915152

Department of Environmental Conservation

Division of Environmental Remediation

Record of Decision

Saginaw - Buffalo

Erie County

Site Number 915152

March 1998

New York State Department of Environmental Conservation
GEORGE E. PATAKI, *Governor* JOHN CAHILL, Commissioner

DECLARATION STATEMENT - RECORD OF DECISION

SAGINAW - BUFFALO
Inactive Hazardous Waste Site
City of Buffalo, Erie County, New York
Site No. 915152

Statement of Purpose and Basis

The Record of Decision (ROD) presents the selected remedial action for the Saginaw - Buffalo inactive hazardous waste disposal site which was chosen in accordance with the New York State Environmental Conservation Law (ECL). The remedial program selected is not inconsistent with the National Oil and Hazardous Substances Pollution Contingency Plan of March 8, 1990 (40 CFR 300).

This decision is based upon the Administrative Record of the New York State Department of Environmental Conservation (NYSDEC) for the Saginaw - Buffalo inactive hazardous waste site and upon public input to the Proposed Remedial Action Plan (PRAP) presented by the NYSDEC. A bibliography of the documents included as a part of the Administrative Record is included Appendix B of the ROD.

Assessment of the Site

Actual or threatened release of hazardous waste constitutes from this site, if not addressed by implementing the response action in this ROD, presents a current or potential threat to public health and the environment.

Description of Selected Remedy

Based upon the results of the Site Investigations, Engineering Evaluation of Alternatives, and Interim Remedial Measure (IRM), the NYSDEC has selected removal of PCB contaminated soil, light non-aqueous phase liquid (LNAPL); collection and treatment of groundwater during soil excavation; maintenance of the pavement to prevent migration of lead contamination; and long term maintenance and monitoring.

The elements of the selected remedy are as follows:

- Excavation of PCB contaminated soils above 10 ppm from the source area and off-site disposal.
- Removal of PCB contaminated groundwater in the source area during excavation, on-site treatment, and discharge to BSA.

- Removal of LNAPL and its off-site destruction.
- Annual maintenance of the existing pavement over the 7-acre site and repair where necessary.
- Long term semi-annual monitoring of ten groundwater monitoring wells and storm sewer for PCBs and lead..
- Maintenance of storm sewer and monitoring wells.
- Deed Restrictions.

New York State Department of Health Acceptance

The New York State Department of Health concurs with the remedy selected for this site as being protective of human health.

Declaration

The selected remedy is protective of human health and the environment, complies with State and Federal requirements that are legally applicable or relevant and appropriate to the remedial action to the extent practicable, and is cost effective. This remedy utilizes permanent solutions and alternative treatment or resource recovery technologies, to the maximum extent practicable, and satisfies the preference for remedies that reduce toxicity, mobility, or volume as a principal element.

3/31/95
Date

Michael J. O'Toole, Jr. Director
Division of Environmental Remediation

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Record of Decision

Saginaw - Buffalo

Buffalo, Erie County, New York

Site No. 915152

March 1998

SECTION 1: SITE LOCATION AND DESCRIPTION

The Saginaw - Buffalo site, which is listed in the registry of Inactive Hazardous Waste Disposal sites in New York State, consists of American Axle Manufacturing's (AAM) paved parking lot #4. It is approximately 7 acres in size (Fig. 1) and is located in a mixed industrial and residential area. The site borders Scajaquada Street on the south, Conrail railroad and AAM's main building on the west, AAM's waste water treatment plant on the north, and the Niagara Mohawk substation and TTARP building on the east.

A storm sewer line with several laterals collects the surface water and is located in the site parking lot (Fig. 2). The sewer discharges into the Scajaquda Creek Drain which is below Scajaquada Street. The site is covered with asphalt. The bedding material underneath the asphalt pavement is approximately one foot deep. The site geology underneath the bedding material is as follows:

Below the bedding material is a layer of ash/slag type black or brown fill intermixed with various other materials and varies in thickness from 2 to 7 feet across the site (the lead contamination appears to be associated with this fill). Below this fill is a thin layer of black organic silt 1/4 to one foot in thickness. The thickness of the silty clay layer below the black organic silt ranges from 10 to 12 feet. This is underlain by Onondaga limestone bedrock which is approximately 17 to 19 feet below ground surface (bgs).

The groundwater is found at a depth of 3 to 4 feet bgs and is believed to be due to perched water conditions. The general groundwater flow direction appears to be towards the Scajaquada Creek Drain, i.e. towards the south, in the overburden. Based upon the regional hydrogeology, it is assumed that groundwater in the bedrock flows towards the west - northwest.

SECTION 2: SITE HISTORY

Scajaquada Creek originally flowed through the southern portion of the site. In the mid 1920's, the creek was relocated through a concrete conduit to flow underground, below what is now Scajaquada Street. The former creek bed and adjacent low lying areas were used for the disposal of ash by the City of Buffalo. From 1947 to 1966, the Buffalo Gravel Corporation operated a concrete plant on portions of this site.

General Motors (GM) purchased several parcels in the mid 1960s and constructed Parking Lot #4, which is the current listed site.

The site was sold to AAM in 1994 along with the main facility west of the Conrail right of way. As part of this conveyance, a deed restriction was placed on the property limiting it for use for industrial purposes only. No other development of the site occurred until November 1994, when AAM began construction of a Parts Coating Facility on the northern third of Parking Lot #4 (Fig. 3)

