 |
| Fluoranthene | 1 | 6.0 | 6.0 |
| Naphthalene | 1 | 200 | 200 |
| Phenanthrene | 2 | 8.0 | 17 |
| PCBs | | | |
| Aroclor-1242 | 20 | 0.30 | 16,000 |
| Aroclor-1248 | 1 | 0.20 | 0.20 |
| Aroclor-1254 | 8 | 0.60 | 230 |
| Aroclor-1260 | 5 | 0.50 | 72 |
| Metals | | | |
| Silver | 49 | 24.0 | 17,000 |
| Zinc | 29 | 3.00 | 99,000 |

TABLE 15
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 10 SCRAPYARD AREA INVESTIGATION

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,2,4-Trimethylbenzene | 3 | 0.020 | 19 |
| 1,3,5-Trimethylbenzene | 2 | 0.030 | 11 |
| Ethylbenzene | 1 | 2.0 | 2.0 |
| Isopropylbenzene | 1 | 1.0 | 1.0 |
| m&p-Xylene | 1 | 12 | 12 |
| n-Butylbenzene | 1 | 5.0 | 5.0 |
| n-Propylbenzene | 1 | 2.0 | 2.0 |
| Naphthalene | 1 | 8.0 | 8.0 |
| o-Xylene | 1 | 3.0 | 3.0 |
| p-Isopropyltoluene | 2 | 0.60 | 5.0 |
| sec-Butylbenzene | 1 | 2.0 | 2.0 |
| Semivolatile Organic Compounds | | | |
| 2-Methylnaphthalene | 2 | 1.4 | 3.8 |
| Acenaphthene | 1 | 1.8 | 1.8 |
| Anthracene | 1 | 1.5 | 1.5 |
| Benzo(a)anthracene | 1 | 1.7 | 1.7 |
| Benzo(a)pyrene | 1 | 1.6 | 1.6 |
| Benzo(b)fluoranthene | 1 | 1.6 | 1.6 |
| Benzo(k)fluoranthene | 1 | 2.0 | 2.0 |
| Chrysene | 1 | 2.9 | 2.9 |
| Fluoranthene | 1 | 3.0 | 3.0 |
| Fluorene | 1 | 2.1 | 2.1 |
| Naphthalene | 2 | 2.5 | 3.5 |
| Phenanthrene | 2 | 1.2 | 6.9 |
| Pyrene | 2 | 0.30 | 6.1 |
| PCBs | | | |
| Aroclor-1242 | 1 | 0.50 | 0.50 |
| Metals | | | |
| Arsenic | 12 | 0.93 | 13.1 |
| Barium | 12 | 7.00 | 2460 |
| Cadmium | 10 | 0.09 | 7.40 |
| Chromium | 12 | 1.50 | 163.0 |
| Copper | 11 | 3.30 | 7,430 |
| Lead | 12 | 3.30 | 9,200 |
| Mercury | 6 | 0.13 | 1.53 |
| Silver | 3 | 0.88 | 1.42 |
| Zinc | 12 | 8.60 | 5,620 |

**TABLE 15
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN**

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 10 SCRAPYARD AREA INVESTIGATION

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Benzene | 1 | 3.0 | 3.0 |
| Chlorobenzene | 1 | 1.3 | 1.3 |
| Trichloroethene | 1 | 3.8 | 3.8 |
| Semivolatile Organic Compounds | | | |
| Semivolatile Organic Compounds | None detected | -- | -- |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 2 | 11 | 22 |
| Barium | 7 | 46 | 9,200 |
| Cadmium | 2 | 1.3 | 5.5 |
| Chromium | 1 | 4.5 | 4.5 |
| Lead | 2 | 3.1 | 4.3 |
| Selenium | 2 | 2.5 | 6.9 |
| Silver | 1 | 1,000 | 1,000 |

TABLE 16
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 10, BUILDING 20
GROUNDWATER TREATMENT SYSTEM

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|------------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1-Dichloroethane | 11 | 1.0 | 37 |
| 1,1-Dichloroethene | 2 | 1.0 | 1.0 |
| 1,2,4-Trimethylbenzene | 4 | 8.0 | 54 |
| 1,2-Dichloroethane | 5 | 2.0 | 16 |
| 1,2-Dichloroethene (total) | 10 | 0.20 | 480 |
| 1,3,5-Trimethylbenzene | 4 | 7.0 | 47 |
| 2-Butanone | 1 | 70 | 70 |
| Acetone | 2 | 130 | 440 |
| Benzene | 9 | 1.0 | 25 |
| Chlorobenzene | 3 | 1.0 | 2.0 |
| Chloroethane | 10 | 1.0 | 700 |
| Chloroform | 1 | 2.0 | 2.0 |
| Chloromethane | 1 | 1.0 | 1.0 |
| Ethylbenzene | 6 | 1.0 | 300 |
| Isopropylbenzene | 1 | 7.0 | 7.0 |
| Naphthalene | 5 | 1.0 | 13 |
| n-Butylbenzene | 4 | 1.0 | 3.0 |
| n-Propylbenzene | 1 | 5.0 | 5.0 |
| p-Isopropylbenzene | 4 | 3.0 | 6.0 |
| sec-Butylbenzene | 2 | 1.0 | 1.0 |
| Toluene | 10 | 1.0 | 7.0 |
| Trichloroethene | 8 | 1.0 | 300 |
| Vinyl chloride | 9 | 2.0 | 3,470 |
| Xylenes (total) | 13 | 1.0 | 3,400 |
| Semivolatile Organic Compounds | | | |
| Fluoranthene | 2 | 10 | 100 |
| Phenanthrene | 3 | 20 | 150 |
| Pyrene | 3 | 10 | 160 |
| PCBs | | | |
| Aroclor-1242 | 11 | 0.10 | 250 |
| Aroclor-1254 | 6 | 0.10 | 50 |
| Aroclor-1254/1260 | 2 | 0.20 | 4.0 |
| Metals | | | |
| Arsenic | 34 | 1.0 | 145 |
| Barium | 38 | 80 | 5,160 |
| Cadmium | 1 | 1.5 | 1.5 |
| Chromium | 8 | 10 | 60 |
| Copper | 17 | 20 | 230 |
| Lead | 10 | 3.0 | 536 |
| Nickel | 15 | 5.0 | 438 |
| Zinc | 18 | 10.0 | 370 |
| Miscellaneous Analyses | | | |
| BOD | 36 | 2,000 | 972,000 |
| COD | 38 | 24,000 | 28,200,000 |
| Total Organic Carbon | 38 | 5,000 | 1,288,000 |

TABLE 17
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 05, BUILDING 43 EAST AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Volatile Organic Compounds | None detected | -- | -- |
| Semivolatile Organic Compounds | | | |
| Benzo(b)fluoranthene | 1 | 0.91 | 0.91 |
| Naphthalene | 1 | 0.99 | 0.99 |
| PCBs | | | |
| Aroclor-1242 | 1 | 51 | 51 |
| Metals | | | |
| Arsenic | 20 | 1.10 | 22.0 |
| Barium | 20 | 2.40 | 75.0 |
| Cadmium | 9 | 0.071 | 0.950 |
| Chromium | 20 | 2.40 | 45.0 |
| Copper | 19 | 2.90 | 100 |
| Lead | 20 | 2.10 | 116 |
| Mercury | 1 | 0.11 | 0.11 |
| Selenium | 7 | 0.60 | 7.70 |
| Zinc | 20 | 6.00 | 254 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,2-Trichloroethane | 1 | 38 | 38 |
| 1,1-Dichloroethane | 1 | 5.0 | 5.0 |
| 1,1-Dichloroethene | 3 | 2.5 | 13 |
| 1,2-Dichloroethane | 1 | 8.5 | 8.5 |
| trans-1,2-Dichloroethene | 1 | 132 | 132 |
| Tetrachloroethene | 1 | 1.0 | 1.0 |
| Trichloroethene | 9 | 1.4 | 1,380 |
| Semivolatile Organic Compounds | | | |
| Semivolatile Organic Compounds | None detected | -- | -- |
| Total Petroleum Hydrocarbons | | | |
| Total Petroleum Hydrocarbons | 8 | 1,200 | 47,000 |
| PCBs | | | |
| Aroclor-1242 | 1 | 3.4 | 3.4 |
| Aroclor-1248 | 1 | 0.72 | 0.72 |
| Metals | | | |
| Arsenic | 10 | 1.30 | 112 |
| Barium | 10 | 102 | 560 |
| Cyanide | 7 | 0.230 | 3.20 |
| Lead | 3 | 34.0 | 230 |
| Mercury | 3 | 60.0 | 260 |
| Selenium | 5 | 3.40 | 16.0 |
| Silver | 8 | 6.50 | 13.0 |
| Zinc | 6 | 28.0 | 436 |

TABLE 18
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 05, BUILDING 43 INTERIOR

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|---------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Methylene chloride | 5 | 0.011 | 1.2 |
| Semivolatile Organic Compounds | | | |
| Acenaphthene | 2 | 0.66 | 1.0 |
| Anthracene | 4 | 0.80 | 1.3 |
| Benzo(a)anthracene | 5 | 0.37 | 1.8 |
| Benzo(a)pyrene | 1 | 0.60 | 0.60 |
| Benzo(b)fluoranthene | 1 | 0.36 | 0.36 |
| Benzo(g,h,i)perylene | 1 | 0.46 | 0.46 |
| Chrysene | 2 | 0.37 | 0.93 |
| Ethylene Glycol | 1 | 270 | 270 |
| Fluoranthene | 6 | 0.53 | 6.0 |
| Phenanthrene | 4 | 0.42 | 0.92 |
| Pyrene | 5 | 0.57 | 2.9 |
| Metals | | | |
| Arsenic | 19 | 1.0 | 4.9 |
| Barium | 20 | 3.5 | 41 |
| Cadmium | 15 | 0.050 | 0.20 |
| Chromium | 19 | 2.2 | 13 |
| Copper | 20 | 2.2 | 11 |
| Lead | 20 | 1.7 | 13 |
| Mercury | 1 | 0.10 | 0.10 |
| Zinc | 20 | 11 | 31 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|--------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1-Dichloroethane | 1 | 5.8 | 5.8 |
| Methylene chloride | 13 | 1.4 | 4.8 |
| trans-1,2-Dichloroethene | 1 | 2.7 | 2.7 |
| Trichloroethene | 3 | 1.1 | 18 |
| Semivolatile Organic Compounds | | | |
| Anthracene | 3 | 7.5 | 19 |
| Benzo(b)fluoranthene | 1 | 15 | 15 |
| Chloroform | 3 | 1.3 | 2.3 |
| Fluoranthene | 1 | 17 | 17 |
| Phenanthrene | 1 | 5.5 | 5.5 |
| PCBs | | | |
| Aroclor-1016 | 4 | 0.28 | 0.60 |
| Metals | | | |
| Arsenic | 9 | 1.0 | 89 |
| Barium | 15 | 78 | 430 |
| Cadmium | 7 | 0.60 | 7.9 |
| Chromium | 2 | 73 | 76 |
| Copper | 4 | 32 | 260 |
| Lead | 6 | 3.0 | 120 |
| Zinc | 11 | 20 | 520 |

TABLE 19
 GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 05 UST AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Toluene | 1 | 0.011 | 0.011 |
| Semivolatile Organic Compounds | | | |
| Semivolatile Organic Compounds | None detected | -- | -- |
| Total Petroleum Hydrocarbons | | | |
| Total Petroleum Hydrocarbons | 7 | 27 | 294 |

TABLE 20
 GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 03 AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|-------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Total Petroleum Hydrocarbons | | | |
| Total Petroleum Hydrocarbons | 4 | 46 | 1,700 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|-------------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Total Petroleum Hydrocarbons | | | |
| Total Petroleum Hydrocarbons | 10 | 1,100 | 156,000 |

TABLE 21
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 03 AREA (2000 INVESTIGATION)

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Benzene | 1 | 0.14 | 0.14 |
| Ethylbenzene | 1 | 0.091 | 0.091 |
| Semivolatile Organic Compounds | | | |
| 2-Methylnaphthalene | 1 | 3.3 | 3.3 |
| Benzo(a)anthracene | 1 | 1.6 | 1.6 |
| Benzo(a)pyrene | 1 | 1.7 | 1.7 |
| Benzo(b)fluoranthene | 1 | 2.0 | 2.0 |
| Benzo(g,h,i)perylene | 1 | 1.3 | 1.3 |
| Benzo(k)fluoranthene | 1 | 1.4 | 1.4 |
| Chrysene | 1 | 2.5 | 2.5 |
| Fluoranthene | 1 | 1.9 | 1.9 |
| Indeno(1,2,3-cd)pyrene | 1 | 1.3 | 1.3 |
| Naphthalene | 1 | 2.0 | 2.0 |
| Phenanthrene | 2 | 2.1 | 7.1 |
| Pyrene | 1 | 2.3 | 2.3 |
| PCBs | | | |
| Aroclor-1254 | 1 | 0.54 | 0.54 |
| Aroclor-1260 | 1 | 0.17 | 0.17 |
| Metals | | | |
| Arsenic | 3 | 1.7 | 6.2 |
| Barium | 3 | 12 | 16 |
| Cadmium | 3 | 0.12 | 0.21 |
| Chromium | 3 | 4.1 | 6.9 |
| Copper | 3 | 9.8 | 14 |
| Lead | 3 | 6.0 | 10 |
| Mercury | 1 | 0.047 | 0.047 |
| Selenium | 1 | 0.46 | 0.46 |
| Silver | 3 | 0.26 | 0.50 |
| Zinc | 3 | 24 | 29 |

TABLE 22
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 81 AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|-----------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Benzene | 3 | 0.022 | 0.12 |
| Ethylbenzene | 2 | 0.052 | 0.16 |
| Toluene | 3 | 0.012 | 0.140 |
| Xylenes (total) | 3 | 0.048 | 0.570 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 24 | 3.30 | 21.0 |
| Barium | 24 | 7.40 | 640 |
| Cadmium | 21 | 0.750 | 4.00 |
| Chromium | 24 | 6.50 | 290 |
| Copper | 24 | 6.20 | 2,000 |
| Cyanide | 6 | 0.100 | 1.30 |
| Lead | 24 | 7.20 | 2,400 |
| Mercury | 3 | 0.150 | 0.73 |
| Selenium | 5 | 0.210 | 2.80 |
| Silver | 14 | 1.50 | 3.20 |
| Zinc | 24 | 17.0 | 270 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Benzene | 1 | 1.2 | 1.2 |
| Ethylbenzene | 1 | 1.6 | 1.6 |
| Toluene | 1 | 2.3 | 2.3 |
| Xylenes (total) | 1 | 1.7 | 1.7 |
| Semivolatile Organic Compounds | | | |
| 2-Methylnaphthalene | 1 | 160 | 160 |
| Phenol | 1 | 3,900 | 3,900 |
| Pesticides/Herbicides | | | |
| Dieldrin | 1 | 1.26 | 1.26 |
| Endosulfan I | 1 | 0.16 | 0.16 |
| Endosulfan II | 1 | 0.09 | 0.09 |
| Metals | | | |
| Antimony | 1 | 122 | 122 |
| Arsenic | 3 | 1.60 | 5.90 |
| Barium | 4 | 20.0 | 1,600 |
| Cadmium | 3 | 0.60 | 3.70 |
| Cyanide | 2 | 80.0 | 100 |
| Lead | 1 | 35.0 | 35.0 |
| Silver | 2 | 0.60 | 1.6 |
| Thallium | 1 | 360 | 360 |
| Zinc | 1 | 51.0 | 51.0 |

TABLE 23
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 83/84 AREA (1996/1997 INVESTIGATIONS)

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|---------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Benzene | 1 | 0.10 | 0.10 |
| Bis(2-ethylhexyl)phthalate | 3 | 0.60 | 1.8 |
| Ethylbenzene | 2 | 0.70 | 1.6 |
| Xylenes (total) | 3 | 3.4 | 7.0 |
| Semivolatile Organic Compounds | | | |
| 2-Methylnaphthalene | 2 | 2.1 | 2.6 |
| Acenaphthene | 1 | 0.70 | 0.70 |
| Anthracene | 1 | 1.4 | 1.4 |
| Benzo(a)anthracene | 1 | 2.4 | 2.4 |
| Benzo(a)pyrene | 1 | 2.3 | 2.3 |
| Benzo(b)fluoranthene | 1 | 2.3 | 2.3 |
| Benzo(g,h,i)perylene | 1 | 1.6 | 1.6 |
| Benzo(k)fluoranthene | 1 | 2.2 | 2.2 |
| Chrysene | 1 | 2.9 | 2.9 |
| Fluoranthene | 1 | 3.9 | 3.9 |
| Fluorene | 1 | 0.90 | 0.90 |
| Naphthalene | 2 | 0.33 | 4.2 |
| Phenanthrene | 1 | 3.8 | 3.8 |
| Pyrene | 1 | 9.0 | 9.0 |
| Metals | | | |
| Cadmium | 3 | 0.10 | 1.0 |
| Chromium | 22 | 1.10 | 18.4 |
| Lead | 22 | 1.90 | 418 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|---------------------------------------|---|--------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1-Dichloroethane | 1 | 2.0 | 2.0 |
| 1,1-Dichloroethene | 1 | 2.0 | 2.0 |
| Benzene | 3 | 3.0 | 10 |
| Chloroethane | 1 | 50 | 50 |
| Ethylbenzene | 2 | 1.0 | 6.0 |
| Tetrachloroethene | 1 | 2.0 | 2.0 |
| trans-1,2-Dichloroethene | 1 | 12 | 12 |
| Trichloroethene | 2 | 18 | 236 |
| Vinyl chloride | 3 | 23 | 133 |
| Xylenes (total) | 3 | 1.0 | 10 |
| Semivolatile Organic Compounds | | | |
| Naphthalene | 1 | 50 | 50 |

TABLE 24
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FACTORY 83/84 AREA (2000 INVESTIGATION)

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Trichloroethene | 1 | 0.073 | 0.073 |
| Semivolatile Organic Compounds | | | |
| bis(2-Ethylhexyl)phthalate | 2 | 0.37 | 1.1 |
| PCBs | | | |
| Total PCBs | None detected | -- | -- |
| Metals | | | |
| Arsenic | 4 | 1.2 | 6.4 |
| Barium | 4 | 7.0 | 71 |
| Cadmium | 4 | 0.072 | 0.15 |
| Chromium | 4 | 4.2 | 20 |
| Copper | 4 | 6.5 | 18 |
| Lead | 4 | 4.0 | 190 |
| Selenium | 2 | 0.12 | 0.22 |
| Silver | 4 | 0.24 | 1.1 |
| Zinc | 4 | 25 | 48 |

TABLE 25
GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - BUILDING 86 (EAST) AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|-----------------------------------|---|---------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Methylene chloride | 4 | 0.011 | 0.015 |
| Metals | | | |
| Arsenic | 20 | 1.1 | 11 |
| Barium | 20 | 7.4 | 110 |
| Cadmium | 2 | 0.20 | 0.50 |
| Chromium | 20 | 1.1 | 15 |
| Copper | 20 | 3.2 | 22 |
| Lead | 20 | 2.6 | 100 |
| Mercury | 15 | 0.10 | 0.10 |
| Zinc | 20 | 15 | 100 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|-----------------------------------|---|--------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| 1,1,1-Trichloroethane | 1 | 2.4 | 2.4 |
| 1,1-Dichloroethane | 1 | 2.2 | 2.2 |
| m&p-Xylene | 1 | 1.1 | 1.1 |
| Methylene chloride | 5 | 2.0 | 8.5 |
| Toluene | 2 | 1.2 | 1.7 |
| Trichloroethene | 1 | 6.8 | 6.8 |
| Metals | | | |
| Arsenic | 3 | 2.0 | 6.0 |
| Copper | 1 | 34 | 34 |
| Selenium | 1 | 2.0 | 2.0 |
| Zinc | 3 | 28 | 67 |

TABLE 26
 GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - BUILDING 86, TANK 59 AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|-----------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Ethylbenzene | 3 | 1.1 | 3.3 |
| Xylenes (total) | 4 | 0.020 | 15 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|-----------------------------------|---|-----------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Ethylbenzene | 1 | 86 | 86 |
| Toluene | 1 | 21 | 21 |
| Xylenes (total) | 4 | 13 | 203 |

TABLE 27
 GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS - FLINT, MICHIGAN

DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - FORMER BUILDING 87/LEITH STREET OVERPASS AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|---------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| BTEX, Total | 5 | 0.010 | 0.21 |
| Ethylbenzene | 2 | 0.029 | 0.039 |
| Toluene | 1 | 0.033 | 0.033 |
| Xylenes (total) | 6 | 0.010 | 0.15 |
| Semivolatile Organic Compounds | | | |
| Naphthalene | 1 | 4.0 | 4.0 |
| Phenanthrene | 1 | 1.8 | 1.8 |
| Metals | | | |
| Lead | 8 | 1.8 | 10 |

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (ug/L) | |
|----------------------------|---|--------------------------------|---------|
| | | Minimum | Maximum |
| GROUNDWATER SAMPLES | | | |
| Metals | | | |
| Lead | 1 | 304 | 304 |

TABLE 28
 GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS - FLINT, MICHIGAN

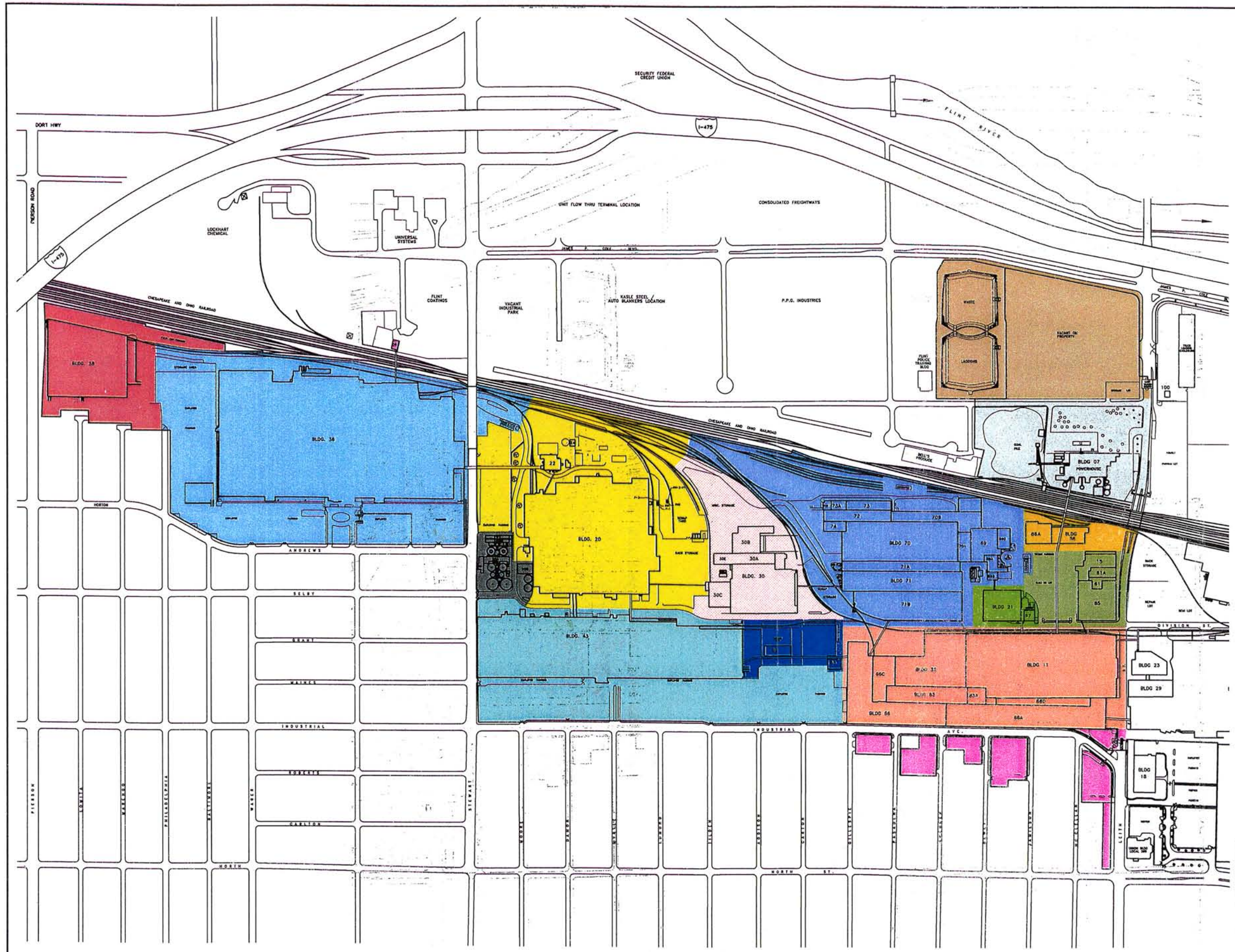
DESCRIPTION OF CURRENT CONDITIONS FOR AREAS NORTH OF LEITH STREET

SUMMARY OF DETECTED CONSTITUENTS - BUILDING 07 AREA

| Constituent | Number of Samples with Concentration Greater than Laboratory Detection Limits | Range of Concentrations (mg/kg) | |
|---------------------------------------|---|------------------------------------|---------|
| | | Minimum | Maximum |
| SOIL SAMPLES | | | |
| Volatile Organic Compounds | | | |
| Volatile Organic Compounds | None detected | -- | -- |
| Semivolatile Organic Compounds | | | |
| bis(2-Ethylhexyl)phthalate | 1 | 9.1 | 9.1 |
| PCBs | | | |
| Aroclor-1016 | None detected | -- | -- |
| Metals | | | |
| Arsenic | 2 | 5.7 | 11 |
| Barium | 2 | 44 | 74 |
| Cadmium | 2 | 0.11 | 0.15 |
| Chromium | 2 | 15 | 17 |
| Copper | 2 | 16 | 22 |
| Lead | 2 | 9.5 | 10 |
| Selenium | 1 | 0.19 | 0.19 |
| Silver | 2 | 1.0 | 1.2 |
| Zinc | 2 | 42 | 48 |

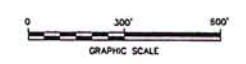
Figures

BLASLAND, BOUCK & LEE, INC.
engineers & scientists



- LEGEND:**
- BUILDING 38 AREA
 - FACTORY 36 - BUILDING 36 AREA
 - BUILDINGS 55, 55A, AND 55B AREA
 - FACTORY 10 - BUILDINGS 20, 22, 24 AREA
 - FACTORY 05 - BUILDINGS 43, 65, AND 99 AREA
 - FACTORY 03 - BUILDINGS 30, 30A, 30B, 30C, AND 30E AREA
 - BUILDINGS 65 AND 99 AREA
 - FACTORY 81 - BUILDINGS 69, 69A, 69B, 69C, 70, 70A, 70B, 71, 71A, 71B, 72, 73, 73A, AND 74 AREA
 - FACTORY 83/84 - BUILDINGS 11, 32, 66, 66A, 66C, 66D, 83, AND 83A AREA
 - BUILDINGS 21 AND 97 AREA
 - BUILDINGS 15, 61, 61A AND 85 AREA
 - BUILDINGS 86 AND 86A AREA
 - BUILDING 07 AREA
 - WASTEWATER AERATION LAGOONS AREA
 - OTHER MISCELLANEOUS AREAS

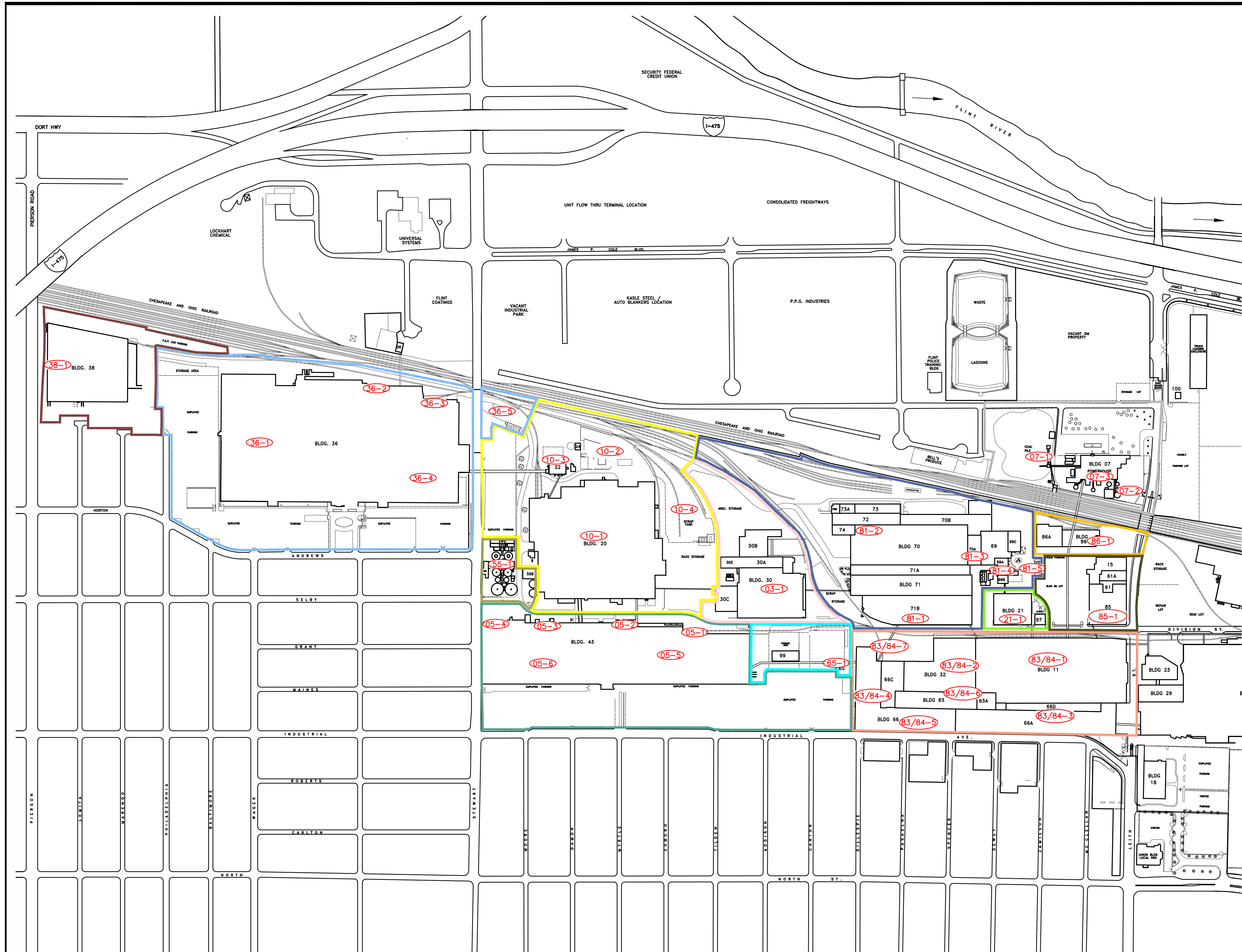
NOTES:
 1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION, POWERTRAIN DIVISION, FLINT, MICHIGAN, DRAWING NO. C71255-C, DATED 5/1/91, @ A SCALE OF 1" = 200'.



GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

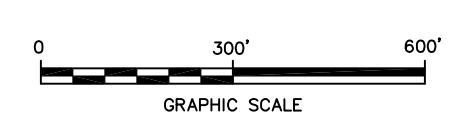
SITE PLAN

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 11/16/00 SYR-54-GMS JER
 86934962/86934810.DWG



- LEGEND:**
- BUILDING 38 AREA
 - FACTORY 36 - BUILDING 36 AREA
 - BUILDINGS 55, 55A, AND 55B AREA
 - FACTORY 10 - BUILDINGS 20, 22, 24 AREA
 - FACTORY 05 - BUILDINGS 43, 65, AND 99 AREA
 - FACTORY 03 - BUILDINGS 30, 30A, 30B, 30C, AND 30E AREA
 - BUILDINGS 65 AND 99 AREA
 - FACTORY 81 - BUILDINGS 69, 69A, 69B, 69C, 70, 70A, 70B, 71, 71A, 71B, 72, 73, 73A, AND 74 AREA
 - FACTORY 83/84 - BUILDINGS 11, 32, 66, 66A, 66C, 66D, 83, AND 83A AREA
 - BUILDINGS 21 AND 97 AREA
 - BUILDINGS 15, 61, 61A AND 85 AREA
 - BUILDINGS 86 AND 86A AREA
 - BUILDING 07 AREA
 - APPROXIMATE AOI LOCATION

NOTES:
 1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION, POWERTRAIN DIVISION, FLINT, MICHIGAN, DRAWING NO. C71255-C, DATED 5/1/91, @ A SCALE OF 1" = 200'.



