General Motors Corporation
Worldwide Facilities Group
Environmental & Regulatory Support
Remediation Team

June 6, 2002

Mr. Gary Cygan
U.S. Environmental Protection Agency – Region 5
Waste, Pesticides, and Toxics Division
77 W. Jackson Blvd. DE-97
Chicago, IL 60604-3590

Re: Scope of Work – Spring 2002 Groundwater Sampling Event
GM NAO Flint Operations Site

Dear Mr. Cygan:

In accordance with the RCRA Facility Investigation Work Plan (RFI Work Plan) (BBL, 2001), this letter presents the scope of work (SOW) for the spring 2002 groundwater sampling event for the General Motors Corporation (GM) North American Operations (NAO) Flint Operations Site in Flint, Michigan (the Site) (ID #MID 005 356 712). This scope of work is being submitted to the U.S. Environmental Protection Agency (USEPA) for information purposes, and to gain concurrence with the general objectives and scope of work.

Field Activities

Field activities will include measurement of groundwater elevations and collection of groundwater samples, using low-flow procedures, at selected monitoring wells across the Site. Protocols for the collection of groundwater elevation measurements and samples are described in the *Field Sampling Plan/Quality Assurance Project Plan* (FSP/QAPP) (Appendix C of the RFI Work Plan)(BBL, 2001).

Prior to groundwater sampling, groundwater elevation measurements will be collected at on-site wells, as access allows. Measurements of the depth to water will be made to the nearest 0.01 feet, and will be collected within a 24- to 48-hour period. A groundwater elevation contour map will be prepared based on the spring 2002 elevation data.

Groundwater sampling will be conducted following the low-flow sampling procedures described in the FSP/QAPP with the addition of a more stringent turbidity goal. In an attempt to obtain total metals samples that are as representative as possible, the sampling teams will try to achieve the lowest practical turbidity reading prior to sample collection. Based on the evaluation of filtered and unfiltered groundwater analytical data for inorganics that was presented to USEPA in a March 5, 2002 letter and subsequent discussions with USEPA, at locations being sampled for inorganic constituents that have a final turbidity reading of greater than 50 NTUs, a dissolved (filtered) sample will be collected in addition to a total (unfiltered) sample for inorganic analyses.

NAO Flint Operations Office
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inorganic constituents that have a final turbidity reading of greater than 50 NTUs, a dissolved (filtered) sample will be collected in addition to a total (unfiltered) sample for inorganic analyses.

At monitoring wells installed after the first groundwater sampling round, specific capacity test data will be collected, where possible based on well yield.

Proposed groundwater sampling locations and analyses for this spring 2002 groundwater sampling event are summarized in Table 1. Figures 1 and 2 show the locations of the proposed sampling points. The following sampling locations were chosen for inclusion in the spring 2002 groundwater sampling event:

- Monitoring wells where constituents were detected at concentrations greater than generic Michigan Department of Environmental Quality (MDEQ) Industrial Drinking Water (IDW) Part 201 criteria;

- Step-out monitoring wells that have not previously been sampled, to further define the extent of dissolved-phase constituents in the area;

- Monitoring wells (Perimeter Wells) along the property boundary, located near or downgradient of monitoring wells where constituents were detected at concentrations above generic Residential Drinking Water (RDW) criteria, and

- Monitoring wells (Sentinel Wells) located downgradient of areas containing non-aqueous phase liquid (NAPL) or areas where constituents were detected at concentrations above generic IDW criteria.

Prior to sampling, each well will be monitored for the presence of NAPL. If NAPL is present, a groundwater sample will not be collected.

At each sampled well, analyses will be completed for analyte groups for which one or more analyte concentration exceeded generic criteria (e.g., analyses for volatile organic compounds will be completed if benzene was previously detected at a concentration above criteria). Total inorganic analyses will be completed wherever one or more inorganic constituent (total or dissolved) exceeded criteria. Dissolved inorganic analyses will also be completed for samples collected at locations with turbidity readings of 50 NTUs or above. Additional dissolved samples for inorganic analyses may also be collected as part of a follow-up sampling round if an anomalous total concentration is detected.

A total of 155 Site monitoring wells and a footer drain located along Leith Street are proposed to be sampled as part of the spring 2002 event. Due to ongoing demolition activities south of Leith Street (Southend), groundwater sampling will be limited to areas that are safely accessible. As a result, sampling of 21 additional wells located in the Southend of the Site will be delayed until access becomes possible.

All groundwater samples will be handled and analyzed in accordance with the FSP/QAPP. Laboratory analytical services will be provided by CT&E, Inc. of Ludington, Michigan.

Schedule

It is anticipated that this round of groundwater sampling will begin on June 10, 2002, and that groundwater sampling will be completed over a three to four week period.

If you have any questions or concerns related to the field activities discussed above, please feel free to contact me.

Sincerely,

Robert S. Metcalf, P.E.
Project Manager

Enclosure

cc: William Yokum, MDEQ
Peter Quackenbush, MDEQ
Jean Caufield, GM Remediation
Stephen Song, ENVIRON
CY Jeng, ENVIRON
Derek Kaiding, BBL
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TABLE 1

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS SITE - FLINT, MICHIGAN
RCRA FACILITY INVESTIGATION

SPRING 2002 GROUNDWATER SAMPLING PLAN

Field Sample ID	Associated AOI	Type of Sample/ Sampling Point	Identification of Sentinel and Perimeter Wells	Spring 2002 Analyses				Total Inorganics Detected Above Criteria	Dissolved Inorganics Detected Above Criteria	Reason for 2002 Sampling/Comments
				VOCs	SVOCs	PCBs (Total and Dissolved)	Total Inorganics			
Northend	Locations									
36-101	38-1	well	NEP				X			
RFI-38-04	38-1	well	NEP				X	Mn		TOT Mn exceeded previous round.
RFI-38-06	38-1	well	NEP				X		Th	DISS Th exceeded 2/21/02.
36-100	36-1	well	NEP	X			X	Mn	Mn	VOCs, DISS/TOT Mn exceedences previous round.
36-FP1	36-1	well		X			X	As,Be,Mn	Mn	VOCs, DISS/TOT Mn, DISS As,Be exceedences previous round.
RFI-36-02	36-1	well					X	As,Mn,Ni	As	DISS As and TOT As,Mn,Se exceedences previous round.
RFI-36-03	36-1	well	NEP/NES	X			X			NEP. Also NES for adjacent plume with VOCs/Diss Mn and As.
RFI-36-04	36-1	well					X		As	DISS As exceeded previous round.
RFI-36-05	36-1	well		X			X		Mn	VOCs, DISS Mn exceedences previous round.
RFI-36-23	36-1	well	NES	X			X		As	DISS As exceedence 2/20/02. NES for VOCs.
RFI-36-24	36-1	well		X						VOCs exceeded previous round.
RFI-36-25R	36-1	well					X		Be	Be exceedence 2/26/02.
RFI-36-27	36-1	well	NES	X			X		As,Be	DISS As,Be exceeded 2/20/02. NES-side gradient of VOC plume.
RFI-36-29R	36-1	well		X			X		As,Be	VOCs, DISS As,Be exceeded 2/26/02.
RFI-36-35	36-1	well		X			X	Cr,V		TOT Cr,V exceedence previous round.
RFI-36-44	36-1	well		X			As			Off-site well. VOCs exceeded 2/20/02, As above criteria at upgradient well 36-FP2.
RFI-36-45	36-1	well		X			Cr, Mn, V			Off-site well. VOCs exceeded 2/20/02, Cr, Mn, V above criteria at upgradient wells 36-100 and RFI-36-35.
RFI-36-46	36-1	well	NEP	X			X			VOCs exceeded 2/25/02.
36-FP2	36-2	well	NEP	X			X	As	As	VOCs, DISS/TOT As exceedences previous round.
36-FP4	36-2	well		X	X	X	X			NAPL detected previous round, no water sample collected. Full PAL if NAPL is not present.
36-FP5	36-2	well		X						VOCs exceeded previous round.
RFI-36-37	36-2	well		X						VOCs exceeded previous round
36-FP8	36-3	well	NEP/NES	X			X	Mn	Mn	DISS/TOT Mn exceedences previous round. Also NES for VOCs at RFI-36-08.
RFI-36-08	36-3	well		X						VOCs exceeded previous round. turb=371 previous round
RFI-36-09	36-3	well					X	Be,Cr,V		TOT Be,Cr,V exceeded previous round.
RFI-36-20	36-3	well					X	Be, Cr, V		Off-site well. Be, Cr, and V above criteria at upgradient well RFI-36-09.
RFI-36-43	36-3	well		X						VOCs exceeded 2/26/02.
20-102	36-5	well		X						VOC exceedence previous round.
20-500	36-5	well		X						Benzene close to criteria.
RFI-36-13	36-5	well		X			X	Mn	Mn	VOCs and TOT/DISS Mn exceeded previous round.