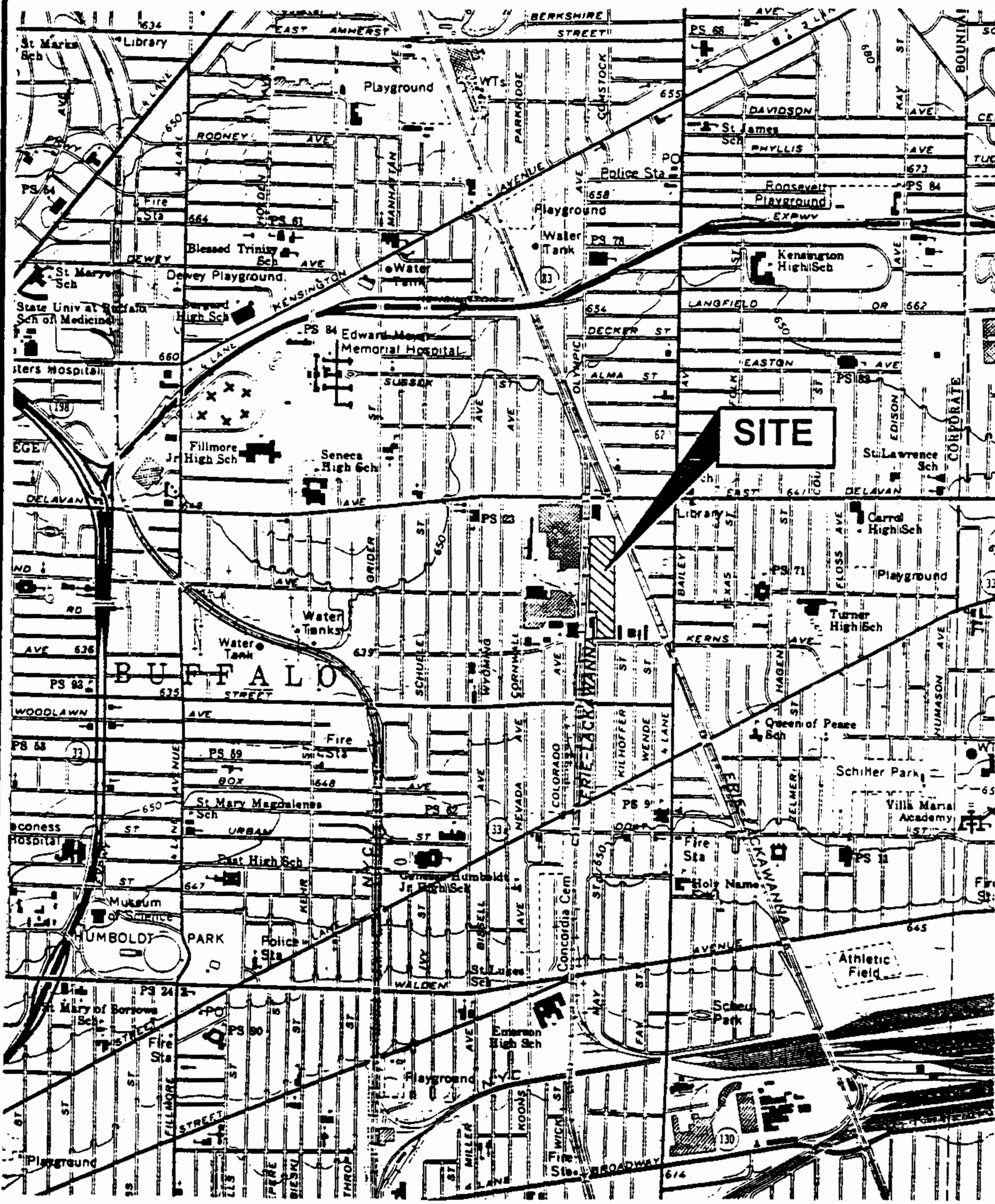

FIGURE 1
SITE LOCATION MAP
FORMER GENERAL MOTORS
SAGINAW - BUFFALO SITE

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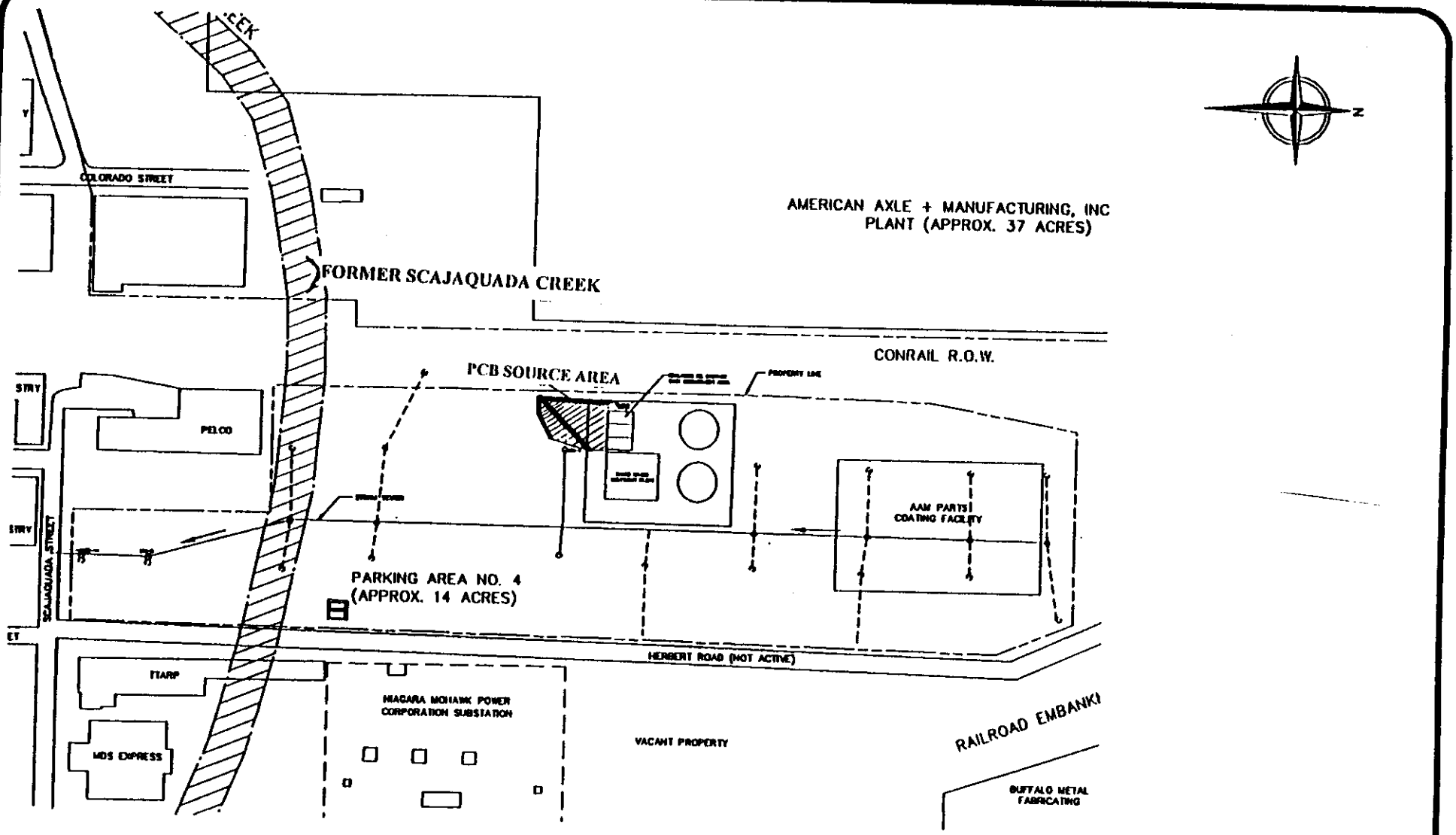

FIGURE 2
PCB SOURCE AREA (CLAY TILE PIPE AREA)
FORMER GENERAL MOTORS
SAGINAW - BUFFALO SITE

2.1: Operational/Disposal History

The source of the PCBs detected in an abandoned clay tile pipe (described in Section 2.2 below) is unknown. In the 1930's, the City of Buffalo filled the low lying areas around the site with large quantities of coal ash, which was commonly produced from heating homes during that time. This ash may be the source of the lead contamination found at the site. Exact quantities of the household waste disposed at this site are unknown.

2.2: Remedial History

In 1992 the site was listed in the registry of Inactive Hazardous Waste Disposal Sites in New York State. The site is classified as a Class 3 because the wastes at the site are covered by pavement of the parking lot. A classification 3 means that the site does not present a significant threat to the public health or the environment - action may be deferred.

Interim Remedial Measures (IRM)

In 1988, a collection trench was installed to cleanup an oil spill and oil contaminated water near the waste water treatment plant in parking lot #4 (Fig. 2). The collection trench consisted of two arms along the southern and western sides of the oil plume and installation of a manhole. During installation of the collection trench, a clay tile pipe containing PCBs contaminated oil was uncovered.

Partial Soil Removal:
In 1994, levels of total lead up to 8300 mg/kg were found in certain areas of the northern portion of the site. AAM addressed that area prior to construction of the Parts Coating Facility building by excavating approximately 30 cubic yards of highly contaminated soil from the area and disposing it off-site at a permitted landfill.

Clay Pipe Removal:
The clay tile pipe along with surrounding PCBs contaminated soil was excavated in 1995. Approximately 400 cubic yards of excavated soil was disposed of as a hazardous waste at a permitted facility. Approximately 56,000 gallons of contaminated water was also collected from the excavated trench and transported to an approved facility for disposal. An 100 foot long perforated pipe was installed in the excavated trench and connected to a manhole to collect the oil and contaminated groundwater. The trench was backfilled and paved over with asphalt.
The collected oil from the collection system is sent off-site for disposal.

Storm Sewer Cleaning and Repair
In 1996, approximately 875 linear feet of the storm sewer system which includes 8 laterals (Fig. 2) was cleaned using high pressure water. The ends of the lines were temporarily plugged to prevent migration of contaminated water and sediments. To ensure the cleanup was successful, the cleaned portions of the sewer were videotaped. Any segment not cleaned up properly was recleaned. Two drums of contaminated sediments recovered during the sewer cleanup were disposed as a hazardous waste while 4500 gallons of water generated from the sewer cleanup was disposed at CWM, a permitted off-site facility.

During video taping, a section of one of the laterals was found to be cracked. That section was replaced in September 1996.

SECTION 3: CURRENT STATUS

3.1: Summary of the Site Investigations

To determine the nature and extent of environmental problems at this site, the following investigations were conducted by GM's consultant, EMCON:

1986:
In order to satisfy the conditions for the major petroleum facility license (Petroleum Storage area is shown in Fig. 3), eight piezometers and five monitoring wells were installed to characterize the soil and groundwater conditions.

Spring 1987:
Four test pits were excavated during this investigation. Ash like fill and oily fill were observed during this investigation.

August 1987:
To determine the extent of oil contamination, sixteen additional test pits were excavated. Free floating oil was observed during this phase of investigation. PCBs were found in soil and oil samples.

1989:
A clay pipe containing oil was exposed during a test pit excavation near the groundwater collection system. Elevated levels of PCBs were found in oil in the pipe.

1990:
Six piezometers were installed to determine the lateral extent and orientation of the clay pipe. The clay tile pipe was found to extend into the oil contaminated area.

April 1993:
Soil samples of ash-like fill from four soil borings were tested for leachability (EP-Toxicity and TCLP) of lead.

November 1993:
In order to determine the nature of contamination in the Waste Water Treatment area, 34 soil borings were done in that area. Soil samples from the borings were tested for PCBs, lead, and total petroleum hydrocarbons (TPH). Ash-like fill which contained elevated levels of lead, was found in most of the soil samples.

1994:
In order to determine the structural integrity of soils in the proposed AAM Parts Coating Facility, EMCON installed 22 soil borings in addition to five borings installed by Malcolm Pirnie. Ash-like fill material and soil samples were tested for lead.

Scajaquada Creek Drain sampling - 1996
Water and sediment samples from three locations (one upstream and two downstream of the storm sewer inlet) in the Scajaquada Creek Drain were collected and tested for PCBs and Lead.

January 1997:
This investigation consisted of excavation of 2 test pits, drilling of 7 test borings, and installation of 3 monitoring wells. Soil samples from test pits and borings; sediment and water samples from the on site

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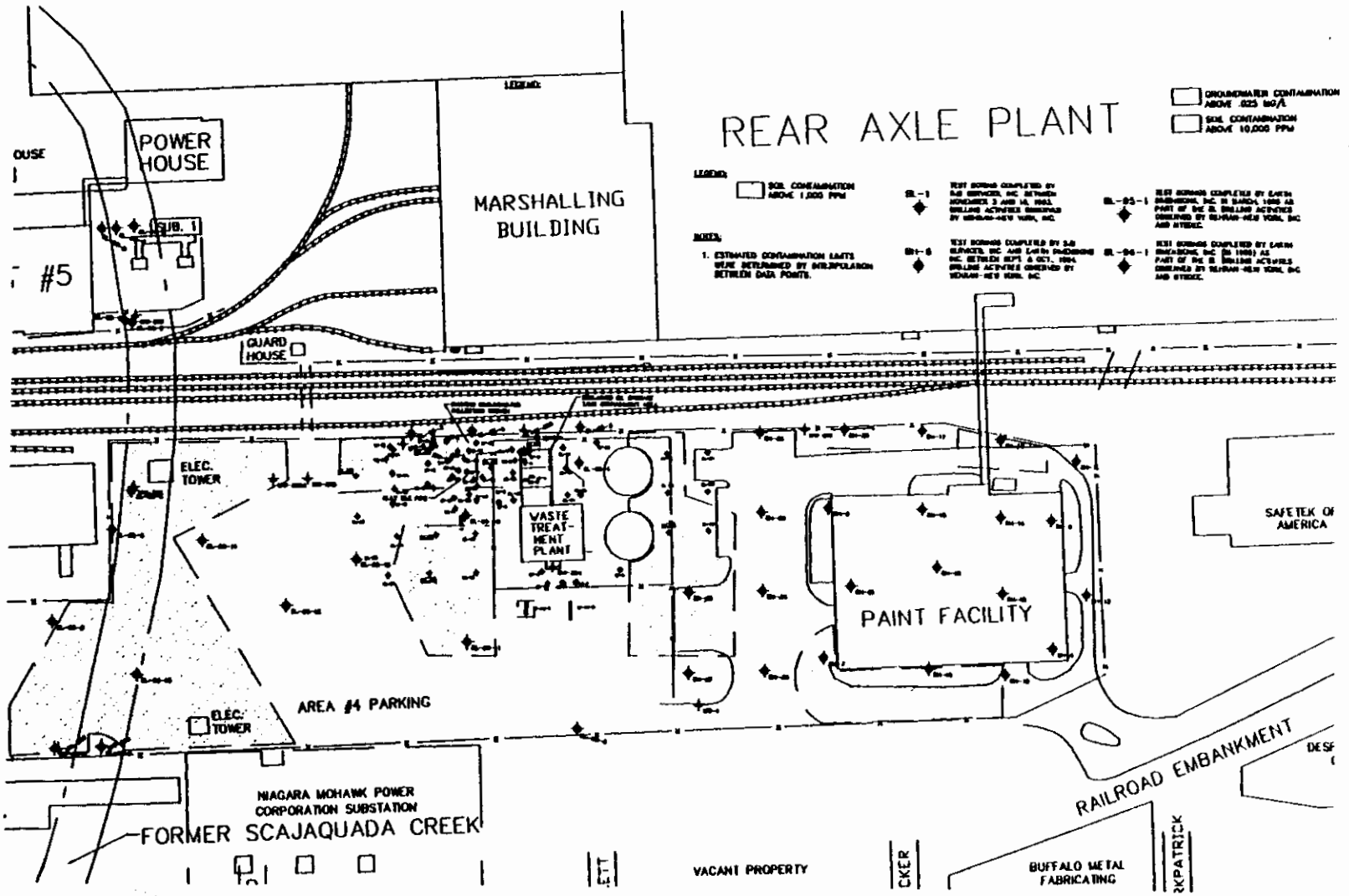

FIGURE 3
LEAD CONTAMINATED SOIL AREAS
FORMER GENERAL MOTORS
SAGINAW - BUFFALO SITE

storm sewer; and groundwater from the monitoring wells were tested for lead and PCBs. Monitoring wells MW-206 and MW - 207 (Fig.4) were installed in the old Scajaquada Creek channel to determine whether or not there is another off-site source of contamination. The samples from these locations were also tested for lead and PCBs.