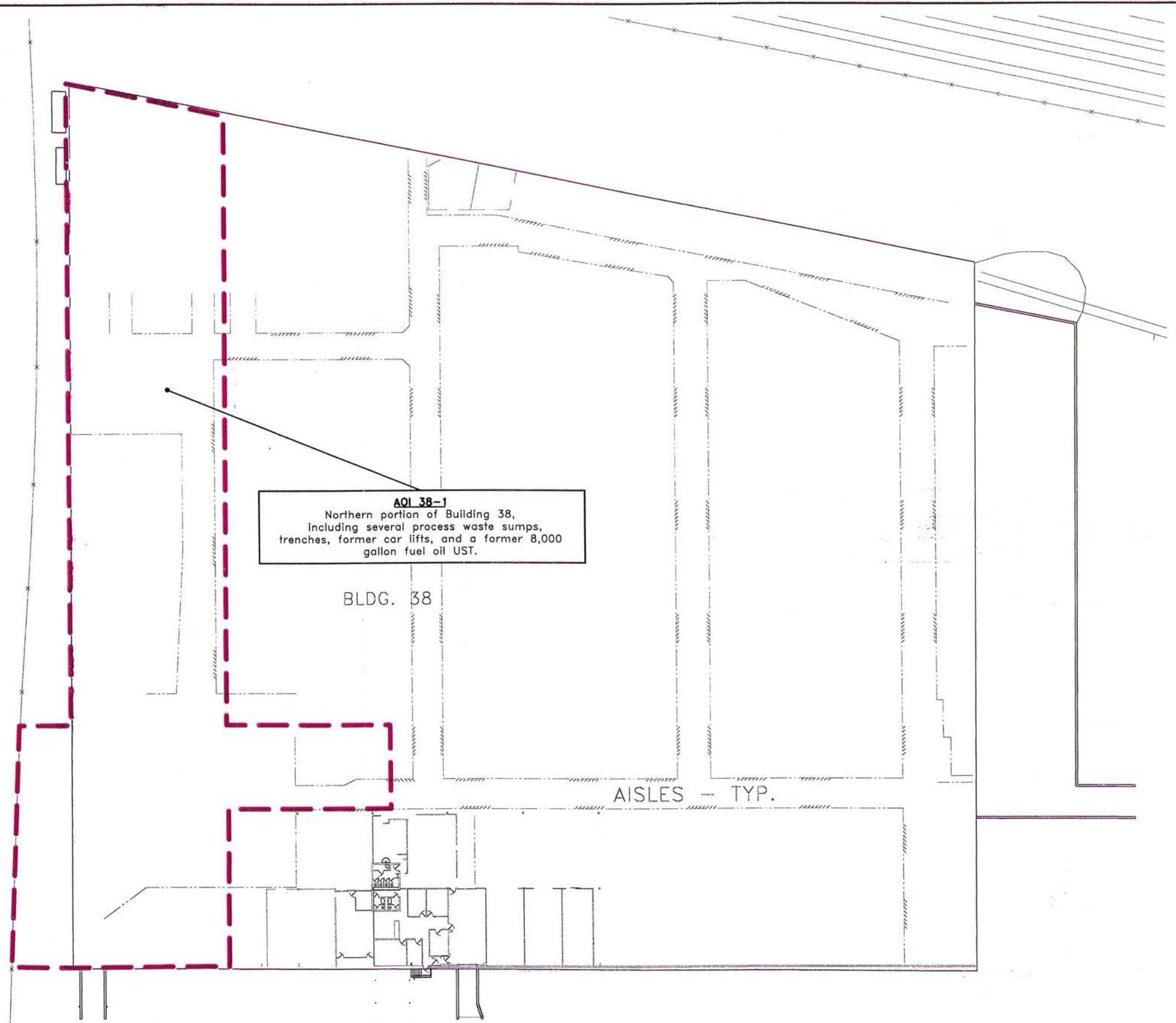
**GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET**

AOI LOCATION PLAN

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FIGURE
3

X: 86934X01.DWG
 L: ON=*,OFF=REF
 P: STD-PCP/DLPCP
 11/20/00 SYR-54-CMS CBM JER
 86934962/86934811.DWG



AOI 38-1
 Northern portion of Building 38,
 including several process waste sumps,
 trenches, former car lifts, and a former 8,000
 gallon fuel oil UST.

BLDG. 38

AISLES - TYP.



LEGEND
 APPROXIMATE AOI BOUNDARY

NOTES:
 1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.



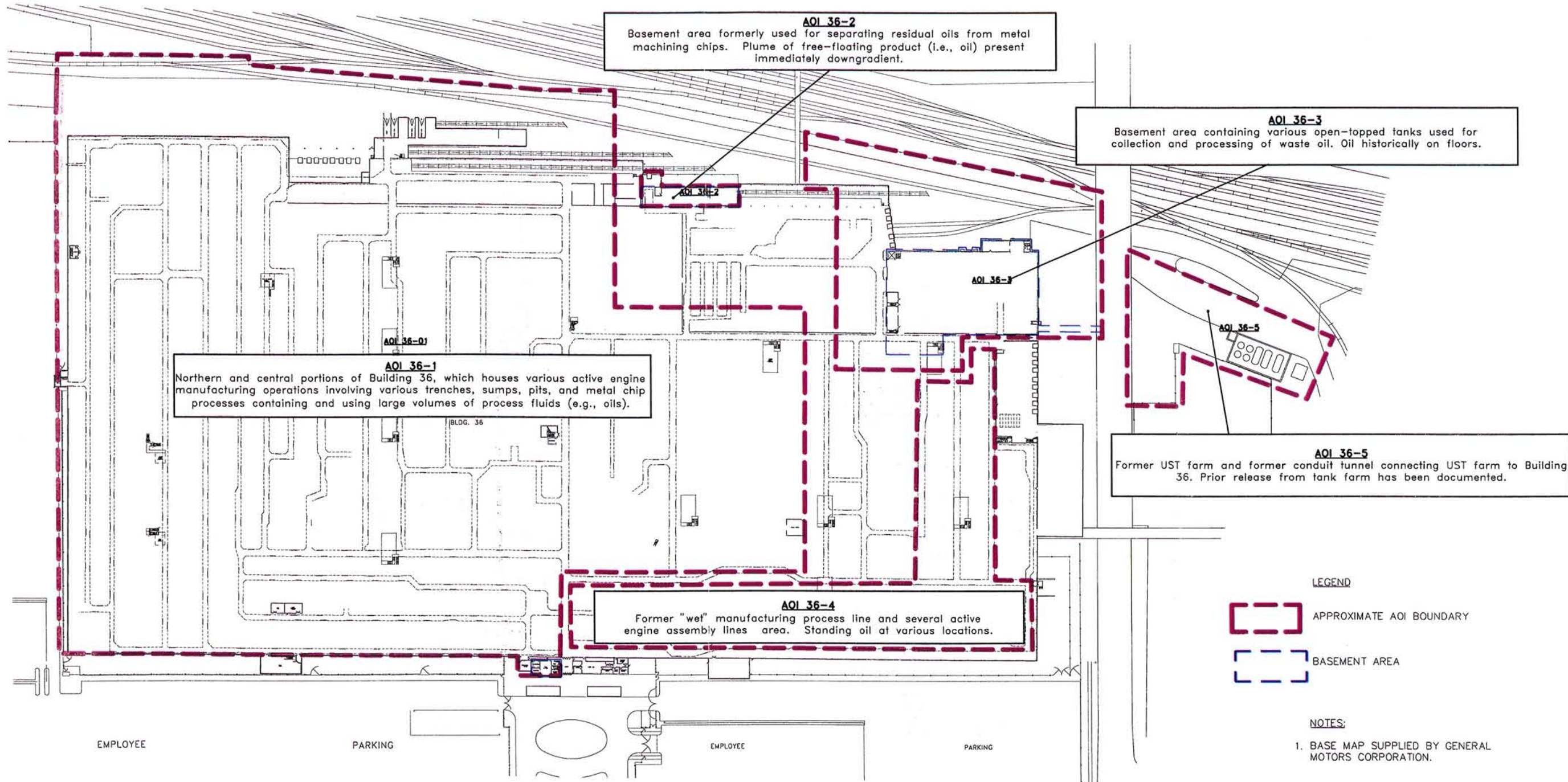
GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

**BUILDING 38 AREA
 AOI LOCATION PLAN**

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FIGURE
4

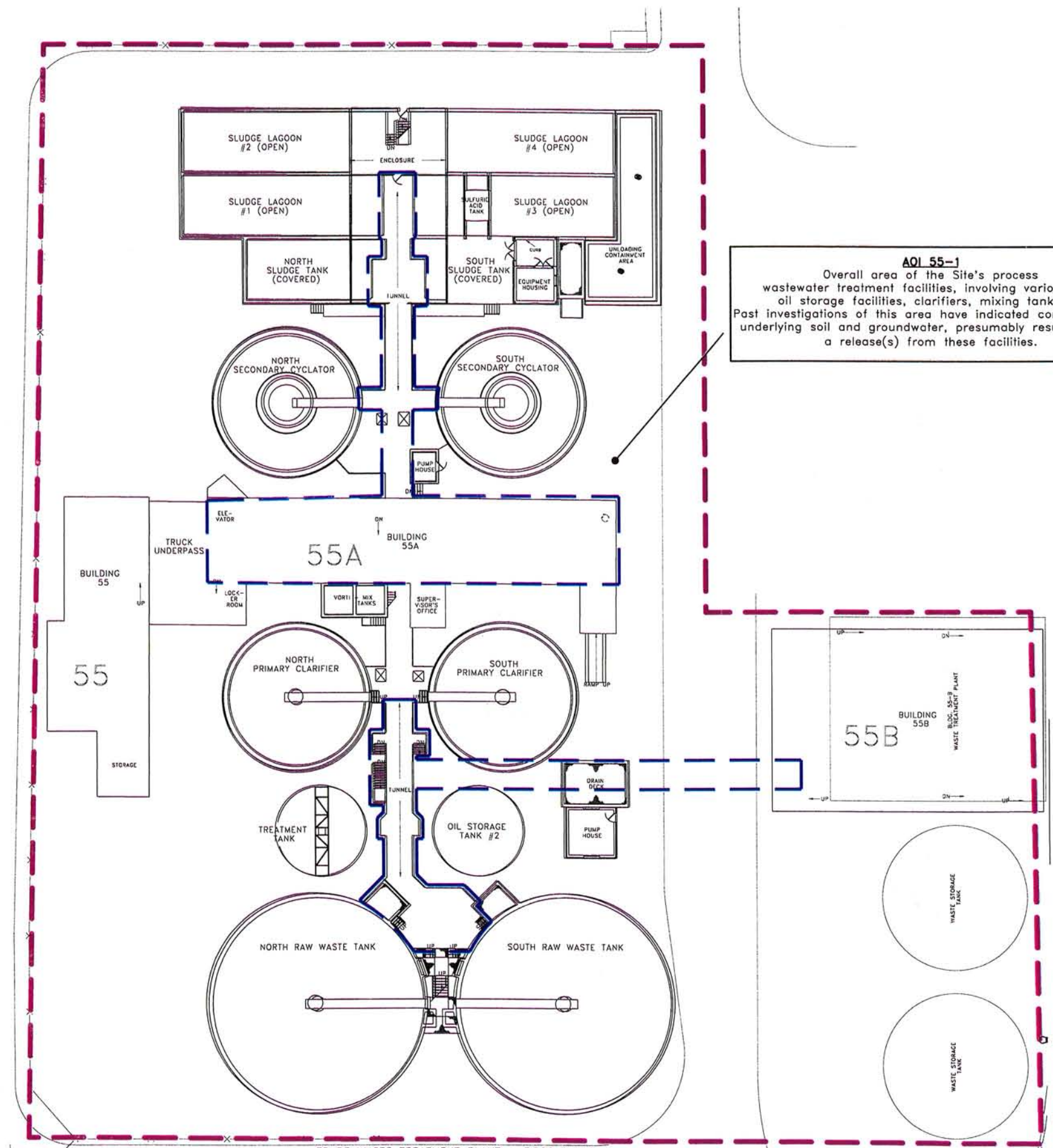
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 11/16/00 SYR-54-JER
 86934010/AOI/86934001.DWG



GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

**FACTORY 36 AREA
 AOI LOCATION PLAN**

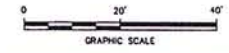
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 86934010/AOI/86934G02.DWG



AOI 55-1
 Overall area of the Site's process wastewater treatment facilities, involving various waste oil storage facilities, clarifiers, mixing tanks, etc. Past investigations of this area have indicated constituents in underlying soil and groundwater, presumably resulting from a release(s) from these facilities.

- LEGEND**
- APPROXIMATE AOI BOUNDARY
 - BASEMENT AREA

NOTES:
 1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.



GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
**DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET**
**BUILDINGS 55, 55A & 55B AREA
 AOI LOCATION PLAN**

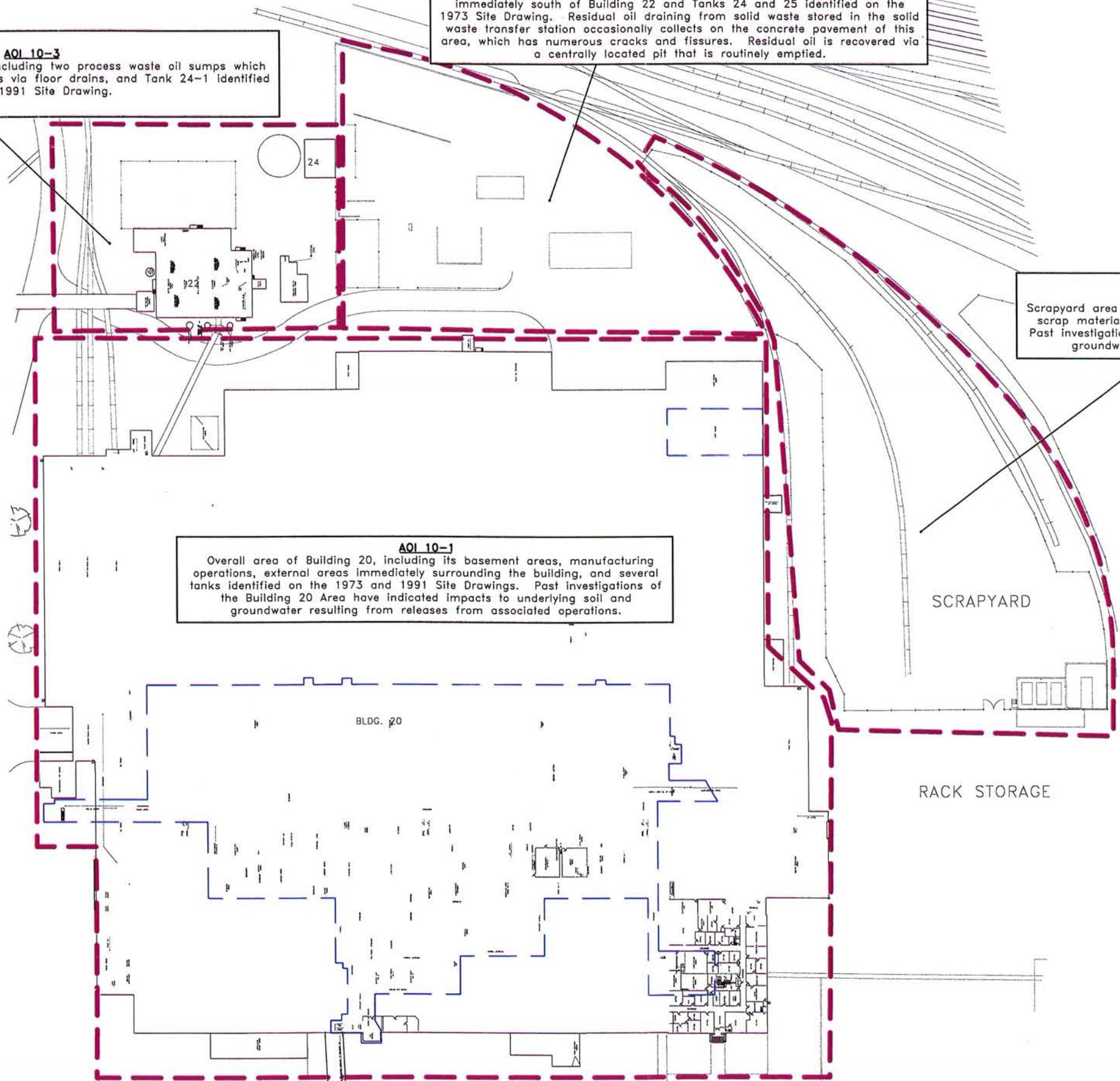
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 10/27/00 SYR-54-JER
 86934010/AOI/86934003.DWG

AOI 10-3
 Basement area of Building 22, including two process waste oil sumps which collect oil leaks from compressors via floor drains, and Tank 24-1 identified on the 1991 Site Drawing.



AOI 10-2
 Solid waste transfer station located immediately east of Building 20 and immediately south of Building 22 and Tanks 24 and 25 identified on the 1973 Site Drawing. Residual oil draining from solid waste stored in the solid waste transfer station occasionally collects on the concrete pavement of this area, which has numerous cracks and fissures. Residual oil is recovered via a centrally located pit that is routinely emptied.

AOI 10-4
 Scrapyard area located immediately south of Building 20 used since 1950 for scrap material storage, vehicle dismantling, and vehicle equipment storage. Past investigations of this area have indicated impacts to underlying soil and groundwater resulting from releases from associated operations.

AOI 10-1
 Overall area of Building 20, including its basement areas, manufacturing operations, external areas immediately surrounding the building, and several tanks identified on the 1973 and 1991 Site Drawings. Past investigations of the Building 20 Area have indicated impacts to underlying soil and groundwater resulting from releases from associated operations.



LEGEND

-  APPROXIMATE AOI BOUNDARY
-  BASEMENT AREA

NOTES:

1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.



GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

**FACTORY 10 AREA
 AOI LOCATION PLAN**

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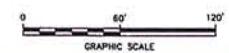
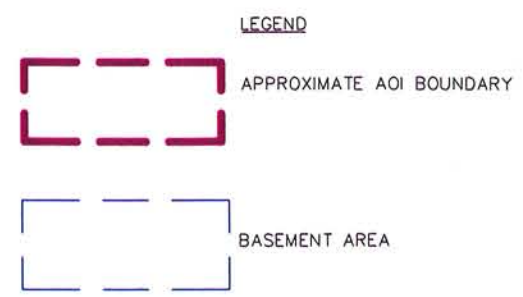
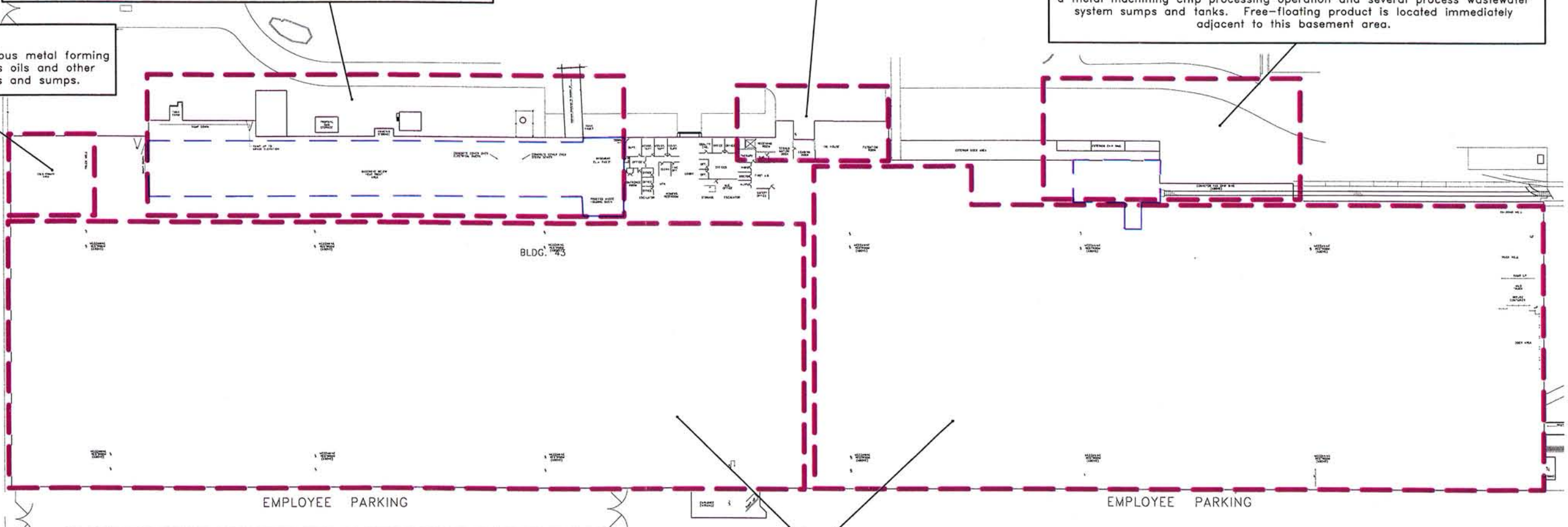
AOI 05-2
 East central portion of Building 43, involving a "Filtration Room," an "Oil Room," a below-grade vault, and an elevator pit. Over 2 feet of oil material has been noted on occasion within the below-grade vault in this area. The source of this material is unknown; however, it may be associated with the adjacent Oil Room and/or Filtration Room.

AOI 05-3
 Basement area of Building 43 beneath transmission component heat treating operations, containing a relatively large process waste oil sump, various other smaller sumps and drains, and intermittent pooling of oil on floor surfaces, as well as several former and existing ASTs and USTs located along the east side of the basement area.

AOI 05-1
 Basement area located along the southeast portion of Building 43, involving a metal machining chip processing operation and several process wastewater system sumps and tanks. Free-floating product is located immediately adjacent to this basement area.

AOI 05-4
 "Cold Former Room," involving various metal forming operations utilizing various process oils and other fluids and recirculation trenches and sumps.

AOI 05-5 and AOI 05-6
 Southern and northern portions of Building 43 (respectively), involving various active process machinery, collection trenches, and sumps (both "wet" and "dry" operations). Due to the nature of the operations (i.e., full production), it is difficult to visually assess whether releases have occurred.



GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

**FACTORY 05 AREA
 AOI LOCATION PLAN**

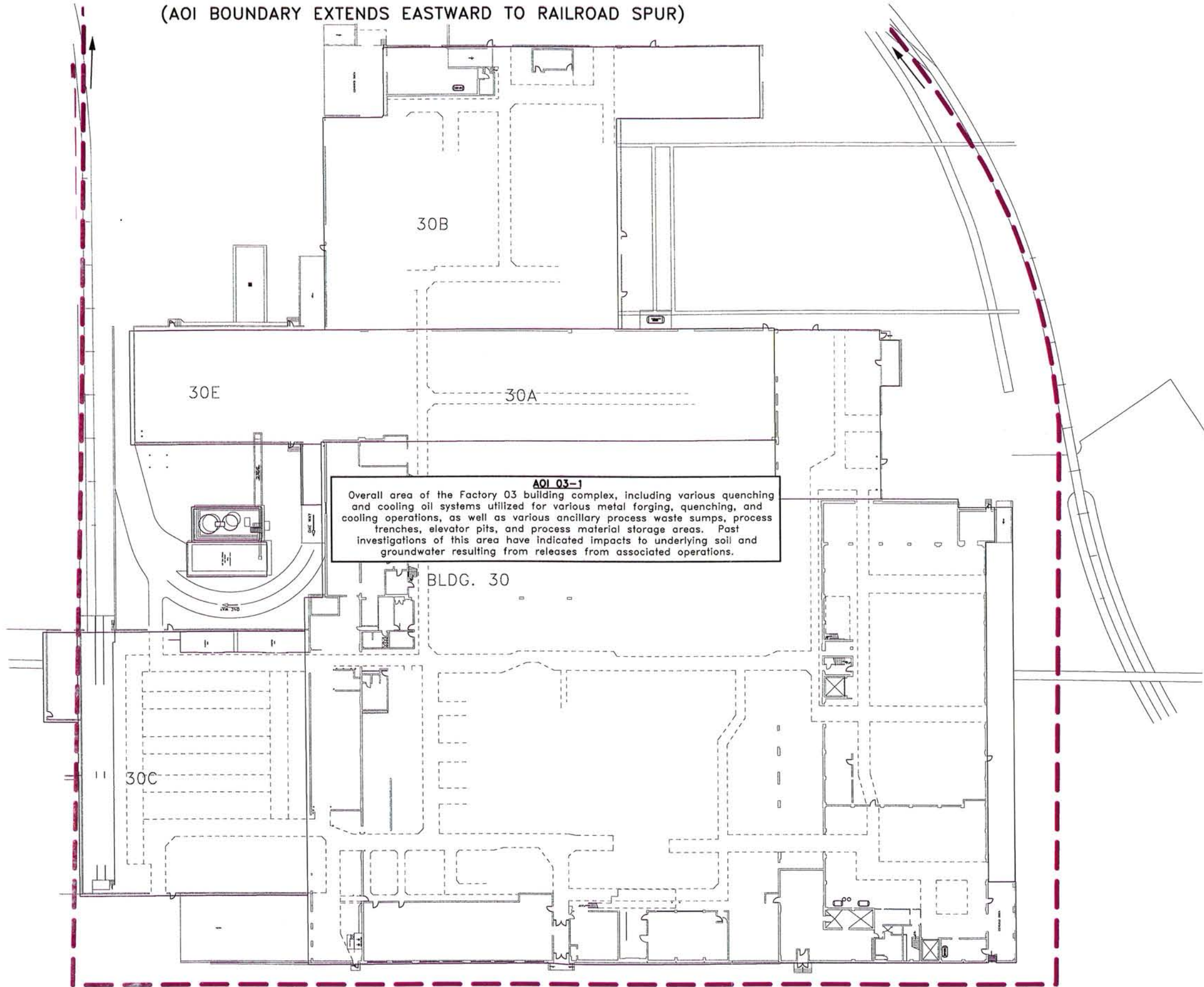
NOTES:
 1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.

BBL BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
8

X: 86934X01.DWG
 L: ON=*, OFF=REF*
 P: AQLPCP
 10/27/00 SYR-54-JER
 86934010/AOI/86934GD4.DWG

(AOI BOUNDARY EXTENDS EASTWARD TO RAILROAD SPUR)

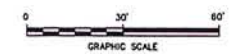


LEGEND

 APPROXIMATE AOI BOUNDARY

NOTES:

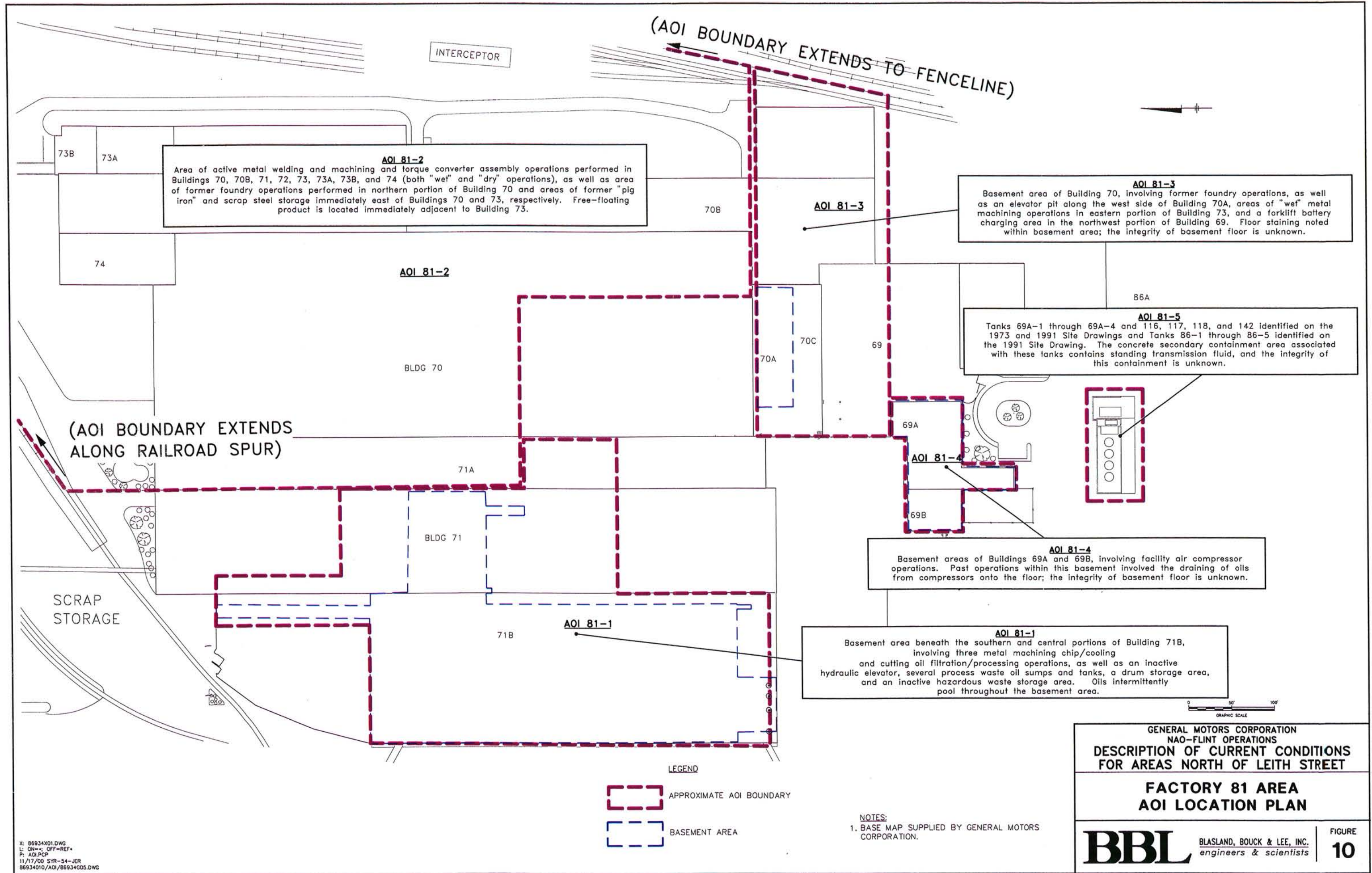
1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.

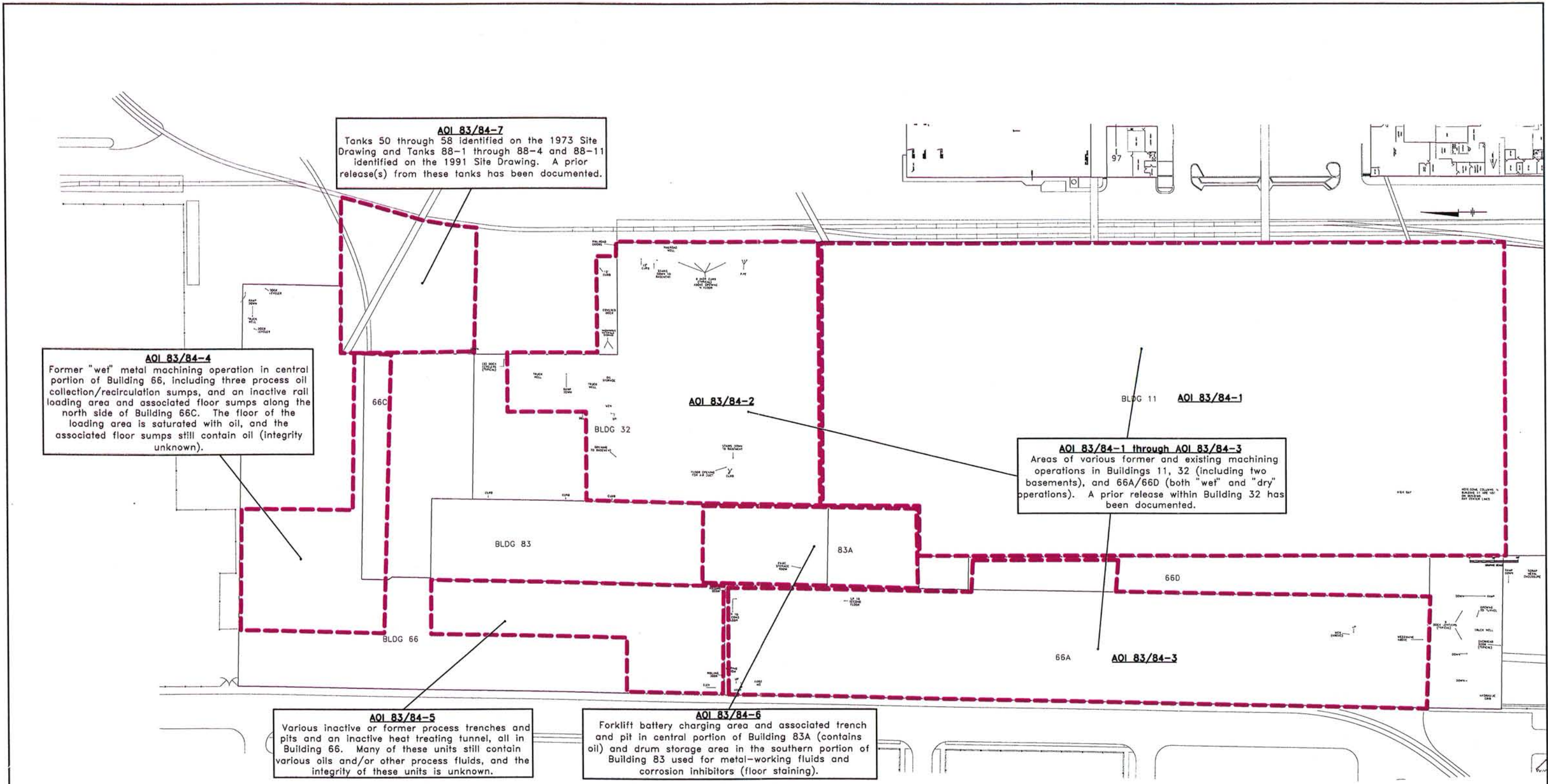


GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

**FACTORY 03 AREA
 AOI LOCATION PLAN**

X: 86934X01.DWG
 L: CIVIL - OFF-REF*
 P: A01RCP
 11/20/00 SYR-54-JER
 86934010/AOI/86934011.DWG





AOI 83/84-7
Tanks 50 through 58 identified on the 1973 Site Drawing and Tanks 88-1 through 88-4 and 88-11 identified on the 1991 Site Drawing. A prior release(s) from these tanks has been documented.

AOI 83/84-4
Former "wet" metal machining operation in central portion of Building 66, including three process oil collection/recirculation sumps, and an inactive rail loading area and associated floor sumps along the north side of Building 66C. The floor of the loading area is saturated with oil, and the associated floor sumps still contain oil (integrity unknown).

AOI 83/84-1 through AOI 83/84-3
Areas of various former and existing machining operations in Buildings 11, 32 (including two basements), and 66A/66D (both "wet" and "dry" operations). A prior release within Building 32 has been documented.

AOI 83/84-5
Various inactive or former process trenches and pits and an inactive heat treating tunnel, all in Building 66. Many of these units still contain various oils and/or other process fluids, and the integrity of these units is unknown.

AOI 83/84-6
Forklift battery charging area and associated trench and pit in central portion of Building 83A (contains oil) and drum storage area in the southern portion of Building 83 used for metal-working fluids and corrosion inhibitors (floor staining).



LEGEND
[Red dashed line symbol] APPROXIMATE AOI BOUNDARY

NOTES:
1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.

GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS
DESCRIPTION OF CURRENT CONDITIONS
FOR AREAS NORTH OF LEITH STREET
**FACTORY 83/84 AREA
AOI LOCATION PLAN**

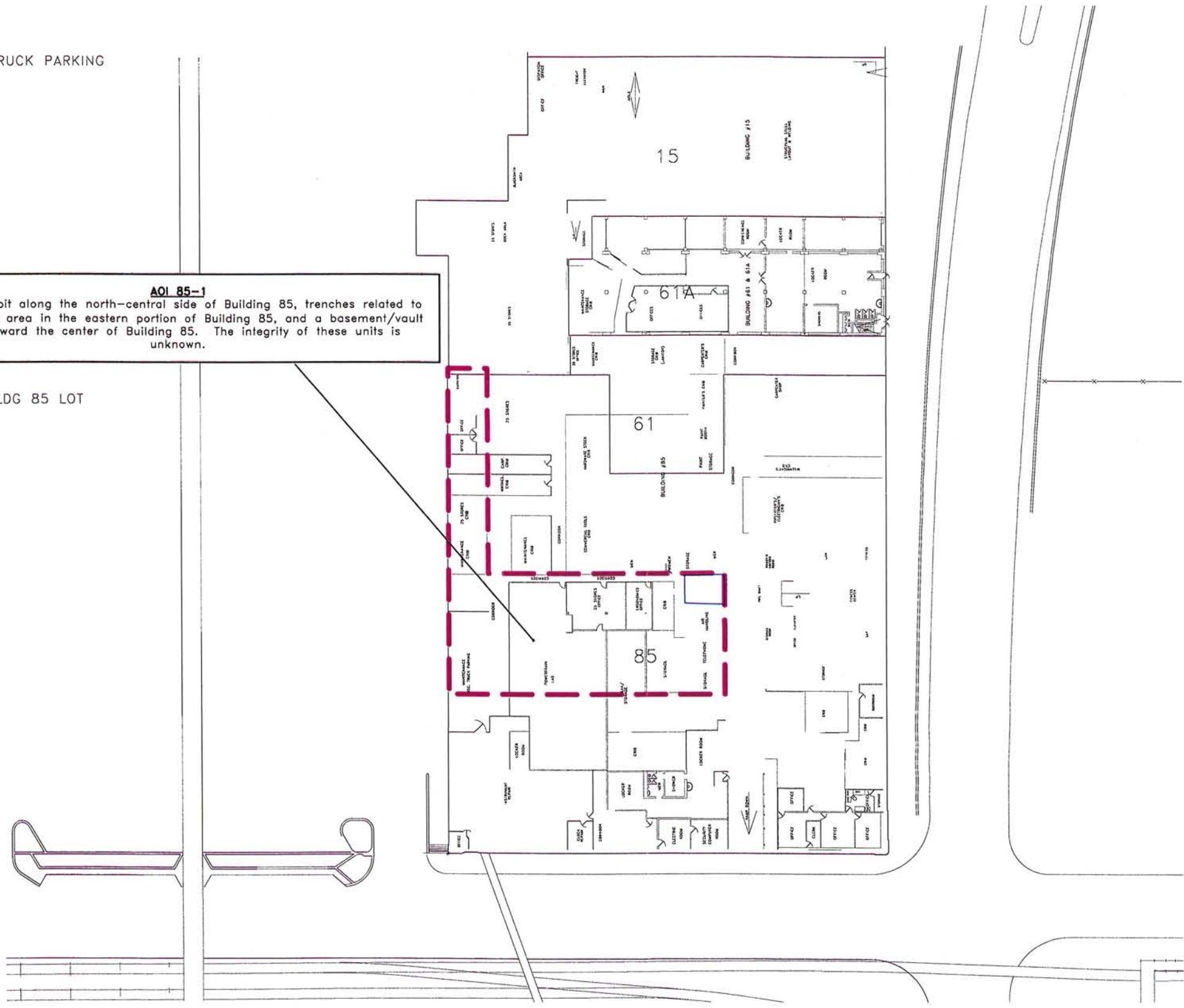
BBL BLASLAND, BOUCK & LEE, INC.
engineers & scientists

X: 86934X01.DWG
L: ON=*, OFF=REF*
P: AOI.PCP
10/27/00 SYR-54-JER
86934010/AOI/86934006.DWG

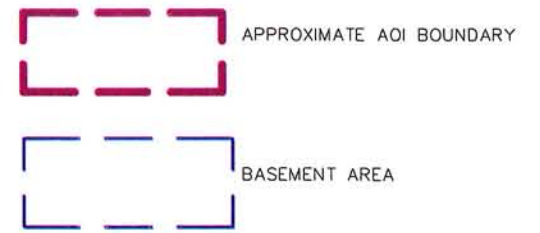
TRUCK PARKING

AOI 85-1
Elevator pit along the north-central side of Building 85, trenches related to engine test area in the eastern portion of Building 85, and a basement/vault area toward the center of Building 85. The integrity of these units is unknown.

BLDG 85 LOT

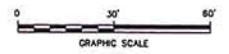


LEGEND



NOTES:

1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.

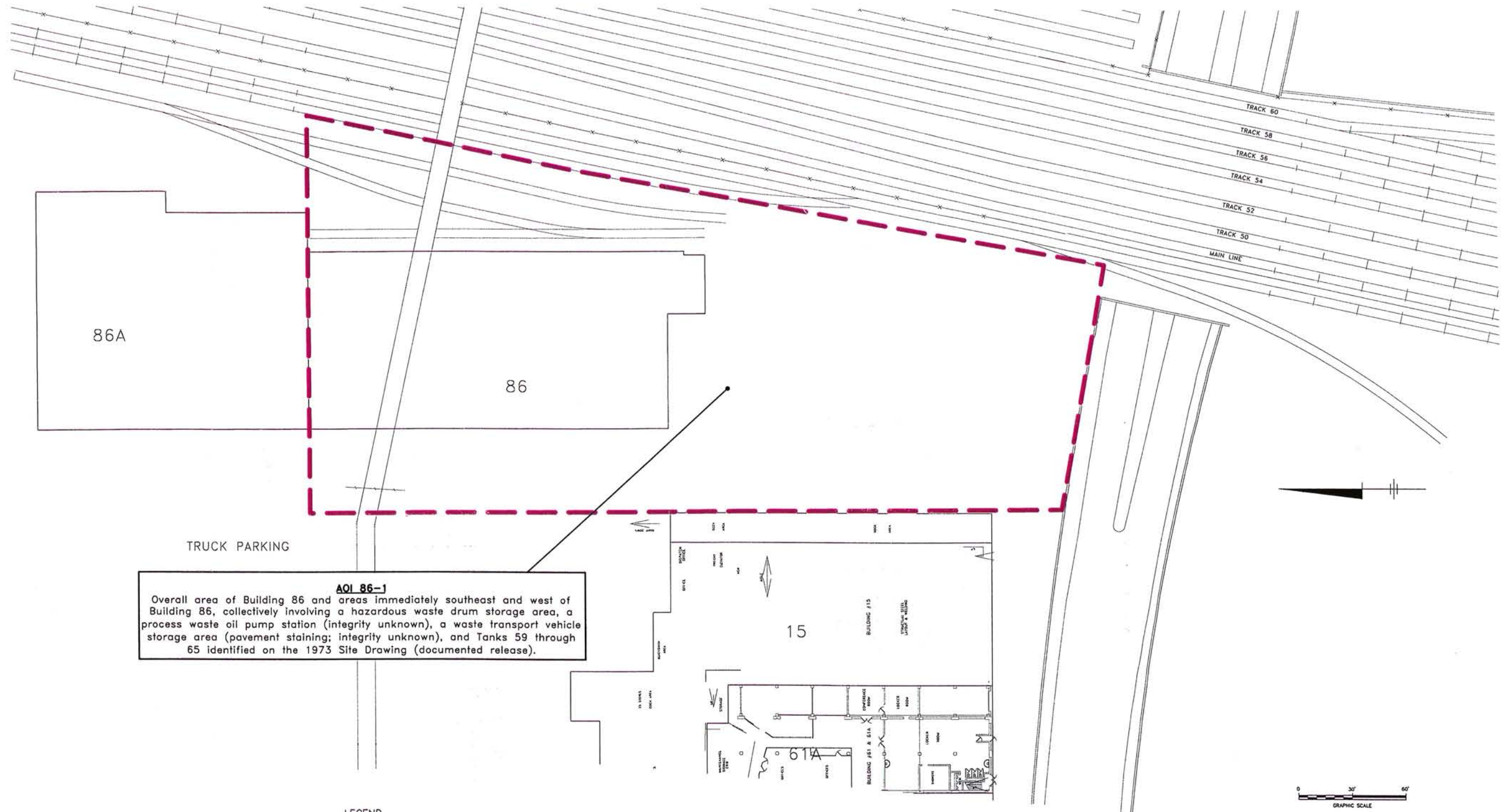


GENERAL MOTORS CORPORATION
NAO-FLINT OPERATIONS
DESCRIPTION OF CURRENT CONDITIONS
FOR AREAS NORTH OF LEITH STREET
**BUILDINGS 15, 61, 61A & 85 AREA
AOI LOCATION PLAN**

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engineers & scientists

FIGURE
12

X: 86934X01.DWG
L: ON=+; OFF=REF+
P: AOLPCP
11/17/00 SYR-54-JER
86934010/AOI/86934010.DWG



AOI 86-J
 Overall area of Building 86 and areas immediately southeast and west of Building 86, collectively involving a hazardous waste drum storage area, a process waste oil pump station (integrity unknown), a waste transport vehicle storage area (pavement staining; integrity unknown), and Tanks 59 through 65 identified on the 1973 Site Drawing (documented release).

TRUCK PARKING

LEGEND
 APPROXIMATE AOI BOUNDARY

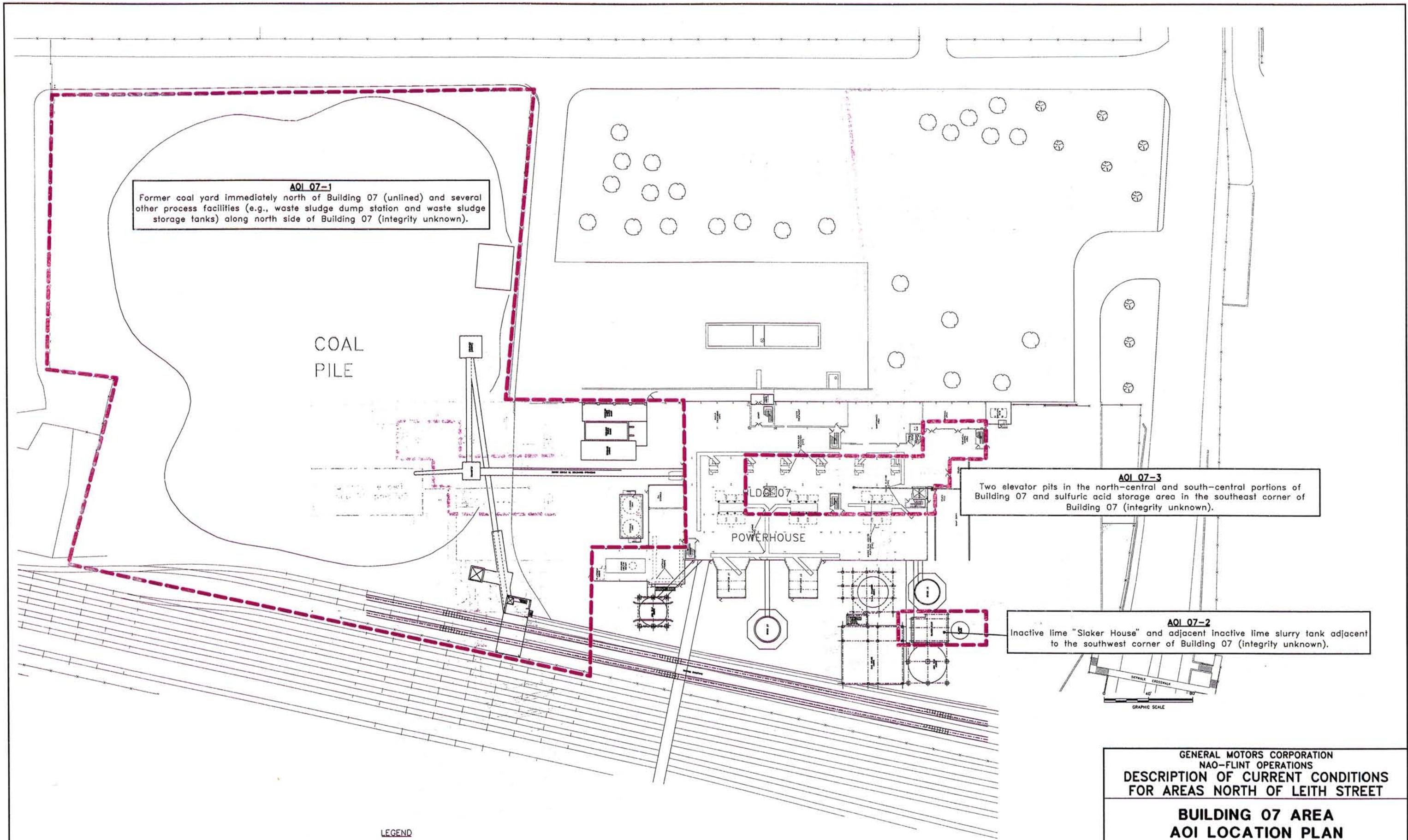
NOTES:
 1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.

GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET
BUILDINGS 86 & 86A AREA
AOI LOCATION PLAN

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 engineers & scientists

FIGURE
13

X: 86934X01.DWG
 L: GN+; OFF-REF+
 P: A01.PCP
 11/17/00 SYR-54-JER
 86934010/AOI/86934007.DWG



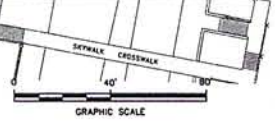
AOI 07-1
 Former coal yard immediately north of Building 07 (unlined) and several other process facilities (e.g., waste sludge dump station and waste sludge storage tanks) along north side of Building 07 (integrity unknown).

COAL
 PILE

LDG 07
 POWERHOUSE

AOI 07-3
 Two elevator pits in the north-central and south-central portions of Building 07 and sulfuric acid storage area in the southeast corner of Building 07 (integrity unknown).

AOI 07-2
 Inactive lime "Slaker House" and adjacent inactive lime slurry tank adjacent to the southwest corner of Building 07 (integrity unknown).



LEGEND
 [Red dashed rectangle] APPROXIMATE AOI BOUNDARY

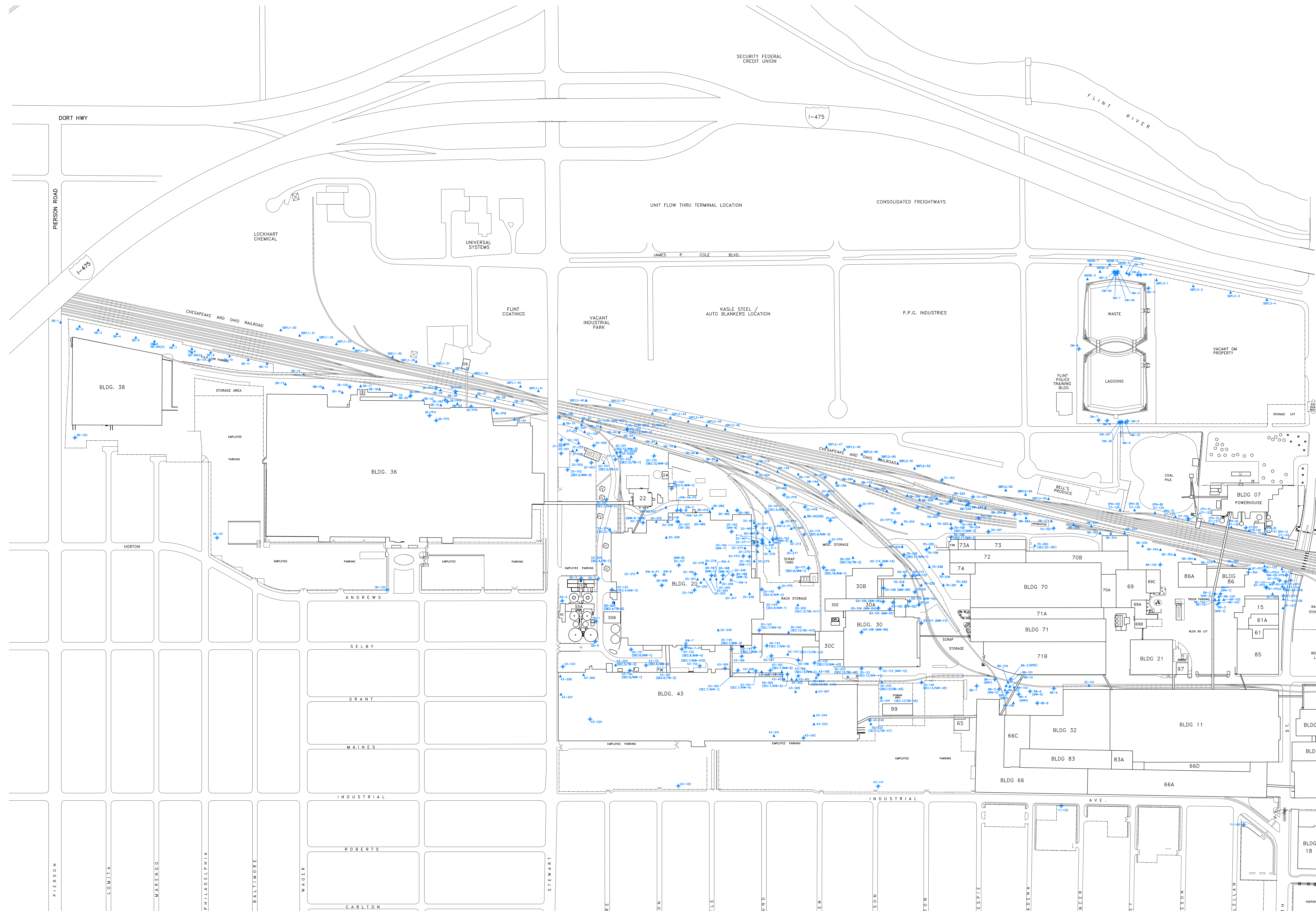
NOTES:
 1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.

GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET
BUILDING 07 AREA
AOI LOCATION PLAN

X: 8693401.DWG
 L: 01/17/00 OFF-REF
 P: AOI.PCP
 11/17/00 SYR-54-JER
 86934010/AOI/86934008.DWG

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 engineers & scientists

FIGURE
14



LEGEND:

- ▲ EXISTING SOIL BORING
- ⊕ EXISTING MONITORING WELL
- ⊕ DECOMMISSIONED MONITORING WELL
- ⊙ RECOVERY WELL

NOTES:

1. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION, POWERTRAIN DIVISION, FLINT, MICHIGAN. DRAWING NO. 07135-C, DATED 5/1/81, @ A SCALE OF 1" = 200'.
2. ALL MONITORING WELL LOCATIONS ARE APPROXIMATE. THE LOCATION OF FEATURES SUCH AS MONITORING WELLS WERE DIGITIZED FROM SITE INFORMATION. ADDITIONAL MONITORING WELLS MAY BE PRESENT AT SELECT LOCATIONS THROUGHOUT THE SITE. HOWEVER, THESE LOCATIONS WERE NOT AVAILABLE TO BBL AT THE TIME OF PRINTING OF THIS MAP.



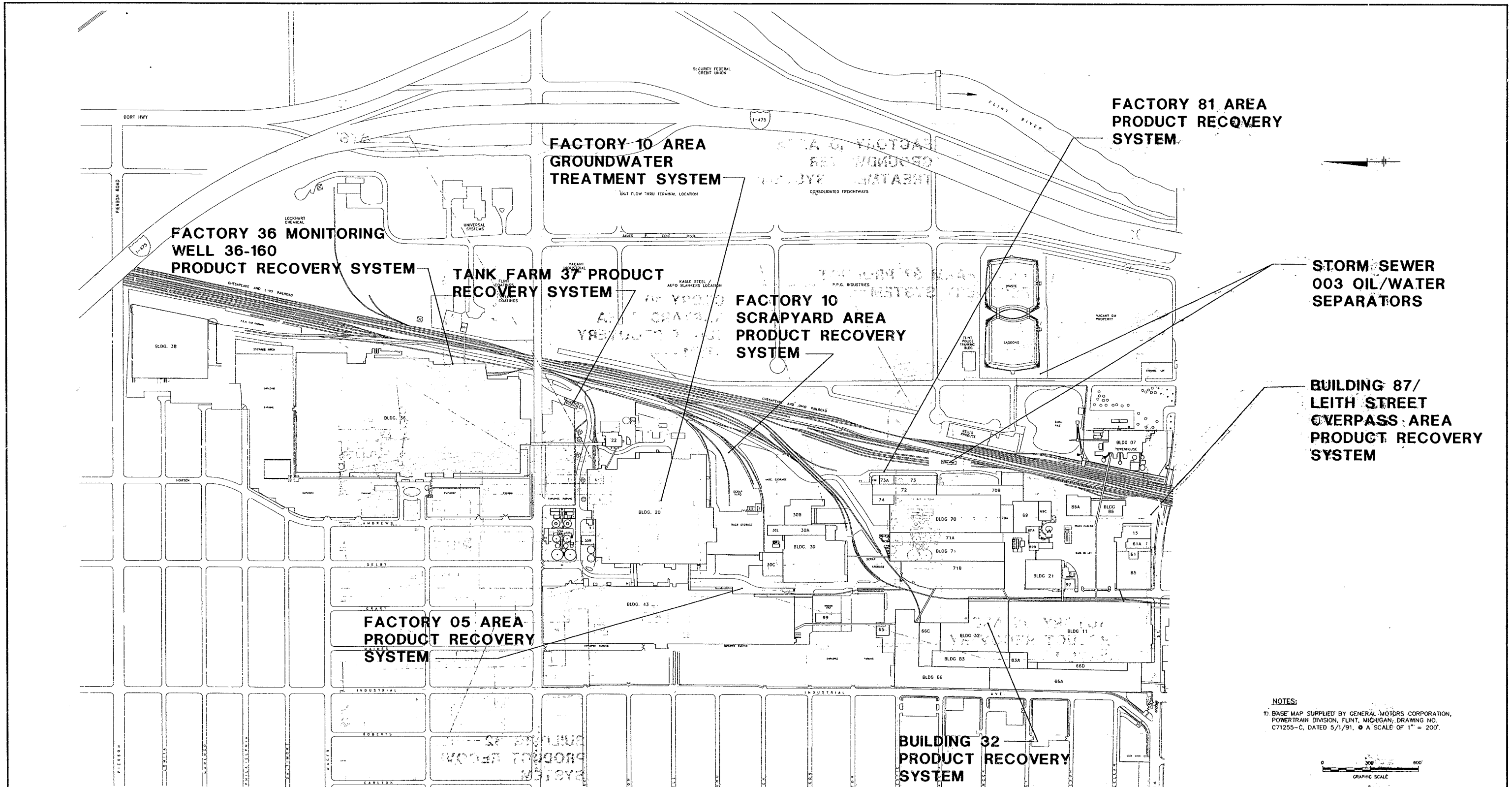
80834301.DWG, 80834303.DWG
 04-1-07-AMREP
 BLDG.POP, SWI, SWI-BN, SWIHALF, SWI10B
 11/17/00 09:54:54 AM SCL, BR
 80834302, 80834302.DWG

GENERAL MOTORS CORPORATION
 NAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

**EXISTING SOIL BORING
 AND MONITORING WELL
 LOCATION MAP**

BBL BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
15



NOTES:
 1) BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION, POWERTRAIN DIVISION, FLINT, MICHIGAN, DRAWING NO. C71255-C, DATED 5/1/91, @ A SCALE OF 1" = 200'.

GENERAL MOTORS CORPORATION
 MAO-FLINT OPERATIONS
 DESCRIPTION OF CURRENT CONDITIONS
 FOR AREAS NORTH OF LEITH STREET

**INTERIM MEASURES
 LOCATION PLAN**

BBL BLASLAND, BOUCK & LEE, INC.
 engineers & scientists

FIGURE
16

X: 86934X01.DWG
 L: ON=*,OFF=REF
 P: STD-PCF/DLPCP
 11/21/00 SYR-54-GMS_JER_CBM
 86934962/86934818.DWG

Appendices

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Appendix A

BLASLAND, BOUCK & LEE, INC.
e n g i n e e r s & s c i e n t i s t s

Site Storm Sewer Plan

Appendix B

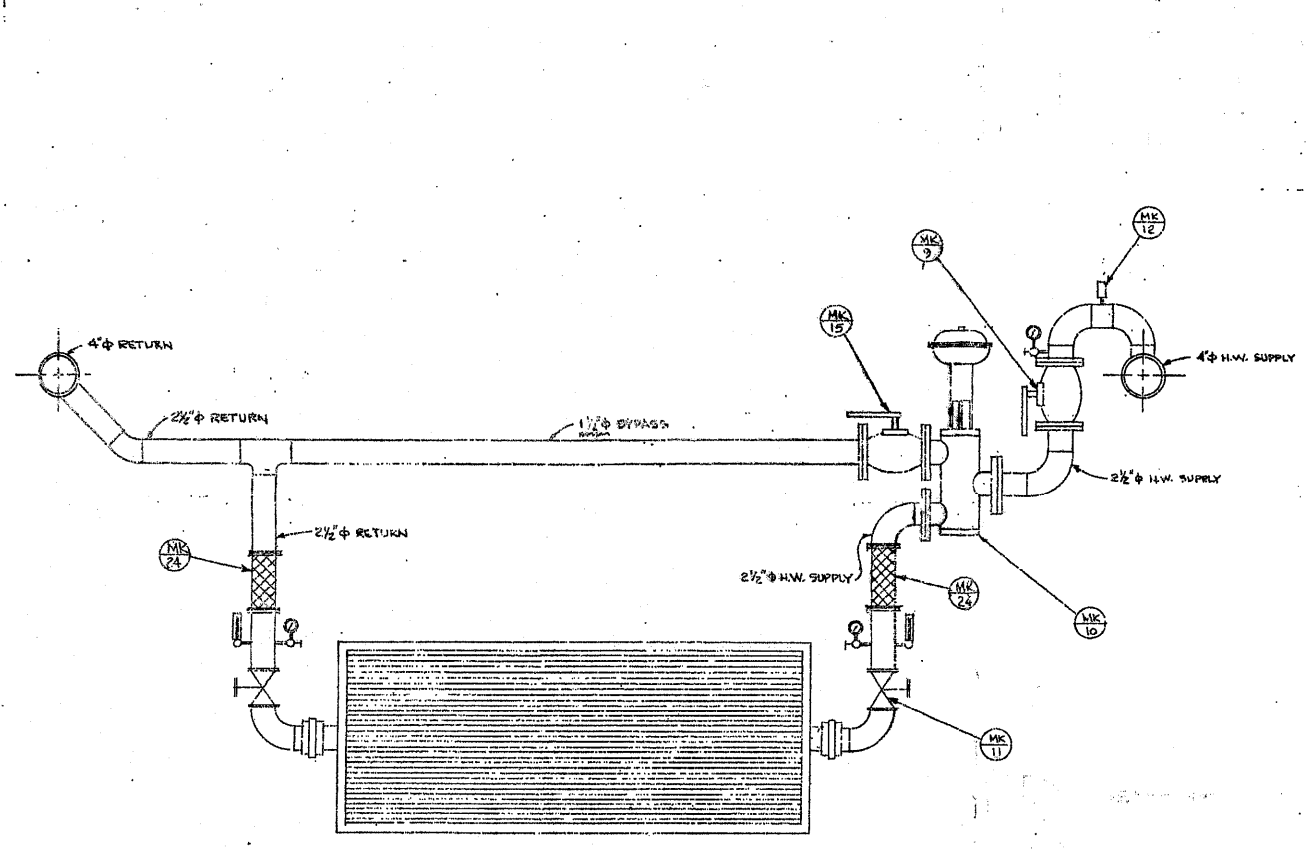
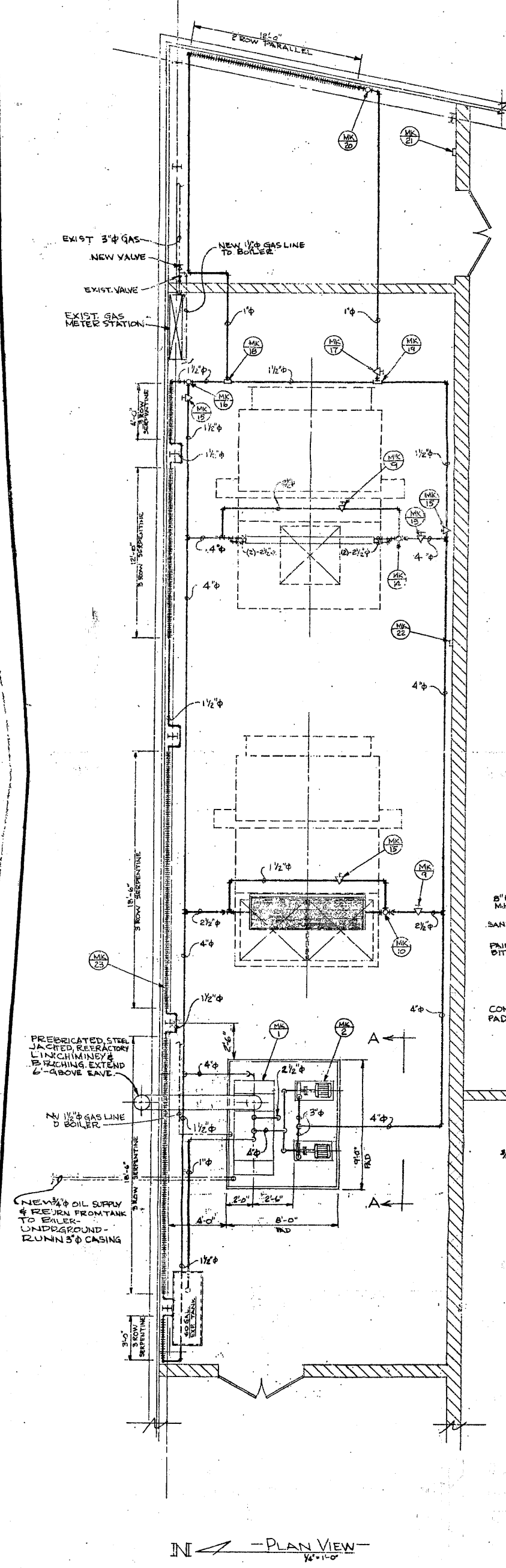
BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Historical Site Building Locations

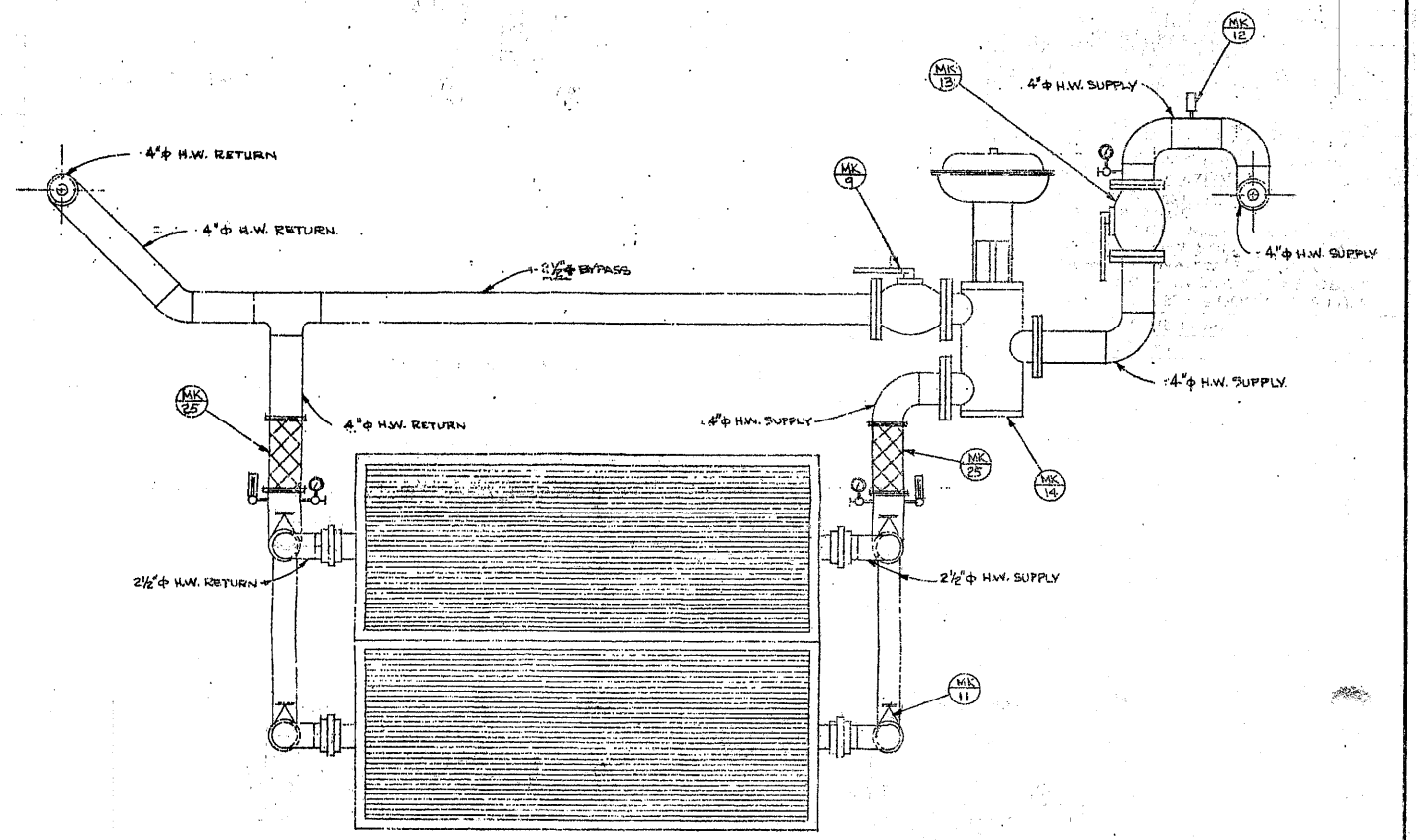
Appendix C

BLASLAND, BOUCK & LEE, INC.
e n g i n e e r s & s c i e n t i s t s

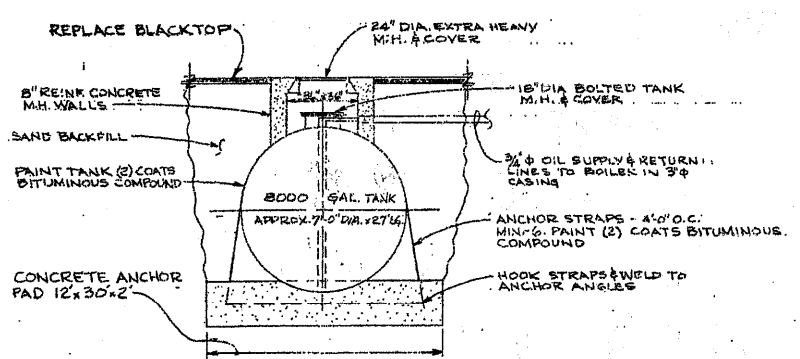
Buick Motor Division Drawing No. B-43683-M, Dated 1971