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				VOCs	SVOCs	PCBs (Total and Dissolved)	Total Inorganics			
RFI-36-14	36-5	well	NEP	X			X			VOCs exceeded 2/20/02. NEP for VOCs.
20-120	55-1	well	NES	X						NES for VOCs at AOI 55-1.
55-1	55-1	well		X						VOCs exceeded previous round.
55-3	55-1	well					X		As	DISS As exceeded previous round.
55-4	55-1	well	NEP	X	X		X		Mn	Bis-2 exceedence-permanent monitoring well of 23.2 ug/L
55-5	55-1	well		X						VOCs exceeded previous round.
RFI-55-01	55-1	well	NEP/NES	X						Offsite well. Downgradient from water treatment plant.
RFI-55-02	55-1	well		X			X		Mn	VOCs, DISS Mn exceedences previous round. Turb=208 previous round.
RFI-55-09	55-1	well		X						VOCs exceeded previous round.
RFI-55-10	55-1	well	NES	X						NES for VOCs at RFI-=55-02.
20-121	10-1	well		X			X		Mn	VOCs, DISS Mn exceedences previous round.
20-144	10-1	well		X						No exceedences 2/22/02. Define VOCs downgradient of 20-145.
20-145	10-1	well		X			X		Mn	VOCs, DISS Mn exceedences previous round.
RFI-10-01	10-1	well					X		Ba	Ba exceedence 2/22/02. Turb=180 prev round.
RFI-10-02	10-2	well		X			X		Mn	VOCs, DISS Mn exceedences previous round. Turb=410 previous round.
RFI-10-03	10-2	well		X			X		Mn	VOCs, DISS Mn exceedences previous round.
RFI-10-04	10-2	well	NEP	X			X	V		TOT V exceedence previous round. NEP for VOCs and inorganics.
RFI-10-05	10-2	well		X						VOCs exceeded previous round.
RFI-10-12	10-2	well					X		As,Mn	DISS As, Mn exceedences previous round.
RFI-10-24	10-2	well	NES	X						No VOC exceedence 2/20/02. NES for VOCs downgradient of RFI-10-05, RFI-10-06
RFI-10-26	10-2	well	NEP/NES	X			X			No VOC exceedence 2/20/02. NEP/NES for VOCs/Diss Mn downgradient of RFI-10-02 and RFI-10-03.
20-101R	10-3	well		X						VOC exceedence previous round. turb=250 previous round.
20-103N	10-3	well	NEP	X			X			NEP for upgradient VOCs/Inorganics.
20-105R	10-3	well		X			X	Mn	Be,Mn	VOC, TOT/DISS Mn, DISS Be exceedences previous round.
RFI-10-06	10-3	well	NEP	X			X	Mn		VOCs, TOT Mn exceedences previous round.
RFI-10-08	10-3	well					X			Within 5% of criteria for Mn.
20-FP11	10-4	well	NES	X						NES for NAPL and VOCs at 20-FP10, PCBs and SVOCs detected in NAPL.
20-FP6	10-4	well	NES	X						No exceedences 2/20/02. Use for VOCs upgradient at 20-145.
RFI-10-11	10-4	well	NEP	X						NEP for VOCs/NAPL.
20-171	10-4	well		X						

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				VOCs	SVOCs	PCBs (Total and Dissolved)	Total Inorganics			
43-166	05-1	well	NES	X			X		Mn	DISS Mn exceedence previous round. NES/VOCs for adjacent NAPL.
20-140	05-2	well		X			X		Be,Mn	VOCs, DISS Be,Mn exceedences 2/22/02. Define VOCs downgradient of RFI-05-01.
RFI-05-01	05-2	well		X			X		Mn	VOCs, DISS Mn exceedences previous round. Turb=93.9 previous round
43-101R	05-3	well	NES	X			X	As	As	DISS/TOT As exceedence previous round. NES for VOCs.
RFI-05-04	05-3	well		X						VOCs exceeded previous round.
RFI-05-05	05-3	well		X						VOCs exceeded previous round.
RFI-05-06	05-3	well	NES	X						NES for VOCs at RFI-05-05.
RFI-05-08R	05-5	piezometer	NEP	X	X	X	X			RFI Piezometer; not sampled yet. Sample in place of missing 43-120. NEP for full PAL.
RFI-05-12	05-5	well					X	As	As	DISS/TOT As exceedence previous round.
30-140	05-6	well					X		Mn	DISS Mn exceedence previous round.
43-140	05-6	well		X						VOCs exceeded previous round.
RFI-05-19S	05-6	well		X			X		Mn	VOCs, DISS Mn exceedences previous round. Turb=378 previous round.
RFI-05-20	05-6	well		X						VOCs exceeded previous round.
RFI-05-30	05-6	well		X						No exceedences of VOCs on 2/19/02. Use as NES for VOCs at 43-140.
03-02	03-1	well	NES	X						NES downgradient of 03-01 with NAPL and/or 03-101 with VOC exceedences.
03-101	03-1	well		X						VOC exceedence previous round.
70-100	03-1	well		X						VOCs exceeded previous round.
RFI-03-02	03-1	well	NES	X			X		Be,Se,V	DISS Be,Se,V exceedences 2/26/02. NES for VOCs at 70-100 and NAPL at 03-03.
RFI-03-04	03-1	well					X		As	DISS As exceeded previous round.
RFI-81-02	81-1	well		X			X		As	VOCs, DISS As exceedences previous round. Turb=55.4 previous round.
RFI-81-35	81-1	well	NES	X			X			NES for VOCs, DISS As.
70-160	81-2	well	NEP/NES	X			X			NEP/NES. NES for NAPL and Metals, no NAPL analytical.
70-163	81-2	well					X	Mn	Mn	Resample for inorganics.
70-165	81-2	well	NEP/NES				X		Pb	DISS Pb exceedence previous round. NES for NAPL.
86-100	81-3	well		X			X		Ba,Mn	VOCs, DISS Ba,Mn exceedences previous round.
RFI-81-08	81-3	well	NEP	X			X		Mn	VOCs, DISS Mn exceedences previous round. Turb=59.9 previous round.
RFI-81-11	81-3	well	NEP/NES	X			X			NES for VOCs and Inorganics upgradient.
RFI-81-12R	81-3	well	NEP	X			X	V		TOT V exceedence previous round. NEP for VOCs.