Nature and Extent of Contamination

SOIL:

PCBs:
Polychlorinated Biphenyls - PCBs (Aroclors 1242,1248,1254, and 1260) were found in subsurface soil samples from the soil borings and the trench excavated to remove the clay tile pipe. Among PCBs, the predominant Aroclor at the site was found to be 1248. The concentrations of total PCBs varied from Not Detected (ND) - 377 parts per million (ppm). Soil samples from borings in the old channel of Scajaquada creek showed PCBs (12 ppm) while none were found in soil at the MW-205 location which is located midway between the groundwater collection trench and MW-203 (Fig. 4). Higher levels of PCBs (12.1 ppm) were found at MW - 206 as compared to other locations in the old channel.

The highest concentration of PCBs (377 ppm) was found at test pit location TP-A, which is in the source area.

Soil			
Paramet er	Conc. Range ppm	RAOs ppm	Frequency Exceeding RAOs
PCBs	ND-377	10	23 of 46
Lead	3-23,900	1,000	135 of 236

RAOs - Remedial Action Objectives

Lead:
Elevated lead concentrations found at site are associated with the residentially derived, ash like fill material. Varying levels of lead are present throughout the site. The highest concentration of 23,900 ppm was found at a depth of 6 feet at location BL -21 which is in the PCBs source area.

GROUNDWATER

PCBs:
Concentrations of PCBs in oil/water samples collected from the clay tile pipe or source area were as high as 15,000 ppb (The elevated levels of PCBs are believed to be due to the presence of the oil). PCBs (Aroclors 1242,1248,1254, and 1260) were found in some overburden groundwater monitoring wells. Samples from the monitoring wells MW-203 and MW-206 screened in the perched groundwater showed 0.3 and 2.9 ppb PCBs, respectively. The groundwater flow direction at the site is to the south towards the Scajaquada Creek Drain. Monitoring well MW-205, which is hydraulically downgradient of the source area and in between MW-203 and the source area, did not show the presence of PCBs.

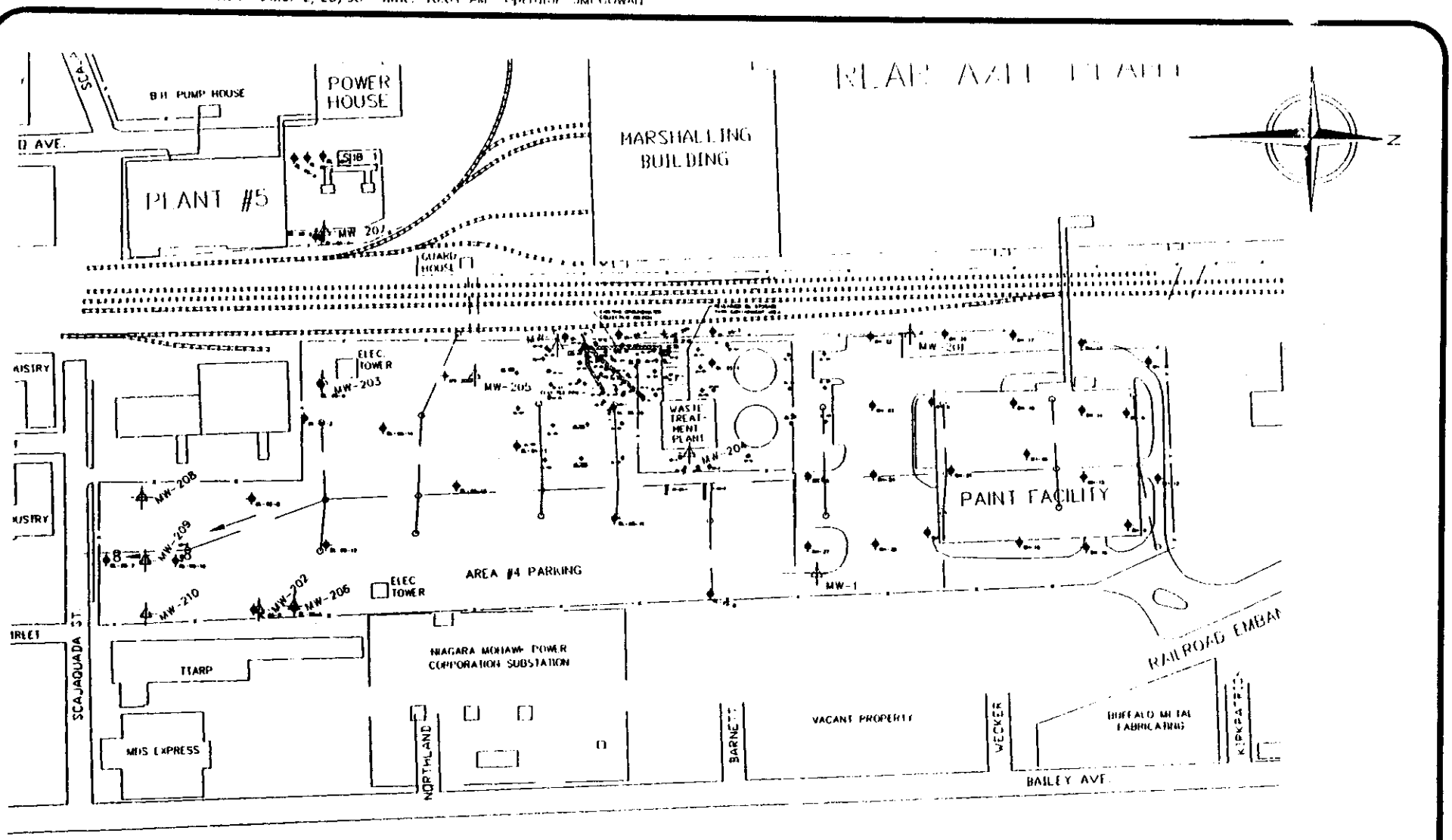

FIGURE 4
SAMPLING LOCATIONS
FORMER GENERAL MOTORS
SAGINAW DIVISION SITE

SAGINAW - BUFFALO SITE

Groundwater			
Parameter	Conc. Range ppb	SCGs ppb	Frequency Exceeding SCGs
PCBs	ND- 6.8	0.1	7 of 18
Lead	ND- 250	25	9 of 14

SCGs - Standards, Criteria, and Guidance

Lead:
Samples collected from wells screened in the fill material were found to be contaminated with lead. All exceedances of groundwater standards were detected in samples which contained a high level of suspended particles (turbidity) and which were not filtered prior to analysis. When filtered portions of the same sample were analyzed, no exceedances of groundwater standards were detected. This indicates that the contaminants are present in particles suspended in the samples, and are not necessarily dissolved in the groundwater.

Although the NYSDEC does not generally accept the suitability of filtered samples for comparison to groundwater standards, site specific factors led to their acceptance. The wells were screened in very fine grained fill material rather than in native soils. Due to the high fines content of this fill material, which included ash, several wells could not be developed to achieve the 50 NTU turbidity guideline. Only after a thorough review of the well installation procedures and development procedures, were the results accepted.

No PCBs or lead were detected in the bedrock wells. It appears that due to the presence of clay underneath the fill, the downwards migration of the contaminants from the overburden to bedrock has not occurred.

The monitoring wells downgradient of the site did not indicate any off-site migration of contaminants towards the residential area.

STORM SEWER

As described in Section 3.2, the storm sewer was cleaned up during an IRM. The following results describe the condition of sewer prior to cleanup.

PCBs:
One water sample from the sewer showed 0.19 ppb of PCBs. The concentrations of PCBs in sediments varied from 0.67 to 31 ppm. Thus it was suspected that PCBs have been leaving the source area through the sewer.

Lead:
Water and sediment samples from the storm sewer also showed some lead contamination. Levels of lead in sewer water varied from 0.001 to 0.027 ppm and in sediments from 34.6 to 360 ppm.

Based upon these findings, it was concluded that PCBs and lead were entering the on-site sewer and the sewer was acting as a pathway for their off-site migration to the Scajaquada Creek drain. As discussed in Section 3.2 the sewer and its laterals were cleaned up during an interim remedial measure (IRM). Lead in surface water and sediment samples from Scajaquada Creek Drain ranged from 0.0014 - 0.0027 ppm and 51.1 - 178 ppm respectively.

3.2 Summary of Human Exposure Pathways:

This section describes the types of human exposures that may present added health risks to persons at or around the site. An exposure pathway is how an individual may come into contact with a contaminant. The five elements of an exposure pathway are 1) the source of contamination; 2) the environmental media and transport mechanisms; 3) the point of exposure; 4) the route of exposure; and 5) the receptor population. These elements of an exposure pathway may be based on past, present, or future events.

Groundwater, including bedrock groundwater, is not used as a source of drinking water because the area is serviced by public water. The perched aquifer present at the site is also incapable of providing adequate yield for use as a groundwater supply. Furthermore, a deed restriction placed on the property during its conveyance from GM to AAM limits the use of the property to industrial purposes, thereby precluding the use of groundwater as a source of drinking water. As a result, the groundwater use pathway is incomplete and does not present a public health risk.

Under current site conditions, there is limited potential for contact with contaminated subsurface soils because the site is paved and surrounded by perimeter fencing.

Completed pathways which are known to or may exist at the site include:

- Incidental ingestion of subsurface contaminated soil by workers doing excavation at the site.
- Migration of contaminated soil from the site to the residential area via wind or rain erosion in the event excavated soil is stockpiled in an unprotected state.

3.3 Summary of Environmental Exposure Pathways:

This section summarizes the types of environmental exposures which may be presented by the site. The following pathways for environmental exposure have been identified:

- Contaminants leaving the site through on site storm sewer or ground water and entering into the nearby Scajaquada Creek Drain.

SECTION 4: ENFORCEMENT STATUS

Potentially Responsible Parties (PRPs) are those who may be legally liable for contamination at a site. This may include past or present owners and operators, waste generators, and haulers.

General Motors, in agreement with AAM, has retained the remedial obligations for contamination present at the site prior to the site's sale. The Potential Responsible Party (PRP), which entered into a consent order (#B9-0410-92-09) with NYSDEC on 2/2/95, to perform the IRM and undertake a site investigation at both of the Operable Units (PCBs Contamination and Lead Contamination), is General Motors.

Upon issuance of the Record of Decision the NYSDEC will approach General Motors to implement the selected remedy under an Order on Consent.

SECTION 5: SUMMARY OF THE REMEDIATION GOALS

Goals for the remedial program have been established through the remedy selection process stated in 6 NYCRR Part 375-1.10. The overall remedial goal is to meet all Standards, Criteria, and Guidance (SCGs) and be protective of human health and the environment.