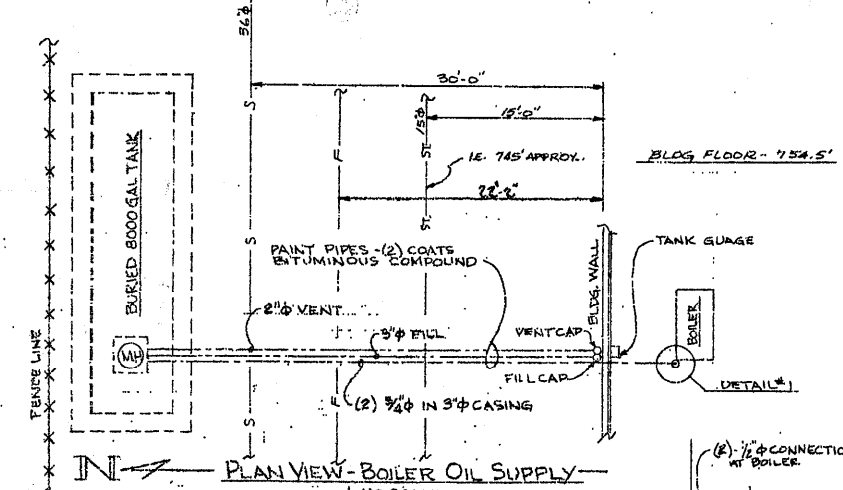
COIL PIPING - TEST CELL A.C. SYSTEM
NO SCALE



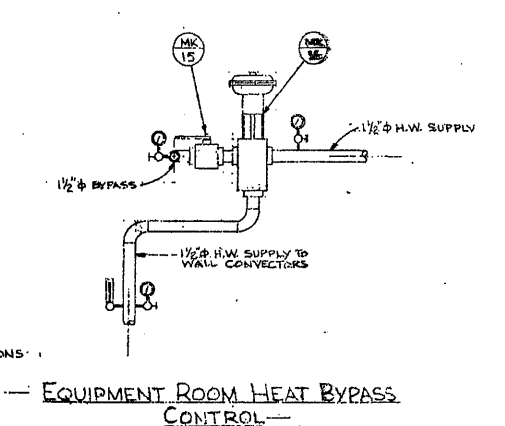
COIL PIPING - SOAK AREA A.C. SYSTEM
NO SCALE



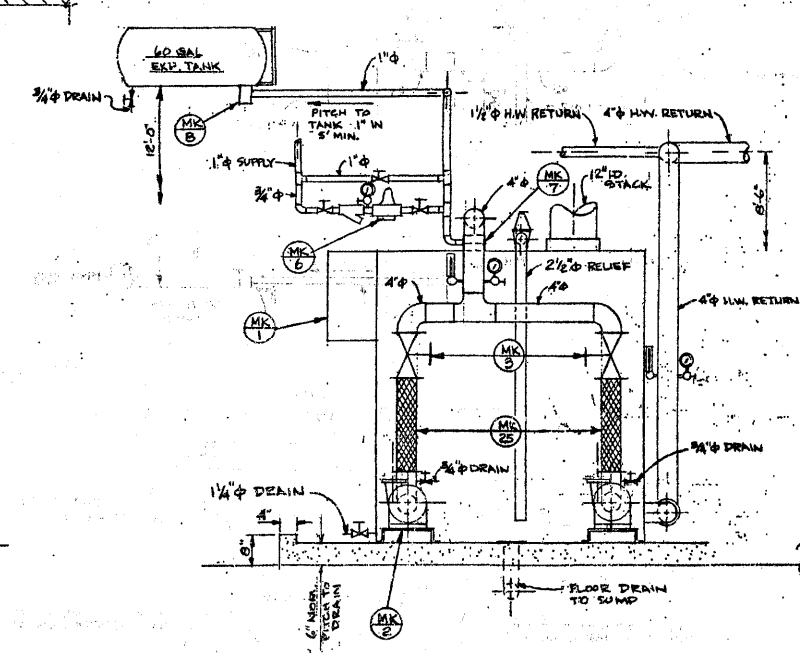
DETAIL - 8000 GAL BURIED FUEL OIL TANK
NO SCALE



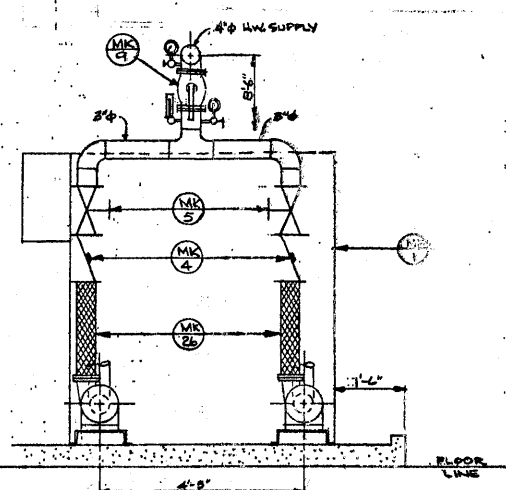
PLAN VIEW - BOILER OIL SUPPLY
NO SCALE



EQUIPMENT ROOM HEAT BYPASS CONTROL
NO SCALE



PUMP INLET & BOILER PIPING



PUMP DISCHARGE PIPING

VIEW AA
1/2\"/>

NOTE:
1. ALL H.W. SUPPLY, RETURN, AND BYPASS PIPING TO BE INSULATED WITH 1\"/>

| MARK NO. | DESCRIPTION | MATERIAL |
|----------|---|-------------------------------------|
| 1 | HOT WATER BOILER - 2,000,000 BTUH OUTPUT - 30 PSI - NATURAL GAS OR OIL | CLEAVER-BROOKS M.W. 200 - 3000 - 30 |
| 2 | BELL & GOSSETT U-4 PUMP - 193 GPM @ 20 FT. HEAD. COMPLETE WITH G.M. T.L.Q. SPEC. 3 HP. 1750 RPM MOTOR | |
| 3 | 4\"/> | |
| 4 | 3\"/> | |
| 5 | 3\"/> | |
| 6 | BELL & GOSSETT N-12 REDUCING VALVE | |
| 7 | BELL & GOSSETT AIRTROL BOILER FITTING | ABF4 x 1/2 |
| 8 | BELL & GOSSETT AIRTROL TANK FITTING | |
| 9 | WORCESTER 3\"/> | |
| 10 | 2 1/2\"/> | |
| 11 | 2 1/2\"/> | |
| 12 | VENT VALVE | |
| 13 | WORCESTER 4\"/> | |
| 14 | BALL VALVE - TEFLON SEATS | |
| 15 | 3 1/2\"/> | |
| 16 | WORCESTER 1 1/2\"/> | |
| 17 | WORCESTER 1\"/> | |
| 18 | BELL & GOSSETT MONOFLO RETURN FITTING | 1 1/2\"/> |
| 19 | BELL & GOSSETT MONOFLO SUPPLY FITTING | 1 1/2\"/> |
| 20 | ASCO 2\"/> | |
| 21 | GAS STORAGE ROOM THERMOSTAT | ACTUATES MK 10 |
| 22 | EQUIPMENT ROOM THERMOSTAT | ACTUATES MK 16 |
| 23 | WALL FINNED TUBE RADIATORS - TRANE | STEEL 2\"/> |
| 24 | TRICE INDUSTRIAL THERMOMETER | 7\"/> |
| 25 | TRICE SERIES 870 PRESSURE GAUGE | 0 - 30 PSI WITH GAUGE COCK |
| 26 | MASON BSRF-125 STANDARD LENGTH | SS BRAIDED HOSE - 2 1/2\"/> |
| 27 | MASON BSRF-125 STANDARD LENGTH | SS BRAIDED HOSE - 4\"/> |
| 28 | PNEUMATIC TANK GAUGE - KING GAGE CO. | 0 - 8000 GALLON |
| 29 | BY CONTROLS CONTRACTOR | |
| 30 | BY BUICK | |

BUICK MOTOR DIVISION
GENERAL SERVICES DEPARTMENT
WORKS ENGINEERS OFFICE

M BLDG. - 38
EMISSION TEST FACILITY - HOT WATER HEATING SYSTEM SHEET 2 OF 7

DRAWN: R. METCALF
CHECKED: CB
APPROVED: [Signature]

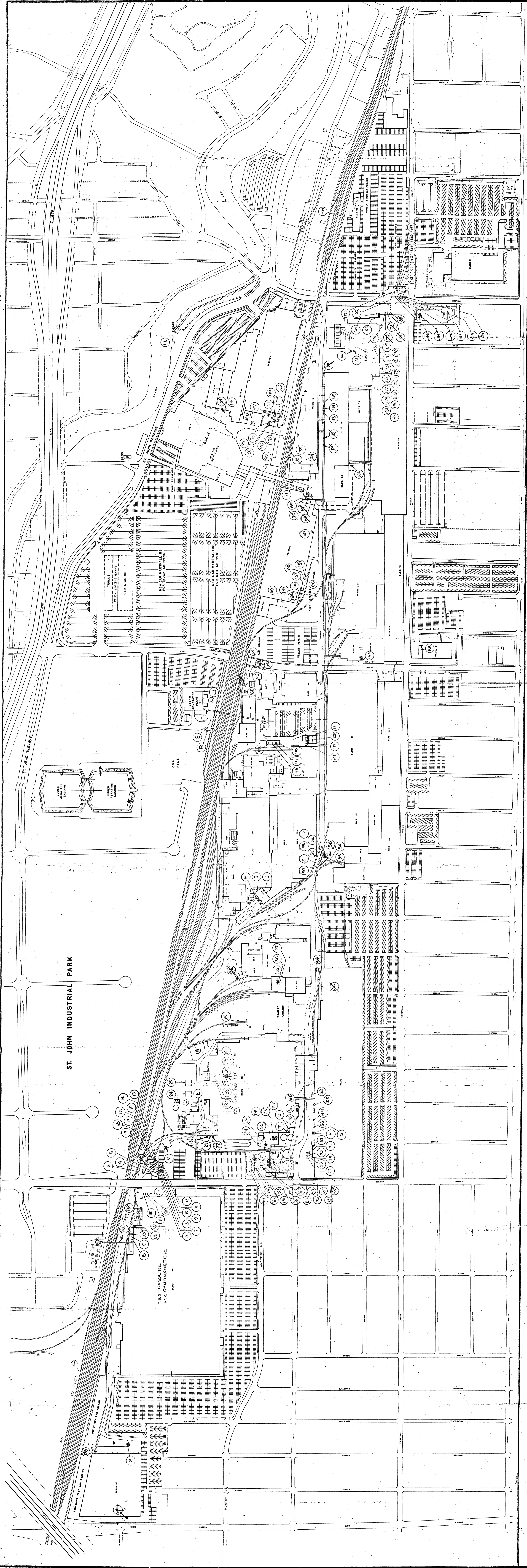
DATE: 11-17-71
JOB NO.: B-43683-M

Note: Figure Reproduced at 50% of Original Size.

Appendix D

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Buick Motor Division Drawing No. B-42361-M, Dated 1973



BUCK MOTOR DIV. G.M.C. FLINT, MICHIGAN SCALE: 1"=200'

DEFINITIONS
 ABANDONED
 NOT IN USE AND UNABLE TO BE USED
 OBSOLETE
 NOT IN USE BUT ABLE TO BE USED
 REMOVED
 NO LONGER EXISTS AT LOCATION
 [] DATE TESTED, TIGHT DATE TESTED, LEAKING

| NO. | LOC. | CAP. | SIZE | INST'D | DWG. # | LIQUID | REMARKS / CODE |
|-----|------|--------|--------------|--------|---------|--------|----------------|
| 162 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 163 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 164 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 165 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 166 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 167 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 168 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 169 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 170 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 171 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 172 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 173 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 174 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 175 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 176 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 177 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 178 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 179 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 180 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 181 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 182 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 183 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 184 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 185 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 186 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 187 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 188 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 189 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 190 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 191 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 192 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 193 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 194 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 195 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |

| NO. | LOC. | CAP. | SIZE | INST'D | DWG. # | LIQUID | REMARKS / CODE |
|-----|------|--------|--------------|--------|---------|--------|----------------|
| 196 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 197 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 198 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 199 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 200 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 201 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 202 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 203 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 204 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 205 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 206 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 207 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 208 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 209 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 210 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |

| NO. | LOC. | CAP. | SIZE | INST'D | DWG. # | LIQUID | REMARKS / CODE |
|-----|------|--------|--------------|--------|---------|--------|----------------|
| 211 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 212 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 213 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 214 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 215 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 216 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 217 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 218 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 219 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 220 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |

| NO. | LOC. | CAP. | SIZE | INST'D | DWG. # | LIQUID | REMARKS / CODE |
|-----|------|--------|--------------|--------|---------|--------|----------------|
| 221 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 222 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 223 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 224 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 225 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 226 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 227 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 228 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 229 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 230 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |

| NO. | LOC. | CAP. | SIZE | INST'D | DWG. # | LIQUID | REMARKS / CODE |
|-----|------|--------|--------------|--------|---------|--------|----------------|
| 231 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 232 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 233 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 234 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 235 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 236 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 237 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 238 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 239 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |
| 240 | 15E | 28,000 | 20' x 27' 2" | 1957 | G-31587 | GLYCOL | |

Appendix E

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

***Flint Automotive Division Drawing
No. C70444-M, Dated 1991***

Appendix F

BLASLAND, BOUCK & LEE, INC.
e n g i n e e r s & s c i e n t i s t s

Closure Documentation for Tanks 1, 2, and 123 Near Building 38



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: <http://www.deq.state.mi.us>

RUSSELL J. HARDING, Director

REPLY TO:

SHAWASSEE DISTRICT OFFICE
10650 S BENNETT DR
MORRICE MI 48857-9792

02 WEST

February 18, 1997

Mr. Dan Harrett
General Motors Corporation
902 East Hamilton Avenue
Flint, Michigan 48550

Dear Mr. Harrett:

SUBJECT: Closure Report Date: January 8, 1997
Confirmed Release Date: December 15, 1988
Location of Tank(s): NAO Flint Operations, Building 38, Tank 28;
Building 2, Tank 66, 902 E. Hamilton Ave., Flint,
Genesee County, Michigan
Facility ID #: 0-002763
MERA Site ID #: N/A
MUSTFA Claim #: N/A

In accordance with Section 21312a(2) of Part 213 Leaking Underground Storage Tanks (LUST) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, (Act 451) the Underground Storage Tank Division (USTD) of the Department of Environmental Quality (DEQ) acknowledges receipt of your closure report. This closure report was submitted on your behalf for the above referenced site by Christopher J. Griffin, Certified Professional (CP) with Global Environmental Engineering, Inc., Qualified Underground Storage Tank Consultant (QC), in accordance with Section 21312a(1) of Part 213.

The closure report submitted by the CP concludes that corrective action at the site has resulted in

- UNRESTRICTED RESIDENTIAL USE of the site.

Please note that when contaminated soil and/or groundwater as a result of a release of a regulated substance remains on site consistent with site closure requirements, the owner/operator shall not remove soil and/or groundwater, or allow soil and/or groundwater to be removed from the site to an off-site location without properly characterizing the soils and/or groundwater to determine that the soils and/or groundwater can be lawfully relocated without posing a threat to the public health safety, or welfare, or the environment. The determination shall consider whether the soil and/or groundwater is subject to regulations under Part 111 of Act 451.

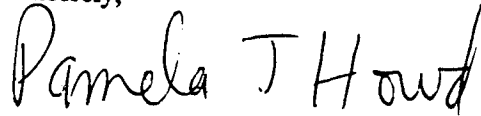
Under Section 21315 (1) of Act 451, the USTD may audit the results of the investigation and corrective actions undertaken to confirm the results and conclusions indicated by the QC within six months of receipt of the closure report. If the audit confirms that corrective action has been conducted in compliance with Part 213 and that the cleanup criteria have been met, you will be provided with a letter describing the audit

Mr. Dan Harrett
Page 2
February 18, 1997

and its results. This letter will also include a reminder that it is necessary to properly abandon any groundwater monitoring wells or similar devices, if appropriate.

If you have any questions, please contact me at the telephone number below.

Sincerely,



Pamela J. Howd
Environmental Quality Analyst
Underground Storage Tank Division
517-625-4617

PJH:km

cc: Mr. Christopher J. Griffin, Global Environmental Engineering, Inc.
Mr. Ben Hall, DEQ

SUMMARY REPORT
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
BUILDING 38 - TANK 001/38

January 3, 1997

Prepared for:

Daniel S. Harrett
Senior Environmental Engineer
General Motors Corporation
GM-CLCD North
902 E. Hamilton Avenue
Flint, Michigan 48550-8503

Prepared by:

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507

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| 2.0 | FIELD INVESTIGATION | 1 |
| 3.0 | LABORATORY ANALYTICAL RESULTS | 1 |
| 4.0 | CONCLUSION | 1 |

ATTACHMENTS

| | |
|--------------|--|
| Attachment A | Site Diagram/Soil Boring Locations |
| Attachment B | Soil Boring Logs |
| Attachment C | Soil Sample Analytical Results |

1.0 UST HISTORY

Tank 001/38, a 500-gallon underground storage tank (UST) used to store diesel fuel, was installed in 1969 and closed on December 7, 1988. During UST excavation and removal, excavation soil samples were field-screened using a photoionization detector (PID). PID readings ranged from 5-15 ppm. Based on the low PID readings, the excavation was backfilled. Three excavation soil samples were collected for laboratory analysis which indicated the presence of petroleum constituents. Based on this data, Global recommended the area be re-sampled.

2.0 FIELD INVESTIGATION

The position of the former UST and the excavation size were determined using blueprints supplied by General Motors Corporation. On July 31, 1996, three soil borings were advanced to a maximum depth of 17 feet below ground surface. Two were advanced at the excavation perimeter and one in the center of the excavation.

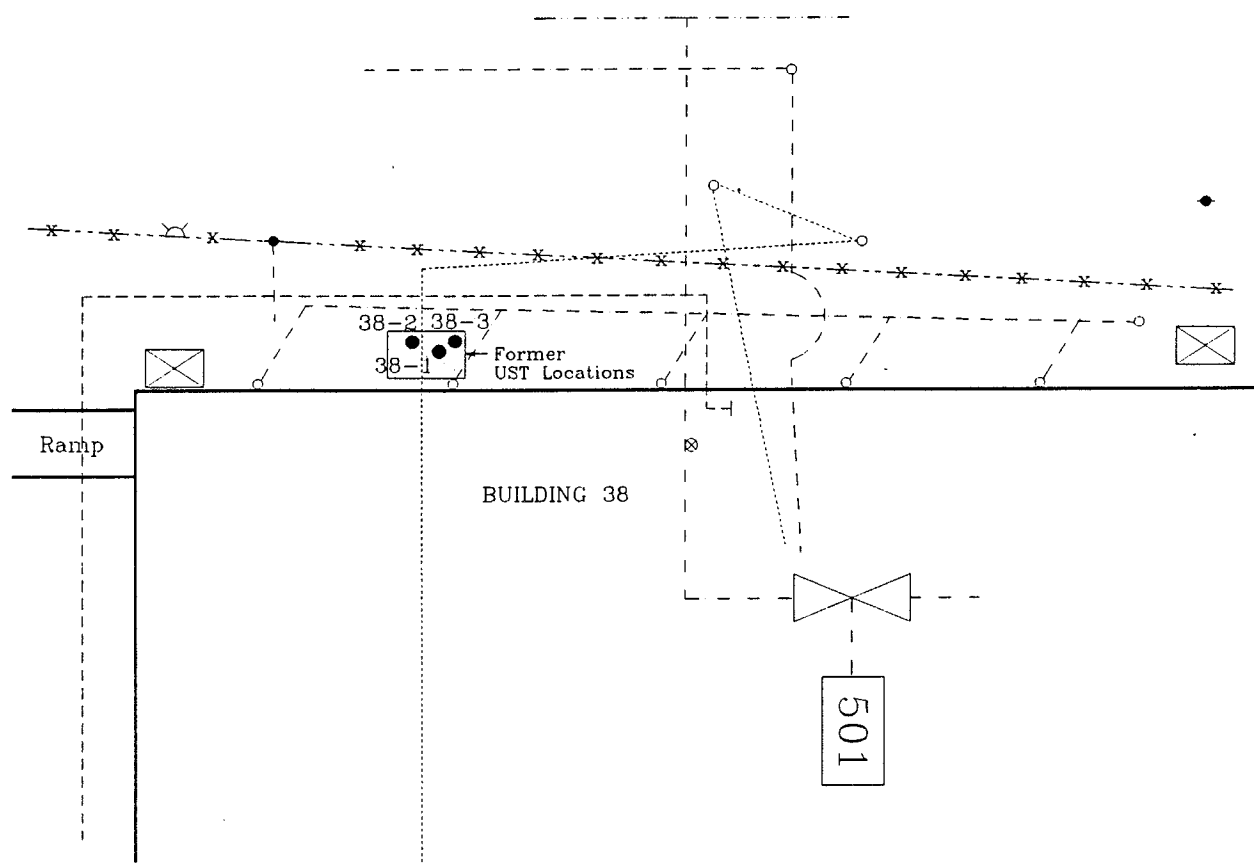
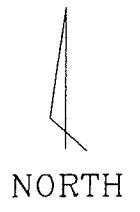
The soil types encountered included sand, clayey sand, and sandy clay. Groundwater was not encountered in the three borings. Samples were collected continuously and field-screened using an organic vapor analyzer (OVA). Two soil samples were selected for laboratory analysis from each boring: the bottom of bore and the sample exhibiting the highest OVA reading. A total of six soil samples were collected for laboratory analysis. Sample analytical parameters included benzene, toluene, ethylbenzene, xylene (BTEX), methyl tertiary butyl ether (MTBE), lead and polynuclear aromatic hydrocarbons (PNAs).

3.0 LABORATORY ANALYTICAL RESULTS

The sample analytical results indicated non-detectable levels of BTEX, MTBE, and PNAs in each of the six soil samples analyzed. Elevated levels of lead below the Type A Default Criteria were noted in five of the six soil samples. One soil sample exhibited elevated lead levels above the Type A Default Criteria; however, due to the absence of petroleum constituents, it is believed that this singularly high reading is either naturally occurring or an anomaly, and not related to the former UST system.


4.0 CONCLUSION

Based on the file review, field investigation, and sample analytical results, it is the opinion of Global that any existing impact from the former UST is below current method detection levels and current regulatory levels. If the presence of the UST system formerly resulted in a release, the petroleum constituents have naturally attenuated to the point that they can no longer be detected. Global recommends that this information be kept on file for the life of the facility.



LEGEND:

- Geoprobe Sample Locations
- Fire Protection Line
- - - Storm Sewer Line
- Sanitary Sewer Line
- - - City Water Line
- * - Fence

| | |
|--|----------------------|
| GM CLCD NORTH | |
| TITLE: SAMPLE LOCATIONS BUILDING 38 - TANK 001/38 | |
| SCALE: 1"=40' | DATE: 8/13/96 |
|  Global Environmental Engineering Inc | APPROVED BY: A.L.K. |
| | PREPARED BY: C.G.S. |
| | ATTACHMENT NUMBER: A |
| PROJECT NUMBER: F174 | |

352 South Saginaw St., Suite 600

Flint, Michigan 48502

Tel: (810) 238-9190

Fax: (810) 238-9195

| | | | |
|-----------------------|-------|-------------------------|----------------------------|
| Drilling Contractor: | YICI | Location: | Hamilton & Industrial Ave. |
| Prepared By: | JCW | Twp/Sec.: | |
| Time Started: | 14:50 | Depth Drilled: | 15' |
| Time Completed: | | Hole Diameter: | 2" |
| Length Coring Device: | 2' | Coring Device: | 2" |
| Boring Methods | | Groundwater Information | |
| Hollow Stem Auger | | GW Encountered at | |
| Hand Auger | | Monitor Wells Installed | |
| X Geoprobe | | Yes No | |
| | | Fluid Used: None | |
| | | Driller: Ken | |
| | | Helper: N/A | |
| | | Weight/Drop: N/A | |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|-------------------|---------------------------|-----|----|
| | | 1 | | Asphalt | | | |
| | GP-1 | 2 | SP | Sand | Brown, Moist, Fine/Medium | | |
| | | 3 | CL | Sandy Clay | | ND | |
| | | 4 | | | | | |
| | [X] GP-2 | 5 | SP | Sand | | 5.0 | |
| | | 6 | CL | Sandy Clay | | | |
| | | 7 | | | | 3.0 | |
| | | 8 | | | | | |
| | | 9 | | | | 2.0 | |
| | GP-3 | 10 | SP | Sand | | | |
| | | 11 | | | | 2.0 | |
| | | 12 | | | | | |
| | | 13 | | | | 3.0 | |
| | GP-4 | 14 | | | | | |
| | [X] | 15 | | | | 2.0 | |
| | | 16 | E.O.B | End of Boring 15' | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

Global Environmental Engineering, Inc.
 352 South Saginaw St., Suite 600
 Flint, Michigan 48502
 Tel: (810) 238-9190
 Fax: (810) 238-9195

| | | | |
|---|---------|--------------------------------|----------------------------|
| Date: | 7/31/96 | Project #: | 4447 |
| Drilling Contractor: | YECI | Location: | Hamilton & Industrial Ave. |
| Prepared By: | JCW | Twp/Sec.: | |
| Time Started: | 15:15 | Depth Drilled: | 15' |
| Time Completed: | | Hole Diameter: | 2" |
| Length Coring Device: | 2' | Coring Device: | 2" |
| Boring Methods | | Groundwater Information | |
| Hollow Stem Auger | | Fluid Used: None | |
| Hand Auger | | Driller: Ken | |
| Geoprobe | | Helper: N/A | |
| <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | Weight/Drop: N/A | |
| GW Encountered at | | | |
| Monitor Wells Installed | | | |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|-------------------|-------------------------------|-----|----|
| | | 1 | | Asphalt | | | |
| | GP-1 | 2 | CL | Sandy Clay | Dark Brown, Wet, No Fractures | | |
| | | 3 | | | | | |
| | | 4 | | | | | |
| | [X] GP-2 | 5 | | | | 5.0 | |
| | | 6 | | | | | |
| | | 7 | | | | | |
| | | 8 | | | | | |
| | | 9 | | | | 4.0 | |
| | GP-3 | 10 | SP | Sand | Brown, Moist, Fine/Medium | | |
| | | 11 | | | | | |
| | | 12 | | | | | |
| | | 13 | | | | 2.0 | |
| | GP-4 | 14 | | | | | |
| | [X] | 15 | | | | ND | |
| | | 16 | E.O.B | End of Boring 15' | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

SOIL SAMPLE LABORATORY ANALYTICAL RESULTS

ATTACHMENT C

FACILITY NAME: NAO FLINT OPERATIONS - TANK 001/38

FACILITY NUMBER: 0-002763

| VOLATILES | | | | | | | | | | |
|---|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|
| Sample ID | BLD 38-1 | | BLD 38-1 | | BLD 38-2 | | BLD 38-2 | | BLD 38-3 | |
| Sample Depth (feet BGS) | 3-5 | | 15-17 | | 3-5 | | 13-15 | | 3-5 | |
| Date Collected | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | |
| Date Extracted | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | |
| Date Analyzed | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | |
| Analytical Method No. | 8260 | | 8260 | | 8260 | | 8260 | | 8260 | |
| Collection Method* | GP | | GP | | GP | | GP | | GP | |
| CONSTITUENT (ug/kg) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Benzene | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Toluene | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Ethylbenzene | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Total Xylenes | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> MTBE | ND | 100 | ND | 100 | ND | 100 | ND | 100 | ND | 100 |
| POLYNUCLEAR AROMATICS (PNAs) | | | | | | | | | | |
| Sample ID | BLD 38-1 | | BLD 38-1 | | BLD 38-2 | | BLD 38-2 | | BLD 38-3 | |
| Sample Depth (feet BGS) | 3-5 | | 15-17 | | 3-5 | | 13-15 | | 3-5 | |
| Date Collected | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | |
| Date Extracted | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | |
| Date Analyzed | 8/10/96 | | 8/10/96 | | 8/10/96 | | 8/10/96 | | 8/10/96 | |
| Analytical Method No. | 8270 | | 8270 | | 8270 | | 8270 | | 8270 | |
| Collection Method* | GP | | GP | | GP | | GP | | GP | |
| CONSTITUENT (ug/kg) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Acenaphthene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Acenaphthylene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Anthracene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Benzo(a)anthracene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Benzo(a)pyrene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Benzo(b)fluoranthene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Benzo(g,h,i)perylene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Benzo(k)fluoranthene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |

BGS = Below Ground Surface

*Collection Method Codes (*List all that apply*): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), Specify here: _____

MDL = Method Detection Limit

**SOIL SAMPLE LABORATORY ANALYTICAL RESULTS
ATTACHMENT C**

FACILITY NAME: NAO FLINT OPERATIONS - TANK 001/38
FACILITY NUMBER: 0-002763

| POLYNUCLEAR AROMATICS (PNAs) | | | | | | | | | | |
|--|----------|------|----------|------|----------|------|----------|------|----------|------|
| Sample ID | BLD 38-1 | | BLD 38-1 | | BLD 38-2 | | BLD 38-2 | | BLD 38-3 | |
| Sample Depth (feet BGS) | 3-5 | | 15-17 | | 3-5 | | 13-15 | | 3-5 | |
| Date Collected | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | |
| Date Extracted | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | | 8/6/96 | |
| Date Analyzed | 8/10/96 | | 8/10/96 | | 8/10/96 | | 8/10/96 | | 8/10/96 | |
| Analytical Method No. | 8270 | | 8270 | | 8270 | | 8270 | | 8270 | |
| Collection Method* | GP | | GP | | GP | | GP | | GP | |
| CONSTITUENT (ug/kg) | Conc. | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Chrysene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Dibenzo(a,h)anthracene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Fluoranthene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Fluorene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Indeno(1,2,3- cd)pyrene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Naphthalene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Phenanthrene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| <input type="checkbox"/> Pyrene | ND | 330 | ND | 330 | ND | 330 | ND | 330 | ND | 330 |
| METALS | | | | | | | | | | |
| Sample ID | BLD 38-1 | | BLD 38-1 | | BLD 38-2 | | BLD 38-2 | | BLD 38-3 | |
| Sample Depth (feet BGS) | 3-5 | | 15-17 | | 3-5 | | 13-15 | | 3-5 | |
| Date Collected | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | | 7/31/96 | |
| Date Extracted | 8/8/96 | | 8/8/96 | | 8/8/96 | | 8/8/96 | | 8/8/96 | |
| Date Analyzed | 8/8/96 | | 8/8/96 | | 8/8/96 | | 8/8/96 | | 8/8/96 | |
| Analytical Method No. | 6020 | | 6020 | | 6020 | | 6020 | | 6020 | |
| Collection Method* | GP | | GP | | GP | | GP | | GP | |
| CONSTITUENT (ug/kg) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Cadmium | | | | | | | | | | |
| <input type="checkbox"/> Chromium III | | | | | | | | | | |
| <input type="checkbox"/> Chromium VI | | | | | | | | | | |
| <input type="checkbox"/> Total Lead | 16900 | 1000 | 8500 | 1000 | 18000 | 1000 | 8600 | 1000 | 78500 | 1000 |

BGS = Below Ground Surface

*Collection Method Codes (*List all that apply*): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), *Specify here*: _____

MDL = Method Detection Limit

**SOIL SAMPLE LABORATORY ANALYTICAL RESULTS
ATTACHMENT C**

FACILITY NAME: NAO FLINT OPERATIONS - TANK 001/38
FACILITY NUMBER: 0-002763

| | | | | | | | | | | |
|---|-------------|------------|-------------|------------|-------------|------------|-------------|------------|-------------|------------|
| VOLATILES | | | | | | | | | | |
| Sample ID | BLD 38-3 | | | | | | | | | |
| Sample Depth (feet BGS) | 13-15 | | | | | | | | | |
| Date Collected | 7/31/96 | | | | | | | | | |
| Date Extracted | 8/6/96 | | | | | | | | | |
| Date Analyzed | 8/6/96 | | | | | | | | | |
| Analytical Method No. | 8260 | | | | | | | | | |
| Collection Method* | GP | | | | | | | | | |
| CONSTITUENT (ug/kg) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Benzene | ND | 10 | | | | | | | | |
| <input type="checkbox"/> Toluene | ND | 10 | | | | | | | | |
| <input type="checkbox"/> Ethylbenzene | ND | 10 | | | | | | | | |
| <input type="checkbox"/> Total Xylenes | ND | 10 | | | | | | | | |
| <input type="checkbox"/> MTBE | ND | 100 | | | | | | | | |
| POLYNUCLEAR AROMATICS (PNAs) | | | | | | | | | | |
| Sample ID | BLD 38-3 | | | | | | | | | |
| Sample Depth (feet BGS) | 13-15 | | | | | | | | | |
| Date Collected | 7/31/96 | | | | | | | | | |
| Date Extracted | 8/6/96 | | | | | | | | | |
| Date Analyzed | 8/10/96 | | | | | | | | | |
| Analytical Method No. | 8270 | | | | | | | | | |
| Collection Method* | GP | | | | | | | | | |
| CONSTITUENT (ug/kg) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Acenaphthene | ND | 330 | | | | | | | | |
| <input type="checkbox"/> Acenaphthylene | ND | 330 | | | | | | | | |
| <input type="checkbox"/> Anthracene | ND | 330 | | | | | | | | |
| <input type="checkbox"/> Benzo(a)anthracene | ND | 330 | | | | | | | | |
| <input type="checkbox"/> Benzo(a)pyrene | ND | 330 | | | | | | | | |
| <input type="checkbox"/> Benzo(b)fluoranthene | ND | 330 | | | | | | | | |
| <input type="checkbox"/> Benzo(g,h,i)perylene | ND | 330 | | | | | | | | |
| <input type="checkbox"/> Benzo(k)fluoranthene | ND | 330 | | | | | | | | |

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

If Other (OT), Specify here: _____

MDL = Method Detection Limit



JOHN ENGLER, Governor

DEPARTMENT OF ENVIRONMENTAL QUALITY

HOLLISTER BUILDING, PO BOX 30473, LANSING MI 48909-7973

INTERNET: <http://www.deq.state.mi.us>

RUSSELL J. HARDING, Director

REPLY TO:

SHIAWASSEE DISTRICT OFFICE
10850 S BENNETT DR
MORRICE MI 48857-9792

February 18, 1997

Mr. Dan Harrett
General Motors Corporation
902 East Hamilton Avenue
Flint, Michigan 48550

Dear Mr. Harrett:

SUBJECT: Closure Report Date: January 8, 1997
Confirmed Release Date: December 15, 1988
Location of Tank(s): NAO Flint Operations, Building 38, Tank 28;
Building 2, Tank 66; 902 E. Hamilton Ave., Flint,
Genesee County, Michigan
Facility ID #: 0-002763
MERA Site ID #: N/A
MUSTFA Claim #: N/A

In accordance with Section 21312a(2) of Part 213 Leaking Underground Storage Tanks (LUST) of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, (Act 451) the Underground Storage Tank Division (USTD) of the Department of Environmental Quality (DEQ) acknowledges receipt of your closure report. This closure report was submitted on your behalf for the above referenced site by Christopher J. Griffin, Certified Professional (CP) with Global Environmental Engineering, Inc., Qualified Underground Storage Tank Consultant (QC), in accordance with Section 21312a(1) of Part 213.