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				VOCs	SVOCs	PCBs (Total and Dissolved)	Total Inorganics			
RFI-81-33	81-3	well	NEP	X			X			Use to as NEP and to define extent of VOCs/DISS As at RFI-81-08.
RFI-81-09	81-4	well		X						VOCs exceeded previous round.
07-02	07-1	well		X						VOC exceedence previous round. turb=250 previous round.
RFI-07-01R	07-1	well		X	X	X	X			Replacement for RFI-07-01(Dry 2001 Sample Event), RFI Monitoring Well.
RFI-07-08	07-3	well					X	Be		TOT Be exceeded previous round.
87-FP2	86-1	well		X						VOCs exceeded previous round.
87-FP3	86-1	well		X						VOCs exceeded previous round.
87-FP5	86-1	well		X						VOCs exceeded previous round. Went dry previous round, turbidity=114
RFI-02-08R	86-1	well	NEP	X						
RFI-86-01R	86-1	well	NEP	X			X	Pb,V		TOT Pb,V exceedences previous round. NEP for VOCs and Inorganics.
RFI-86-02	86-1	well	NEP	X	X	X	X			RFI Monitoring Well. NAPL detected (in error) last round. No 2001 sample collected. DRY??
RFI-86-03	86-1	well	NEP	X			X		Mn	VOCs, DISS Mn exceedences previous round.
RFI-86-04	86-1	well	NES	X						NES for upgradient VOCs at 86-100.
RFI-86-05	86-1	well		X						VOCs exceeded previous round.
RFI-86-06D	86-1	well	NEP	X						VOCs exceeded previous round. Also a perimeter well.
RFI-86-06S	86-1	well	NEP	X						VOCs exceeded previous round. Also a perimeter well.
RFI-86-08R	86-1	well		X			X		Be,V	VOCs,DISS Be,V exceedences 2/21/02.
RFI-86-14	86-1	well		X						Define VOCs downgradient of AOI-86-1
RFI-86-15	86-1	well	NEP	X						NEP for VOCs downgradient of AOI 86-1.
Footer Drain South of RFI-86-06 on Leith St.	86-1	grab		X	X	X	X			
RFI-21-04	21-1	well	NES	X			X	Mn	Mn	TOT/DISS Mn exceeded previous round. NES for upgradient VOCs.
RFI-85-02R	85-1	well		X			X		V	VOCs, DISS V exceedences previous round.
RFI-85-03	85-1	well					X		Se	DISS Se exceeded previous round. Went dry previous round.
RFI-85-04R	85-1	well					X		Se	DISS Be,Se exceeded 2/28/02.
RFI-85-06	85-1	well		X						VOCs exceeded previous round.
RFI-85-07	85-1	well		X			X		Mn	VOCs, DISS Mn exceedences previous round.
RFI-65-01	65-1	well		X			X		Mn	VOCs, DISS Mn exceedences previous round.
RFI-83/84-25	83/84-2	well		X			X		As	VOCs, DISS As exceedences previous round.
RFI-83/84-27	83/84-2	well					X		Be	DISS Be exceeded 2/21/02.

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				VOCs	SVOCs	PCBs (Total and Dissolved)	Total Inorganics			
RFI-83/84-29	83/84-2	well					X		Be,Mn	DISS Be,Mn exceeded 2/21/02.
RFI-83/84-20	83/84-3	well					X		Be,Mn	DISS Be,Mn exceeded 2/22/02.
88-7	83/84-7	well	SES	X			X			SES for VOCs and Mn at RFI-65-01.
88-8	83/84-7	well		X						VOCs exceeded previous round.
88-9	83/84-7	well		X						VOCs exceeded previous round. Turb=205 previous round.
RFI-83/84-11	83/84-7	well		X			X		V	Define extent of V=6.4 ug/L (just over RDW 4.5ug/L). VOCs exceeded previous round.
Southend Locations										
RFI-84-06	84-A	well	SEP	X	X	X	X			RFI MW. Active demolition area. Collect sample when accessible.
84-6	84-D	well		X			X		Cr,Ni	VOCs, DISS Cr,Ni exceedences previous round. Turb=75.3 previous round.
RFI-84-05	84-D	well	SES	X			X			SES for Inorganics and VOCs at 84-6.
RFI-94-02	94-B	grab		X	X	X	X			RFI SB/TW. Active demolition area. Collect sample when accessible.
RFI-94-05	94-D	well		X	X	X	X			RFI MW. Active demolition area. Collect sample when accessible.
RFI-17-02	17-A	well	SEP				X	Se, Ag		TOT Se and Ag(Silver) exceeded previous round in low flow samples.
RFI-02-07	02-F	well					X	Mn	Mn	DISS/TOT Mn exceedences previous round.
40-1R	40-A	well		X	X	X	X			Replace/Sample pending access to demo area.
40-6	40-A	well					CN(amenable)			
40-3	40-A	well		X			X		As	VOCs, DISS As exceedences previous round.
40-4R	40-A	well		X			X	Ba	As	VOCs, DISS As,TOT Ba exceedences previous round.
40-2	40-A	well		X						VOCs exceedence previous round.
40-6	40-A	well					X	CN	CN	DISS/TOT CN exceeded previous round.
RFI-40-07	40-A	well	SES	X						SES for VOCs. Review following demolition activities.
RFI-40-09	40-A	well		X			X		Be	VOCs, DISS Be exceedences 2/26/02. Review following demolition activities.
RFI-40-10	40-B	well		X						VOCs exceeded 2/21/02.
RFI-12-15	12-A	well	SES	X						Sampled 2001. SES for NAPL. Review after demolition activities.
RFI-12-11S	12-B	well	SES	X			X			Sampled 2001. Clean 2001. SES for NAPL and Inorganics.
RFI-12-14	12-B	well								RFI Step Out. NAPL detected previous round, No water collected. Slim chance for NAPL next round.
RFI-12-11D	12-B	well								RFI Step Out. NAPL detected previous round, no water collected. NAPL not likely to be present next round.
RFI-16-04	16-C	well		X	X	X	X			RFI Well, NAPL present previous round, not recently.
16-12	16-C	well	SES	X			X			No VOC exceedence 2/28/02. SES for VOCs.