At a minimum, the remedy selected should eliminate or mitigate all significant threats to the public health and to the environment presented by the hazardous waste disposed of at the site through the proper application of scientific and engineering principles.

The goals selected for this site are:

- To the extent practicable, reduce the potential for human contact with PCBs and lead impacted soils.
- Prevent or greatly reduce the potential for migration of contaminants via surface run-off and on-site drain lines.
- Prevent, to the extent possible, migration of contaminants at site to the Scajaquada Creek Drain.
- To the extent practicable, provide for attainment of SCGs for groundwater.

SECTION 6: SUMMARY OF THE EVALUATION OF ALTERNATIVES

The selected remedy should be protective of human health and the environment, be cost effective, comply with other statutory laws and utilize permanent solutions, alternative technologies or resource recovery technologies to the maximum extent practicable. Potential remedial alternatives for the Saginaw site were identified, screened and evaluated in a Feasibility Study report dated December 1997.

A summary of the detailed analysis follows. As used in the following text, the time to implement reflects only the time required to implement the remedy, and does not include the time required to design the remedy, procure contracts for design and construction or to negotiate with responsible parties for implementation of the remedy.

6.1: Description of Alternatives

PCBs

PCB Contaminated Soil

Alternative 1S1: No Action

The no action alternative is evaluated as a procedural requirement and as a basis for comparison. This alternative would not require any remediation of soil or groundwater. Under this alternative, the site would remain in its present condition, therefore, this alternative would not comply with SCGs. No additional protection to human health or the environment will be provided under this alternative.

No costs are associated with this alternative.

Alternative 1S2: Maintenance of the existing Pavement:

No remediation is proposed under this alternative. The alternative includes a maintenance of the existing pavement. The pavement would prevent infiltration into the PCB contaminated soils due to rain.

Present Worth	$28,531
Capital Cost	$0
Annual O&M	$19,677
Time to Construct	0 months

Alternative 1S3: Soil Containment/Capping:
Under this alternative, a cap of 1.5 inch layer of hydraulic asphalt would be placed over the existing parking lot. All areas that require replacement would receive a 4-inch layer of hydraulic cap. The overall permeability of the cap would about 1x10-7 cm/sec. The covered area would extend 10 feet beyond the limits of contamination.

Present Worth	$68,261
Capital Cost	$27,400
Annual O&M	$19,677
Time to Construct	< 6 months

Alternative 1S4: In-Situ Thermal Desorption:
This alternative consists of in-situ treatment by Terra Therm process which consists of thermally desorbing and destroying PCBs. Pollution control equipment would be used to minimize air pollution due to vapors extracted from the system.

Present Worth	$1,294,642
Capital Cost	$873,180
Annual O&M	$19,677
Time to Construct	8 months

Alternative 1S5: On-site Thermal Desorption:
Under this alternative, PCBs contaminated soils would be excavated and stockpiled on site. The excavated soil would be treated thermally to desorb organic contaminants, especially the PCBs. Any contaminated water encountered during excavation of soil would be treated and discharged at the Buffalo Sewer Authority.

Present Worth	$2,993,861
Capital Cost	$2,045,055
Annual O&M	$19,677
Time to Construct	8 months

Alternative 1S6: Excavation and Off-Site Disposal:
Under this alternative the contaminated soils above the clean up level of 10 ppm would be excavated. The excavated soils would be loaded directly into lined rail cars and transported for off-site disposal. Any light non-aqueous phase liquid (LNAPL) encountered during excavation would also be sent off-site for disposal. Water found during excavation would be treated and disposed of at the BSA sewer. Therefore, this alternative indirectly involves a component to address PCB contaminated groundwater. Prior to backfilling with clean fill, the excavated areas would be tested to ensure that clean up levels have been met.

Present Worth	$1,185,327
Capital Cost	$797,790
Annual O&M	$19,677
Time to Construct	< 6 months

PCB Contaminated Groundwater

Alternative 1G1: No Action:
No remediation of the PCBs contaminated groundwater is considered in this alternative. The existing deed restriction would prevent the use of groundwater at site for potable purposes.

No costs are associated with this alternative.

Alternative 1G2: Pavement Maintenance and Groundwater Monitoring:
This alternative proposes maintaining the existing pavement to reduce infiltration into the contaminated soils. Selected on-site monitoring wells (identified in alternative 2G2) would be monitored semi-annually for PCBs for a period to be determined based on the sampling results.

Present Worth	$106,547
Capital Cost	$0
Annual O&M	$73,481
Time to Construct	0 months

Alternative 1G3: LNAPL and Groundwater Collection, Discharge to BSA:
Under alternative 1G3, LNAPL and groundwater would be collected from the existing collection trench system. LNAPL and groundwater would either be separated in the sump of the collection trench or by using an outside oil/water separator. The separated groundwater would be cleaned up using an activated carbon unit and effluent from this unit would be transferred to the on site treatment plant and discharged to the BSA sewer. Separated LNAPL would be sent off-site to a permitted facility for disposal.

Present Worth	$1,190,807
Capital Cost	$134,750
Annual O&M	$686,496
Time to Construct	< 6 months

Alternative 1G4: LNAPL and Groundwater Collection, Direct Discharge:
Alternative 1G4 would include LNAPL collection and disposal as under Alternative 1G3. Groundwater would be treated, tested, and discharged to the nearby Scajaquada Creek drain.

Present Worth	$1,124,979
Capital Cost	$129,750
Annual O&M	$646,098
Time to Construct	< 6 months

LEAD

Lead Contaminated Soils

Alternative 2S1: No Action:
No remediation or monitoring is proposed in this alternative and the site would remain in its present condition.

No costs are associated with this alternative.

Alternative 2S2: Maintenance of Existing Pavement:
This alternative proposes annual maintenance of the existing asphalt pavement to reduce infiltration into lead contaminated soils and aid in the control of migration of contaminants to the groundwater. The alternative would also include evaluation and repair of the existing pavement (Fig.5). Under the long term maintenance plan, the pavement would be annually maintained. A deed restriction would limit use of this site only for industrial purposes.

Present Worth	$633,694
Capital Cost	$378,000
Annual O&M	$58,030
Time to Construct	< 6 months

Alternative 2S3: Soil Containment/Capping:
Under this alternative, the existing asphalt pavement would be capped with 1.5 inch layer of hydraulic asphalt. The deteriorated areas of the pavement would receive a 4-inch layer. The capping limit would extend 10 feet beyond the limits of the on-site lead contamination. The alternative would also include a long term O&M plan.

Present Worth	$1,008,066
Capital Cost	$636,188
Annual O&M	$59,030
Time to Construct	< 6 months

Alternative 2S4: In-Situ Treatment - Stabilization/Solidification:
In this alternative, a treatability study would be performed to find a suitable stabilizing agent. After removing the existing pavement, the stabilizing agents would be mixed mechanically with the lead contaminated soil. Upon completion of stabilization, the affected area would be paved over with asphalt and maintained for a long period of time.

Present Worth	$3,780,738
Capital Cost	$2,548,375
Annual O&M	$59,030
Time to Construct	18 months

Alternative 2S5: Excavation and on-Site Treatment by Solidification/Stabilization:
This alternative is similar to Alternative 2S4. In this alternative instead of mixing stabilizing agents in-situ, the soil would be excavated, mixed out side and placed back in the excavated area. The backfilled area would be paved and undergo annual maintenance for a long period of time.

Present Worth	$3,630,436
Capital Cost	$2,444,718
Annual O&M	$59,030
Time to Construct	18 months

Alternative 2S6: Excavation and Off-Site Disposal:
This alternative proposes to excavate all contaminated soils with lead to meet the cleanup level of 1000 ppm and dispose at permitted facilities. Post excavation sampling would ensure that remaining soils at site have met the clean up objective. The excavated areas would be backfilled with clean soil.

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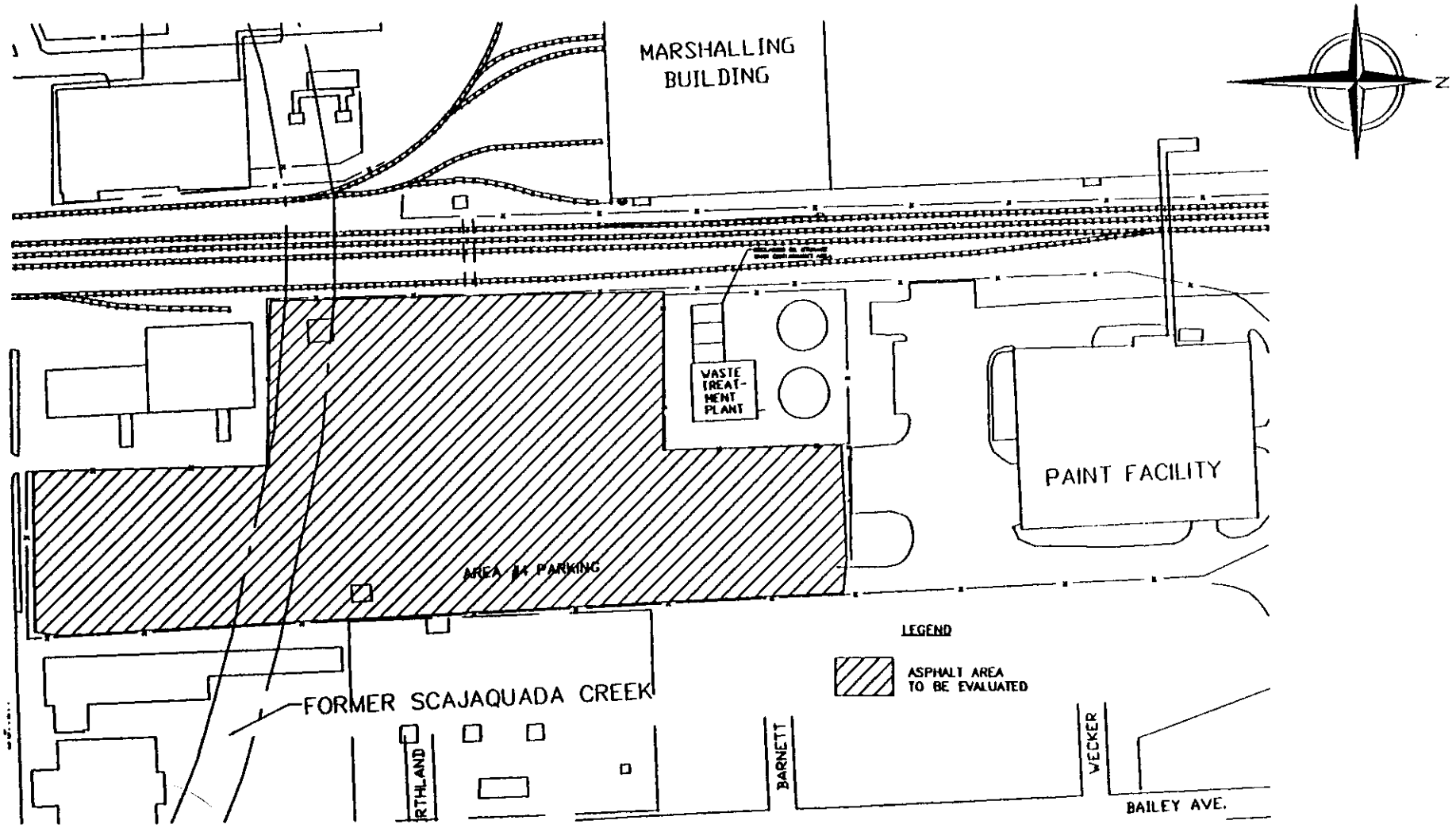

FIGURE 5
OU2 ASPHALT EVALUATION AREA
FORMER GENERAL MOTORS
SAGINAW - BUFFALO SITE

Present Worth	$5,599,122
Capital Cost	$3,802,433
Annual O&M	$59,030
Time to Construct	8 months

Lead Contaminated Groundwater:

Alternative 2G1 - No Action
No groundwater remediation is proposed. The groundwater would remain in its present contaminated state.