The closure report submitted by the CP concludes that corrective action at the site has resulted in

- UNRESTRICTED RESIDENTIAL USE of the site.

Please note that when contaminated soil and/or groundwater as a result of a release of a regulated substance remains on site consistent with site closure requirements, the owner/operator shall not remove soil and/or groundwater, or allow soil and/or groundwater to be removed from the site to an off-site location without properly characterizing the soils and/or groundwater to determine that the soils and/or groundwater can be lawfully relocated without posing a threat to the public health safety, or welfare, or the environment. The determination shall consider whether the soil and/or groundwater is subject to regulations under Part 111 of Act 451.

Under Section 21315 (1) of Act 451, the USTD may audit the results of the investigation and corrective actions undertaken to confirm the results and conclusions indicated by the QC within six months of receipt of the closure report. If the audit confirms that corrective action has been conducted in compliance with Part 213 and that the cleanup criteria have been met, you will be provided with a letter describing the audit

Mr. Dan Harrett

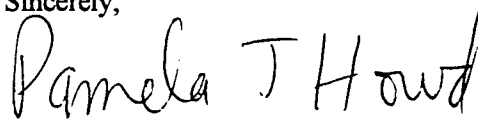
Page 2

February 18, 1997

and its results. This letter will also include a reminder that it is necessary to properly abandon any groundwater monitoring wells or similar devices, if appropriate.

If you have any questions, please contact me at the telephone number below.

Sincerely,

A handwritten signature in black ink that reads "Pamela J. Howd". The signature is written in a cursive style with a large initial "P".

Pamela J. Howd
Environmental Quality Analyst
Underground Storage Tank Division
517-625-4617

PJH:km

cc: Mr. Christopher J. Griffin, Global Environmental Engineering, Inc.
Mr. Ben Hall, DEQ

002-38
EN 10914

002-38 (385W)

CLOSURE REPORT
NAO FLINT OPERATIONS
FLINT, MICHIGAN
902 East Hamilton Avenue



**Global
Environmental
Engineering Inc.**

Global Project Number F174
January 8, 1997

**LEAKING UNDERGROUND STORAGE TANK
CLOSURE REPORT**

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit this report within the stated time period may result in Administrative Penalties as provided for in Part 213, Section 21321 of Act 451, P.A. 1994 as amended.

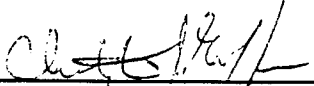
| | |
|---|---------------------------------|
| FACILITY NAME: NAO Flint Operations (Tank 002/38) | FACILITY ID NUMBER: 0-002763 |
| ADDRESS: 902 East Hamilton Avenue, Flint, MI 48420 COUNTY: Genesee | AMERA SITE ID NUMBER: |
| DATE(S) RELEASE DISCOVERED: | CONFIRMED RELEASE NUMBER(S): |
| O/O NAME: General Motors Corporation | MUSTFA CLAIM NUMBER: |
| O/O ADDRESS: 902 East Hamilton Avenue, Flint, MI 48550 | |
| CONTACT PERSON: Mr. Dan Harrett | PHONE NUMBER: (810) 236-3436 |

ANSWER ALL QUESTIONS, (DO NOT LEAVE BLANKS):

- Has the UST been emptied? Yes No (If no, explain why):
- Free product present: a. Currently? YES NO If YES, total gallons recovered since last report:
b. Previously? YES NO If YES, total gallons recovered to date:
- Have vapors been identified in any confined spaces (basement, sewers)? YES NO
- State the number of homes where drinking water is or was affected as a result of a release from this facility: None
- Estimated distance and direction from point of release to nearest:
a. Private well: NA b. Municipal well: NA c. Surface water/wetland: Flint River >1000 ft east
- Since last report: a. cubic yards of soil remediated: None b. gallons of groundwater remediated: None
- Totals to date: a. cubic yards of soil remediated: None b. gallons of groundwater remediated: None
- Michigan RBCA Site Classification (1-4): 4

CERTIFICATION OF REPORT COMPLETION

I, the undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the USTD on 1/5/97.
(date submitted-Required)

| | | |
|--|---------------------------------------|---------------------------------|
|  | Amanda L. Kurzman | |
| CP Original Signature - Required | Date | PRINT QC Project Manager's Name |
| Christopher J. Griffin, P.E. | Global Environmental Engineering Inc. | |
| PRINT CP's Name | CONSULTANT | |
| 5467 Hill 23 Drive, Suite. B. Flint, MI 48507 | (810) 238-9190 | (810) 238-9195 |
| ADDRESS | TELEPHONE NO. | FAX NO. |

CERTIFICATION OF CLOSURE

- Type of RBCA Evaluation: Tier 1 Tier 2 Tier 3
- Closure report based on which type of land use?: Residential Commercial III Commercial IV Industrial
- Institutional Controls: None Notice of Corrective Action Restrictive Covenant

I certify under penalty of law that corrective actions associated with the above referenced release at this facility were completed in accordance with Part 213, Act 451, P.A. 1994 as amended, and current departmental guidance and procedures available at this time.

I further certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine or imprisonment for knowing violations.

| | |
|---|---------------|
|  | Date |
| CP Signature - Required | <u>1/5/97</u> |

PLEASE RETURN THIS COMPLETED REPORT AND ASSOCIATED ATTACHMENTS TO THE APPROPRIATE USTD DISTRICT OFFICE LISTED ON THE BACK OF THIS PAGE.

UNDERGROUND STORAGE TANK DIVISION OFFICES AND LOCATIONS

Determine in which county the UST release occurred. Return all completed forms and associated reports to the USTD office listed next to that county in the following table. Addresses for the USTD offices are listed below.

| COUNTY | USTD OFFICE | COUNTY | USTD OFFICE | COUNTY | USTD OFFICE | COUNTY | USTD OFFICE |
|------------|-------------|----------------|--------------|-------------|--------------|--------------|--------------|
| Alcona | Grayling | Dickinson | Marquette | Lake | Grayling | Oceana | Grand Rapids |
| Alger | Marquette | Eaton | Shiawassee | Lapeer | Shiawassee | Ogemaw | Grayling |
| Allegan | Plainwell | Emmet | Grayling | Leelanau | Grayling | Ontonagon | Marquette |
| Alpena | Grayling | Genesee | Shiawassee | Lenawee | Jackson | Osceola | Grayling |
| Antrim | Grayling | Gladwin | Grayling | Livingston | Shiawassee | Oscoda | Grayling |
| Arenac | Grayling | Gogebic | Marquette | Luce | Marquette | Otsego | Grayling |
| Baraga | Marquette | Grand Traverse | Grayling | Mackinac | Marquette | Ottawa | Grand Rapids |
| Barry | Plainwell | Gratiot | Shiawassee | Macomb | SE Michigan | Presque Isle | Grayling |
| Bay | Saginaw-Bay | Hillsdale | Jackson | Manistee | Grayling | Roscommon | Grayling |
| Benzie | Grayling | Houghton | Marquette | Marquette | Marquette | Saginaw | Saginaw-Bay |
| Berrien | Plainwell | Huron | Saginaw-Bay | Mason | Grayling | Sanilac | Saginaw-Bay |
| Branch | Jackson | Ingham | Shiawassee | Mecosta | Grand Rapids | Schoolcraft | Marquette |
| Calhoun | Jackson | Ionia | Grand Rapids | Menominee | Marquette | Shiawassee | Shiawassee |
| Cass | Plainwell | Iosco | Grayling | Midland | Saginaw-Bay | St Clair | SE Michigan |
| Charlevoix | Grayling | Iron | Marquette | Missaukee | Grayling | St Joseph | Plainwell |
| Cheboygan | Grayling | Isabella | Saginaw-Bay | Monroe | SE Michigan | Tuscola | Saginaw-Bay |
| Chippewa | Marquette | Jackson | Jackson | Montcalm | Grand Rapids | Van Buren | Plainwell |
| Clare | Grayling | Kalamazoo | Plainwell | Montmorency | Grayling | Washtenaw | Jackson |
| Clinton | Shiawassee | Kalkaska | Grayling | Muskegon | Grand Rapids | Wayne | SE Michigan |
| Crawford | Grayling | Kent | Grand Rapids | Newaygo | Grand Rapids | Wexford | Grayling |
| Delta | Marquette | Keweenaw | Marquette | Oakland | SE Michigan | | |

| | | |
|--|---|---|
| <p align="center"><u>CADILLAC OFFICE</u></p> <p>ROUTE #1 8015 MACKINAW TRAIL CADILLAC MI 49601</p> <p>616-775-9727 (PHONE) 616-775-9671 (FAX)</p> | <p align="center"><u>JACKSON OFFICE</u></p> <p>301 E LOUIS GLICK HIGHWAY JACKSON MI 49201</p> <p>517-780-7900 (PHONE) 517-780-7855 (FAX)</p> | <p align="center"><u>SAGINAW BAY OFFICE</u></p> <p>503 N EUCLID AVE SUITE 9 BAY CITY MI 48706</p> <p>517-684-9141 (PHONE) 517-684-9799 (FAX)</p> |
| <p align="center"><u>GAYLORD OFFICE</u></p> <p>P0 BOX 667 GAYLORD MI 49735</p> <p>517-732-3541 (PHONE) 517-732-0794 (FAX)</p> | <p align="center"><u>MARQUETTE OFFICE</u></p> <p>1990 US 41 SOUTH MARQUETTE MI 49855</p> <p>906-228-6561 (PHONE) 906-228-5245 (FAX)</p> | <p align="center"><u>SHIAWASSEE OFFICE</u></p> <p>10650 BENNETT DR MORRICE MI 48857-9792</p> <p>517-625-4600 (PHONE) 517-625-5000 (FAX)</p> |
| <p align="center"><u>GRAND RAPIDS OFFICE</u></p> <p>350 OTTAWA ST NW GRAND RAPIDS MI 49503</p> <p>616-456-5071 (PHONE) 616-456-1239 (FAX)</p> | <p align="center"><u>PLAINWELL OFFICE</u></p> <p>1342 SR-89 SUITE B PLAINWELL MI 49080-1915</p> <p>616-692-2120 (PHONE) 616-692-3050 (FAX)</p> | <p align="center"><u>SE MICHIGAN OFFICE</u></p> <p>38980 SEVEN MILE RD LIVONIA MI 48152</p> <p>313-953-0241 (PHONE) 313-953-0243 (FAX)</p> |
| <p align="center"><u>GRAYLING OFFICE</u></p> <p>1955 NORTH I-75 BL GRAYLING MI 49738</p> <p>517-348-6371 (PHONE) 517-348-8825 (FAX)</p> | | |

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LIST OF ATTACHMENTS

(Include as Required and Check Box if Attached)

Attachments 1 - 6, 9 and 12 are to be submitted if applicable.

Attachments 7,8, 10, 11, 13 and 14 are found in the back of this document and should be completed and submitted when necessary to certify closure.

| ATTACHMENT NUMBER | DESCRIPTION |
|----------------------|-------------|
|----------------------|-------------|

- | | | |
|----|-------------------------------------|---|
| 1 | <input type="checkbox"/> | Schematic Drawing of the Remedial System |
| 2 | <input type="checkbox"/> | Public Notification Document(s) |
| 3 | <input type="checkbox"/> | Permission of Property Owner to File a Notice of Corrective Action |
| 4 | <input type="checkbox"/> | Permission of Property Owner to File a Notice of Restrictive Covenant |
| 5 | <input type="checkbox"/> | Site Map Showing the Extent of the Former Soil Contamination and the Soil Verification Sampling Locations |
| 6 | <input checked="" type="checkbox"/> | Excavation Drawing Showing Soil Verification Sampling Locations |
| 7 | <input checked="" type="checkbox"/> | Data Table Showing All Soil Verification Sampling Results (Laboratory) |
| 8 | <input checked="" type="checkbox"/> | Comparison Table for Soil Verification |
| 9 | <input type="checkbox"/> | Site Map Showing the Extent of the Former Groundwater Contamination and the Groundwater Verification Sampling Locations |
| 10 | <input type="checkbox"/> | Data Table Showing All Groundwater Verification Sampling Results (Laboratory) |
| 11 | <input type="checkbox"/> | Comparison Table for Groundwater Verification |
| 12 | <input type="checkbox"/> | Site Map Showing the Extent of the Former Other Media Contamination and the Other Media Verification Sampling Locations |
| 13 | <input type="checkbox"/> | Data Table Showing All Other Media Verification Sampling Results (Laboratory) |
| 14 | <input type="checkbox"/> | Comparison Table for Other Media Verification |
| 15 | <input checked="" type="checkbox"/> | Soil Boring Logs |
| 16 | <input checked="" type="checkbox"/> | Site Map/Tank Location |

1.0 PROJECT CHRONOLOGY

| | |
|--|---|
| A. Date Confirmed Release Discovered: | <u>12</u> / <u> </u> / <u>88</u> * |
| B. Date Confirmed Release Report Submitted: | <u>NA</u> / <u> </u> / <u> </u> |
| C. Date Initial Assessment Report Submitted: | <u>NA</u> / <u> </u> / <u> </u> |
| D. Other Milestone Date (Specify:) | <u>NA</u> / <u> </u> / <u> </u> |
| E. Other Milestone Date (Specify:) | <u>NA</u> / <u> </u> / <u> </u> |
| F. Date Final Assessment Report Submitted: | <u>NA</u> / <u> </u> / <u> </u> |
| G. Other Milestone Date (Specify:) | <u>NA</u> / <u> </u> / <u> </u> |
| H. Date Closure Report Submitted: | <u>1</u> / <u>8</u> / <u>97</u> |

* Estimated release date based on archive file data.

2.0 DE MINIMIS CLASSIFICATION

A. Was this a *de minimis* spill as defined in Section 324.21302(e)? Yes No

NOTE: If "Yes", complete questions "B" and "C" below and only the following remaining sections of this Closure Report: 3.1, 3.2, 3.6, 4.1, and the Cover Sheet Certification.

B. Volume of soil remediated or disposed to date: _____ yds³
 C. Disposal facility name(s) and location(s): _____

3.0 SUMMARY OF CORRECTIVE ACTION ACTIVITIES PERFORMED

Summarize the overall program and the primary components of the corrective action performed at the facility by addressing each project phase identified below that was relevant to this site and its remediation. Include a schematic drawing of the remedial system (Attachment No. 1). Attach additional sheets, if necessary.

3.1 RELEASE REPORTING

A. List the source(s) of the release and the location(s) where contamination was first discovered:
The source of the release was one 3,000-gallon UST used to store unleaded gasoline. The UST was installed in 1964 and removed in December of 1988. Documentation was not available to confirm a clean closure; therefore, four soil borings were advanced in the excavation area in August, 1996. The location of the former UST and excavation were determined using blueprints and report information provided by GM. Three soil borings were advanced at the edges of the excavation, and one in the center. Analysis of soil samples obtained during the investigation (no groundwater was encountered in this area) indicated that a release of petroleum compounds had occurred, but that contaminant levels in the soil are below the Tier I Residential Soil Leaching to Groundwater RBSLs, and the UST area is suitable for closure.

3.2 IMMEDIATE RESPONSE ACTION IMPLEMENTATION

- A. Date Began: 12 / / 88
- B. Date Completed: 12 / / 88
- C. List the initial response actions performed (*excluding free product removal*): The UST was removed in December, 1988. The excavation area was investigated as detailed above in Section 3.1.

3.3 FREE PRODUCT DISCOVERY AND REMOVAL

- A. Was free product discovered? Yes No

If "No", skip to Section 3.4; if "Yes", complete questions "B" through "G"

- B. Date Free Product Discovered:----- / /
- C. Date Free Product Reported to USTD: / /
- D. Date Free Product Removal Began: / /
- E. Date Free Product Removal Completed: / /
- F. Briefly describe the approach used to remove or recover the free product: _____
- G. Total Quantity of Free Product Recovered: _____ gallons

3.4 SITE ASSESSMENT ACTIVITIES

- A. Date Initial Assessment Began: 8 / 02 / 96
- B. Date Initial Assessment Completed: 8 / 02 / 96

- C. Check the environmental media sampled and analyzed during this phase of investigation:
(*Check all that apply*)

- Soil Air Sediments Other *Specify*): _____
- Groundwater Surface Water Biota _____

D. Briefly describe the sampling and analysis performed during the initial assessment phase for each medium checked above: The position of the UST and the excavation size were determined using blue prints supplied by GM as well as visual evidence noted during the field investigation. Three soil borings were advanced at the edges of the excavation, and one in the center. Soil samples were screened continuously using an organic vapor analyzer (OVA). The highest OVA and bottom of boring were submitted for laboratory analysis. Eight soil samples were collected for laboratory analysis. Groundwater was not encountered. Based on the historical UST contents (unleaded gasoline), BTEX and MTBE were selected as analytical parameters.

- E. Date Final Assessment Began: NA / /
- F. Date Final Assessment Completed: / /

- G. Check the environmental media sampled and analyzed during this phase of investigation:
(*Check all that apply*)

- Soil Air Sediments Other

CLOSURE ASSESSMENT REPORT (Continued)

3.4 SITE ASSESSMENT ACTIVITIES (Continued)

H. Briefly describe the additional sampling and analysis performed during the final assessment phase for each medium checked above: NA

I. Briefly describe and explain any differences between the Work Plan submitted with the Initial Assessment Report and the site characterization work performed: NA

3.5 SITE CLASSIFICATION

A. Date of Initial Classification: 11 / 01 / 96

B. Initial Classification Level:
 Class 1 Class 2 Class 3 Class 4

C. Date of Most Recent Reclassification (if any): NA / /

D. Most Recent Reclassification Level:
 Class 1 Class 2 Class 3 Class 4

E. Briefly describe the justification for any reclassifications: NA

3.6 TIERED EVALUATIONS AND CLEANUP GOALS

A. What levels of evaluation were performed for this site?
 (Check all that apply)

Tier I Tier II Tier III

B. If a Tier II or Tier III evaluation was performed, describe the most significant alternate assumptions, models, or site-specific information used in place of the default assumptions, models, or model parameters:

NA

3.6 TIERED EVALUATIONS AND CLEANUP GOALS (Continued)

C. What was the ultimate basis for the cleanup goals established for this facility?
 (Check only those that apply)

| | ON-SITE | | | OFF-SITE | | |
|----------------|---|--|---|--|--|---|
| | Soil | Groundwater | Other Media | Soil | Groundwater | Other Media |
| RESIDENTIAL | <input checked="" type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III |
| COMMERCIAL III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III |
| COMMERCIAL IV | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III |
| INDUSTRIAL | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier I <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III | <input type="checkbox"/> Tier II <input type="checkbox"/> Tier III |

NOTE: If the site meets the Tier I criteria without any corrective action and the release was *de minimus*, complete Sections 4.1, 4.2 and the Cover Sheet Certification

3.7 PUBLIC NOTICE

If implementation of the corrective action plan will result in anything other than unrestricted land use or unlimited resource use, notice must be provided to the public directly impacted by the release and the planned corrective action.

A. Will implementation of the corrective action plan result in any restrictions to land use or limitations on resource use? Yes No

If "No", skip to Section 3.9; if "Yes", continue with question "B" below.

B. Describe all land use or resource use limitations associated with the implemented corrective action:

C. Was USTD guidance used to establish the form and content of the Public Notice? (See Attachment No. 20 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks".)
 Yes No

D. If "No", provide an explanation: _____

E. Attach a copy of the public notification document(s) used to provide the required public notice. (Include as Attachment No. 2.)

3.7 PUBLIC NOTICE (Continued)

F. Identify the individuals or segments of the public that were provided notice of the proposed land use restrictions or limitations to be placed on resource use: _____

G. Describe the mechanism(s) by which the directly impacted public was notified: _____

3.8 NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS

If the corrective action depends on the use of institutional controls or other land use restrictions, a Notice of Corrective Action (for corrective actions based on Tier I clean-up criteria with institutional controls or land use restrictions) or a Declaration of Restrictive Covenant (for corrective actions based on Tier II or III clean-up criteria with institutional controls or land use restrictions) must be recorded with the Register of Deeds for the County in which the site is located.

A. Does the corrective action depend on the use of institutional controls or other land use or resource use restrictions? Yes No

If "No", skip to Section 3.9; if "Yes", continue with question "B" below.

B. Was a Notice of Corrective Action as defined in Section 324.21310a(1) required as part of the corrective action? Yes No

If "No", skip to question "P"; if "Yes", continue with question "C" below.

C. Was USTD guidance used to establish the form and content of the notice? (See Attachment No. 20 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks"). Yes No

D. If "No", provide an explanation: _____

E. Date the Notice of Corrective Action was submitted to the USTD for approval:

F. Date of USTD approval of the Notice of Corrective Action: _____/_____/_____
_____/_____/_____

CLOSURE ASSESSMENT REPORT (Continued)

3.8 NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS (Continued)

G. Was the Notice of Corrective Action recorded with the Register of Deeds for the County in which the site is located? Yes No

H. If "No", provide an explanation; then skip to question "P": _____

If "Yes", provide the following:

I. Date Recorded: _____ / _____ / _____

J. County Where Site is Located: _____

K. Register of Deeds Contact Name: _____

L. Register of Deeds Telephone No.: _____

M. Person Filing: _____

N. Is the person filing the property owner? Yes No

O. If "No", attach a copy of the written permission for the filing from the property owner. (Include as Attachment No. 3.)

P. Was a Restrictive Covenant as defined in Section 324.21310a(2) required as part of the Corrective Action? Yes No

If "No", skip to question "II"; if "Yes", continue with question "Q" below.

Q. Was USTD guidance used to establish the form and content of the Declaration of Restrictive Covenant? (See Attachment No. 20 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks".) Yes No

R. If "No", provide an explanation: _____

S. Date the Declaration of Restrictive Covenant was submitted to the USTD: _____ / _____ / _____

T. Date of USTD approval of the Declaration of Restrictive Covenant: _____ / _____ / _____

U. Was the Declaration of Restrictive Covenant recorded with the Register of Deeds for the County in which the site is located? Yes No

V. If "No", provide an explanation: _____

CLOSURE ASSESSMENT REPORT (Continued)

3.8 NOTICE OF CORRECTIVE ACTION, DECLARATION OF RESTRICTIVE COVENANT, AND OTHER RESTRICTIVE MECHANISMS (Continued)

If "Yes", provide the following:

- W. Date Recorded: _____ / _____ / _____
- X. County Where Site is Located: _____
- Y. Register of Deeds Contact Name: _____
- Z. Register of Deeds Telephone Number: _____
- AA. Person Filing: _____
- BB. Is the person filing the property owner? Yes No
- CC. If "No", attach a copy of the written permission for the filing from the property owner. *(Include as Attachment No. 4.)*

Does the restrictive covenant include:

- DD. Provisions that the restrictions run with the land? Yes No
- EE. Provisions that restrictions are binding on the owner's successors, assigns, and lessees? Yes No
- FF. Provisions that restrictions are binding until the USTD determines that the regulated substances no longer present an unacceptable risk? Yes No
- GG. A survey and description of the property addressed by the corrective action plan? Yes No
- HH. The scope of any land use or resource use restrictions? Yes No

II. Was an alternate mechanism to restrict exposure to regulated substances as defined in Section 324.21310a(3) associated with the Corrective Action? Yes No

If "No", skip to Section 3.9; if "Yes", continue with question "JJ" below.

JJ. Describe the alternate restrictive mechanism(s) associated with the corrective action. *(Check all that apply):*

Ordinance prohibiting certain activities to control exposures to regulated substances. *(Specify the prohibited activity):* _____

Other mechanism. *(Describe):* _____

KK. Date other restrictive mechanism(s) was submitted to USTD for approval:

_____ / _____ / _____

LL. Date of USTD approval of the alternative restrictive mechanism: _____ / _____ / _____

4.1 VERIFICATION OF SOIL REMEDIATION

A. Was the MDEQ guidance document "Verification of Soil Remediation Guidance Document" (Attachment No. 25 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks") used to prepare the soil verification sampling plan?

Yes* No

B. * *Due to the lack of information available when the UST was removed, the number and location of the soil borings were based on the size of the UST, location of the UST as indicated in blueprints provided by GM and visual observations made during the field investigation such as concrete patching. The archive data did not indicate that a release had occurred, although not enough data was available to confirm a clean closure. Therefore, four borings were advanced to determine if a release had occurred.*

B. If "No", provide an explanation: _____

C. If "Yes", under what category did the site fall? "Small Site" "Medium or Large Site"

D. Describe the soil verification sampling strategy applied at the site by providing the following. (*Attach additional sheets, as necessary*):

- Scaled site map (Attachment No. 5) which identifies the former extent of the soil contamination, and the soil verification sampling locations relative to existing site features. (*Multiple chemical contaminants and multiple sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility*).
- For a corrective action involving excavation, a scaled drawing(s) (Attachment No. 6) showing the floor and walls of the excavation and the associated sampling locations. The drawing should also depict the subsurface stratigraphy, soil types, fractures, discolored soil locations, and adjoining conduits or potential migration pathways, as appropriate.

E. Describe how the number of samples collected for soil verification purposes was established:

Four soil borings were advanced in the area of the excavation. Two soil samples were collected from each boring. Soil samples were collected for laboratory analysis based on high OVA readings and bottom of boring.

F. List the analytical parameters used to verify the soil remediation: The UST was used to store unleaded gasoline; therefore soil samples were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX), and Methyl tertiary butyl ether (MTBE).

G. Were all soil verification samples analyzed, preserved, and handled in accordance with the USTD guidance document entitled "Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases" (Attachment No. 12 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks")?

Yes No

H. If "No", provide an explanation for any differences: _____

4.1 VERIFICATION OF SOIL REMEDIATION (Continued)

I. Attach data tables presenting the analytical results of all on-site and off-site soil verification sampling performed in the attached Laboratory Results table format (Attachment No. 7). Include all pertinent sample results submitted previously with the Initial Assessment Report or Final Assessment Report. (NOTE: The USTD may request copies of the laboratory data sheets, chain of custody forms, and all available QA/QC information relating to these verification samples.)

J. Attach a Comparison Table for Soil Verification (Attachment No. 8) to demonstrate that the established target cleanup levels have been attained in accordance with the applicable MDEQ/USTD closure guidance.

K. Total volume of soil remediated or disposed to date: 0 yds³

L. Disposal facility name(s) and location(s): NA

4.2 VERIFICATION OF GROUNDWATER REMEDIATION

A. Was the USTD "Groundwater and Soil Closure Guidance" (Attachment No. 26 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks") used to prepare the groundwater verification sampling plan? NA Yes No

B. If "No", provide an explanation: Groundwater was not encountered in any of the four borings advanced in this location. The borings were advanced to a maximum depth of 15 feet below ground surface.

Describe the groundwater verification sampling strategy applied at the site by answering questions "C" through "G". (Attach additional sheets, as necessary):

C. Attach a scaled site map (Attachment No. 9) that identifies the former extent of the groundwater contamination and the groundwater verification sampling locations relative to existing site features. (Multiple chemical contaminants and multiple aquifer/sample depths should be addressed on the minimum number of site maps needed to convey the information with clarity and legibility.)

D. Describe how the sampling frequency and duration of sampling used for groundwater verification purposes was established: NA

E. List the analytical parameters used to verify the groundwater remediation, and the justification for their selection: NA

4.2 VERIFICATION OF GROUNDWATER REMEDIATION (Continued)

F. Were all groundwater verification samples analyzed, preserved, and handled in accordance with the USTD guidance document entitled "Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases" (Attachment No. 12 of the "Guidance Document for Risk-based Corrective Action at Leaking Underground Storage Tanks")?

NA Yes No

G. If "No", provide an explanation for any differences: _____

H. Attach data tables presenting the analytical results of all on-site and off-site groundwater verification sampling performed in the attached Laboratory Results table format (Attachment No. 10). Include applicable sample results submitted previously with the Initial Assessment Report or Final Assessment Report. (NOTE: The USTD may request copies of laboratory data sheets, chain of custody forms, and all available QA/QC information relating to these verification samples.)

I. Attach a Comparison Table for Groundwater Verification (Attachment No. 11) to demonstrate that the established target cleanup levels have been attained in accordance with the applicable MDEQ /USTD closure guidance.

For corrective actions involving the operation of a groundwater treatment system, answer questions "J" through "N". Otherwise, skip to question "O".

J. Were the target cleanup levels met for six consecutive months (minimum of two quarterly samplings) with the treatment system operating? NA Yes No

K. If "No", provide an explanation: NA

L. Were the sample results from all wells used for verification at or below the target cleanup levels for a full year (minimum of four quarterly samplings) after the remedial system was turned off? NA
 Yes No

M. If "No", provide an explanation: _____

4.2 VERIFICATION OF GROUNDWATER REMEDIATION (Continued)

For corrective actions where no groundwater remediation was required, answer questions "O" through "P". Otherwise, skip to Section 4.3.

N. Total volume of groundwater remediated to date: NA gallons

O. Were the target cleanup levels met for at least one sampling event? NA Yes No

P. If "No", provide an explanation: _____

4.3 VERIFICATION OF REMEDIATION FOR OTHER MEDIA

A. Was the corrective action for this site implemented for any media other than soil or groundwater?
 Yes No

If "Yes", continue with questions "B" through "J" answering each question in the series for each of the other environmental media remediated. If "No", complete the Cover Sheet Certification and quit.

B. What other environmental media were remediated as part of this corrective action?
(Check all that apply):

- Air
- Sediments
- Other (Specify): _____
- Surface Water
- Biota

Describe the verification sampling strategy applied at the site by providing the following information pertaining to each of the other media remediated. (Attach additional sheets, as necessary.)

C. Provide a scaled site or area map (Attachment No. 12) which identifies the former extent of the contamination in each of these other media and the verification sampling locations relative to existing site features and boundaries. (Multiple chemical contaminants should be addressed on the minimum number of site or area maps needed to convey the information with clarity and legibility.)

D. Describe how the sampling frequency and duration of sampling used for verification purposes in each of these other media was established: _____

E. List the analytical parameters used to verify the specified remediation in each of these other media, and the justification for their selection: _____

4.3 VERIFICATION OF REMEDIATION FOR OTHER MEDIA (Continued)

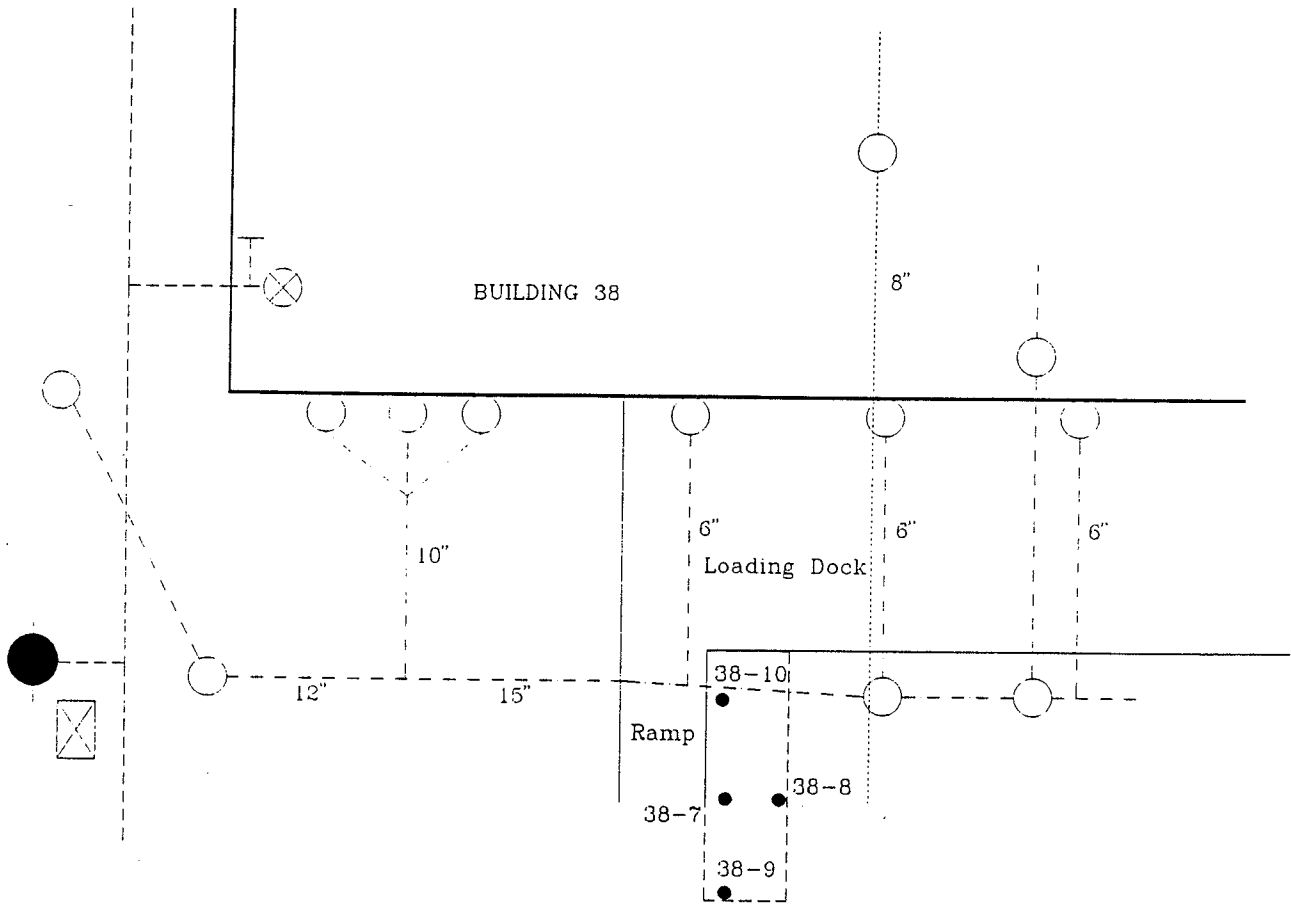
F. Were all verification samples associated with each of these other media analyzed, preserved, and handled in accordance with the USTD guidance document entitled "Guidance for Parameters, Analytical Methods, Sample Handling, Quality Control, and Cleanup Limits for Petroleum Hydrocarbon Releases" (Attachment No. 12 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks" to the maximum extent possible)? Yes No

G. If "No", provide an explanation for any differences: _____

H. Attach data tables presenting the results of all on-site and off-site verification sampling performed for each of these other media in the attached Laboratory Results table format (Attachment No. 13). Include applicable sample results submitted previously with the Initial Assessment Report or Final Assessment Report. (NOTE: The USTD may request copies of laboratory data sheets, chain of custody forms, and all available QA/QC information relating to these verification samples.)