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				VOCs	SVOCs	PCBs (Total and Dissolved)	Total Inorganics			
RFI-16-11	16-C	well		X						VOCs exceeded previous round.
RFI-40-03	40-C	temp. well		X			X		Be	VOCs,DISS Be exceedence 2/25/02.
40-303R	40-D	well	SEP	X			X	Pb		TOT Pb exceedence previous round. Went dry previous round, turb=100. SEP for VOCs.
40-304	40-D	well		X						VOCs exceeded previous round.
40-305	40-D	well		X						VOCs exceeded previous round.
RFI-40-04	40-D	well	SEP	X			X			SEP for VOCs and inorganics.
04-160	44-A	well	SEP				X			
RFI-44-04	44-A	well	SEP			X	X			Sampled 2001. Off-site well.
RFI-44-06R	44-A	well			X					Replacement for RFI-44-06 (dry). Step-out for PAHs at RFI-44-01.
RFI-44-05	44-A	well				X	X		Se	DISS Se and PCB exceeded previous round.
RFI-09-01	09-A	well	SEP	X						VOCs exceeded previous round. turb=83.7 previous round
RFI-09-04R	09-A	well	SEP	X						VOCs exceeded previous round.
RFI-09-14	09-A	well					Ba, Sb, Se			Off-site well. Resample for Inorganics. Ba from 10/03/01 rejected.
RFI-09-32	09-A	well	SEP	X			Pb, Sb, Se			Off-site well. Use to define extent of DISS Pb,VC
31-5	09-B	well				X				DISS PCB exceedence previous round.
31-6	09-B	well	SES	X						SES for Tank Farm.
31-8	09-B	well		X			X		Pb	VOCs, DISS Pb exceedence previous round.
MW-22	09-B	well					Sb, Se			Off-site well.
MW-23	09-B	well					Sb, Se			Off-site well.
MW-24	09-B	well					Sb, Se			Off-site well.
MW-25	09-B	well		X			Pb, Mn			Off-site well. Define downgradient extent of Pb from RFI-09-02.
MW-26	09-B	well	SEP	X						Sample to define extent of TCE at RFI-09-04.
RFI-09-06	09-B	well		X						VOCs exceeded previous round. turb=103 previous round
RFI-09-07	09-B	well	SEP	X	X	X	X			RFI Well. NAPL detected 2002, No sample collected. Take full PAL if NAPL is not present.
RFI-09-08	09-B	well		X			X		Se	VOCs, DISS Se exceedences previous round. Went dry previous round, turb=340.
RFI-09-09	09-B	well	SES	X			X			SES for VOCs at RFI-09-11. Mn close to RDW.
RFI-09-10	09-B	well					X		Sb	DISS Sb exceedence previous round. Turb=210 previous round.
RFI-09-11	09-B	well		X						VOCs exceeded previous round.
RFI-09-12	09-B	well		X			X	As		VOCs, TOT As exceedences previous round.
RFI-09-13	09-B	well	SEP	X			Sb, Se			Off-site well. VOC exceedence previous round. Define extent of DISS Se at RFI-09-08.
BD01-02	Admin. Bldg.	well		X						Benzene above criteria.

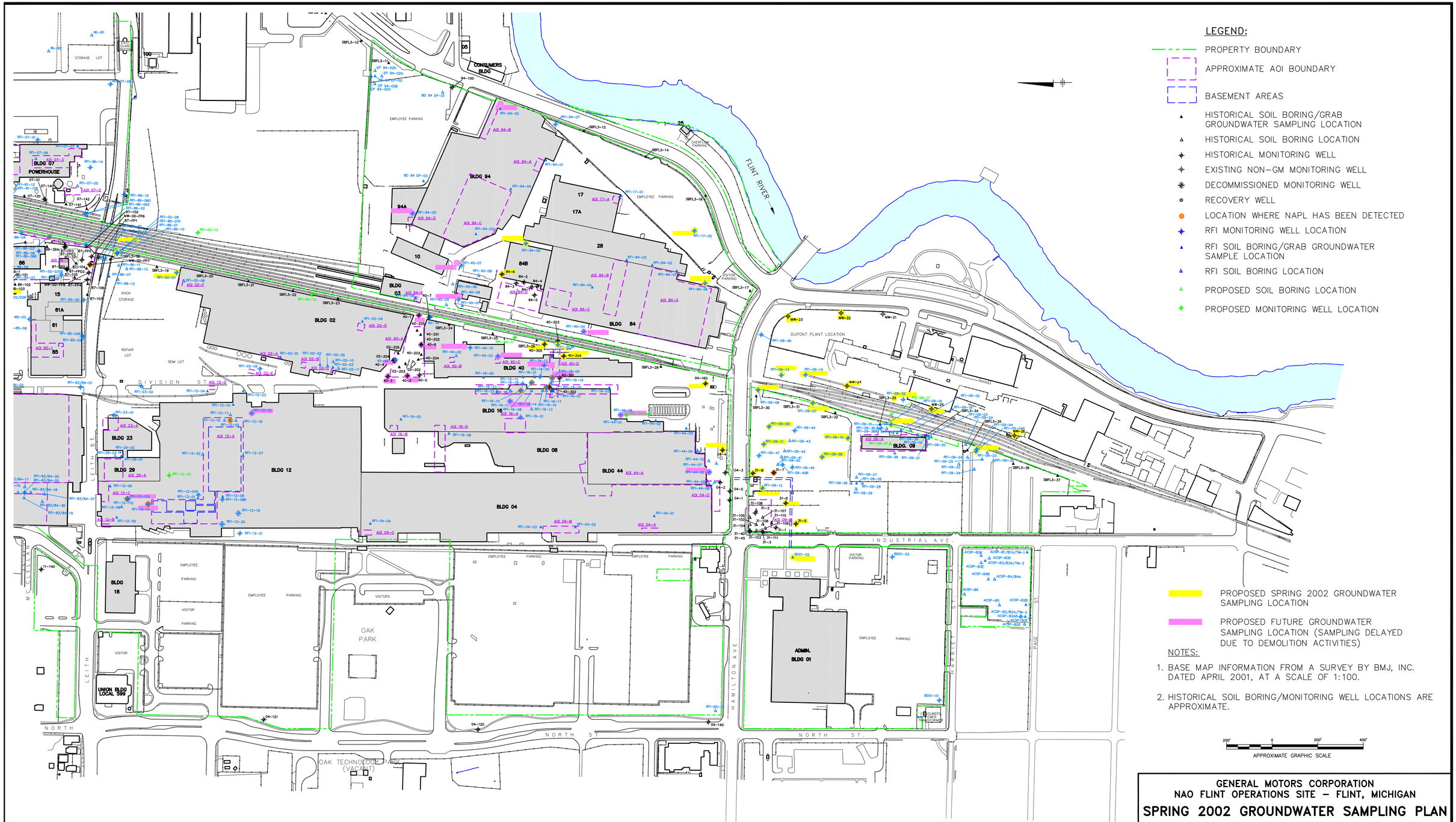
TABLE 1

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS SITE - FLINT, MICHIGAN
RCRA FACILITY INVESTIGATION

SPRING 2002 GROUNDWATER SAMPLING PLAN

Field Sample ID	Associated AOI	Type of Sample/ Sampling Point	Identification of Sentinel and Perimeter Wells	Spring 2002 Analyses				Total Inorganics Detected Above Criteria	Dissolved Inorganics Detected Above Criteria	Reason for 2002 Sampling/Comments
				VOCs	SVOCs	PCBs (Total and Dissolved)	Total Inorganics			

Notes:
Comments that reference "exceedences" are referring to the generic MDEQ Industrial Drinking Water (IDW) and Residential Drinking Water (RDW) screening values.
X=To be sampled for in Spring 2002
SEP-South End Perimeter Well, NEP-North End Perimeter Well
SES-South End Sentinel Well, NES-North End Sentinel Well.
40-6 Shading indentifies locations that will not be sampled in Spring of 2002 due to demolition activities.
Ag = silver
As = arsenic
Ba = barium
Be = beryllium
CN = cyanide
Cr = chromium
Mn = manganese
Ni = nickel
Pb = lead
Sb = antimony
Se = selenium
Th = thallium
V = vanadium



NOTES:

1. BASE MAP INFORMATION FROM A SURVEY BY BMJ, INC. DATED APRIL 2001, AT A SCALE OF 1:100.
2. HISTORICAL SOIL BORING/MONITORING WELL LOCATIONS ARE APPROXIMATE.