Alternative 2G2 - Maintenance of existing Pavement and Groundwater and Sewer Monitoring
Under this alternative, the existing pavement would prevent infiltration and it would undergo annual maintenance. Six downgradient monitoring wells (MW-5, MW-203, MW-205, MW-208, MW-209, and MW-210) and four upgradient wells (MW-1, MW-201, MW-204, and MW-206) would be monitored to check the groundwater conditions at the site. The locations of these long term monitoring wells are shown in Fig.4.

Additionally, storm sewer Manhole 2 would be monitored for lead on a semiannual basis. Monitoring results would be periodically reviewed to assess any further monitoring requirements. If monitoring shows any increase in levels of contamination, sewer would be checked for possible cracks and infiltration and repaired.

The existing deed restriction would ensure that groundwater is not being used for potable purposes.

Present Worth	$183,455
Capital Cost	$6,000
Annual O&M	$120,520
Time to Construct	< 6 months

Alternative 2G3 - Collection, Pretreatment, and Discharge to BSA:
Under this alternative, a groundwater collection system would be installed to collect contaminated groundwater. PCBs would be removed from the collected water using carbon adsorption units. The treated water would be discharged to BSA.

The alternative also proposes groundwater monitoring and maintenance of the pavement for a long period of time.

Present Worth	$853,081
Capital Cost	$350,550
Annual O&M	$237,782
Time to Construct	< 6 months

Alternative 2G4 - Collection, Treatment, and Direct Discharge:
The alternative would include collection of groundwater, removal of lead and PCBs by using technologies such as filtration and carbon adsorption, and discharge of treated water into the Scajaquada Creek drain. Testing would be performed to ascertain that SPDES permit requirements are met.

Present Worth	$794,503
Capital Cost	$350,550
Annual O&M	$197,383

Time to Construct < 6 months

6.2 Evaluation of Remedial Alternatives

The first two evaluation criteria are termed threshold criteria and must be satisfied in order for an alternative to be considered for selection.

1. Compliance with New York State Standards, Criteria, and Guidance (SCGs)

Compliance with SCGs addresses whether or not a remedy will meet applicable environmental laws, regulations, standards, and guidance. The most significant SCGs for this site are as follows:

- 6 NYCRR Part 360 - Solid Waste Management Facilities
- 6 NYCRR Part 371 - Identification and Listing of Hazardous Wastes
- 6 NYCRR Part 375 - Regulations directing the investigation/cleanup of inactive hazardous waste sites.
- TAGM HWR-94-4046 - Guidance regarding soil cleanup objectives and cleanup levels.
- 6 NYCRR Parts 700-705 - Water Quality Regulations for surface water and groundwater.
- TAGM HWR-89-4031 - Fugitive Dust Suppression and Particulate Monitoring Program at Inactive Hazardous Waste Sites.

PCB Contaminated Soil

Alternative 1S1 - No Action would not comply with SCGs as no remediation is required and PCBs would remain at site.

In Alternatives 1S2 and 1S3, Remedial Action Objectives (RAOs) would be partially met as the contaminated surface and sub surface soils are not exposed and would be capped in place. However, the source of contamination would remain causing the potential for migration via groundwater to Scajaquada Creek Drain. The deed restriction would prevent further development of this property.

RAOs would be met in Alternatives 1S4, 1S5, 1S6 by reducing concentrations of PCBs to meet the cleanup objectives of 10 ppm by desorption technologies or by excavation and off-site disposal of contaminated soils.

PCB Contaminated Groundwater

By themselves, Alternatives 1G1 and 1G2 would not comply with PCB groundwater standards in a reasonable amount of time. If, however, they were combined with Alternative 1S6 (off-site disposal of PCB soils, NAPL, and groundwater) adequate compliance would be achieved. This is because 1S6 includes the indirect component of removing the most heavily PCB contaminated groundwater during the soil removal.

In the event a source area remained, active pumping/treating of the groundwater would meet SCGs by ensuring the contamination did not migrate. Alternatives 1G3 and 1G4 would reduce contamination in

groundwater so that concentration would approach the groundwater standards. These alternatives would comply with the groundwater standard by groundwater treatment and discharge to either BSA or Scajaquda Drain.

Lead Contaminated Soil

No remediation is proposed in alternative 2S1. Several locations identified to contain lead in subsurface soils above the selected clean up goal of 1000 ppm would not be addressed. This alternative would not comply with SCGs as the site would remain in its current condition.

Alternatives 2S2 and 2S3 would meet RAOs as with capping and/or maintenance of pavement direct contact with contaminated soil would be eliminated. However, soils containing levels of lead above the cleanup goals would remain under the pavement.

Alternatives 2S4, 2S5, and 2S6 would comply with site specific cleanup goals for lead as well as other SCGs.

Lead Contaminated Groundwater

No Action alternative 2G1 would not comply with SCGs, assuming no soil remediation would be done and the site conditions would remain in its current condition.

In Alternative 2G2 , there would be reduction in infiltration by maintenance of paving (2S2 or 2S3). This would result in minimizing any off-site migration of contaminated groundwater. In the long term, this alternative would meet SCGs in the perched groundwater through natural recovery.

Alternatives 2G3 and 2G4 would meet SCGs as groundwater would be removed from the site through collection, treatment, and discharge to BSA or the Scajaquada Creek.

2. Protection of Human Health and the Environment.

This criterion is an overall evaluation of the health and environmental impacts to assess whether each alternative is protective.

PCB Contaminated Soils

Alternative 1S1 - No Action would not be protective of the environment as it does not contain any action to alter or improve the current site conditions.

Alternative 1S2 - Maintenance of the existing pavement and Alternative 1S3 - Containment/Capping would be protective of human health and the environment when implemented along with the groundwater collection and treatment alternatives - 1G3 or 1G4.

PCBs in soil would be removed in Alternatives 1S4 and 1S5 by thermal desorption. Therefore, these alternatives would be protective of human health and environment as the source of contamination would be eliminated.

Alternative 1S6 - excavation and Off-Site disposal would be protective of human health and the environment as the source of PCBs contamination would be removed from the site.
Future impacts to groundwater would be eliminated in alternatives 1S4, 1S5, and 1S6.

PCB Contaminated Groundwater

Alternatives 1G1 and 1G2 would currently be protective of human health as the contaminated water is under the pavement and there is no human contact to this water. The site groundwater is not used for drinking purposes. These alternatives would be fully protective of the environment if groundwater and LNAPL were removed/treated during implementation of alternatives 1S4, 1S5, and 1S6.

Alternatives 1G3 and 1G4 would be protective of human health and the environment as contaminated groundwater and LNAPL would be collected, treated, and removed from the site.

Lead Contaminated Soils

Alternative 2S1 - No Action would not be protective of human health and environment in the long term due to likely decay of the existing pavement and on-site storm sewer.

Alternatives 2S2 and 2S3 would be protective of human health by eliminating the possibility of direct contact with lead contaminated soil by maintaining the pavement. The contaminated fill would remain on site. These alternatives would protect the environment by reducing infiltration and hence reducing off-site migration of lead.

Alternatives 2S4 and 2S5 would provide better protection of human health and the environment as compared to the above alternatives because lead in the fill would be rendered unleachable by stabilization.

Under alternative 2S6 -Excavation and off - site disposal, the potential for future contact with contaminated soils would be eliminated. Since the source of contamination would be removed from the site, this alternative would provide the best protection of human health and environment.

Lead Contaminated Groundwater:

The groundwater is not used as drinking water source in the area. The alternatives 2G1 and 2G2 would therefore would be protective of human health. In alternative 2G2, the quality of groundwater would improve over a period of time as the asphalt pavement would reduce infiltration.

Under alternatives 2G3 and 2G4, the groundwater would be collected, treated and removed from the site. Therefore, these alternatives would be protective of human health and the environment.

The next five "primary balancing criteria" are used to compare the positive and negative aspects of each of the remedial strategies.

3. Short-term Effectiveness.

The potential short-term adverse impacts of the remedial action upon the community, the workers, and the environment during the construction and/or implementation are evaluated. The length of time needed to achieve the remedial objectives is also estimated and compared against the other alternatives.

PCB Contaminated Soils

In Alternatives 1S1 and 1S2, there would not be any incremental risks to the community as no construction is proposed in alternative 1S1 and pavement maintenance in alternative 1S2 would not disturb the contaminated soil. These alternatives would not be effective in the short term as there would not be any reduction in levels of contaminants.

In Alternative 1S3 - Containment/Capping, the construction activities in large part would be on top of the existing pavement, therefore, there would not be any significant impacts on the workers or the nearby community due to contaminants in subsurface soil. Regular construction activities would increase traffic and noise, and are expected to last from 3 to 4 months. This alternative would not be effective in a short period of time to reduce the contaminants at the site.

Alternatives 1S4, 1S5, and 1S6 would require construction activities such as excavations and installation of wells. Disturbance of contaminated soils could result in short term impacts due to noise and contaminated dust. Problems due to noise and contaminated dust would be mitigated through the use of engineering controls, personnel protective equipment, and trained personnel. The dust controls and dust monitoring would be done according to the Health and Safety Plan to protect the workers and the public. There would also be an increase in traffic due to construction vehicles. These alternatives would be effective in the short term to reduce or eliminate the source of contamination.

PCB Contaminated Groundwater

In Alternatives 1G1 (No Action) and 1G2 (Maintenance of the existing pavement and groundwater monitoring), there would be no impact on the workers and community. There would be short term effectiveness on the reduction of groundwater contamination if contaminated groundwater is removed during implementation of alternative 1S6.