I. Attach a Verification Comparison Table for each of the other remediated media (Attachment No. 14) to demonstrate that the established target cleanup levels have been attained in accordance with the applicable MDEQ /USTD closure guidance.

J. Estimated volume of each of the other specified media remediated, or treated or disposed to date (specify units): _____



LEGEND:

- Geoprobe Sample Locations
- Fire Protection Line
- - - Storm Sewer Line
- Sanitary Sewer Line

| | |
|--|----------------------|
| <h2>GM CLCD NORTH</h2> | |
| TITLE: SAMPLE LOCATIONS BUILDING 38 - TANK 002/38 | |
| SCALE: 1"=40' | DATE: 8/13/96 |
|  Global Environmental Engineering Inc. | APPROVED BY: A.L.K. |
| | PREPARED BY: C.G.S. |
| | ATTACHMENT NUMBER: 6 |
| | PROJECT NUMBER: F174 |

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE ASSESSMENT REPORT

ATTACHMENT NO. 7
 SOIL VERIFICATION SAMPLING RESULTS (LABORATORY)
 FACILITY NAME: NAO FLINT OPERATIONS - TANK 002/38
 FACILITY NUMBER: 0-002763

| VOLATILES | | BLD 38-7 | | BLD 38-7 | | BLD 38-8 | | BLD 38-8 | | BLD 38-9 | |
|---|--|----------|--------|----------|--------|----------|--------|----------|--------|----------|--------|
| Sample ID | | 3-5 | 7-9 | 11-13 | 13-15 | 11-13 | 13-15 | 11-13 | 13-15 | 11-13 | 11-13 |
| Sample Depth (feet BGS) | | 8/2/96 | 8/2/96 | 8/2/96 | 8/2/96 | 8/2/96 | 8/2/96 | 8/2/96 | 8/2/96 | 8/2/96 | 8/2/96 |
| Date Collected | | 8/7/96 | 8/7/96 | 8/7/96 | 8/7/96 | 8/7/96 | 8/7/96 | 8/7/96 | 8/7/96 | 8/7/96 | 8/7/96 |
| Date Analyzed | | 8260 | 8260 | 8260 | 8260 | 8260 | 8260 | 8260 | 8260 | 8260 | 8260 |
| Analytical Method No. | | GP | GP | GP | GP | GP | GP | GP | GP | GP | GP |
| Collection Method* | | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Benzene | | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Toluene | | ND | 10 | 200 | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Ethylbenzene | | ND | 10 | 500 | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Total Xylenes | | ND | 10 | 1600 | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> MTBE | | ND | 100 | ND | 100 | ND | 100 | ND | 100 | ND | 100 |
| POLYNUCLEAR AROMATICS (PNAs) | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | |
| Sample Depth (feet BGS) | | | | | | | | | | | |
| Date Collected | | | | | | | | | | | |
| Date Extracted | | | | | | | | | | | |
| Date Analyzed | | | | | | | | | | | |
| Analytical Method No. | | | | | | | | | | | |
| Collection Method* | | | | | | | | | | | |
| CONSTITUENT (ug/kg) | | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Acenaphthene | | | | | | | | | | | |
| <input type="checkbox"/> Acenaphthylene | | | | | | | | | | | |
| <input type="checkbox"/> Anthracene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(a)anthracene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(a)pyrene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(b)fluoranthene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(g,h,i)perylene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(k)fluoranthene | | | | | | | | | | | |

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Conc Penetrometer (CP), Hydroponch (HP)

If Other (OT), Specify here: _____

MDL = Method Detection Limit

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE ASSESSMENT REPORT

ATTACHMENT NO. 8
 COMPARISON TABLE FOR SOIL VERIFICATION
 FACILITY NAME: NAO FLINT OPERATIONS - TANK 002/38
 FACILITY NUMBER: 0-002763

| Contaminant | Number of Samples Taken | Range of Detected Concentrations [Min - Max] (ug/kg) | Maximum Detected (ug/kg) | Applicable RBSL or SSSL Criterion /Specify Tier Level in ()/ | | |
|---|-------------------------|--|--------------------------|---|--|------------|
| | | | | Residential | Commercial III <input type="checkbox"/> Commercial IV | Industrial |
| VOLATILES | | | | | | |
| <input type="checkbox"/> Benzene | 8 | ND -- ND | ND | 100 (I) | () | () |
| <input type="checkbox"/> Toluene | 8 | ND -- 200 | 200 | 16,000 (I) | () | () |
| <input type="checkbox"/> Ethylbenzene | 8 | ND -- 500 | 500 | 1500 (I) | () | () |
| <input type="checkbox"/> Total Xylenes | 8 | ND -- 1600 | 1600 | 5600 (I) | () | () |
| <input type="checkbox"/> MTBE | 8 | ND -- ND | ND | 4800 (I) | () | () |
| POLYNUCLEAR AROMATICS (PNAs) | | | | | | |
| <input type="checkbox"/> Acenaphthene | NA | -- | | () | () | () |
| <input type="checkbox"/> Acenaphthylene | NA | -- | | () | () | () |
| <input type="checkbox"/> Anthracene | NA | -- | | () | () | () |
| <input type="checkbox"/> Benzo(a)anthracene | NA | -- | | () | () | () |
| <input type="checkbox"/> Benzo(a)pyrene | NA | -- | | () | () | () |
| <input type="checkbox"/> Benzo(b)fluoranthene | NA | -- | | () | () | () |
| <input type="checkbox"/> Benzo(g,h,i)perylene | NA | -- | | () | () | () |
| <input type="checkbox"/> Benzo(k)fluoranthene | NA | -- | | () | () | () |
| <input type="checkbox"/> Chrysene | NA | -- | | () | () | () |
| <input type="checkbox"/> Dibenzo(a,h)anthracene | NA | -- | | () | () | () |
| <input type="checkbox"/> Fluoranthene | NA | -- | | () | () | () |
| <input type="checkbox"/> Fluorene | NA | -- | | () | () | () |
| <input type="checkbox"/> Indeno(1,2,3-cd)pyrene | NA | -- | | () | () | () |
| <input type="checkbox"/> Naphthalene | NA | -- | | () | () | () |
| <input type="checkbox"/> Phenanthrene | NA | -- | | () | () | () |
| <input type="checkbox"/> Pyrene | NA | -- | | () | () | () |
| METALS | | | | | | |
| <input type="checkbox"/> Cadmium | NA | -- | | () | () | () |
| <input type="checkbox"/> Chromium III | NA | -- | | () | () | () |
| <input type="checkbox"/> Chromium VI | NA | -- | | () | () | () |
| <input type="checkbox"/> Total Lead | NA | -- | | () | () | () |

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
CLOSURE ASSESSMENT REPORT

ATTACHMENT NO. 8
 COMPARISON TABLE FOR SOIL VERIFICATION
 FACILITY NAME: NAO FLINT OPERATIONS - TANK 002/38
 FACILITY NUMBER: 0-002763

| Contaminant | Number of Samples Taken | Range of Detected Concentrations [Min - Max] (ug/kg) | Maximum Detected (ug/kg) | Applicable RBSL or SSTL Criterion (Specify Tier Level in ()) | | |
|---|-------------------------|--|--------------------------|---|--|------------|
| | | | | Residential | Commercial III <input type="checkbox"/> Commercial IV | Industrial |
| PCBs | | | | | | |
| <input type="checkbox"/> Aroclor 1016 | NA | -- | | () | () | () |
| <input type="checkbox"/> Aroclor 1221 | NA | -- | | () | () | () |
| <input type="checkbox"/> Aroclor 1232 | NA | -- | | () | () | () |
| <input type="checkbox"/> Aroclor 1242 | NA | -- | | () | () | () |
| <input type="checkbox"/> Aroclor 1248 | NA | -- | | () | () | () |
| <input type="checkbox"/> Aroclor 1254 | NA | -- | | () | () | () |
| <input type="checkbox"/> Aroclor 1280 | NA | -- | | () | () | () |
| HALOGENATED HYDROCARBONS | | | | | | |
| <input type="checkbox"/> Carbon Tetrachloride | NA | -- | | () | () | () |
| <input type="checkbox"/> 1,1-Dichloroethane | NA | -- | | () | () | () |
| <input type="checkbox"/> 1,2-Dichloroethane | NA | -- | | () | () | () |
| <input type="checkbox"/> 1,1-Dichloroethylene | NA | -- | | () | () | () |
| <input type="checkbox"/> cis-1,2-Dichloroethylene | NA | -- | | () | () | () |
| <input type="checkbox"/> trans-1,2-Dichloroethylene | NA | -- | | () | () | () |
| <input type="checkbox"/> Tetrachloroethylene | NA | -- | | () | () | () |
| <input type="checkbox"/> 1,1,2-Trichloroethane | NA | -- | | () | () | () |
| OTHER* | | | | | | |
| | | -- | | () | () | () |
| | | -- | | () | () | () |
| | | -- | | () | () | () |
| | | -- | | () | () | () |
| | | -- | | () | () | () |
| | | -- | | () | () | () |
| | | -- | | () | () | () |

Global Environmental Engineering, Inc.
 352 South Saginaw St., Suite 600
 Flint, Michigan 48502
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 Fax: (810) 238-9195

| | | | |
|-----------------------|--------|----------------|----------------------------|
| Date: | 8/2/96 | Project #: | F174 |
| Drilling Contractor: | YECI | Location: | Hamilton & Industrial Ave. |
| Prepared By: | JCW | Twp/Sec.: | |
| Time Started: | 10:25 | Depth Drilled: | 9' |
| Time Completed: | | Hole Diameter: | 2" |
| Length Coring Device: | 2' | Coring Device: | 2" |

| Boring Methods | | Groundwater Information | |
|-------------------------------------|-------------------|-------------------------|------|
| <input type="checkbox"/> | Hollow Stem Auger | GW Encountered at | 8' |
| <input type="checkbox"/> | Hand Auger | Monitor Wells Installed | |
| <input checked="" type="checkbox"/> | Geoprobe | Yes | No |
| | | Fluid Used: | None |
| | | Driller: | Ken |
| | | Helper: | N/A |
| | | Weight/Drop: | N/A |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|------------------|----------------|-------|----|
| | | 1 | | Concrete | | | |
| | GP-1 | 2 | SP | Sand | Brown, Moist | | |
| | | 3 | | | | ND | |
| | | 4 | | | | | |
| | [X] GP-2 | 5 | | | | ND | |
| | | 6 | | | | | |
| | | 7 | | | | 620 | |
| | | 8 | | | | | |
| | [X] | 9 | CL | Sandy Clay | Dark Gray, Wet | >1000 | |
| | | 10 | E.O.B | End of Boring 9' | | | |
| | | 11 | | | | | |
| | | 12 | | | | | |
| | | 13 | | | | | |
| | | 14 | | | | | |
| | | 15 | | | | | |
| | | 16 | | | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

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 352 South Saginaw St., Suite 600
 Flint, Michigan 48502
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 Fax: (810) 238-9195

| | | | |
|-----------------------|--------|----------------|----------------------------|
| Date: | 8/2/96 | Project #: | F174 |
| Drilling Contractor: | YECI | Location: | Hamilton & Industrial Ave. |
| Prepared By: | JCW | Twp/Sec.: | |
| Time Started: | 10:50 | Depth Drilled: | 15' |
| Time Completed: | | Hole Diameter: | 2" |
| Length Coring Device: | 2' | Coring Device: | 2" |

| | | | |
|-----------------------|--------------------------------|--------------|------|
| Boring Methods | Groundwater Information | Fluid Used: | None |
| Hollow Stem Auger | GW Encountered at | Driller: | Ken |
| Hand Auger | Monitor Wells Installed | Helper: | N/A |
| X Geoprobe | Yes No | Weight/Drop: | N/A |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|-------------------|----------------------------|-----|----|
| | | 1 | | Concrete | | | |
| | GP-1 | 2 | CL | Clay | Brown, Moist, No Fractures | | |
| | | 3 | | | | ND | |
| | | 4 | SP | Sand | | | |
| | | 5 | | | | ND | |
| | GP-2 | 6 | | | | | |
| | | 7 | | | | ND | |
| | | 8 | | | | | |
| | GP-3 | 9 | | | | ND | |
| | | 10 | | | | | |
| | | 11 | | | | ND | |
| | | 12 | | | | | |
| | [X] | 13 | | | | ND | |
| | GP-4 | 14 | | | | | |
| | [X] | 15 | | | | ND | |
| | | 16 | E.O.B | End of Boring 15' | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

Global Environmental Engineering, Inc.
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 Fax: (810) 238-9195

Date: 8/2/96 Project #: F174
 Drilling Contractor: YECI Location: Hamilton & Industrial Ave.
 Prepared By: JCW Twp/Sec.:
 Time Started: 11:15 Depth Drilled: 15'
 Time Completed: Hole Diameter: 2"
 Length Coring Device: 2' Coring Device: 2'

Boring Methods **Groundwater Information**
 Fluid Used: None
 Hollow Stem Auger GW Encountered at
 Hand Auger Monitor Wells Installed
 Driller: Ken
 Geoprobe Yes No
 Helper: N/A
 Weight/Drop: N/A

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC | |
|----------------------------|----------------|----------------|--------------|-------------------|----------------------------|-----|----|--|
| | | 1 | CL | Concrete | | | | |
| | GP-1 | 2 | | Sandy Clay | Brown, Moist, No Fractures | | | |
| | | 3 | | | | ND | | |
| | | 4 | | | | | | |
| | | 5 | SP | Sand | Fine/Medium | | | |
| | GP-2 | 6 | | | | | ND | |
| | | 7 | | | | | ND | |
| | | 8 | | | | | | |
| | GP-3 | 9 | | | | | ND | |
| | | 10 | | | | | | |
| | | 11 | | | | | ND | |
| | [X] | 12 | | | | | | |
| | GP-4 | 13 | | | | | ND | |
| | | 14 | | | | | | |
| | [X] | 15 | E.O.B | End of Boring 15' | | ND | | |
| | | 16 | | | | | | |
| | | 17 | | | | | | |
| | | 18 | | | | | | |
| | | 19 | | | | | | |
| | | 20 | | | | | | |
| | | 21 | | | | | | |
| | | 22 | | | | | | |
| | | 23 | | | | | | |
| | | 24 | | | | | | |
| | | 25 | | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

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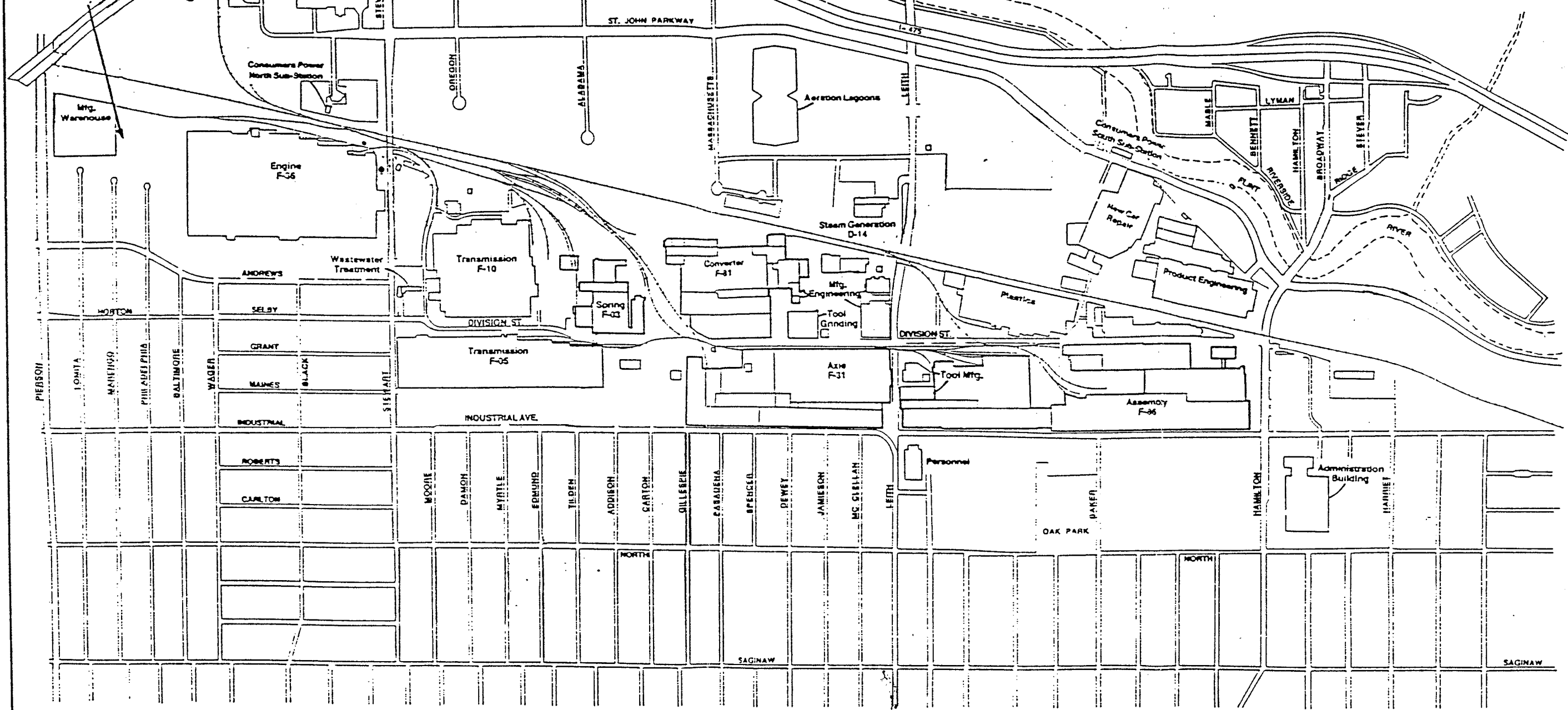
Date: 8/2/96 Project #: F174
 Drilling Contractor: YECI Location: Hamilton & Industrial Ave.
 Prepared By: JCW Twp/Sec.:
 Time Started: 11:50 Depth Drilled: 15'
 Time Completed: Hole Diameter: 2"
 Length Coring Device: 2' Coring Device: 2"

| Boring Methods | | Groundwater Information | |
|-------------------------------------|-------------------|--------------------------|---------------------------------|
| <input type="checkbox"/> | Hollow Stem Auger | <input type="checkbox"/> | GW Encountered at |
| <input type="checkbox"/> | Hand Auger | <input type="checkbox"/> | Monitor Wells Installed |
| <input checked="" type="checkbox"/> | Geoprobe | <input type="checkbox"/> | Yes <input type="checkbox"/> No |
| | | Fluid Used: | None |
| | | Driller: | Ken |
| | | Helper: | N/A |
| | | Weight/Drop: | N/A |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|-------------------|---------------------------|-----|----|
| | | 1 | SP | Concrete | | | |
| | GP-1 | 2 | | Sand | Brown, Moist, Fine/Medium | | |
| | | 3 | | | | | ND |
| | | 4 | | | | | |
| | | 5 | | | | | ND |
| | GP-2 | 6 | | | | | |
| | | 7 | | | | | ND |
| | | 8 | | | | | |
| | GP-3 | 9 | | | | | ND |
| | | 10 | | | | | |
| | | 11 | | | | | ND |
| | | 12 | | | | | |
| | [X] GP-4 | 13 | | | | | ND |
| | | 14 | | | | | |
| | [X] | 15 | | | | | ND |
| | | 16 | E.O.B | End of Boring 15' | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

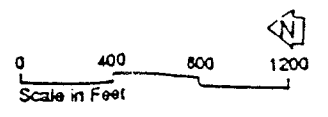
SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

Building 38
Tank 002



LEGEND

- F-36 Factory Number
- D-14 Division Number
- Hazardous Waste Storage Area
- 38 Building Number
- Property Line
- Gate House
- Pedestrian Entrance
- Fence



BOC FLINT OPERATIONS (BUICK SITE)

Site Plan/Tank Location
Attachment 16

Adapted from
EDI Engineering & Science

June, 1989

SUMMARY REPORT
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
BUILDING 38 - TANK 123/38

January 3, 1997

Prepared for

**Daniel S. Harrett
Senior Environmental Engineer
General Motors Corporation
GM-CLCD North
902 E. Hamilton Avenue
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Prepared by:

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Flint, Michigan 48507**

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| 2.0 | FIELD INVESTIGATION | 1 |
| 3.0 | LABORATORY ANALYTICAL RESULTS | 1 |
| 4.0 | CONCLUSION | 1 |

ATTACHMENTS

| | |
|--------------|--|
| Attachment A | Site Diagram/Soil Boring Locations |
| Attachment B | Soil Boring Logs |
| Attachment C | Soil Sample Analytical Results |

1.0 UST HISTORY

Tank 123/38, a 6,000-gallon underground storage tank (UST) used to store gasoline, was closed on December 16, 1988. Soils removed from the excavation were field-screened using a photoionization detector (PID). The initial soils excavated from above the tank had PID readings of 60-70 ppm. As the excavation continued, PID readings decreased. Three excavation soil samples were collected for laboratory analysis which indicated the presence of petroleum constituents. Based on this data, Global recommended the area be re-sampled.

2.0 FIELD INVESTIGATION

The position of the former UST and the excavation size were determined using blueprints supplied by General Motors Corporation. On August 2, 1996, three soil borings were advanced at the excavation perimeter to a maximum depth of fifteen feet below ground surface.

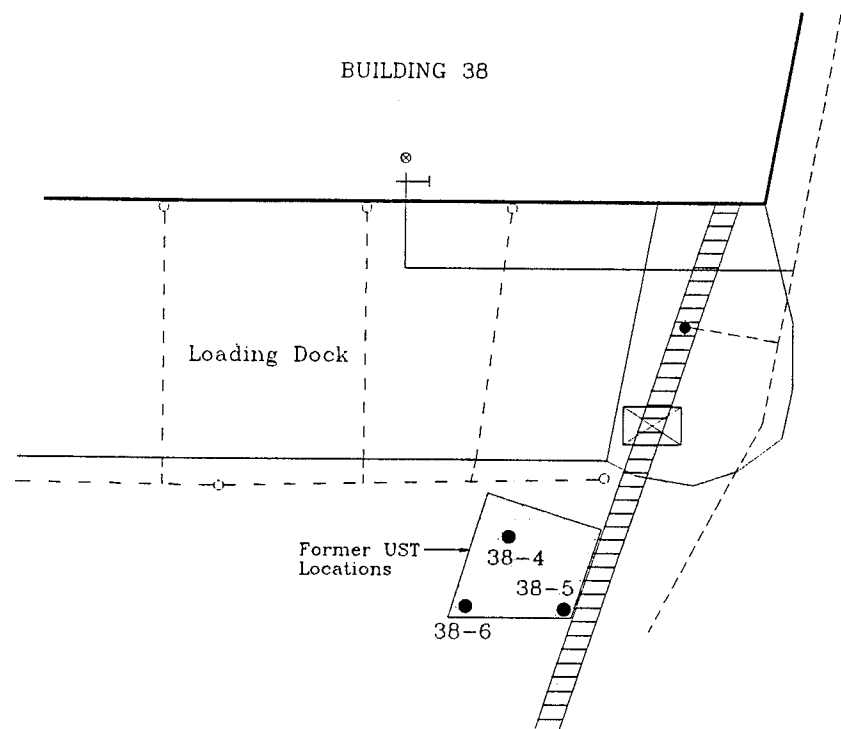
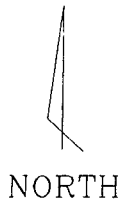
The soil types encountered included sand and clay. Groundwater was not encountered in the three borings. Samples were collected continuously and field-screened using an organic vapor analyzer (OVA). Two soil samples were selected for laboratory analysis from each boring: the bottom of bore and the sample exhibiting the highest OVA reading. A total of six soil samples were collected for laboratory analysis. Sample analytical parameters included benzene, toluene, ethylbenzene, xylene (BTEX), methyl tertiary butyl ether (MTBE), lead and polynuclear aromatic hydrocarbons (PNAs).

3.0 LABORATORY ANALYTICAL RESULTS

The sample analytical results indicated non-detectable levels of BTEX and MTBE in each of the six soil samples analyzed. Elevated levels of lead *below* the Type A Default Criteria were noted in each of the six soil samples. (See Attachment C)


4.0 CONCLUSION

Based on the file review, field investigation, and sample analytical results, it is the opinion of Global that the UST area any existing impact from the former UST is below current method detection levels and current regulatory levels. If the presence of the UST system formerly resulted in a release, the petroleum constituents have naturally attenuated to the point that they can no longer be detected. Global recommends that this information be kept on file for the life of the facility.



LEGEND:

- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line (6")
- - - Storm Sewer Line (15")

| | |
|---|----------------------|
| GM CLCD NORTH | |
| TITLE: SAMPLE LOCATIONS BUILDING 38 - TANK 123/38 | |
| SCALE: 1"=40' | DATE: 8/13/96 |
|  Global Environmental Engineering Inc. | APPROVED BY: A.L.K. |
| | PREPARED BY: C.G.S. |
| | ATTACHMENT NUMBER: A |
| PROJECT NUMBER: F174 | |

Global Environmental Engineering, Inc.
 352 South Saginaw St., Suite 600
 Flint, Michigan 48502
 Tel: (810) 238-9190
 Fax: (810) 238-9195

| | | | |
|--|-------------------------|--------------------------------|----------------------------|
| Date: | 8/2/96 | Project #: | F174 |
| Drilling Contractor: | YECI | Location: | Hamilton & Industrial Ave. |
| Prepared By: | JCW | Twp/Sec.: | |
| Time Started: | 8:05 | Depth Drilled: | 9' |
| Time Completed: | | Hole Diameter: | 2" |
| Length Coring Device: | 2' | Coring Device: | 2" |
| Boring Methods | | Groundwater Information | |
| <input type="checkbox"/> Hollow Stem Auger | GW Encountered at | | Fluid Used: None |
| <input type="checkbox"/> Hand Auger | Monitor Wells Installed | | Driller: Ken |
| <input checked="" type="checkbox"/> Geoprobe | Yes | No | Helper: N/A |
| | | | Weight/Drop: N/A |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|-------------------|---------------------------|-----|----|
| | | 1 | | Concrete | | | |
| | GP-1 | 2 | SP | Sand | Brown, Moist, Fine/Medium | | |
| | | 3 | | | | ND | |
| | | 4 | | | | | |
| | [X] GP-2 | 5 | | | | ND | |
| | | 6 | | | | | |
| | | 7 | | | | ND | |
| | | 8 | | | | | |
| | [X] | 9 | | | | ND | |
| | | 10 | | | | | |
| | | 11 | | | | | |
| | | 12 | | | | | |
| | | 13 | | | | 2.0 | |
| | | 14 | | | | | |
| | | 15 | E.O.B | End of Boring 15' | | ND | |
| | | 16 | | | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

Global Environmental Engineering, Inc.
 352 South Saginaw St., Suite 600
 Flint, Michigan 48502
 Tel: (810) 238-9190
 Fax: (810) 238-9195

| | | | |
|-----------------------|--------|----------------|----------------------------|
| Date: | 8/2/96 | Project #: | F174 |
| Drilling Contractor: | YECI | Location: | Hamilton & Industrial Ave. |
| Prepared By: | JCW | Twp/Sec.: | |
| Time Started: | 9:20 | Depth Drilled: | 15' |
| Time Completed: | | Hole Diameter: | 2" |
| Length Coring Device: | 2' | Coring Device: | 2" |

| Boring Methods | | Groundwater Information | |
|-------------------------------------|-------------------|-------------------------|------|
| <input type="checkbox"/> | Hollow Stem Auger | GW Encountered at | 14' |
| <input type="checkbox"/> | Hand Auger | Monitor Wells Installed | |
| <input checked="" type="checkbox"/> | Geoprobe | Yes | No |
| | | Fluid Used: | None |
| | | Driller: | Ken |
| | | Helper: | N/A |
| | | Weight/Drop: | N/A |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|-------------------|----------------------------|-----|----|
| | | 1 | CL | Concrete | | | |
| | GP-1 | 2 | | Clay | Brown, Moist, No Fractures | | |
| | | 3 | SP | Sand | Brown, Fine/Medium | ND | |
| | | 4 | | | | | |
| | | 5 | | | | | |
| | GP-2 | 6 | | | | | |
| | | 7 | | | | | |
| | | 8 | | | | | |
| | | 9 | | | | | |
| | GP-3 | 10 | | | | | |
| | | 11 | | | | | |
| | | 12 | | | | | |
| | [X] | 13 | E.O.B | End of Boring 15' | Gray, Wet | ND | |
| | GP-4 | 14 | | | | | |
| | | 15 | | | | | |
| | | 16 | | | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

Global Environmental Engineering, Inc.
 352 South Saginaw St., Suite 600
 Flint, Michigan 48502
 Tel: (810) 238-9190
 Fax: (810) 238-9195

| | | | |
|-----------------------|--------|----------------|----------------------------|
| Date: | 8/2/96 | Project #: | F174 |
| Drilling Contractor: | YECI | Location: | Hamilton & Industrial Ave. |
| Prepared By: | JCW | Twp/Sec.: | |
| Time Started: | 9:55 | Depth Drilled: | 15' |
| Time Completed: | | Hole Diameter: | 2" |
| Length Coring Device: | 2' | Coring Device: | 2" |

Boring Methods

Groundwater Information

| | | | |
|--|-------------------------|--------------|------|
| Hollow Stem Auger | GW Encountered at | Fluid Used: | None |
| Hand Auger | Monitor Wells Installed | Driller: | Ken |
| <input checked="" type="checkbox"/> Geoprobe | Yes No | Helper: | N/A |
| | | Weight/Drop: | N/A |

| Penetration Tons/Sq ft. | Sample Type | Depth (ft.) | USCS Code | SOIL DESCRIPTION | REMARKS | FID | GC |
|----------------------------|----------------|----------------|--------------|-------------------|---------------------------|-----|----|
| | | 1 | | Asphalt | | | |
| | GP-1 | 2 | SP | Sand | Brown, Moist, Fine/Medium | | |
| | | 3 | | | | ND | |
| | | 4 | | | | | |
| | | 5 | | | | ND | |
| | GP-2 | 6 | | | | | |
| | | 7 | | | | ND | |
| | | 8 | | | | | |
| | | 9 | | | | ND | |
| | GP-3 | 10 | | | | | |
| | | 11 | | | | ND | |
| | | 12 | | | | | |
| | [X] GP-4 | 13 | | | | ND | |
| | | 14 | | | | | |
| | | 15 | | | | ND | |
| | | 16 | E.O.B | End of Boring 15' | | | |
| | | 17 | | | | | |
| | | 18 | | | | | |
| | | 19 | | | | | |
| | | 20 | | | | | |
| | | 21 | | | | | |
| | | 22 | | | | | |
| | | 23 | | | | | |
| | | 24 | | | | | |
| | | 25 | | | | | |

SS - Split Spoon HA - Hand Auger Sample PID - Photoionization Detector (ppm) AL - Acetate Liner
 NR - No Recovery [X] - Laboratory/Jar Sample GC - Gas Chromatograph (ppb) FS - Field Screening Container

SOIL SAMPLE LABORATORY ANALYTICAL RESULTS
ATTACHMENT C

FACILITY NAME: NAO FLINT OPERATIONS - TANK 123/38
FACILITY NUMBER: 0-002763

| VOLATILES | | BLD 38-4 | | BLD 38-4 | | BLD 38-5 | | BLD 38-5 | | BLD 38-6 | |
|---|-------------------------|----------|-----|----------|-----|----------|-----|----------|-----|----------|-----|
| Sample ID | Sample Depth (feet BGS) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| | 3-5 | | | | | | | | | | |
| Date Collected | 8/2/96 | | | | | | | | | | |
| Date Extracted | 8/7/96 | | | | | | | | | | |
| Date Analyzed | 8/7/96 | | | | | | | | | | |
| Analytical Method No. | 8260 | | | | | | | | | | |
| Collection Method* | GP | | | | | | | | | | |
| CONSTITUENT (ug/kg) | | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Benzene | | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Toluene | | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Ethylbenzene | | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> Total Xylenes | | ND | 10 | ND | 10 | ND | 10 | ND | 10 | ND | 10 |
| <input type="checkbox"/> MTBE | | ND | 100 | ND | 100 | ND | 100 | ND | 100 | ND | 100 |
| POLYNUCLEAR AROMATICS (PNAs) | | | | | | | | | | | |
| Sample ID | | | | | | | | | | | |
| Sample Depth (feet BGS) | | | | | | | | | | | |
| Date Collected | | | | | | | | | | | |
| Date Extracted | | | | | | | | | | | |
| Date Analyzed | | | | | | | | | | | |
| Analytical Method No. | | | | | | | | | | | |
| Collection Method* | | | | | | | | | | | |
| CONSTITUENT (ug/kg) | | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Acenaphthene | | | | | | | | | | | |
| <input type="checkbox"/> Acenaphthylene | | | | | | | | | | | |
| <input type="checkbox"/> Anthracene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(a)anthracene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(a)pyrene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(b)fluoranthene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(g,h,i)perylene | | | | | | | | | | | |
| <input type="checkbox"/> Benzo(k)fluoranthene | | | | | | | | | | | |

BGS = Below Ground Surface
*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)
If Other (OT), Specify here: _____
MDL = Method Detection Limit