X: 64410X01, X02, X03, X15.DWG
LMAN: PGL
P: PAGESET/PLT-DL (PLTHALF.CTB)
6/5/02 SYR-54-NES RCA PGL
64410101/64410B15.DWG

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS SITE – FLINT, MICHIGAN

SPRING 2002 GROUNDWATER SAMPLING PLAN

SITE PLAN - SOUTHEND

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

FIGURE 2

General Motors Corporation
Worldwide Facilities Group
Environmental Services
Remediation Team

Transmitted via First Class Mail

July 5, 2001

Mr. Gary Cygan
U.S. Environmental Protection Agency – Region 5
Waste, Pesticide and Toxics Division
77 W. Jackson Blvd. DE-97
Chicago, IL 60604-3590

Re: *RCRA Facility Investigation Work Plan Modifications*
GM NAO Flint Operations Site, Flint, Michigan

Dear Mr. Cygan:

The General Motors Corporation (GM) has prepared this letter to present a summary of modifications to the *RCRA Facility Investigation Work Plan* (Work Plan) for the GM North American Operations (NAO) Flint Operations Site in Flint, Michigan (U.S. Environmental Protection Agency [USEPA] ID # 005 356 712) submitted on March 30, 2001. These modifications were made to provide more specificity and clarity in the Work Plan for the use of field personnel and data users. These modifications were discussed with USEPA during the biweekly project conference calls and a site visit on May 21, 2001.

We have provided a summary list of the Work Plan modifications to be inserted in the front of the Work Plan and also revised pages for the RFI Work Plan, as appropriate. Please insert the replacement pages into your copy of the RFI Work Plan.

Future modifications will be submitted to USEPA in a similar manner.

Should you have any questions, please call me at 810-236-0300.

Sincerely,

Robert S. Metcalf / MAA by

Robert S. Metcalf, P.E.
Project Manager

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DCK/
cc: Derek Kaiding, Blasland, Bouck & Lee, Inc.
Jean Caufield, General Motors Corporation
William Yocum, Michigan Department of Environmental Quality
Peter Quackenbush, Michigan Department of Environmental Quality
Stephen Song, ENVIRON
Pieter Booth, E[X]ponent
Robert J. Anderson, P.G., Blasland, Bouck, & Lee, Inc.
Lisa Coffey, Blasland, Bouck & Lee, Inc.

NAO Flint Operations Office
902 East Hamilton Avenue • Flint, MI 48550-8502 • Mail Code 485-185-020 • FAX (810) 236-7391

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

Transmitted via FedEx

March 29, 2001

Mr. Gary Cygan
U.S. Environmental Protection Agency – Region 5
Waste, Pesticide, and Toxics Division
77 W. Jackson Blvd. DE-9J
Chicago, IL 60604-3590

Re: *RCRA Facility Investigation Work Plan*
GM NAO Flint Operations Site, Flint, Michigan

Dear Mr. Cygan:

On behalf of General Motors Corporation (GM), Blasland, Bouck, & Lee, Inc. is pleased to submit this *RCRA Facility Investigation Work Plan* (Work Plan) for the GM North American Operations (NAO) Flint Operations Site in Flint, Michigan (the Site) (U.S. Environmental Protection Agency [USEPA] ID# 005 356 712). The enclosed Work Plan presents GM's approach for conducting a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for the Site, and incorporates comments on preliminary RFI scoping documentation reviewed with you on March 9 and 13, 2001.

The Work Plan is divided into eight volumes:

Volume I
Main Work Plan text, tables, and figures

Volume II

Appendix A	Geologic Cross-Section Mapping and Historical Soil Boring and Monitoring Well Logs > Geologic Cross-Section Mapping > Historical Monitoring Well Logs

Volume III

Appendix A	Geologic Cross-Section Mapping and Historical Soil Boring and Monitoring Well Logs > Historical Soil Boring Logs

Volume IV

Appendix B	Project Management Plan (PMP)

Volume V

Appendix C	Field Sampling Plan/Quality Assurance Project Plan (FSP/QAPP)

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Volume VI

Appendix D	Data Management Plan (DMP)
Appendix E	Health and Safety Plan (HASP)
	➢ Excluding Attachment H (Material Safety Data Sheets)

Volume VII

Appendix E	Health and Safety Plan (HASP)
	➢ Attachment H (Material Safety Data Sheets)

Volume VIII

Appendix F	Community Relations Plan (CRP)
Appendix G	Historical Analytical Results

Should you have any questions, please contact Robert Metcalf of GM directly at (810) 236-0300.

Sincerely,

BLASLAND, BOUCK & LEE, INC.

Derek C. Kaiding
Manager/Senior Engineer I

DCK/
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Enclosure

cc: Robert Metcalf, P.E., General Motors Corporation
Jean Caufield, General Motors Corporation
William Yokum, Michigan Department of Environmental Quality
Peter Quackenbush, Michigan Department of Environmental Quality
Robert Anderson, P.G., Blasland, Bouck, & Lee, Inc.
Lisa Coffey, Blasland, Bouck, & Lee, Inc.
Stephen Song, ENVIRON
Pieter Booth, E^{x}ponent

RCRA Facility Investigation Work Plan

Volume I

General Motors Corporation
NAO Flint Operations Site
Flint, Michigan

March 30, 2001

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

consultants with focus

General Motors Corporation, NAO Flint Operations
RCRA Facility Investigation Work Plan
Modification #1

List of Modifications as of July 5, 2001

The following modifications have been made to the RFI Work Plan, Volume I (Blasland, Bouck & Lee, Inc., March 30, 2001).

Volume I

- Figure 2: The decision logic flow chart for groundwater sampling has been modified mainly to consider the assessment of dense nonaqueous phase liquid (DNAPL).

- Page 5-3, Table 5, and Table 6: Sampling locations for collection of geotechnical samples have been specified. They are RFI-36-01, RFI-55-01, RFI-05-09, RFI-07-08, and RFI-94-2. In addition to grain size analysis, sand and till soil samples will be analyzed for total organic carbon and bulk density. A sample of the clay till will also be collected from each boring and analyzed for Atterberg Limits and flex wall permeability (if the density of the unit allows a shelby tube to be pushed).

- Page 5-3 and Table 7: The depth increment for a surface soil sample has been modified. In instances where surface soil samples will be collected beneath paved or floor areas, the two-foot depth increment immediately beneath the pavement or floor will be sampled.

- Page 5-3: Olfactory means of determining evidence of contamination will not be used. Instead, oil/water shake tests will be used when necessary.

- Page 5-4 and Table 6: The locations of well clusters to evaluate vertical groundwater gradients have been specified. These locations are existing well 36-100 and new well RFI-36-35, new wells RFI-05-19S and RFI-05-19D, new wells RFI-07-08S and RFI-07-08D, and any other instances deemed warranted based on encountered site conditions.

- Page 5-6: To evaluate the potential presence of DNAPL, concentrations of detected constituents will be compared to their respective effective solubility limits rather than their respective theoretical solubility limits.

- Table 7: Provisions have been added to allow select samples to be analyzed for abridged analyte lists as opposed to the full Project Analyte List (PAL). Specifically, for off-site locations, the rationale for proposing each of the off-site locations will be reviewed (e.g., benzene, toluene, ethylbenzene, and xylene [BTEX] were detected along with lead above screening criteria at the Site boundary) and matched with the analyte list for the corresponding off-site location(s). For example, if a particular off-site location was proposed due to BTEX and lead detected above screening criteria at the Site boundary, samples from that particular location will be analyzed for the volatile organic compound (VOC) fraction of the PAL, plus lead. If subsequent on-site data indicate the potential for off-site migration of other constituents (e.g., naphthalene), additional samples would be subsequently collected from the corresponding off-site location and analyzed for additional fractions of the PAL (e.g., semivolatile organic compounds [SVOCs]), as needed.