No disturbance of the contaminated media is expected during implementation of alternatives 1G3 (LNAPL Collection/Groundwater Pretreatment, Discharge to BSA) and 1G4 (LNAPL Collection/Groundwater Treatment, Direct Discharge). There would not be any exposure of contaminated groundwater to the community. The workers would be protected by personal protection equipment. Both these alternatives would be effective in short term in eliminating the potential for migration of contaminated groundwater and LNAPL.

Lead Contaminated Soils

Alternative 2S1 would not pose any risk to the community. This alternative would not be effective in the short term in meeting the remedial goals.

During annual maintenance in Alternative 2S2 , there would be some increase of traffic due to construction vehicles for 3-4 weeks. The community or the workers would not be exposed to contaminated soil during annual maintenance work. These would be handled according to health and safety plan. The alternative would not be effective in short term to reduce concentrations of contaminants.

In Alternative 2S3, construction activities would last from 3-4 months. Health and safety programs would be implemented during construction to protect workers and the community. Protective equipment and engineering controls would be used to handle any contaminated soils. This alternative would be effective in short term to protect workers and community. Short term effectiveness in reducing soil contaminant concentrations would not be achieved.

In Alternative 2S4, the contaminated soil would be disturbed during mixing. Any dust problems would be mitigated by dust controls. Workers and community would be protected by implementation of health and safety plan. The alternative would be effective over short term to prevent groundwater contamination.

Excavation and treatment activities in Alternative 2S5 could cause noise and dust problems. Community and workers impact would be mitigated by dust controls and implementation of health and safety plan.

There is a potential of dust generation during excavation and hauling activities in Alternative 2S6. Air monitoring and dust control measures would ensure protection of workers and the community. Decontamination procedures would ensure that contaminated soil is not tracked off-site to public roads by hauling trucks. The alternative would be highly effective in removing source of lead contamination from site within 6-8 months. Thus this alternative would be effective in a short period of time to reduce groundwater contamination.

Lead Contaminated Groundwater:

There would not be any short term impacts on the workers or the community for 2G1 and 2G2 alternatives as no construction in the contaminated media would take place.

The installation of the collection systems in alternatives 2G3 and 2G4 could create some noise and dust. These would be addressed through Heath and Safety plan and engineering controls. These alternatives would be effective over a short period of time to address the groundwater contamination problems due to lead.

4. Long-Term Effectiveness and Permanence

This criterion evaluates the long-term effectiveness of the remedial alternatives after implementation. If wastes or treated residuals remain on site after the selected remedy has been implemented, the following items are evaluated: 1) the magnitude of the remaining risks, 2) the adequacy of the controls intended to limit the risk, and 3) the reliability of these controls.

PCB Contaminated Soils

Alternative 1S1 would not provide a permanent reduction in risk to the environment as no remediation is proposed in this alternative.

Alternatives 1S2 and 1S3 would reduce infiltration and would be effective in the long term. These alternatives would not be considered permanent because these alternatives would not treat or reduce PCBs in the source area.

Alternatives 1S4 and 1S5 would be effective in the long term as the PCBs source would be reduced. These alternatives would result in providing permanent solution to the PCBs contamination in subsurface soils. By removing the source of PCBs contamination in Alternative 6, a permanent solution would be achieved.

PCB Contaminated Groundwater

Alternative 1G1 (No action) would be effective in the long term and no future risks would remain as contaminated groundwater would be removed during implementation of alternative 1S6.

Alternative 1G2 (Maintenance of Existing Pavement and Groundwater Monitoring), would reduce infiltration and hence slow down migration of contaminated groundwater. Since water would be removed during excavation of PCBs in alternative 1S6, therefore, this alternative would be effective in the long-term.

Alternatives 1G3 and 1G4 would be effective in the long-term as LNAPL and contaminated groundwater would be removed from the site. The improvements in site conditions would be permanent.

Lead Contaminated Soils

Alternative 2S1 would not be effective in the long term as no remediation is proposed.

Alternatives 2S2 and 2S3 would be effective in the long term to prevent human exposure and reduce infiltration and would meet RAOs. These alternatives would not be considered permanent as there would not be any treatment or reduction of the source of contamination.

Alternatives 2S4 and 2S5 would be effective in the long term because the stabilized waste would not cause any further groundwater contamination problems.

Alternative 2S6 would provide a permanent solution to the lead contamination problem at site by removal of its source. This alternative would be effective in the long term.

Lead contaminated Groundwater.

Alternative 2G1 would not be effective over the long term as groundwater would remain in its contaminated condition.

The groundwater is not used as drinking water source in the area. Therefore, the alternatives 2G1 and 2G2 would would be protective of human health. The environmental problems would remain at site. Long term monitoring in alternative 2G2 would assess if contaminants are not leaving the site and causing any further environmental problems.

Under alternatives 2G3 and 2G4, the groundwater would be collected, treated and removed from the site. Therefore, these alternatives would be protective of human health and the environment.

5. Reduction of Toxicity, Mobility or Volume.

Preference is given to alternatives that permanently and significantly reduce the toxicity, mobility or volume of the wastes at the site.

PCB Contaminated Soils

No remediation of soils is proposed in alternatives 1S1, 1S2, and 1S3.Therefore, these alternatives would not result in reduction of toxicity and/or volume. Mobility would be slightly limited in alternatives 1S2 and 1S3.

In Alternatives 1S4 and 1S5, in-situ or on-site thermal desorption would reduce volume of the PCBs contamination at site. Thus mobility of residual contamination at site would be greatly reduced.

In Alternative 1S6, the volume of contaminated soil would be greatly reduced by its excavation and off-site disposal. With removal of source of contamination, toxicity and mobility of PCBs would be eliminated.

PCB Contaminated Groundwater

PCBs contaminated water would be removed during excavation of PCBs contaminated soils in alternative 1S6 therefore, the groundwater conditions would improve. Thus alternatives 1G1 and 1G2 would be effective in reduction in toxicity, mobility, and volume, if included with alternative 1S6.

Alternatives 1G3 and 1G4 would result in reduction of toxicity, mobility, and volume of the LNAPL and contaminated water at site since these would be pumped out and discharged to BSA or Scajaquada Creek drain after treatment.

Lead Contaminated Soils

There would not be any reduction of toxicity, mobility, and volume of lead contamination in soil in Alternative 2S1.

There would not be any reduction in toxicity and volume of contaminated soils in alternatives 2S2 and 2S3. Because of pavement capping, there would be some reduction in mobility of lead contamination through groundwater.

Solidification/stabilization in Alternatives 2S4 and 2S5 would be effective in reducing toxicity and mobility of contamination.

With excavation and off-site disposal, there would be total reduction of mobility and volume of contaminants in Alternative 2S6, relative to the site.

Lead Contaminated Groundwater

There would not be any reduction in source toxicity, mobility, and volume in alternative 2G1 because no groundwater treatment is proposed in this alternative.

In alternative 2G2, reduction in infiltration due to paving would result in reduction in volume and mobility of contaminated groundwater at site.

With the extraction of contaminated water and treatment, alternatives 2G3 and 2G4 would be effective to reduce source mobility and volume.

6. Implementability.

The technical and administrative feasibility of implementing each alternative is evaluated. Technical feasibility includes the difficulties associated with the construction and the ability to monitor the effectiveness of the remedy. For administrative feasibility, the availability of the necessary personnel and material is evaluated along with potential difficulties in obtaining specific operating approvals, access for construction, etc.

PCB Contaminated Soils

Alternative 1S1 - No Action can be readily implemented since no construction is required.

Alternatives 1S2 and 1S3. would be easy to implement as no special construction is required.

In-Situ Thermal Desorption (Alternative 1S4) would require treatability study to determine whether or not this technology would be easy to implement under the site specific conditions.

In Alternative 1S5, On-site Thermal Desorption can be accomplished by using readily available construction equipment. However, very strict air emission standards would have to be implemented because there are residences in the vicinity of the site.

Alternative 1S6 - excavation and off-site disposal can be easily implemented as it requires readily available equipment. The railroad lines pass through the site, therefore, transportation of contaminated soils by rail cars is feasible and can be easily implemented.

PCB Contaminated Groundwater

Alternative 1G1 - No Action would be easily implemented since no remediation or monitoring is proposed.

Alternative 1G2 would also be easy to implement as it proposes quarterly groundwater sampling and annual maintenance of the wells and the pavement.

The equipment such as pumps, oil-water separator, and tanks required to implement alternatives 1G3 and 1G4 are readily available. Therefore it is feasible to implement either of these alternatives.

Lead Contaminated Soils

Alternative 2S1 does not require any action hence is easily implementable.

Alternatives 2S2 and 2S3 are implementable as both these alternatives requires construction on the existing pavement by using readily available construction equipment and materials.

Alternatives 2S4 and 2S5 would require solidification/stabilization technologies which are available from several venders. The process uses readily available equipment and materials and is implementable.

Excavation and off-site disposal in alternative 2S6 is a common method of site remediation and is easily implementable.

Lead Contaminated Groundwater

No Action alternative - 2G1 can be readily implemented as no construction is required.

Initial construction and long term O&M in alternative 2G2 is easy to implement.

The alternatives 2G3 and 2G4 are also easy to implement as they would require common construction and pump and treat methods.

7. Cost.

Capital and operation and maintenance (O&M) costs are estimated for each alternative and compared on a present worth basis. Although cost is the last balancing criterion evaluated, where two or more alternatives have met the requirements of the remaining criteria, cost effectiveness can be used as the basis for the final decision.

As presented in Section 7.1, no costs are associated with alternatives 1S1, 1G1, 2S1, and 2G1. Alternative 1S6, which provides a permanent remedy for PCB contaminated soils, is one of the low cost alternatives with a capital cost $1,185,327. For lead contamination, a combination of low cost alternatives 2S2 and 2G2 would provide adequate protection of human health and environment and would cost $817, 149.

This final criterion is considered a modifying criterion and is taken into account after evaluating those above. It is focused upon after public comments on the Proposed Remedial Action Plan have been received.

8. Community Acceptance

Concerns of the community regarding the site investigations and feasibility study reports and the Proposed Remedial Action Plan are evaluated. A "Responsiveness Summary" has been prepared (Appendix A) that describes public comments received and how the Department will address the concerns raised.

SECTION 7: SUMMARY OF THE SELECTED REMEDY

Based upon the results of the site investigations and feasibility study, and the evaluation presented in Section 6, the NYSDEC is selecting a combination of alternatives 1S6 - Excavation and Off-site Disposal, 1G2 - Groundwater Monitoring for PCBs and 2S2 and 2G2 - Maintenance of Existing Pavement and Groundwater Monitoring for lead.

This selection is based upon the conclusion that the remedies described in alternatives 1S6, 1G2 2S2, and 2G2 will meet all the remedial goals for this site and will achieve the threshold and balancing criteria described in Section 6.