SOIL SAMPLE LABORATORY ANALYTICAL RESULTS
ATTACHMENT C

FACILITY NAME: NAO FLINT OPERATIONS - TANK 123/38
FACILITY NUMBER: 0-002763

| POLYNUCLEAR AROMATICS (PNAs) | | | | | | | | | | | | |
|---|----------|------|------|----------|------|------|----------|------|------|----------|------|--|
| Sample ID | | | | | | | | | | | | |
| Sample Depth (feet BGS) | | | | | | | | | | | | |
| Date Collected | | | | | | | | | | | | |
| Date Extracted | | | | | | | | | | | | |
| Date Analyzed | | | | | | | | | | | | |
| Analytical Method No. | | | | | | | | | | | | |
| Collection Method* | | | | | | | | | | | | |
| CONSTITUENT (ug/kg) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | MDL | |
| <input type="checkbox"/> Chrysene | | | | | | | | | | | | |
| <input type="checkbox"/> Dibenzo(a,h)anthracene | | | | | | | | | | | | |
| <input type="checkbox"/> Fluoranthene | | | | | | | | | | | | |
| <input type="checkbox"/> Fluorene | | | | | | | | | | | | |
| <input type="checkbox"/> Indeno(1,2,3-cd)pyrene | | | | | | | | | | | | |
| <input type="checkbox"/> Naphthalene | | | | | | | | | | | | |
| <input type="checkbox"/> Phenanthrene | | | | | | | | | | | | |
| <input type="checkbox"/> Pyrene | | | | | | | | | | | | |
| METALS | | | | | | | | | | | | |
| Sample ID | BLD 38-4 | | | BLD 38-4 | | | BLD 38-5 | | | BLD 38-5 | | |
| Sample Depth (feet BGS) | 3-5 | | | 7-9 | | | 11-13 | | | 13-15 | | |
| Date Collected | 8/2/96 | | | 8/2/96 | | | 8/2/96 | | | 8/2/96 | | |
| Date Extracted | 8/8/96 | | | 8/8/96 | | | 8/8/96 | | | 8/8/96 | | |
| Date Analyzed | 8/8/96 | | | 8/8/96 | | | 8/8/96 | | | 8/8/96 | | |
| Analytical Method No. | 6020 | | | 6020 | | | 6020 | | | 6020 | | |
| Collection Method* | GP | | | GP | | | GP | | | GP | | |
| CONSTITUENT (ug/kg) | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL | MDL | |
| <input type="checkbox"/> Cadmium | | | | | | | | | | | | |
| <input type="checkbox"/> Chromium III | | | | | | | | | | | | |
| <input type="checkbox"/> Chromium VI | | | | | | | | | | | | |
| <input type="checkbox"/> Total Lead | 5000 | 1000 | 5000 | 1000 | 2800 | 1000 | 2800 | 1000 | 2800 | 1000 | 1000 | |

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydromunch (HP)

If Other (OT), Specify here:

MDL = Method Detection Limit

SOIL SAMPLE LABORATORY ANALYTICAL RESULTS
ATTACHMENT C

FACILITY NAME: NAO FLINT OPERATIONS - TANK 123/38
FACILITY NUMBER: 0-002763

| VOLATILES | | BLD 38-6 | | | | | | | |
|---|---------|----------|-----|------|-----|------|-----|------|-----|
| Sample ID | | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| Sample Depth (feet BGS) | | | | | | | | | |
| Date Collected | 13-15 | | | | | | | | |
| Date Extracted | 8/2/96 | | | | | | | | |
| Date Analyzed | 8/12/96 | | | | | | | | |
| Analytical Method No. | 8260 | | | | | | | | |
| Collection Method* | GP | | | | | | | | |
| CONSTITUENT (ug/kg) | | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Benzene | | ND | 10 | | | | | | |
| <input type="checkbox"/> Toluene | | ND | 10 | | | | | | |
| <input type="checkbox"/> Ethylbenzene | | ND | 10 | | | | | | |
| <input type="checkbox"/> Total Xylenes | | ND | 10 | | | | | | |
| <input type="checkbox"/> MTBE | | ND | 100 | | | | | | |
| POLYNUCLEAR AROMATICS (PNAs) | | | | | | | | | |
| Sample ID | | | | | | | | | |
| Sample Depth (feet BGS) | | | | | | | | | |
| Date Collected | | | | | | | | | |
| Date Extracted | | | | | | | | | |
| Date Analyzed | | | | | | | | | |
| Analytical Method No. | | | | | | | | | |
| Collection Method* | | | | | | | | | |
| CONSTITUENT (ug/kg) | | Conc | MDL | Conc | MDL | Conc | MDL | Conc | MDL |
| <input type="checkbox"/> Acenaphthene | | | | | | | | | |
| <input type="checkbox"/> Acenaphthylene | | | | | | | | | |
| <input type="checkbox"/> Anthracene | | | | | | | | | |
| <input type="checkbox"/> Benzo(a)anthracene | | | | | | | | | |
| <input type="checkbox"/> Benzo(a)pyrene | | | | | | | | | |
| <input type="checkbox"/> Benzo(b)fluoranthene | | | | | | | | | |
| <input type="checkbox"/> Benzo(g,h,i)perylene | | | | | | | | | |
| <input type="checkbox"/> Benzo(k)fluoranthene | | | | | | | | | |

BGS = Below Ground Surface

*Collection Method Codes (List all that apply): Grab Sample (GS), Split Spoon (SS), Hand Auger (HA), Geoprobe (GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch (HP)

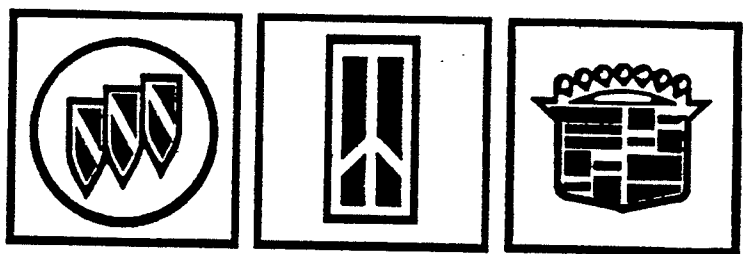
If Other (OT), Specify here: _____

MDL = Method Detection Limit

[Handwritten signature]

Underground Storage Tank Removal

prepared for . . .



**BUICK/OLDSMOBILE/CADILLAC
GROUP**
Flint, Michigan

December 1988

21080

EDI Engineering & Science

Environmental Engineering, Geology, Biology and Chemistry
a subsidiary of WW Engineering & Science



Grand Rapids, Michigan (616) 942-9600

Livonia, Michigan (313) 591-0522

INTRODUCTION

This report summarizes the principle activities associated with the December, 1988 removal of six underground storage tanks (USTs) at Buildings 38, 43, 86, and a storage tank from within a vault adjacent to Building 84 at Buick-Oldsmobile-Cadillac, Flint Product Team, located at 902 E. Hamilton Avenue, Flint, Michigan. A site map of the facility showing the locations of the USTs is provided in Attachment A. The tanks are regulated under the 1983 Flammable and Combustible Liquids Storage Rules which are administered by the Fire Marshall Division of the Michigan Department of State Police. The tanks were closed and removed from the ground following the guidance of API Bulletin 1604 in accordance with Michigan Rule 36, R 29.2336 Abandoned Underground Tanks. The USTs are not regulated under RCRA because they were not used to store hazardous wastes.

Closure activities began on December 5, 1988 and were completed on December 28, 1988. These activities included the excavation and disposal of concrete and soils from above the tanks; tank opening, content removal, tank washing and rinsate disposal; excavation back filling; and replacement of concrete pavement. All excavation and tank removal activities were performed by BOC personnel. EDI field technicians were on site during the operation to document the tank closure activities and to collect soil samples from the excavations. The daily field reports are provided in Attachment B. The Flint Fire Department and the Michigan Department of Natural Resources (MDNR) were given copies of the UST removal plan and notified prior to the start of closure activities to provide them with the opportunity to view the removal of the USTs.

SPECIFIC TANK INFORMATION

The six storage tanks were located at six separate locations and adjacent to three different buildings (see Attachment A). Specific information on each tank is provided in Table 1.

Material Safety Data Sheets (MSDS) are provided in Attachment C for each material stored in the tanks.

TANK CLOSURE ACTIVITIES

BUILDING 43, Tank #049

Tank closure activities started on the morning of December 5, 1988 with tank #049 located at the southeast side of Building 43. Concrete and soils were removed from

TABLE 1

| <u>Tank ID#</u> | <u>Age (years)</u> | <u>Bldg. Location</u> | <u>Volume (gals.)</u> | <u>Contents</u> | <u>Notes</u> |
|-----------------|--------------------|-----------------------|-----------------------|--------------------|-------------------------|
| 001 | 19 | 38NW | 500 | #2 Diesel Fuel | In use prior to closure |
| 002 | 24 | 38SW | 3000 | Gasoline (no lead) | In use prior to closure |
| 049 | 37 | 43SE | 3000 | Gasoline (leaded) | Empty |
| 059 | 24 | 86W | 6000 | Gasoline (leaded) | In use prior to closure |
| 123 | ? | 38SE | 6000 | Gasoline (no lead) | In use prior to closure |
| 78 | 8 | 84NW | 15000 | #2 Diesel Fuel | Empty |

above the UST to uncover the top of the tank. The tank was then filled through its four inch fill line with emulsified water from BOC's waste water treatment plant to clean the inside of the tank. The emulsified water was then pumped out and the inside of the tank was scanned with a photoionization detector (PID). PID readings of over 1000 ppm were detected inside the tank so it was decided not to open the tank at that time for safety reasons. BOC personnel then tested the inside of the tank for flammability using an explosion meter. The results of the testing demonstrated that the threat of an explosion did not exist.

The excavation of soils continued until the tank was completely exposed. The excavation activities were somewhat hampered by the existence of a six inch sprinkler line running parallel to the length of the tank on its east side and a six inch sewer line running parallel to the length of the tank on its west side. The excavated soils were placed on both sides of the excavation and covered with plastic. PID readings of the excavated soil ranged from non-detect to over 200 ppm.

The Flint Fire Department was notified before the tank was removed from the excavation. On December 6, Sergeant Vincent M. Lewis of the Flint Fire Marshall inspected the excavation site and gave permission to remove the tank. The UST was then lifted out of the excavation using a large crane and placed on the small parking lot just north of the excavation. The manway on the UST was then removed to allow any vapors remaining in the tank to escape. Initial PID readings from the opened manway were 200 ppm. Within a few hours the readings had decreased to 20 ppm.

Following the removal of the UST, the excavation was inspected by Mr. Ben Hall of the Michigan Department of Natural Resources. It was explained to Mr. Hall that most of the soils in the excavation had PID readings of 30-50 ppm and a few areas had readings ranging from 200-1000 ppm. Mr. Hall said that the areas of elevated PID readings should be excavated until PID readings fall within the 30-50 ppm range. Mr. Hall stated that once the elevated areas were removed the excavation could be back filled.

On December 7, all soils having elevated PID readings were removed except for those at the southwest corner of the excavation. The excavation of soils from this area continued around the sewer pipe and to the west until an eight inch gas main was encountered. The excavation was terminated at this point for safety reasons. The excavated soil was moved to a temporary storage area in the salvage yard. The soil was then transported to

Grand Blanc Landfill which is a licensed Type II landfill. The UST was moved to the BOC scrap yard where it was cut up and sold for scrap steel.

The temperature for the night of December 7 was expected to fall below 32 degrees, therefore, it was decided to back fill all but the southwest corner of the excavation to prevent the sprinkler line from freezing. Before the excavation was back filled three soil samples were collected from the base of the excavation. The soil samples were placed in VOA vials and sent to EDI for analyses. A soil sample was not collected from the center of the excavation because several inches of water had accumulated from small leaks associated with the sprinkler line. Soil sample #3 was taken from the southwest corner of the excavation which continued to have high PID readings.

The majority of the excavation was then back filled with clean fill sand. A temporary monitoring well was installed in the southwest corner of the excavation. Mr. Hall was informed of the condition of the excavation and the placement of the monitoring well. After obtaining permission from Mr. Hall the rest of the excavation was back filled and resurfaced with concrete. The monitoring well will be sampled every six months to define the presence of contamination.

BUILDING 38, Tanks #001, #002 and #123

Tank #001

The closure of tank #001 took place on December 7, 1988. The contents of the tank were removed and transported to another location for on-site use. The soils above the UST were excavated down to the top of the tank. The small amount of product found in the fill line was allowed to flow back into the tank. The UST was then filled with water and the soils surrounding it were excavated. Following the excavation of the soils the water was removed from the tank and transported to BOC Flint's waste water treatment facility.

The interior of the tank was then tested by BOC personnel for flammability using an explosion meter. The results of the testing demonstrated that the possibility of an explosion did not exist. The tank was then removed from the excavation and placed on the asphalt pavement adjacent to Building 38. PID readings of the excavation and the excavated soils ranged from 5-15 ppm. The Flint Fire Department was notified and gave BOC Flint verbal permission to remove the tank. Because of the low PID readings, it was not necessary to notify the MDNR before back filling the excavation.

After the tank was removed three soil samples were taken from the base of the excavation. The soil samples were placed in VOA vials and sent to EDI for analyses. The excavation was then backfilled with natural soils.

Tank #002

Tank closure activities started on December 8, 1988. The contents of tank #002 were removed and transported to another location for use. The UST was then filled with emulsified water flooding all lines. The concrete pavement above the tank was then broken up and removed.

During the excavation of the tank, PID readings of the soils surrounding the tank were consistently below 2 ppm. Additional time was needed to remove the oddly placed fill and vent lines which were encountered approximately two feet below the surface. Once the lines were removed the excavation of the soils proceeded quickly.

Near the end of the excavating process the backhoe operator tried to slide the tank to one side to remove the remaining soils. The tank was inadvertently punctured and approximately one third of the water in the tank entered the excavation. The remaining contents of the tank and the water in the excavation was pumped out and taken to BOC Flint's waste water treatment plant.

Tank #002 was removed from the excavation on December 13 and taken to the salvage yard where it was cut up and sold as scrap steel. The excavated soils were transported to Grand Blanc Landfill for disposal. PID readings of the excavation after the tank was removed ranged from 0 to 21 ppm. Three soil samples were taken from the bottom of the excavation, placed in VOA vials and sent to EDI for analyses. The results of the chemical analyses are provided in Attachment D. The excavation was then back filled with clean fill sand and paved over with concrete.

Tank #123

Tank closure activities started on December 16, 1988. The contents of tank #123 were removed and transported to another location for use. The tank was then filled with emulsified water, flooding all lines. The asphalt and concrete pavement above the tank were then broken up and removed.

The initial soils excavated from above the tank had PID readings of 60-70 ppm. As the excavation continued PID readings decreased. Soils adjacent to the top and sides of the

tank had Hnu readings of 30-60 ppm. Soils within the excavation a few feet from the tank had PID readings of 1-2 ppm.

A sewer line was discovered running parallel to the north side of the tank after it was broken by the backhoe. A six inch water main for the fire prevention system was also discovered running parallel to the west side of the tank. It was not damaged. After the soils surrounding the tank were removed the water from within the tank was pumped out and taken to BOC Flint's waste water treatment plant.

Tank #123 was removed from the excavation on December 21 and taken the salvage yard where it was cut up and sold as scrap steel. The soils under the UST were then excavated down to the concrete hold-down pad. The UST's hold-down straps were attached to three sets of four inch I-beams that were located on the north and south sides of the tank. The presence of the beams made it difficult to excavate additional soils. The soils around the I-beams had PID readings from 100-200 ppm. PID readings for all other soils in the excavation ranged from 2-30 ppm. The excavated soils were transported to Grand Blank Landfill for disposal.

Three soil samples were taken from the base of the excavation, placed in VOA vials, and sent to EDI for analyses.

BUILDING 86, Tank #059

Tank closure activities started on December 8, 1988. The contents of tank #059 were removed and transported to another location for use. The UST was then filled with emulsified water flooding all lines. It was necessary to break through the concrete to gain access to the manway on top of the tank to perform the pumping. After the tank was filled with water the concrete pad above the tank was broken up and removed.

The material surrounding the UST was composed of black core sand. Near the top of the UST and extending to a depth of three feet, the surrounding sand had PID readings ranging from 200-500 ppm. The sand below this level had substantially lower PID readings with a few areas reaching 156 ppm. After the sand surrounding the UST was excavated the water from within the tank was pumped out and taken to BOC Flint's waste water treatment plant. The interior of the tank was then tested by BOC personnel for flammability using an explosion meter. The results of the testing demonstrated that the possibility of an explosion did not exist. The manhole on the UST was then opened and the tank allowed to air out for a day.

On December 13 tank #059 was removed from the ground and taken to the salvage yard where it was cut up and sold as scrap steel. A few areas within the excavation had PID readings as high as 80 ppm. These areas were removed, as well as the sand above the concrete hold down pad. All areas of the excavation now had PID readings ranging from 0-5 ppm except along the southern edge of the hold down pad. PID readings for this area were as high as 850 ppm. The excavation of soils along the southern end of the hold down pad extended several feet below the pad. However, PID readings continued to range between 300 and 850 ppm.

On December 14, the pit adjacent to the hold down pad within the excavation was enlarged to the east, west, and south. The pit was also deepened until water was encountered. General PID readings dropped considerably, but several isolated areas continued to have readings as high as 750 ppm. A sump was dug into the pit and a six inch screened well was installed in the sump. Mr. Hall of the MDNR was informed on December 16 of the status of the excavation and the installation of the well. Mr. Hall then gave permission to back fill the excavation. The monitoring well will be sampled every six months to define the presence of contamination. The soil removed from the excavation was taken to a temporary storage area in the salvage yard. The soil was tested for EP tox lead and determined to be non-hazardous. The soil was then transported to Grand Blanc Landfill for disposal.

Two soil samples were taken from the base of the excavation, placed in VOA vials and sent to EDI for analyses. The excavation was back filled with clean fill sand on December 20 and 21 and then covered with concrete pavement.

BUILDING 84, Tank 78

Tank #78 was located within a concrete vault adjacent to Building 84. The empty 15,000 gallon tank last contained #2 diesel fuel. Because the tank was located within a vault it is not considered an UST and is therefore not regulated under Michigan Rule R29.2336 Abandoned Underground Tanks.

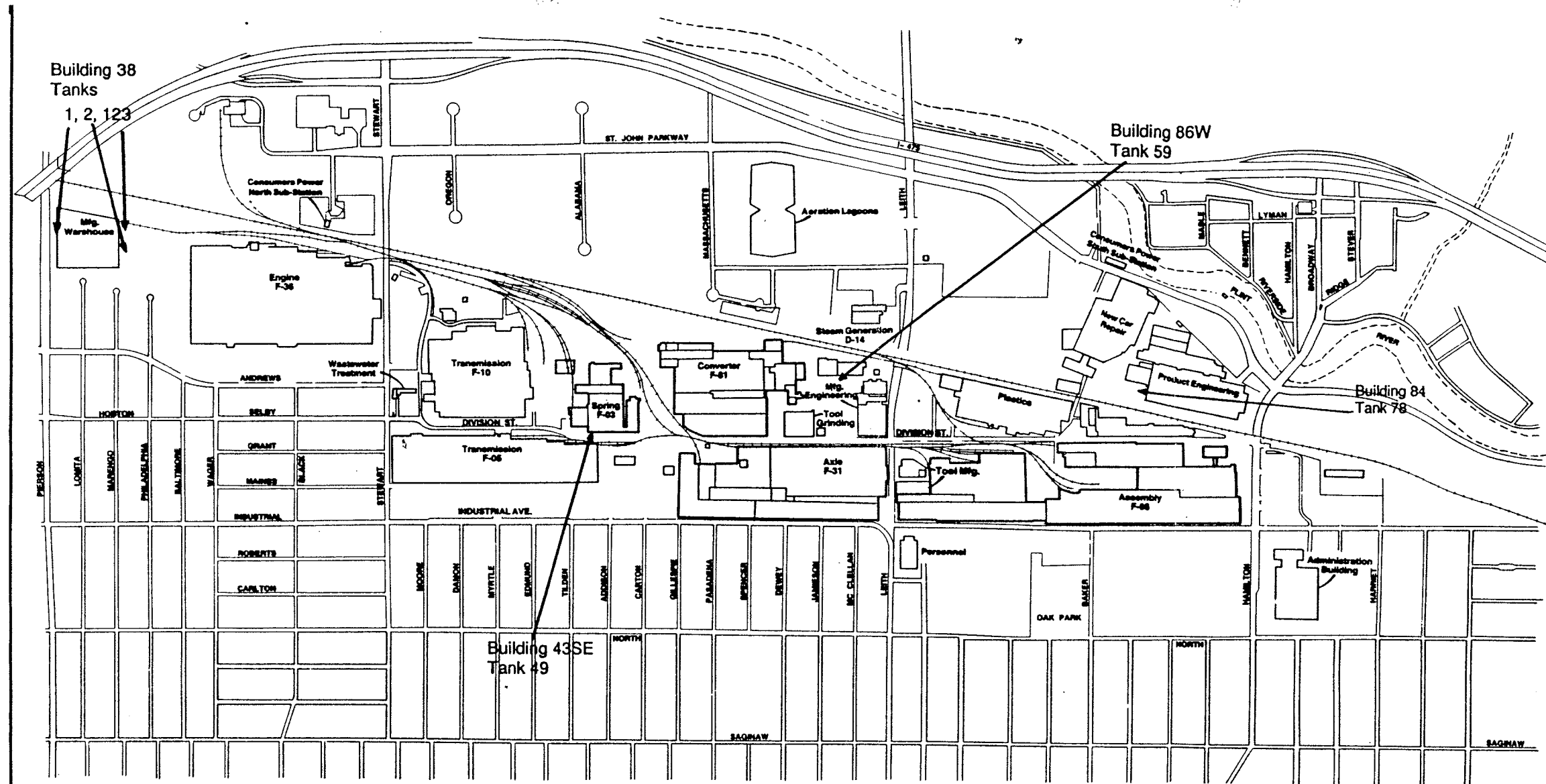
The removal of Tank #78 started with the disconnecting and removal of the metal structure covering the vault. Before the structure was removed the interior of the vault was tested by BOC personnel for flammability using an explosion meter. The results of the testing demonstrated that the possibility of an explosion did not exist. The structure was then lifted off the top of the vault by crane. The vault was left uncovered for several days and then tested again for flammability. The results demonstrated that the possibility

days and then tested again for flammability. The results demonstrated that the possibility of and explosion did not exist. The pipes connected to the tank were then removed.

On December 15, Tank #78 was lifted by crane and turned upright within the vault. The tank was left in this position until December 21, when the tank was removed from the vault by crane. While the tank was being removed the insulation surrounding the tank caught on fire. The fire was quickly extinguished and no damage was incurred. The tank was taken to the salvage yard where it was cut up and sold as scrap steel.

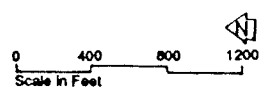
ATTACHMENT A

SITE MAP



LEGEND

- F-36 Factory Number
- D-14 Division Number
- ☐ Hazardous Waste Storage Area
- 38 Building Number
- Property Line
- Gate House
- Pedestrian Entrance
- Fence



BOC FLINT OPERATIONS (BUICK SITE)
December 1988 Underground Tank Removal
Site Plan

ATTACHMENT B
DAILY FIELD REPORTS

DAILY FIELD REPORT

Client: BOC Flint

Date: 12-5-20

Location: Building 435E

Proj No: _____

Work Description: UST Removal Tank 49 Building 435E

Contractors: BOC

Safety Precautions: _____

Weather: Cloudy 40°F

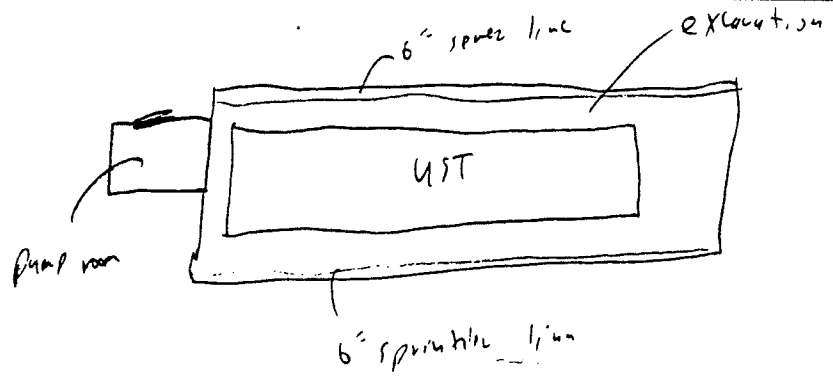
Sampling & Testing Locations & Methods: VDA - excavation, soil, ambient air, inside UST

Visitors (title, company, purpose): BOC Henry Hatter, Cindy
Hail - safety director

Principal Work Performed: Removal of tank contents, rinse out tank with deionized water, removal of soils from above and around UST. Soil stabilized along excavation and covered with plastic

Incident Report or Significant Observation: OVA readings of inside of UST through 4" opening was over 100 ppm. OVA readings of excavated soil at the same depth of UST ranged from non detect to over 200 ppm. Highest readings found along south end and along the west side of UST. Flammability test was performed by BOC on contaminated soil - results over 200°F. Parallel to tank on west side is a 6" sewer line and on east side a 6" sprinkler line. BOC personnel were not aware of their existence. Water encountered at NE corner of excavation at a depth of the bottom of the UST.

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DAILY FIELD REPORT

Client: BOC Flint

Date: 12-6-88

Location: Building 435F

Proj No: 21080

Work Description: UST Removal Building 435E Tank #049

Contractors: BOC

Safety Precautions: _____

Weather: Sunny 45°F

Sampling & Testing Locations & Methods: _____

Visitors (title, company, purpose): Inspector State Fire Marshal
SGT Vincent M. Lewis Ben Hall - MDR - inspect excavation and UST

Principal Work Performed: State Fire Marshal Lewis gave
permission to remove UST. At 10:00 AM it was removed and placed
adjacent to excavation. Mr Ben Hall arrived on site at 3:45 and inspected
the excavation and the tank. It was explained to him that most soils in
the excavation had 30-50 ppm on the OVA and a few "hot spots" had
from 200-1000 ppm. He said the hot spots should be excavated down to
the 30-50 ppm range. He was satisfied that the UST was clean. He
said the excavated soil should be sent to a Type II lead fill.
Before Mr Hall arrived the man way on the UST was removed. Initial
OVA readings in the tank were 200 ppm. By the time Mr Hall arrived
the readings had dropped to 20 ppm. The tank will be moved tomorrow

Incident Report or Significant Observation: Ambient excavation
air 10-50 ppm. Excavation soil 20-50 ppm. SW corner 100-1000 ppm
4" inches of water in bottom of excavation. Some leaking sprinkler
main that rise above ground.

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DAILY FIELD REPORT

Client: BOC Flint

Date: 12-7-2000

Location: Building 435E @ 38NW

Proj No: 21020

Work Description: UST Removal Tank 049 & 001

Contractors: BOC

Safety Precautions: _____

Weather: Partly Cloudy 40°

Sampling & Testing Locations & Methods: Tank 001 excavation - 3 sample location from bottom of excavation

Vistors (title, company, purpose): _____

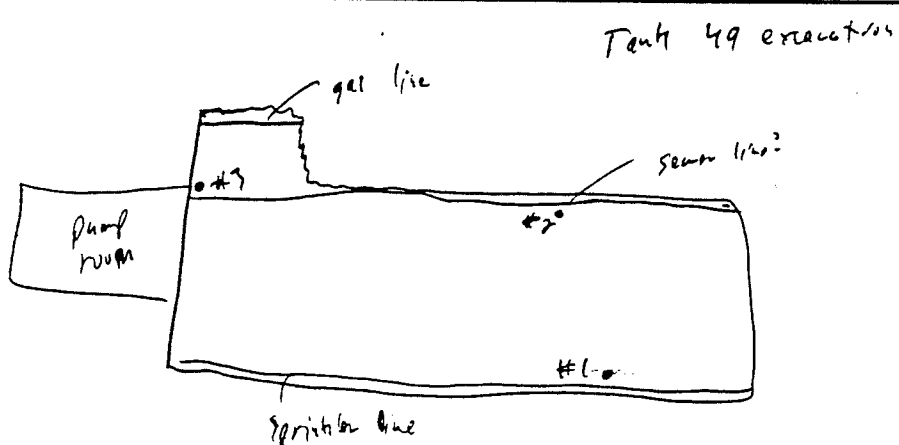
Principal Work Performed: Excavated and removed tank 001. OVA soil readings ranged from 5 ppm - 15 ppm. Tank 001 was emptied of product and filled with water. The tank was excavated and the water was then pumped out. The tank was then lifted out of the excavation. LEL readings were all 0% before and after tank excavation. The excavation was backfilled with native soil.

Several more cubic yards of soil were removed from the SW corner of the tank 049 excavation. OVA readings continue to range as high as 1000 ppm. Tank 049 was moved to the scrap yard. The north and east side of the excavation was backfilled with fill sand. Several more cubic yards of soil was removed from the SW portion of the excavation. Excavation was stopped when an 8-10 line (gas?) was found 4' to the west and parallel to the sewer line.

Incident Report or Significant Observation: _____

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f N



DAILY FIELD REPORT

Client: BOC FRINT

Date: 12/8/88

Location: W side Bldg 86; SW corner Pldg 38

Proj No: 81080

Work Description: UST Removal

Contractors: BOC

Safety Precautions: Hard Hat, Steel toe boots

Weather: Sunny, 30°

Sampling & Testing Locations & Methods:

LEL Explosion meter prior to emptying tanks - off scale
After ads were removed and tanks filled with water - 0% - 21% oxygen

Visitors (title, company, purpose):

None

Principal Work Performed: Tank # 002 & Tank # 059 were both
drained of fuel, then filled with water flood - all lines.

Tank # 001 had no accessible man - familiar procedure. It was necessary
to break through concrete and breach the man way on top of tank.
No other problems were involved.

The decision was made to install a well at hot spot
found during removal of Tank # 001. Rock & stone will be set around bottom
of well pipe at ground water level to act as "screen".
Quality re results from M&S spec lab at BOC showed lack of Benzene & Ethane
however Xylene, Methyl Benzene + 30-50 other components were noted.
Lab anal. bt suspects a type of thinner involved - Not gasoline as
was in tank.

Incident Report or Significant Observation:

Only 1 pump tank truck available for removal of fuel &
delivery of water.

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DAILY FIELD REPORT

Client: BOC FLINT

Date: 12/3/88

Location: W BLDG 86

Proj No: 21080

Work Description: UST Removal - Tank # 059

Contractors: BOC

Safety Precautions: Hard Hat, Steel toe boots, Emergency Procedure, No Displays

Weather: Cold, 25° - light snow cover, breezy

Sampling & Testing Locations & Methods:

- OVM Background - 1-5 ppm
- Above tank - 200-500 ppm
- 3' and below on side of tank - 156 ppm (peak)

Visitors (title, company, purpose):

Principal Work Performed:

OVM Reading at tank location 8-20 am.
Cement pad on top of tank broken up and removed - As pad
was broken removed OVM reading on soils surrounding tank were between
15 and 105 ppm. Soil surrounding tank is coarse sand - black, highly
saturated 200-500 ppm at top of tank - Flash point was below
140° (room temp - flash). All soil 3' and above surrounding tank is being
put in 100' Soil from below 3' was considered hazardous for this
Flash point (analyzed in BOC lab) and is being put in a 2nd pile - This
will volatilize some what over the weekend and will be tested again
next week OVM reading on the soil below 3' peaked at 156 ppm
Tank does not seem to be leaking - water level still at top. Confirmation of
soil above tank may be due to water filling, or draining from piping as it was
being removed.

Incident Report or Significant Observation:

Very congested area - many people & vehicles.
Nothing began until 11:30 am - Problem in rounding up all people.
A number of people not involved with the removal work did not heed
the orange flagging - stood talking with workers directing in
construction zone - could not leave when requested.

DAILY FIELD REPORT

Client: BOC FLUIT

Date: 12/9/88

Location: SW BLDG 38

Proj No: 21080

Work Description: UST REMOVAL, Tank #002

Contractors: BOC

Safety Precautions: Hard hat, Safety Glasses, Boots, Emergency Procedure

Weather: Cold - 25°, light snow cover, breezy Notice Posted.

Sampling & Testing Locations & Methods: OVM Background - 0ppm
Ambient Air at Tank Location - 0ppm

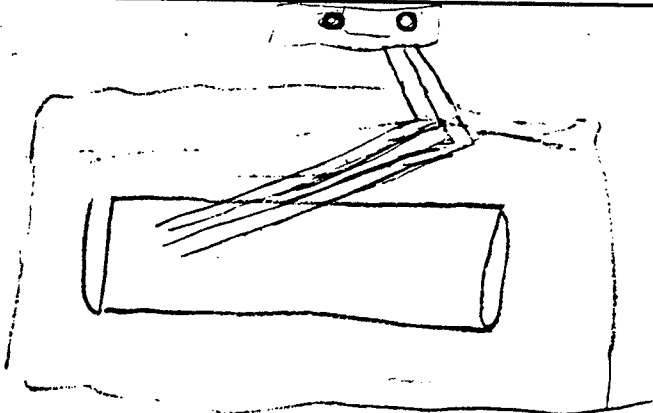
Visitors (title, company, purpose): _____

Principal Work Performed: Concrete slab on top of Tank #002 was broken up and removed. Soil is very clayey, mixed with med. gravel and very wet. OVM reading on still being removed from top & sides of tank was 0ppm. No flash increased on sample taken to BOC lab. Note: soil and oil (as shown below) should be checked for flash points. Unusual fuel tank no beam was - This was noted after work was stopped for the day.

Incident Report or Significant Observation:

2 pipe lines - (on top of other) - were discovered along W side of tank (Tank Runs N-S) - Coming from SW cor of Bldg 38 at an angle to tank. 3-4" lines? Approx 2' below surface. Checked Underground plans to see what they are. Pipelines are to the tank - set up is very unusual - After excavating area more closely it was determined that they are fill line and possibly vent line. Backhoe was leaking hydraulic fluid - needs repairs.

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DAILY FIELD REPORT

Client: BOC Flit

Date: 12-12-88

Location: Building 39 & 86

Proj No: 21020

Work Description: AST Removal Tank # 002 & 059

Contractors: BOC

Safety Precautions: _____

Weather: Cold 20°F partly cloudy

Sampling & Testing Locations & Methods: LEL Tank # 59 0%

Visitors (title, company, purpose): _____

Principal Work Performed: Tank 59 at building 86 was emptied of water and manhole on top of tank opened.

Tank #002 at building 39 - soil above and around tank was excavated. Tractor operator tried to slide the tank over in the excavation while the tank was full of water and punched the tank. About 1/3 of the water entered the excavation. The tank and the excavation was then pumped out.