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- Excluding Attachment H (Material Safety Data Sheets)

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- Attachment H (Material Safety Data Sheets)

Volume VIII

Appendix F Community Relations Plan (CRP)

Appendix G Historical Analytical Results

1. Introduction

1.1 Background

Blasland, Bouck & Lee, Inc. (BBL) has been retained by Environmental Corporate Remediation Company, Inc. (ENCORE), a wholly owned subsidiary of General Motors Corporation (GM), to prepare this RCRA Facility Investigation Work Plan (RFI Work Plan) for GM's North American Operations (NAO) Flint Operations Site in Flint, Michigan (the Site) (ID #MID 005 356 712). The RFI Work Plan presents GM's approach for conducting a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) for the Site, fulfilling tasks under the RCRA Section 3008(h) Administrative Order on Consent R8H-5-00-02, effective March 2, 2000 (Consent Order).

The Consent Order does not require preparation of an RFI Work Plan, nor submittal of the RFI Work Plan to the U.S. Environmental Protection Agency (USEPA) for review or approval. However, this RFI Work Plan was prepared to specify collection and interpretation activities. The RFI Work Plan is being submitted to USEPA for information purposes and to gain concurrence with the general objectives and scope of work. The scope of work set forth in this RFI Work Plan was discussed in a scoping meeting on March 9, 2001, and a conference call on March 13, 2001, between GM, USEPA, and BBL, at which time consensus was reached on the RFI objectives, scope, and methods.

The Site is located in the northeast quadrant of the City of Flint, Michigan, at 902 East Hamilton Avenue (see Figure 1). The Site lies west of the Flint River on approximately 452 acres of land. The Site 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). Examples of past operations include automotive painting, sheet metal stamping, foundry operations, and transmission component production.

In 2000, GM submitted to the USEPA the following documents related to the Site, fulfilling the initial tasks of the Consent Order:

- *Description of Current Conditions for Areas South of Leith Street* (hereafter referred to as the Southend DOCC) (BBL, May 30, 2000); and
- *Description of Current Conditions for Areas North of Leith Street* (hereafter referred to as the Northend DOCC) (BBL, November 26, 2000).

These reports provided 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 Areas of Interest (AOIs) that may warrant further investigation or evaluation in the RFI;
- A brief summary of past Site-related environmental investigations and resulting analytical data; and
- A brief summary of Site-related Interim Measures (IMs) implemented to date.

These reports served as the basis for developing this RFI Work Plan.

1.2 RFI Scope

The scope of the RFI is to perform an investigation to identify the nature and extent of any releases of hazardous constituents at or from the Site that may pose an unacceptable risk to human health and the environment under current or reasonably expected future land and groundwater use. GM has developed the scope of work described in this RFI Work Plan to investigate potential releases of hazardous constituents that may be associated with AOIs at the Site.

1.3 RFI Work Plan Objectives

The objectives of the RFI Work Plan are to guide data collection and interpretations necessary to:

- Determine the presence and extent of hazardous constituents in media from releases at the Site or from AOIs at the Site;

- Develop the data necessary to assess human health and ecological risks associated with exposure scenarios based on current and reasonable expected future land and groundwater use at and around the Site. The Michigan Part 201 generic screening criteria will be the primary criteria used for evaluating the Site data to determine whether Site characterization is adequate;

- Develop the data necessary to evaluate the hydrogeologic flow regime, including groundwater gradients, flow direction, hydraulic conductivity, and groundwater depth at the Site;

- Develop the data necessary to evaluate the feasibility and design of interim and final remedial alternatives needed to attain risk levels that are within USEPA's acceptable risk range, meet the environmental indicators, and address nonaqueous phase liquid (NAPL);

- Provide the data necessary to characterize material for disposal as needed throughout the Site investigation and Site remedial activities;

- Provide the data necessary to evaluate the need for interim and final remedial actions at the Site; and

- Provide the data necessary to assess overall accuracy, representativeness, comparability, precision, and sensitivity of the various project data sets.

1.4 RFI Work Plan Organization

This RFI Work Plan is consistent with USEPA guidance and is organized as follows:

Section 1. - Introduction

This section presents background information, RFI scope, RFI Work Plan objectives, organization of this document, and an investigation summary and review of data needs.

Section 2. - Description of the Site

This section summarizes general conditions at the Site, including the Site location, current and historical operations, historical mapping and review of aerial photographs, and potential receptors.

Section 3. - Regional Setting

This section summarizes regional land use and demographics, climate, geology, hydrogeology, hydrology, and river ecology.

Section 4. - Site Setting

This section summarizes the Site-specific setting pertaining to geology, hydrogeology, hydrology, and surface cover and ecology.

Section 5. - Sampling and Analysis Plan for Areas of Interest (AOIs)

This section presents the current status of each AOI at the Site, and describes the proposed investigation, if any, for each AOI. In certain cases, the proposed investigation may be performed in two or more phases, in the event that the results of investigation in the first phase suggest potential contamination of other environmental media.

Section 6. - Data Evaluation

This section describes data evaluation objectives and the proposed methods for evaluating the RFI data. This will consist of initial data analysis, review of exposure information, post-investigation evaluation, and potential corrective measures technologies evaluation.

Section 7. - Reporting

This section outlines the reporting associated with the RFI, including progress reports, the Phase I and Phase II Investigation Reports and the Environmental Indicators Report. These are consistent with the reporting requirements presented in the Consent Order.

Section 8. - RFI Schedule

This section presents the RFI schedule. This schedule is consistent with the requirements of the Consent Order.

Section 9. - References

This section presents a list of references used in the preparation of this RFI Work Plan. The background information in this RFI Work Plan has been taken primarily from the Northend DOCC and the Southend DOCC.

Appendix A - Historical Soil Boring and Monitoring Well Logs

Appendix A presents soil boring and monitoring well logs from previous investigations. Stratigraphic and well completion logs for the existing monitoring well network are also included.

Appendix B - Project Management Plan (PMP)

The PMP presents a discussion of the project team organization and the responsibilities of the project team members. The qualifications of personnel performing or directing the RFI are also included.

Appendix C - Field Sampling Plan (FSP)/Quality Assurance Project Plan (QAPP)

The FSP/QAPP presents procedures for the collection of surface soil, subsurface soil, NAPL, groundwater, and surface water grab samples, and the installation of soil borings and monitoring wells. It includes organization, objectives, planned activities and specific quality assurance/quality control (QA/QC) procedures that will be used during implementation of the RFI Work Plan.

Appendix D - Data Management Plan (DMP)

The DMP presents procedures to be employed for managing information, reports, and correspondence associated with the implementation of the RFI Work Plan.

Appendix E - Site Health and Safety Plan (HASP)

The HASP presents the minimum health and safety standards to be met by all personnel during implementation of the RFI Work Plan.

Appendix F - Community Relations Plan (CRP)

The CRP presents the mechanisms for dissemination of information to the public regarding investigation activities, results, and selection of a remedy.

Appendix G - Historical Analytical Results

Appendix G presents relevant historical analytical results for each AOI that will be investigated further as part of the RFI.

1.5 Investigation Summary and Data Needs

1.5.1 Summary of Historical Investigations

Numerous historical investigations have been performed at the Site 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.

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;
- Inactive Wastewater Aeration Lagoons Area;
- Building 40 basements;
- Building 02 USTs;
- Building 40 USTs;
- Former Tank Farm 94; and
- Former Hamilton Avenue Tank Farm.