Alternative 1S6 was selected over the other alternatives as this alternative will provide best protection of human health and the environment, will meet the SCGs, will be effective over the long term, and will reduce the toxicity, mobility, and/or volume of the waste. The alternative 1S6 will be protective of human health and the environment through removal of PCB contaminated subsurface soils greater than 10 ppm, LNAPL, and contaminated groundwater encountered during the excavation. Because of the pavement, no surficial soils are exposed in the PCB contaminated area. With removal of the PCB source (i.e. contaminated soil and LNAPL), further remediation of groundwater for PCBs may not be required. Alternative 1S6 will cost less than alternatives 1S4 and 1S5. Although alternative 1S2 and 1S3 would be cheaper than 1S6, those alternatives would not adequately protect human health and the environment. If one of these alternatives were chosen, groundwater contamination would also have to be remediated by implementing a separate groundwater treatment technology. The total cost to implement alternatives 1S6 and 1G2 is estimated to be $1.29 million.

For lead contamination, Alternative 2S2 was preferred over alternative 2S1 because no remediation was proposed in alternative 2S1. Alternative 2S3 was ruled out because of higher cost with same benefit as in alternative 2S2. Because of the fact that lead waste has not shown any off-site mobility for the last 60 years and RAOs could be achieved by considering a lower cost alternative 2S2, higher cost alternatives 2S4, 2S5, and 2S6 were eliminated. Alternative 2S2 was also preferred over other alternatives due to the fact that contamination in groundwater appears to be limited to perched water in fill under the parking area and does not appear to be traveling off-site into the Scajaquada Creek Drain. Furthermore, it is not possible to identify isolated hot spots of lead contaminated soil that could be removed. This alternative will prevent further deterioration of groundwater quality.

Under alternative 2S2 the pavement will prevent direct human exposure to the fill containing lead. The monitoring proposed in alternative 2G2 will ensure that lead contamination in fill is not migrating off-site. The existing deed restriction prevents use of the site property for purposes other than industrial uses, thereby preventing the use of groundwater as a potable water source.

The selected remedy will be effective in keeping the lead contamination on site. Total cost to address lead contamination problem is estimated to be $818,000.

The elements of the selected remedies are as follows:

- Excavation of PCB contaminated soils above 10 ppm from the source area and off-site disposal.

- Removal of PCB contaminated groundwater in the source area during excavation, on-site treatment, and discharge to BSA.
- Removal of LNAPL and its off-site destruction.
- Annual maintenance of the existing pavement over the 7-acre site and repair where necessary.
- Long-term, semi-annual, monitoring of ten groundwater monitoring wells and storm sewer for PCBs and lead.
- Maintenance of storm sewer and monitoring wells.
- Deed Restriction (Already in place).

SECTION 8: HIGHLIGHTS OF COMMUNITY PARTICIPATION

Citizen Participation (CP) activities were implemented to provide concerned citizens and organizations with opportunities to learn about and comment upon the investigations, studies, and IRM pertaining to the Saginaw site. All reports were available for public review in the document repository. A public contact list was developed and used to distribute fact sheets and meeting announcements. Fact sheets were sent to the public in February 1995, May 1996 and November 1997.

On March 2, 1998 a public meeting was held at the East Delavan Branch Library, Buffalo, NY to describe the Proposed Remedial Action Plan (PRAP). Prior to the meeting, an invitation and Fact Sheet were mailed to those persons on the contact list. The public comment period extended from February 16, 1998 until March 18, 1998. Comments received regarding the Proposed Remedial Action Plan have been addressed and are documented in the Responsiveness Summary (Appendix A).

Appendix A
RESPONSIVENESS SUMMARY
SAGINAW - BUFFALO SITE
BUFFALO, ERIE COUNTY
SITE # 915152

This responsiveness summary contains questions and comments received by the New York State Department of Environmental Conservation (NYSDEC)regarding the Proposed Remedial Action Plan (PRAP) for the subject site. A public meeting on the Proposed Remedial Action Plan for the Saginaw - Buffalo site was held on March 2, 1998 in the East Delavan Branch Library, Buffalo, NY at 7:00 PM. The public comment period lasted from February 16, 1998 to March 18, 1998. The information below summarizes a description of the selected remedy, questions received from the public and the Department's responses to the questions.

Description of the Selected Remedy

The selected remedy (Alternatives 1S6, 1G2, 2S2, and 2G2) is the same as was proposed in the PRAP. The major elements of the selected remedy include:

The elements of the selected remedies are as follows:

- Excavation of PCB contaminated soils above 10 ppm from the source area and off-site disposal.
- Removal of PCB contaminated groundwater in the source area during excavation, on-site treatment, and discharge to BSA.
- Removal of LNAPL and its off-site destruction.
- Annual maintenance of the existing pavement over the 7-acre site and repair where necessary.
- Long-term, semi-annual, monitoring of ten groundwater monitoring wells and storm sewer.
- Maintenance of storm sewer and monitoring wells.
- Deed Restriction (Already in place).

Responses to Public Comments and Concerns:

Questions from the meeting:

Q.1 How large is the contact list and how was it developed?

A. The contact list consists of about 135 names and addresses of local elected officials, government agencies, residents and interested public. The homes included in the list are those on either side of the streets that are adjacent to the site. Letters to local residents are addressed to an individual with a second line reading "Or Current Resident". If it is an apartment building the letters are addressed to Unit One, Unit Two, etc.

Q.2 Why didn't I get a notice of the meeting?

A. Your address was beyond the scope of the contact list. Only those addresses along streets adjacent to the site were included in the contact list. The attached map indicates with stars the addresses of those who signed in at the meeting. All those who signed in were outside the scope of the contact list and were responding to an article in a local paper. However, DEC continually updates its' mailing list and will include anyone who requests to be put on the list. As was stated at the meeting and in the fact sheets mailed to the community, if you are aware of someone who would like to be on the mailing list, please contact the DEC office and speak to Mr. Walia or Mr. Podd.

Q.3 Could you send us an executive summary?

A. The Fact Sheet mailed to the contact list and handed out at the meeting is in effect an executive summary. It consists of a summary of the site's background, the results of the Remedial Investigation, the various Interim Remedial Measures already taken by the company, the Feasibility Study and evaluation criteria, and the Proposed Remedial Action Plan.

Q.4 What are some of the other remedial alternatives that were looked at?

A. A total of 20 alternatives - 12 for soils and 8 for groundwater were evaluated and are detailed in the report entitled "Engineering Evaluation of Alternatives Report for Operable Units 1 and 2". All the evaluated alternatives are also summarized in the Proposed Remedial Action Plan and are included in this Record of Decision.

Q.5 What is the other digging around the plant? Is it part of the remedy?

A. A new sewer line is being installed by the Buffalo Sewer Authority along East Delavan Avenue and outside the site area. It is not part of the site remediation.

The following questions were received in writing from Geomatrix Consultants on behalf of Niagara Mohawk

Q.6 A Site Investigation ("SI") and an Engineering Evaluation were performed on the Saginaw Site. General Motors's ("GM") investigation of the Saginaw site does not meet the requirements of a comprehensive Remedial Investigation/Feasibility Study ("RI/FS") as required by the National Contingency Plan ("NCP"), the New York State Environmental Conservation Law ("ECL") or 6NYCRR Part 375. Why was a RI/FS not conducted in accordance with the NCP, ECL and 6NYCRR Part 375, which require full characterization of the nature and extent of the contaminants present at the Saginaw Site. For example, hazardous waste disposal was confirmed at the Saginaw site (PCBs - B003 waste and leachable lead – D008 waste) yet GM's "Site Investigation" did not attempt to sample for or quantify the presence of volatile and semi-volatile organic compounds which are commonly associated with the use of solvents in operations similar to GM's. Why did GM's "Site Investigation" exclude these compounds?

A. The Department asserts that the investigation and remedy selection process for this Site are not inconsistent with the NCP. General Motors and the NYSDEC entered into a Consent Order on 2/2/95 to define the nature and extent of site contamination and develop feasible remedial alternatives that are not inconsistent with the NCP.

The tasks under the Consent Order included:

- An Interim Remedial Measure (IRM) - to remove the clay tile sewer pipe,

- A site investigation to determine the nature and extent of contamination,
- Review of historical data,
- Prepare an Engineering Evaluation of Alternatives - describing and assessing remedial alternatives,
- Prepare a Remedial Design Report - detailing the design of the selected remedy,
- Remedial Alternative Certification - certifying the completion of the selected remedy,
- Submit progress and a final reports - describing investigation results and actions at the site.

Taking into consideration the information and conditions at the site, the Department believes that these tasks fulfill the substantive requirements of the NCP.

The PCB contamination at the site, in the clay tile pipe, was discovered in 1988 during the clean up of a spill which occurred in 1987. During various phases of investigation, 22 test pits, 67 soil borings, 6 piezometers, and 12 monitoring wells were installed to determine the extent of soil and groundwater contamination. The Department considers this investigation has covered the whole site area as is required in a typical Remedial Investigation.

Finally, the spilled oil was tested for total petroleum hydrocarbons(TPH), PCBs, and TCLP metals. The spill is believed to be from one of three storage tanks. (One tank contained sulfuric acid and two contained recovered oils from the plant. During recovery, oils undergo a thermal treatment which will drive off volatiles, if any). No solvents or wastes contaminated with solvents were stored in the storage tanks. Also, there is no evidence that any other chemicals were stored or used in the site area. Therefore, it was not necessary, based on this prior knowledge of plant practices, to test for any other organics (volatiles or semivolatiles).

Q.7 The Proposed Remedial Action Plan ("PRAP") states on page 6 that "*it was suspected that PCBs have been leaving the source area through the sewer (storm)*. GM's Site Investigation detected PCBs in the storm water and sediment in the storm sewer system. Despite the statement in the PRAP and the presence of PCBs in the storm sewer system, why was a detailed investigation of the storm sewer system not completed which should have included sampling of sewer bedding along the main trunk of the storm sewer and the laterals east and west of the main sewer in the fill of the former Scajaquada Creek bed? A comprehensive investigation of the storm sewer bedding was warranted given the fact that storm sewers and the bedding materials are preferential pathways for the migration of contaminants. Despite this, why did the Site Investigation sample water and sediment at only two manhole locations and examine bedding material at the terminus of only one sewer lateral?

A. A detailed investigation of the storm sewer was conducted. During the 1993 investigation, two borings were advanced into the sewer bedding. No PCBs were found in these borings suggesting that PCBs are not migrating along the bedding. Additional sewer bedding borings were done during February 1998. It is noted that no visual oil was present in these borings. Preliminary sample results indicate that PCBs are not present in the sewer bedding. PCBs which were found in the sewer, most likely entered the sewer through a crack found in a section of the sewer near the PCB source area. The crack was found during the video inspection of the sewer.