Incident Report or Significant Observation: _____

DAILY FIELD REPORT

Client: BOC Flight

Date: 12-13-21

Location: Buildings 3854 & 864

Proj No: _____

Work Description: UST Removal

Contractors: BOC

Safety Precautions: _____

Weather: Cold 30°F Partly Clouds

Sampling & Testing Locations & Methods: Excavation 3854 (3 samples soil), 864 (2 samples soil)

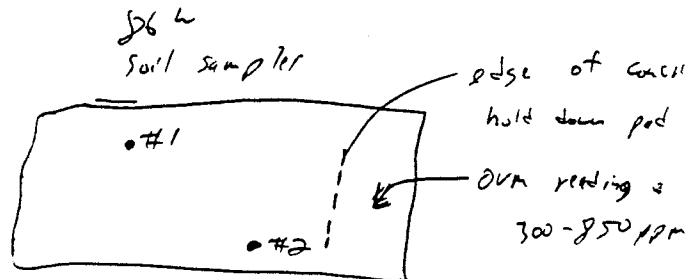
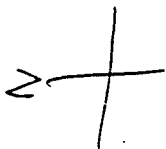
Vistors (title, company, purpose): _____

Principal Work Performed: Tank #002 was removed. OVM readings of excavation 0-2 ppm. OVR gave Ok to back fill - will be done tomorrow.

Tank #059 was removed. A few "hot spots" were found with OVM readings 0-5 ppm for rest of excavation. Hot spots were removed. All OVM reading 0-5 ppm except for south of concrete build tank pad. Soil excavated south of pad down 3' below level of pad. OVM reading continues to reach 850 ppm will wait for Henry Hottel's return for next steps.

Incident Report or Significant Observation: _____

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DAILY FIELD REPORT

Client: BOC Flint

Date: 12/15/88

Location: W86

Proj No: 21080

Work Description: Backfill of UST #059

Contractors: BOC

Safety Precautions: Hard Hat, Safety Glasses

Weather: Cold, Flurries, temp. falling through out day 30°-20°

Sampling & Testing Locations & Methods: Water sample taken by
bailer from sump area - VOC analysis by BOC Lab.

Visitors (title, company, purpose): None

Principal Work Performed: Tanker truck busy all day with water
main breaks.
Could not get DNR to comment or show up on site for inspection
of contamination of pit at #059.
No work performed.

Incident Report or Significant Observation: Tank at building #78
was lifted and turned "upright" - workers were in vault on top of
tank hooking up chains. No harness or confined space entry equipment
was used.

DAILY FIELD REPORT

Client: Boe

Date: 12/16/88

Location: W-86

Proj No: 21080

Work Description: UST Removals

Contractors: Boe

Safety Precautions: As before

Weather: Cold, flurries, 25°-30°

Sampling & Testing Locations & Methods: None

Visitors (title, company, purpose): None

Principal Work Performed: DNR ok'd backfill for #059. It was decided to put a 4" screened well at sump location. liquid was seen "seeping" up from under pad at this location. A well was designed on paper and given to draftsman to draw up for pipefitters to build.

Tank #123 was opened and pumped, then filled with water - Ready to be excavated next week.

No backfilling was done at #059 today. This will be done next week when well is ready.

Incident Report or Significant Observation:

Cindy Heil & John Moldvan both agreed that because tank near building #078 did not need to be filled with water because contents were non combustible.



Date: 12/19/88
 Client: BOC Flint
 Project No.: 21080

12/19/88

Notes:

TANK #123:

Finished w/ Jack Hammer @ 1:45p

1:40p Matt G. went to talk to ^{John} (Dave M.?) Regarding Progress. - He left from there -

Back-Hoe operator Picked up ^{the} Scoop for the Back-Hoe & He & the Dump Truck Drove away 1:50p

I'm Assuming they're Done for the Day, AS, Nothing was said to me prior to them leaving.

Concrete @ TANK #2 location Trolled & Workers left @ 2:00p - Took Photo -

2:05p - They Returned w/ A 912 Backhoe (Liebherr 912) ~~to~~ ~~load~~ ~~Broken~~ ~~Concrete~~ ~~and~~ ~~truck~~ #8391 (B) Dropped off & left.

@ 2:10p * Now I'm Assuming they're Done here for the Day.

Went to tank #59 to see if anything was happening. Checked in w/ John Mulind? - Nothing else happening.

I left Site to find a motel @ 2:30p

12/20/88

Arrived @ Plant @ 6:45a

Drove by TANK Excavation #59 to see, if by chance, the Contractors were here yet. - Not Here -

Drove to TANK #123 Area to wait.

Contractors Arrived @ #123 Area @ 7:15p

Working on their Equipment 7:15p - 7:35p

Started the 912 Backhoe @ 7:45p & Began Loading Broken Concrete. - Calibrated HNU to 70 ppm using Benzene Calibration Gas. -

MOSTLY
SUNNY
40-45°F

LT. RAIN
35°F



Date: _____

Client: _____

Project No.: _____

12/20/88 Continued:

First Load in 10yd Dump truck HAULED AWAY @ 7:55⁺

Took HNU Reading of 60-70ppm (Due to old GAS Lines broken w/spillage) on Surface of Soils under Concrete

Third Load hauled away @ 8:25⁺ - 8:35⁺

Located EDGES of TANK & hooks for lifting, also the Vent Pipe, and where it Runs. - Took Photo - (overcast, - Photo may not be

Fourth Load HAULED AWAY @ 8:50⁺ Above TANK

Took HNU Reading of Exposed Soils (30-40ppm) & Ambient Reading - upwind of 0.0ppm - Down wind of 1-2ppm.

* Most Areas (approx. 3' away) (width of Bucket) only 1-2ppm →

Contractors took break 8:50⁺ - 9:45⁺

* Started Light Rain @ 8:45⁺ * (again)

Started Loading 5th Dump truck Load @ 9:45⁺ - 9:53⁺

HNU Readings Staying @ 1-2ppm in Excavated Area ~~South Side~~
(South Side of tank #123

(#123) 6th Load 10:00⁺ - 10:10⁺

Drove over to Area #59, ~~Area~~

The well is in place w/some clean sand in the area.

- Took 2 photos -

Back at #123, started working on Soil Removal of the North Side of the TANK.

(#123) 7th Load of Soils 10:15⁺ - 10:25⁺

Cement truck @ Area #49, Ready to Pour Concrete over Area.

(#123) 8th Load of Soils 10:30⁺ - 10:45⁺

A Storm Sewer Pipe Ran Next to the TANK, AND WAS Hit by Backhoe. Also a water main Runs Across the Excavation Area (West End of



12/20/88 Continued:

↑ **Still raining**
 Contractor took lunch 10:50* -
 Clouds started breaking-up @ 11:30*
 Took 2 photos of Broken Storm Sewer Pipe w/one showing Exposed water main (6"-8" dia.) for fire prevention system.

Backhoe operator back @ 11:45*
 Dump Truck back @ 12:00pm (started 9th load of Soils)
 12:05pm Moved Backhoe into position to Remove Soils from the East West Ends of tank #123

↓ **Clouds Break-up Stopped raining**
 HNU Readings around tank (outer perimeter) - 1/2 ppm (N, W, & S)
 Right next to tank & on East side of tank 40-60 ppm.

* Soils in that area will have to be removed after tank is lifted out.* (Spillage from backhoe, swept back into excavated area.)
 9th truck load completed @ 12:20pm (hailed away @ 12:45pm)

Area Enclosed
 Took another (2) photos of excavation around tank 12:30pm (from use & from ex)
 Next Phase: Pump water out of tank - (photo) 2:00pm
 " : Hook-up to tank - (photo) (12/21/88)
 " : Pull tank - (photo) (suspended) (12/21/88)

* Area #49 concreted & trolled * **BELOW**
 Drove over to #59 to check progress.
 Breaking more concrete to the East of excavated area (old bumper guard)
 (#59) • more clean fill added (around where gas pumps w)

Went back to #123; no one over there - found out it was break time (again)
 1:30pm Went to John Molodtsov's office to update him.

↑ Doing this time the Pump Truck must have come, because, a hose is in the tank #123. - Pump truck holds 2000 gals. (will take 3-trips)
 Took photo of 2nd Pumping (2:00pm)

East side
 I was told that the tank will be pulled out tomorrow 12/21/88
 Took photo of cemented area #49 & area #59 w/back filled soils & broken concrete



Client: _____

Project No.: _____

12/21/88

ARRIVED ON SITE @ 7:00^{AM}

7:20^{AM} - BOB DROPPED OFF TRAILER AT #123 TO LOAD TANK ON TO.

CRANE BROUGHT OVER @ 8:00^{AM} (HUGE)

LOADED-UP BACKHOE FROM YESTERDAY @ 8:20^{AM}

CRANE IN POSITION TO PULL TANK BY: 8:30^{AM} HOOKED CHAINS ON TANK, PULLED @ 8:45^{AM} (TOOK PHOTO)

TANK LOADED ONTO TRAILER, AWAITING BINDERS TO HOLD DOWN THE TANK FOR TRANSPORT.

BACKHOE ARRIVED BACK @ #123 @ 9:15^{AM} TO REMOVE SOILS THAT WERE UNDER TANK. (STRONG ODOR)

HAULED TANK AWAY @ 9:30^{AM}

10^{YD} DUMP TRUCK ARRIVED @ 9:32^{AM} - BEGAN LOADING -

* HARD TO REMOVE ALL HOT SOILS, AS, TANK SAT ON CONCRETE BASE W/ 4" I-BEAMS ON THE NORTH & SOUTH SIDE OF TANK (USED AS TANK HOLD DOWNS) BEAMS IN THE WAY OF EXCAVATION. THESE AREAS HAVE HIGH READINGS ON THE HNU (100ppm - 200ppm) - TOOK PHOTO -

Other Readings taken on outer perimeter read from 2ppm - 30ppm in some areas (towards base of excavation)

Backhoe operator took lunch @ 10:30^{AM} - I will let the pit Airate (vitalize) during this time.

Drove to #59 - HAS BEEN CEMENTED & TROLLED - PHOTO - LUNCH - 10:45 - 11:15^{AM}

UPON RETURNING FROM LUNCH, I FOUND OUT THEY WERE PULLING TANK 78 (BY BLDG 78) & SOMEHOW IT CAUGHT FIRE. I FOUND THIS OUT AFTER THE FACT. I WAS TOLD ON MONDAY BY MATT GIOVANNI THAT THIS TANK WASN'T GOING TO BE PULLED UNTIL AFTER JAN. 1, 1989



Date: _____

Client: _____

Project No.: _____

12/21/88 continued

By the time I got to the tank, it had already been removed & the fire put out, took a few photos of tank & tank area

1:30pm contacted SUSAN VANDERPLIG of ERI to find out about sampling & soils in the #123 excavation & also tell her about tank #78 catching fire.

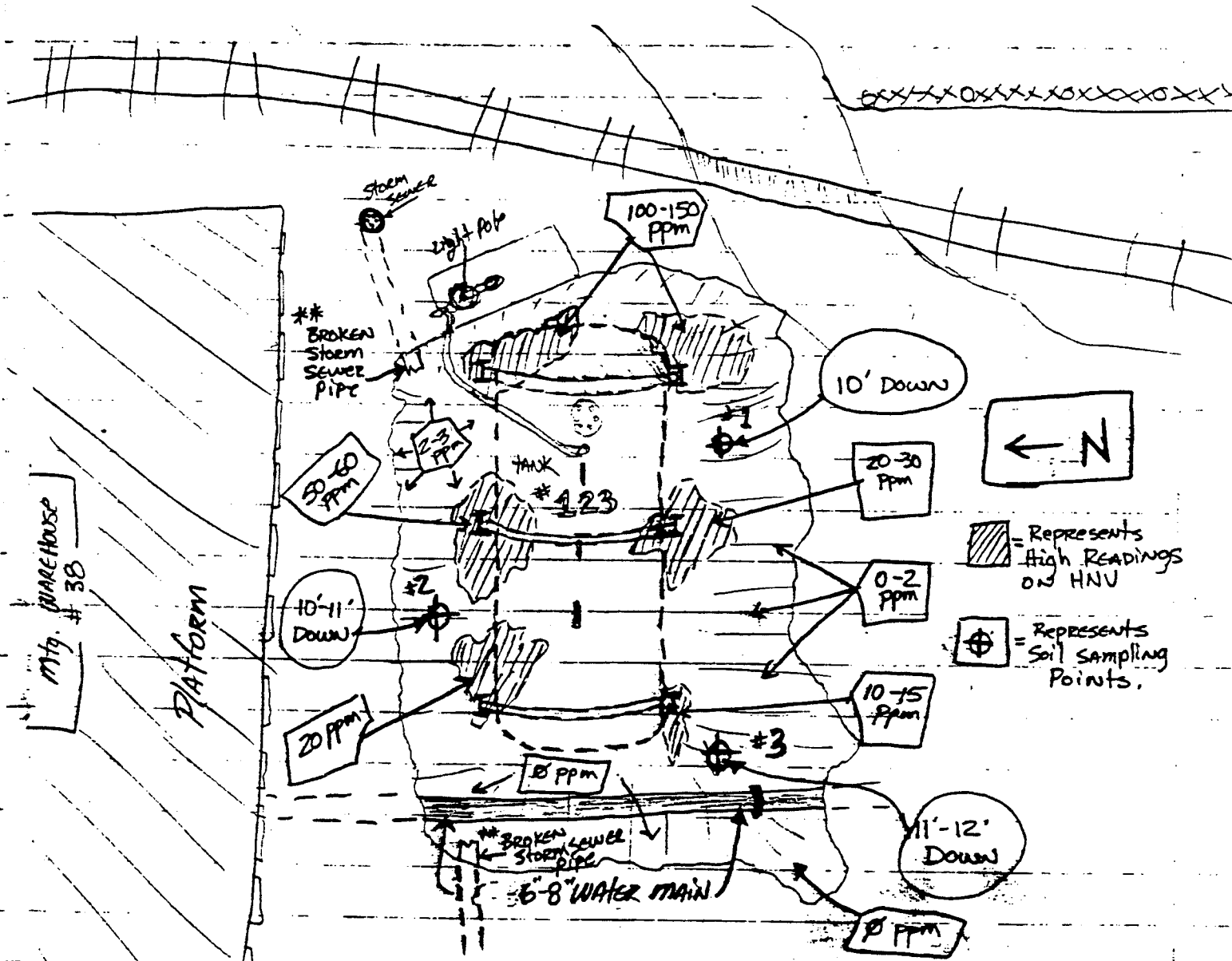
Took a soil sample from the South Side, the North Side, & the South West Corner of the excavation. 1:50pm - 2:00pm

Background readings of 2-3ppm in pit (due to the small piles of "hot" soils around the I-beams in the concrete pad)

Went to John Moldovans' office to update him on what has been done & what happened @ tank #78.

left BOC @ 3:00pm

TANK # 123 EXCAVATION & REMOVAL.
 APPROX. 13' DEEP TO CONCRETE PAD (BASE)



TANK SAT ON CONCRETE SLAB w/ 4" I-BEAMS & STRAPS FOR HOLDING TANK IN PLACE. COULD NOT GET ALL "HOT" SOILS w/ BACKHOE IN THE AREAS WITH AN I-BEAM.

I WOULD ESTIMATE 95-98% OF CONTAMINATED SOILS REMOVED

** I WAS INFORMED BY BACKHOE OPERATOR THAT THE STORM SEWER BREAK WILL BE REPAIRED, PRIOR TO BACKFILLING.

ATTACHMENT C
MATERIAL SAFETY DATA SHEETS

B-O-C Materials Engineering

| | | | | | |
|-----------------------|-------------|---------------------|-----------------------|--------------------|--------------------------|
| Card Date 09/26/89 | Prefix V | Lab Number 14327 | Project Number N/A | Part Number NPN | Part Name SOIL SAMPLE |
|-----------------------|-------------|---------------------|-----------------------|--------------------|--------------------------|

Specifications

N/A

| | | | | |
|--------------------|---------------------|---------------|------------------------|--------------------------------|
| Heat Number N/A | Lot Number 9-25A | Factory 03 | Number of Samples 1 | Quantity in Lot CORE SAMPLE |
|--------------------|---------------------|---------------|------------------------|--------------------------------|

| | |
|---------------------------|--|
| Date Received 09/25/89 | Source SOIL UNDER RUST INHIBITOR TANK |
|---------------------------|--|

| | | |
|------------------------|----------------------------|----------------------------------|
| Report To H. HATTER | Telephone Number 6-9442 | Requested by M. NIELSEN/ H.H. |
|------------------------|----------------------------|----------------------------------|

Sample History

CORE SAMPLE OF SOIL FOUR FEET UNDER RUST INHIBITOR TANK IN FAC. 03. SAMPLE TAKEN FROM UNDER TWO FEET OF CONCRETE UPON WHICH RUST INHIBITOR TANK WAS LOCATED. GEORGE SMILJANICH PH. 6-5324 WOULD LIKE SOIL CHECKED. SAMPLE WAS TAKEN 09/22/89. NOTE; SAMPLE COLLECTED IN CONDUIT PIPE AND ENDS OF PIPE CLOSED WITH DUCT TAPE. M.N.

Work Requested

TYPE SOIL, pH OF SOIL, CHECK FOR RESIDUE FROM RUST INHIBITOR TANK. (NITRITES NITRATES, PHOSPHATES AND ALSO CHECK WITH PROCESS PEOPLE TO DETERMINE WHAT WAS USED IN THIS SYSTEM AND THEN CHECK SOIL FOR ANY LEAKAGE.

| Area(s) | Initials | Human Time | Machine Time | Date Completed | Sample(s) Out | Meth/Proc |
|--------------|----------|------------|--------------|----------------|---------------|-----------|
| CM Chemistry | COD | 2 | 0 | 04 OCT 89 | 04 OCT 89 | NO |

Results/Methods

SOIL PH OF 50 GRAMS + 50 MILLILITERS DI WATER = 11.05
 PH OF WATER ENTERING PIT AREA = 7.88
 NO NITRITES DETECTED IN SOIL OR WATER.
 NO FREON EXTRACTABLES IN SOIL SUBMITTED.

Appendix G

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

Closure Documentation for Tanks 35, 36, and 37 Near Building 30

UST REPORTS

for...

FACTORY 3

at...

BOC FLINT AUTOMOTIVE DIVISION



September 26, 1990

Michigan State Police
Fire Marshal Division
HAZMAT Section
3705 W. Jolly Road
P.O. Box 30157
Lansing, MI 48909

Re: UST Closure Report, Factory 03 Tank Farm

Gentlemen:

Attached please find the excavation-zone assessment, laboratory reports, site maps, and special reports, if appropriate, for the referenced tank farm located within the B-O-C Flint complex.

Should you have any questions, please contact either our consultant, WW Engineering & Science (Mr. Marion Johnston), at their Livonia Office (313/591-0522) or Mr. Henry Hatter at 313/236-9442.

Sincerely,

Joseph A. Orloff
Manager
Manufacturing Technical Staff

/lmr

Enclosure

xc: M. Johnston, WWES

B-O-C Flint Automotive Division

General Motors Corporation 902 E. Hamilton Avenue Flint, Michigan 48550

EXCAVATION ZONE ASSESSMENT
40 CFR 280.72

Computed by: MOJ
Site: Factory 03-Delco

Subject: UST Removals
Tank #: 35, 36, 37
Client: BOC Flint

Sheet 1 of 1
Job #: 21193.04
Date: _____

A. METHOD OF CLOSURE:

Three (3) 12,000 gallon Quench Oil tanks were removed by excavation by BOC Flint division 25 facilities engineering personnel.

B. NATURE OF THE STORED PRODUCT:

The product stored in each of the 3 tanks were S-7 Quench Oil. Two tanks contained new product and one recirculated oil from the Quench Processes.

C. TYPE BACKFILL:

Backfill around the tanks was foundry sand.

D. DEPTH TO GROUND WATER:

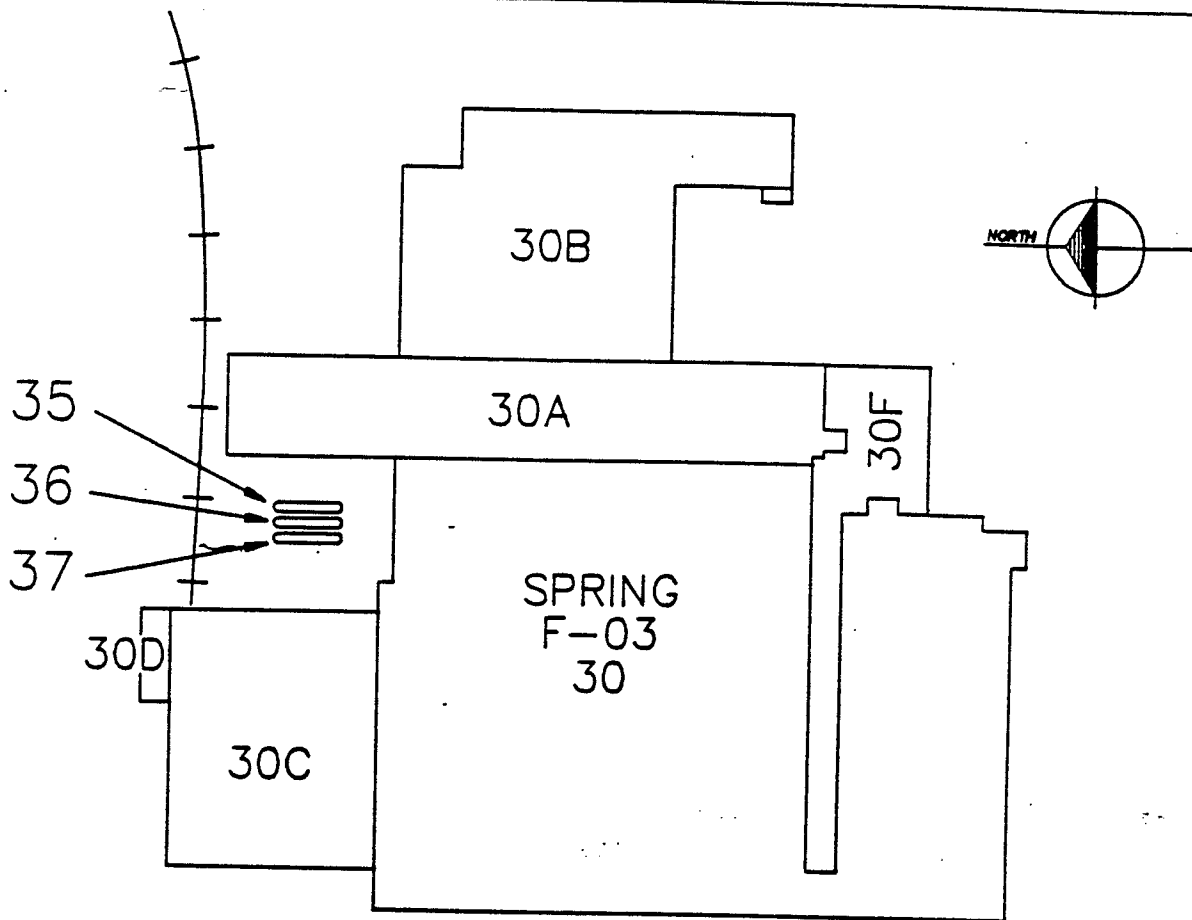
Ground water depth was 13 feet below grade.

E. OTHER FACTORS:

The 3 tanks were cleaned on the BOC site, and cut into manageable pieces for disposal at local scrap metal dealers.

F. FINDINGS:

Four (4) soil samples were taken in the bottom of the excavation zone and tested for TPH. Total Petroleum Hydrocarbon concentrations above 100 ppm were not detected in the excavation zone of the tanks. No releases occurred at the Factory 03 tank farm.



| TANK NO. | TYPE OF TANK | CAPACITY (GALLONS) | MSDS NO. | PRODUCT STORED | FLASH POINT | FLAMMABLE LIMITS | | REQ. ANALYSIS | | |
|----------|--------------|--------------------|----------|----------------|-------------|------------------|-------|---------------|-----|----|
| | | | | | | UPPER | LOWER | 802 | TPH | Pb |
| 35 | STEEL | 12,000 | 7 | S-7 QUENCH | 320F | ND | ND | X | | |
| 36 | STEEL | 12,000 | .7 | S-7 QUENCH | 320F | ND | ND | X | | |
| 37 | STEEL | 12,000 | 7 | S-7 QUENCH | 320F | ND | ND | X | | |

APPENDIX F
 DELCO-FACTORY 03
 TANK LOCATION PLAN

NOT TO SCALE

Notification for Underground Storage Tanks

FORM APPROVED
OMB NO 2050-0068
APPROVAL EXPIRES 9-30-91

Michigan State Police
Fire Marshal Division, Hazmat Section
3705 W. JoTly Road
P.O. Box 30157 Lansing, MI 48909

I.D. Number **STATE USE ONLY**
Date Received

GENERAL INFORMATION

Notification is required by Federal law for all underground tanks that have been used to store regulated substances since January 1, 1974, that are in the ground as of May 8, 1984, or that are brought into use after May 8, 1984. The information requested is required by Section 9002 of the Resource Conservation and Recovery Act. (RCRA), as amended.

The primary purpose of this notification program is to locate and evaluate underground tanks that store or have stored petroleum or hazardous substances. It is expected that the information you provide will be based on reasonably available records, or, in the absence of such records, your knowledge, belief, or recollection.

Who Must Notify? Section 9002 of RCRA, as amended, requires that, unless exempted, owners of underground tanks that store regulated substances must notify designated State or local agencies of the existence of their tanks. Owner means—

(a) in the case of an underground storage tank in use on November 8, 1984, or brought into use after that date, any person who owns an underground storage tank used for the storage, use, or dispensing of regulated substances, and

(b) in the case of any underground storage tank in use before November 8, 1984, but no longer in use on that date, any person who owned such tank immediately before the discontinuation of its use.

What Tanks Are Included? Underground storage tank is defined as any one or combination of tanks that (1) is used to contain an accumulation of "regulated substances," and (2) whose volume (including connected underground piping) is 10% or more beneath the ground. Some examples are underground tanks storing: 1. gasoline, used oil, or diesel fuel, and 2. industrial solvents, pesticides, herbicides or fumigants.

What Tanks Are Excluded? Tanks removed from the ground are not subject to notification. Other tanks excluded from notification are: 1. farm or residential tanks of 1,100 gallons or less capacity used for storing motor fuel for noncommercial purposes;

2. tanks used for storing heating oil for consumptive use on the premises where stored;

3. septic tanks;

4. pipeline facilities (including gathering lines) regulated under the Natural Gas Pipeline Safety Act of 1968, or the Hazardous Liquid Pipeline Safety Act of 1979, or which is an intrastate pipeline facility regulated under State laws;
5. surface impoundments, pits, ponds, or lagoons;
6. storm water or waste water collection systems;
7. flow-through process tanks;
8. liquid traps or associated gathering lines directly related to oil or gas production and gathering operations;
9. storage tanks situated in an underground area (such as a basement, cellar, mineworking, drift, shaft, or tunnel) if the storage tank is situated upon or above the surface of the floor.

What Substances Are Covered? The notification requirements apply to underground storage tanks that contain regulated substances. This includes any substance defined as hazardous in section 101 (14) of the Comprehensive Environmental Response, Compensation and Liability Act of 1980 (CERCLA), with the exception of those substances regulated as hazardous waste under Subtitle C of RCRA. It also includes petroleum, e.g., crude oil or any fraction thereof which is liquid at standard conditions of temperature and pressure (60 degrees Fahrenheit and 14.7 pounds per square inch absolute).

Where To Notify? Completed notification forms should be sent to the address given at the top of this page.

When To Notify? 1. Owners of underground storage tanks in use or that have been taken out of operation after January 1, 1974, but still in the ground, must notify by May 8, 1984. 2. Owners who bring underground storage tanks into use after May 8, 1984, must notify within 30 days of bringing the tanks into use.

Penalties: Any owner who knowingly fails to notify or submits false information shall be subject to a civil penalty not to exceed \$10,000 for each tank for which notification is not given or for which false information is submitted.

INSTRUCTIONS

Please type or print in ink all items except "signature" in Section V. This form must be completed for each location containing underground storage tanks. If more than 5 tanks are owned at this location, photocopy the reverse side, and staple continuation sheets to this form.

Indicate number of continuation sheets attached

I. OWNERSHIP OF TANK(S)

Owner Name (Corporation, Individual, Public Agency, or Other Entity)
B-0-C Flint Automotive Division - GM

Street Address
902 E. Hamilton Ave.

County
Genesee

City State ZIP Code
Flint Michigan 48550

Area Code Phone Number
313 236-1606

Type of Owner (Mark all that apply)

Current State or Local Gov't Private or Corporate
 Former Federal Gov't (GSA facility I.D. no.) Ownership uncertain

II. LOCATION OF TANK(S)

(If same as Section I, mark box here)

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable

County

City (nearest) State ZIP Code

Indicate number of tanks at this location

Mark box here if tank(s) are located on land within an Indian reservation or on other Indian trust lands

III. CONTACT PERSON AT TANK LOCATION

Name (If same as Section I, mark box here) Job Title Area Code Phone Number
Henry Hatter Senior Environmental Engineer 313 236-9442

IV. TYPE OF NOTIFICATION

Mark box here only if this is an amended or subsequent notification for this location.

V. CERTIFICATION (Read and sign after completing Section VI)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the submitted information is true, accurate, and complete.

Name and official title of owner or owner's authorized representative Signature Date Signed
Joseph A. Orloff, Manager

CONTINUE ON REVERSE SIDE



Analytic & Biological
Laboratories, Inc.

BOC-FLINT OPERATIONS
ENVIRONMENTAL CONTROL

'89 NOV 17 P2:06

24360 INDOPLEX CIRCLE ■ FARMINGTON HILLS, MICHIGAN 48331 ■ PHONE: (313) 477-6666 ■ FAX: (313) 477-4604

(See enclosure report)
Shelton

11-16-89

SAMPLE NO: SEE BELOW
PAGE 1

EDI ENGINEERING & SCIENCE
39209 WEST SIX MILE ROAD
LIVONIA, MI 48152

MARION JOHNSTON

SAMPLE DESCRIPTION: SEE BELOW

RECEIVED: 11-14-89

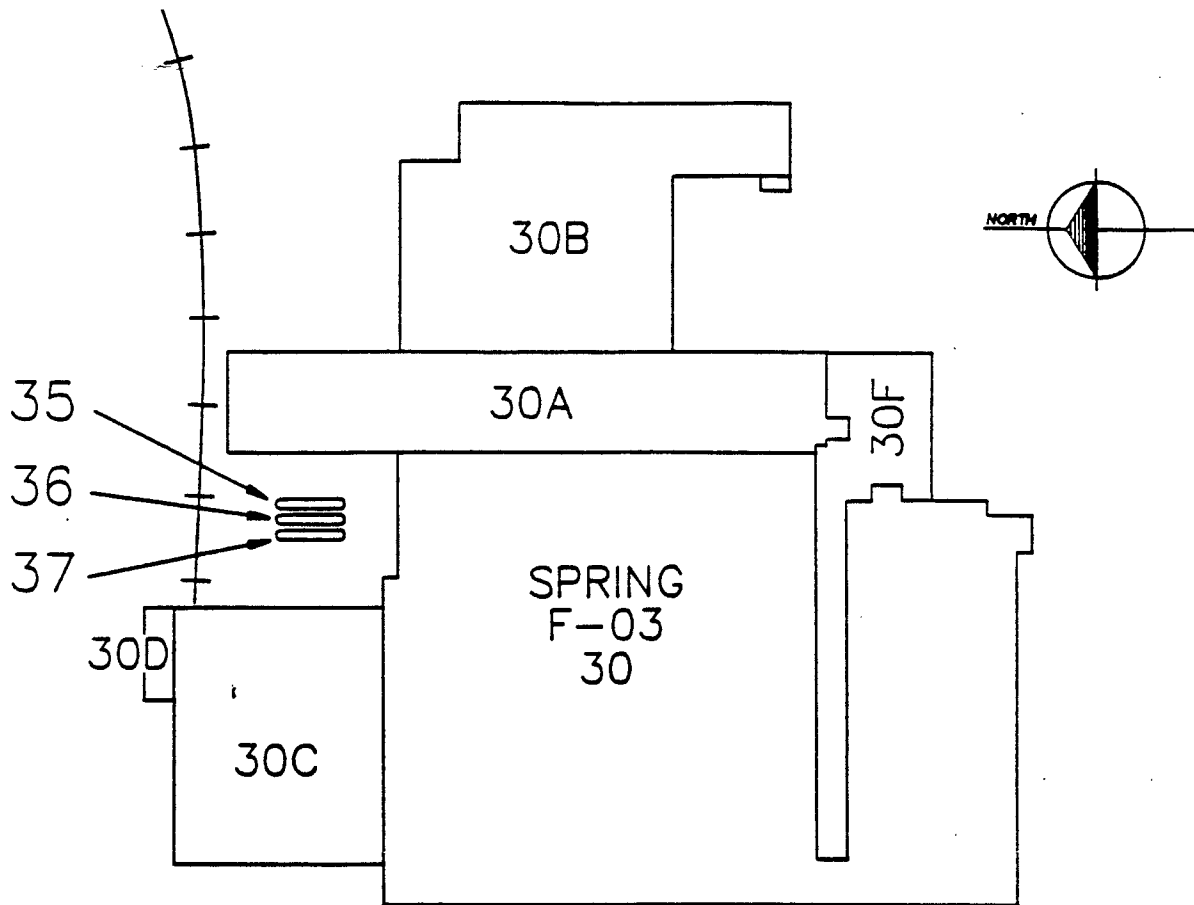
Total Hydrocarbons

| | | | |
|-------|------|------|-----|
| 12157 | 0950 | <1.0 | ppm |
| 32158 | 0952 | <1.0 | ppm |
| 12159 | 0955 | 1.6 | ppm |
| 12160 | 0958 | <1.0 | ppm |

ANALYTIC & BIOLOGICAL LABORATORIES, INC.

Francis B. Mc Laughlin, FAIC
Director of Laboratories





| TANK NO. | TYPE OF TANK | CAPACITY (GALLONS) | MSDS NO. | PRODUCT STORED | FLASH POINT | FLAMMABLE LIMITS | | REQ. ANALYSIS | | |
|----------|--------------|--------------------|----------|----------------|-------------|------------------|-------|---------------|-----|----|
| | | | | | | UPPER | LOWER | 602 | TPH | Pb |
| 35 | STEEL | 12,000 | 7 | S-7 QUENCH | 320F | ND | ND | X | | |
| 36 | STEEL | 12,000 | 7 | S-7 QUENCH | 320F | ND | ND | X | | |
| 37 | STEEL | 12,000 | 7 | S-7 QUENCH | 320F | ND | ND | X | | |

APPENDIX F
 DELCO-FACTORY 03
 TANK LOCATION PLAN

NOT TO SCALE

Appendix H

BLASLAND, BOUCK & LEE, INC.
e n g i n e e r s & s c i e n t i s t s

Geographic Information System Database (Compact Disk)