These investigations are further discussed in Section 4 of the Northend DOCC and the Southend DOCC.

In addition to the summaries of analytical data presented in tables of the Northend DOCC and Southend DOCC, 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 of the Northend DOCC. An updated version of this GIS is included on compact disk in Appendix H of this document.

1.5.2 Overview of Data Needs

Based on the historical investigations performed at the Site, several known areas of release of hazardous constituents have been identified as AOIs. Several of these areas are already being addressed with Interim Measures (IMs) as summarized in Section 5 of the Northend DOCC and the Southend DOCC. However, additional data needs for these AOIs are addressed as part of this RFI Work Plan.

Additionally, based on extensive Site reconnaissance, records review, and interviews with Site personnel, numerous other AOIs have been identified based on their potential for having released hazardous constituents. Data needs identified for these AOIs will also be addressed as part of the RFI Work Plan.

In general, overall data needs associated with the AOIs identified related to the Site involve the completion of a Site data set, which satisfies the objectives identified above in Section 1.3.

1.5.3 Overview of Proposed Investigations

Tables 1 and 2 list the various AOIs identified to be investigated further within the areas of the Site north and south of Leith Street, respectively. Table 1 lists the Northend AOIs as previously presented in the Northend DOCC. Each of these AOIs will be subject to further investigation as discussed in Section 5. Since the Southend of the Site has been subject to decommissioning activities, all 327 AOIs previously identified in the Southend DOCC for this area were visually evaluated, to the extent possible, following cleaning efforts performed as part of the building decommissioning activities.

Many AOIs have been appropriately combined based on proximity and common associations (e.g., common processes and materials managed) and many of these grouped AOIs as well as other discrete AOIs have been deemed not to warrant further investigation based on visual observations (i.e., no visual indications of potential release; therefore, AOIs do not pose an unacceptable risk to human health and the environment). Table 2 lists the AOIs warranting further investigation based on the results of the post-cleaning visual evaluations.

Tables 3 and 4 summarize the investigatory activities proposed to address the Northend and Southend AOIs that warrant further investigation. These activities collectively include soil boring and monitoring well installations and soil, groundwater, and NAPL sampling. These activities are further detailed in Section 5.

2. Description of the Site

2.1 Site Location

The Site is located at 902 East Hamilton Avenue in Flint, Michigan, in Genesee County (see Figures 1 and 3). The Site encompasses approximately 452 acres of land and is oriented in a north-to-south direction. It is generally bounded to the north by Stewart Avenue and Pierson Road, to the south by Harriet Street, to the east by James P. Cole Boulevard and CSX Railroad, and to the west by Industrial Avenue and North Street.

The topography of the Site is fairly flat, although the regional topography slopes east-southeast toward the Flint River (approximately 100 feet away at the Southend of the Site and approximately 3,000 feet away at the Northend of the Site).

A plastics recycling facility is located on the northeast corner of James P. Cole Boulevard and Garfield Avenue, and a Consumers Power Building is located on the southeast corner of James P. Cole Boulevard, between the Site and the Flint River. A former DuPont facility is located south of Hamilton Avenue, east of the Site. Several other industries are located east of the Site, between the Site and the Flint River, including the CSX Railroad, Interstate I-475, Bell's Produce, PPG Industries, Kasle Steel/Auto Blankers, Flint Coatings, and Lockhart Chemicals. The remaining areas surrounding the Site are generally occupied by residential neighborhoods and other industries, including Universal Systems, Flint Plating, Associated Truck, and Unit Terminal (GM).

2.2 Current and Historical Operations

Portions of the Site 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 to 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, 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 that 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);
- Automobile painting (discontinued);
- V-6 engine manufacturing;
- Coil spring manufacturing (discontinued);
- Torque converter manufacturing;
- Transmission components manufacturing;
- Plastic injection (discontinued); and
- Vehicle assembly (discontinued).

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 (discontinued); and
- Industrial wastewater treatment.

For further details regarding the current and historical operations at the Site, refer to the Northend DOCC and the Southend DOCC.

2.3 Historical Mapping, Aerial Photographs, and Site Buildings

A detailed review of historical mapping and aerial photographs related to the Site is presented in Section 2.8 of the Northend DOCC and Section 2.8 of the Southend DOCC. Summaries of historical and existing Site buildings are presented respectively in Sections 2.7 and 2.9 of the Northend DOCC and Sections 2.7 and 2.9 of the Southend DOCC.

3. Regional Setting

3.1 Land Use

The vicinity of the Site is a developed industrial, commercial, and residential area. Interstate I-475 and the Flint River are directly east of the Site. 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. A former DuPont facility is located southeast of the Site. Directly to the north and west of the Site are predominantly residential neighborhoods. 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). South of the Site are sparsely occupied residential and commercial areas. The Site is currently zoned industrial. Future on-site land use is expected to remain industrial.

3.2 Demographics

The Site is located in Flint, Michigan, in the southeastern portion of Michigan in Genesee County, which is approximately 649 square miles in area. The City of Flint has a population of approximately 143,000, which accounts for 33% of the approximately 437,000 residents of Genesee County. Approximately one-third of the land area of Genesee County is used for agriculture. Drinking water for Flint is provided by Detroit Pipeline, which uses Lake Huron, approximately 60 miles east from the Site, as its source.

3.3 Climate

Since day-to-day weather is controlled by the movement of pressure systems across the nation, 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. Flint experiences some lake-effect snow. However, this is minimal and essentially limited to increased cloudiness during the late fall and early winter. The average mid-day relative humidity varies from 54% in May to 73% in December, and averages 62% annually.

Summers are dominated by moderately warm temperatures with a 1964 to 1993 annual average of 6.6 days exceeding the 90°F mark. The lake influence was reflected in the minimum temperatures for these years; 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 18.5 inches, or 60% of the average annual total, for 1942 to 2000. 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 1942 to 2000 average seasonal snowfall was about 45.1 inches. During the 1964 to 1993 period, 14.3 days per season averaged one inch or more of snow on the ground, but this varied greatly from season to season.

3.4 Regional Geology

The regional landscape of Flint and the surrounding area consists of gently rolling topography. This topography includes a gently sloping ground moraine, broken by several outwash channels and also by numerous end-moraine ridges, some having slightly greater relief than the surrounding ground-moraine topography. Local relief of less than 50 feet is found over areas of several miles. The greatest regional elevation changes are along outwash channels, which are commonly accompanied by steep slopes and are 50 to 100 feet lower than the adjacent ground moraine.

The area is dominated by two primary stratigraphic units consisting of unconsolidated glacial deposits of Pleistocene age, underlain by sandstone bedrock. The bedrock geology in the area consists primarily of Paleozoic age sandstone and limestone formations, primarily Pennsylvanian sandstone, shale, coal, and limestone, with Mississippian shale and gypsum occurring at the western edge (Dorr and Eschman, 1970). There are also scattered occurrences of Mesozoic bedrock; these Jurassic red beds consist mainly of sandstone, shale, and clay, with minor beds of limestone and gypsum.

3.5 Regional Hydrogeology

Groundwater in the area is found in various sand and gravel deposits, within the glacial clay till and in the underlying bedrock aquifer. The regional groundwater flow direction within the sandstone bedrock is generally to the east and southeast, with groundwater eventually discharging to Saginaw Bay and Lake Huron (Water Resources Paper, 1963). Hydrogeologic discharge areas within 1 mile of the Site include the Flint River and its tributaries.