Surface water and sediment samples were collected from downgradient locations in the main trunk sewer. As all the laterals are connected to the main trunk, no samples were collected from the laterals. It is noted that the elevation of laterals is higher than the main trunk e.g. the east lateral in the old Scajaquada Creek Channel between the main trunk and the eastern property is about two feet higher. As the area is not prone to flooding and there are no records of any flood occurrence in the site area, it is unlikely that water flowed from the main trunk into the laterals. Data collected during the investigation indicate no significant impacts from the site to the Scajaquada Drain.

The Department is satisfied that the investigation conducted to date has provided enough information to prepare a remedial action plan. Furthermore, the Consent Order between General Motors and the Department is based upon remediating all contaminated PCB soils in the source area, and if that includes sewer bedding that has been impacted by the source area, the bedding will be addressed.

Q.8 The SI Report inaccurately states (on page 4-4 of the SI Report) that groundwater flow from the former channel of Scajaquada Creek is from the east to the west and concludes that PCB contamination in the southern portion of the Saginaw site originates from the east. GM's data clearly shows that groundwater flow is primarily from north to south with groundwater flow in the former Scajaquada Creek channel from the west to the east. If the groundwater flow has been inaccurately characterized, how can an effective site remedy be selected?

A. The old Scajaquada Creek flowed from east to west towards Lake Erie. The current Scajaquada Creek Drain also flows from east to west. Any water flowing through the old creek channel - which is filled with permeable fill consisting of cinder and ash - is likely to follow the old path i.e. from east to west. The groundwater flow in the shallow perched water table is to the south. With respect to the site remedy, it is noted that the remedy calls for the source area to be removed which will address the migration pathways noted in the comment.

Q.9 The SI Report concludes that different PCB congeners exist at the site although GM's data validation concludes that matrix interferences exist on samples purporting to show different congeners. The presence of other organic hydrocarbon compounds at the site interfere with the identification of such Aroclor mixtures. GM's conclusion is not supported by the data or data validation.

A. The data was rechecked by Northeast Analytical Environmental Lab Services of Schenectady, New York in February, 1998. Their comparison of gas chromatograms confirms that congeners of PCBs in the source area and the ones found in the old Scajaquada Creek Channel are different and hence may be from different sources.

Q.10 The NYSDEC has informed us of the recent installation of three additional groundwater monitoring wells in the southern portion of the site by GM. Should an evaluation of remedial alternatives have been conducted and a PRAP prepared recommending a remedial response without complete evaluation of this additional site characterization data?

A. The three additional groundwater monitoring wells (MW-208, MW-209, and MW-210, shown in Fig. 4) are part of the long term groundwater monitoring plan to monitor the downgradient groundwater conditions and not for further site characterization. Even after the source of PCBs is removed, these three wells along with seven other wells will be used to monitor levels of PCBs and lead.

Q.11 Niagara Mohawk submitted an evaluation of site investigations conducted at the Saginaw -Buffalo site (Geomatrix Consultants, Inc., December 22, 1997) that identifies numerous data deficiencies, data gaps and misinterpretations which do not support GM's consultant's (EMCON) conclusion that PCB contamination in the southern portion of the GM facility migrated from a purported "secondary source" located east of the GM facility. Why were these investigative data gaps and deficiencies not addressed prior to the evaluation of remedial alternatives? Niagara Mohawk is resubmitting Geomatrix's Evaluation Report (attached) and requests that the Department review and respond in full to the report in the context of the Responsiveness Summary to public comments in the PRAP.

A. Many of the questions raised in the Geomatrix Evaluation Report are addressed here in the responsiveness summary. NYSDEC will discuss the conclusions of the Geomatrix Report with Niagara Mohawk and respond to their concerns.
Under the Proposed Remedial Action Plan, the major source area of PCBs would be excavated from the site, backfilled with clean fill, and paved over. The PCBs contamination along the eastern property line will be addressed after obtaining data from the Niagara Mohawk property.

Q.12 The conclusion presented on Page ix of the Evaluation of Alternatives Report states that "the detected PCBs in the former Scajaquada Creek channel are not migrating from the on-site source of PCBs." This is in direct contradiction to the PRAP which stated that "it was suspected that PCBs have been leaving the source area through the sewer (storm)." Further, the storm sewer and the east-west laterals transect the former creek channel. Therefore, how can the alleged "on-site" source area be eliminated as the source of PCBs detected in the former creek channel if:

(I) The sewer acted as a transport mechanism for PCBs
(2) The sewer and the east-west laterals transect the former channel; and
(3) the SI failed to adequately investigate the storm sewer system as outlined in Comment 2 above?

A. As stated in the PRAP and this document (ROD) , PCBs were found in the sewer line which likely entered into it through cracks in the sewer line. Since then the sewer line has been cleaned and cracks have been repaired. It is noted that PCBs were not found in the Scajaquada Creek Drain during the 1996 sampling event. With repair of the sewer and removal of PCBs source area from the site, off-site migration of PCBs through this suspected pathway (storm sewer) will essentially be eliminated.

As stated in response to Q.9, the PCBs found in the former Scajaquada Creek Channel have been identified to be different than the ones found in the source area. Also the general groundwater flow direction in the old channel area appears to be from east to west. Highest levels of PCBs were found near the eastern side of the site property line. Also the laterals are above the main trunk elevation. Thus it is unlikely that PCBs could have migrated eastwards through the laterals.

During the site investigation, sediment and surface water samples were collected from the sewer. The sewer was found to be contaminated and was cleaned. The earlier borings in the sewer bedding near the source area did not indicate migration of PCBs along the sewer bedding. Additional borings done in February 1998 were also non detect for PCBs. During implementation of the selected remedy, excavation of the PCBs contamination will start from the source area and will extend to the surrounding impacted areas including the sewer bedding to meet clean up levels of 10 ppm. Thus no contaminated sewer bedding, if any, will be left in place.

Q.13 How can the PRAP, that only addresses an alleged "on-site" source, be accepted without addressing data deficiencies, data gaps, and misinterpretations in the SI?

A. Answered in earlier responses.

Q.14 GM is required to conduct a RI/FS on its Inland Fisher Guide Site, a Class 2 Inactive Hazardous Waste Site and a federal Superfund/National Priorities List subsite, located in Onondaga County, New York (see attached Fact Sheet). The Inland Fisher Guide Site is similar in nature to the Saginaw Site in terms of its history, operations, and contamination, e.g., the release of PCB contaminated oil into the subsurface. PCB contaminated oil infiltrated into the storm sewer system and subsequently released contaminants into surface and subsurface soils resulting in the detection of PCBs in the soil, sediment, and groundwater. Further, the site has been impacted by solvents

associated with paint thinners. Why is the Saginaw Site not required to undergo a comprehensive RI/FS similar to the Inland Fisher Guide Plant Site despite their similarities? Specifically: Why was the storm sewer not identified as one, if not, the primary transport mechanism of site contaminants? Why did the Saginaw SI fail to investigate for solvent/paint thinner related contaminants, e.g., VOCs and SVOCs, if these substances were known to be used at the Site and have been identified as compounds of concern at similar GM sites? Has the Region 9 of the Department conducted a consistency review of the Saginaw Site with other Department-lead sites, such as the Inland Fisher Guide Site?

A. The Saginaw - Buffalo site is a class 3 site (a site at which hazardous waste does not presently constitute a significant threat to the environment) and contamination at this site resulted due to a spill from one of the storage tanks containing recovered oil from the plant. Solvent would not be expected to be a component of this oil. As indicated in Answer 12, no significant impacts from the site to the Scajaquada Drain were identified during the investigation. As a matter of record, the PRAP and this Record of Decision is reviewed by staff across the State to ensure consistency with other Record of Decisions is met.

Appendix B

ADMINISTRATIVE RECORD
SAGINAW - BUFFALO
Site No. 915152

1. Record of Decision.....March, 1998

2. Proposed Remedial Action Plan.....February, 1998

3. Engineering Evaluation of Alternatives Report for Units 1 and 2 (EMCON).....December 1997

4. Site Investigation Report - Vols I & II (EMCON).....January, 1997

5. Environmental Engineering Services - Parts Coating Facility (EMCON).....January, 1996

6. Plans and Technical Specifications Underground Clay Tile Pipe Removal and Groundwater Collection Trench Installation in Parking Area 4. (EMCON).....March, 1995

7. Site History Report (EMCON).....March, 1995

8. PCB and Lead Work Plan (EMCON).....November, 1994

9. Lead Sampling Project - Oil Contaminated Area (EMCON).....December, 1993

10. Soil Quality Evaluation (EMCON).....May, 1993

11. QA/QC and Health and Safety Plans (EMCON) .....December, 1992

12. Additional Investigation Associated with Delineation of Clay Pipe (EMCON).....July, 1990

Consent Order.....February, 1995

Relevant Correspondence:

G.A. Carlson to M. J. O'Toole - NYSDOH concurrence letter for Record of Decision, 3/98.

G. A. Carlson to M. J. O'Toole - NYSDOH concurrence letter for Proposed Remedial Action Plan, 3/98.

R.E. Wagner (Northeast Analytical) to K. Galanti (EMCON) - Interpretation of PCB congener specific data, 2/16/98.

K. C. Malinowski (EMCON) to M. Doster (NYSDEC)– Response to Comments on Engineering Evaluation Report, 11/26/97

J. S. Walia (NYSDEC) to K.C. Malinowski - Comments on Engineering Evaluation Report, 10/28/97.

K.C. Malinowski/K.B. Galanti to J. S. Walia - Response to comments on Site Investigation Report, 6/27/97.

K.C. Malinowski/K.B. Galanti to J.S. Walia - Response to comments on Site Investigation Report, 4/15/97.

J. S. Walia to K.C. Malinowski - Comments on the Site Investigation Report, 3/31/97.

K.C. Malinowski/K.B. Galanti to J. S. Walia - Regarding sewer repairs, 8/27/96.

K.C. Malinowski/K.B. Galant to J. S. Walia - Regarding sewer cleaning, 6/24/96.

J. S. Walia to K.C. Malinowski - Approval of Supplemental Work Plan, 2/23/96.

K.C. Malinowski/K.B. Galanti to J. S. Walia - Work Plan fro Supplemental Investigation, 2/21/96.

J. S. Walia to K.C. Malinowski - Comments on Site Investigation Report, 12/27/95.

M. Napolitan (GM) to J.S. Walia - Preconstruction Activities at Parts Coating Facility, 11/2/94.

J .S. Walia to M. Napolitan - Comments on PCB and Lead Work Plan, 7/5/94.

D. Hubbard (GM) to E.J.Feron (NYSDEC) - Response to comments on Work Plan, 3/26/93.

E. J. Feron to D. Hubbard - Comments on Work Plan, 3/3/93.

R. L. Marino (NYSDEC) to General Motors Corp., Listing of the site as Class 3, 6/8/92.

Response by Wehran-EnviroTech (EMCON) to NYSDEC letter of June 29, 1989.