3.6 Regional Hydrology

The Flint watershed consists of approximately 1,360 square miles with the drainage area for the Flint River comprising approximately 956 square miles. Median daily stream flow for the Flint River is approximately 400 cubic feet per second (cfs). Stream flow varies widely as a function of precipitation and runoff throughout the year and from season to season.

East of the Site, the Flint River flows north to south through the City of Flint. The slope is approximately 2 feet per mile through this reach. There are four major tributaries to the Flint River in the study area: Butternut, Kearsley, Thread, and Swartz creeks. The aqueous geochemical signatures of the surface waters tend to be of the bicarbonate type—with high concentrations of calcium and magnesium. The pH of these waters can be as high as 8.6 standard units. Most of the tributary waters flow from upland glacial moraines, and all of the surface waters are receptors of groundwater discharging from storage.

3.7 River Ecology

The Flint River watershed provides habitat for communities of fish and wildlife. In addition to aquatic habitat for fish and aquatic macroinvertebrates, the associated riparian corridor provides habitat for terrestrial mammals and birds. The riparian habitat along the river contains a mixture of industrial and commercial development, residential areas, agricultural land, and natural wooded areas. Species of mammals that typically inhabit the watershed may include muskrats, mink, whitetail deer, skunk, raccoons, opossum, bats, and various squirrel species. Various species of breeding birds may also exist within the watershed. At a minimum, freshwater drum, channel catfish, white bass, and rock bass fish species inhabit the Flint River. Reptile and amphibian species include several common species of turtle, snakes, salamanders, toads, and frogs.

4. Site Setting

4.1 Geology

The subsurface deposits at the Site have been characterized through the completion of numerous soil borings. Historical soil boring logs are provided in Appendix A.

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

Fill – Sandy fill deposits that range in thickness from 0 to 10 feet are present beneath most areas of the Site.

Silty Sand – A silty sand unit is present beneath the fill across the majority of the Site. The sand unit generally thins toward the south and is absent in some portions of the Site south of Leith Street. Where present, the sand unit ranges in thickness from 5 to 25 feet.

Silty Clay – A silty clay ablation till deposit underlies the silty sand at the Site. The silty clay grades to a clayey silt in some areas and contains discontinuous sand lenses. The total thickness of this unit ranges from approximately 50 to 75 feet.

Bedrock consisting of sandstone, sandy shale, shale, coal, and limestone (Saginaw Formation) is present beneath the Site at depths of approximately 75 to 100 feet bgs.

Figures A-1 through A-4 provided in Appendix A present general cross sections of the major geologic units at the Site.

4.2 Hydrogeology

The sandy fill and silty sand units contain groundwater and are monitored in localized areas of the Site; however, these units are not continuous across the entire Site. The Silty Clay Unit contains lenses of sand of varying thickness that are fully saturated. The lower portions of the Silty Clay Unit are partially saturated, or in some cases

dry. The silty clay has a low hydraulic conductivity and acts as an aquitard. This unit also does not yield significant amounts of groundwater. The Silty Clay Unit overlies the Saginaw Formation Bedrock.

The water table in the northern portion of the Site is located at approximately 15 feet bgs and intersects the sandy fill, silty sands, and Silty Clay Unit (EMI, 1996). The water table in the southern portion of the Site is located approximately 5 feet below ground surface (bgs) and intersects the sandy fill and Silty Clay Unit (EMI, 1996).

Groundwater elevations in the water table observation wells indicate that shallow horizontal groundwater flow in the sandy fill, silty sands, and Silty Clay Unit is toward the Flint River. Flow in the overburden is toward the north-northeast in the northern third of the Site, and toward the east-southeast in the remaining portion of the Site. A groundwater divide appears to be located in the vicinity of Building 20. The horizontal groundwater hydraulic gradient at three locations across the Site was calculated by EMI (1996). The gradient for the area of the Site north of Building 20 was calculated to be 0.004 toward the northeast between groundwater monitoring wells 36-120 and 36-101. The horizontal groundwater hydraulic gradient for the area of the Site between Building 20 and Leith Street was calculated to be 0.004 toward the southeast between groundwater monitoring wells 43-141 and 86-100. The gradient for the area of the Site south of Leith Street was calculated to be 0.018 toward the southeast between groundwater monitoring wells 02-160 and 94-100.

A groundwater elevation contour map for the Site is presented in Appendix A, Figure A-5.

There are no active production wells at the Site. All potable water is obtained from the City of Flint. The Saginaw Formation Bedrock Aquifer, which is overlain by the Silty Clay Unit, is a water source for the City of Flint (G&M, 1986). Geraghty & Miller (G&M) (1986) estimated the hydraulic conductivity of the Saginaw Formation Bedrock Aquifer to be at least two orders of magnitude higher than that of the unconsolidated materials.

4.3 Hydrology

Surface water drainage patterns at the Site are generally east and southeast, toward the Flint River, which is the nearest naturally occurring surface water body. Paved surfaces, parking lots, and structures cover more than 80% of the Site. 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 13 outfalls (outfalls 001 through 013), as shown on Figure 1 of Appendix A of the Northend DOCC (BBL,

November 2000) and Figure 1 of Appendix F of the Southend DOCC (BBL, May 2000). This system discharges via outfalls 001 through 013, located along the Flint River, which are monitored by GM in accordance with GM's National Pollutant Discharge Elimination System (NPDES) permit.

4.4 Surface Cover and Ecology

As noted in Section 4.3, the Site is located within an area of intensive industrial and commercial use, and more than 80% of the Site is covered by paved (asphalt and/or concrete) parking lots and building structures. The Site consists of nearly 11 million square feet of building area serving manufacturing operations summarized in Section 2.2. The remaining areas consist of maintained strips of lawn adjacent to plant buildings and patches of early successional grasses and forbs that are characteristic of pioneering plant communities in disturbed areas (e.g., the area of the former storm water retention basins and the adjacent field).

5. Sampling and Analysis Plan for Areas of Interest (AOIs)

5.1 Sampling Rationale and Approach

The proposed sampling program described in this section has been designed to define the presence, nature, and extent of hazardous constituents in soil and groundwater at the Site. Additional data to refine our understanding of the physical subsurface environment will also be collected as part of the RFI. In addition to performing visual evaluations of the AOIs at the Site, to identify data gaps and to refine our understanding of the potential migration pathways at the Site, existing data have been compared to Generic Michigan Department of Environmental Quality (MDEQ) Screening Criteria, as described in Section 5.1.1.

All sampling and analysis activities will be performed in accordance with the FSP/QAPP (Appendix C) and HASP (Appendix E).

5.1.1 Generic Michigan Department of Environmental Quality (MDEQ) Screening Criteria

Existing historical soil and groundwater analytical data have been compared to the following Generic MDEQ Screening Criteria (Part 201 of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended) (hereafter referred to as MI Part 201 Criteria) to identify data gaps and to focus additional investigation activities.

Groundwater

Generic Residential Drinking Water (RDW) Criteria – The generic RDW criteria identify drinking water concentrations that are safe for long-term, daily residential consumption.

Generic Industrial Drinking Water (IDW) Criteria – The generic IDW criteria identify drinking water concentrations that are safe for long-term, daily consumption while at work. Adverse aesthetic impacts are taken into account for select hazardous constituents.

Generic Groundwater Contact Criteria (GCC) – The generic GCC criteria identify groundwater concentrations that are protective against adverse health effects resulting from dermal exposure to hazardous constituents in groundwater, such as could be experienced by workers in subsurface excavations.

Soil

Generic Industrial and Commercial II Direct Contact (IDC) Criteria – The generic IDC criteria identify soil concentrations that are protective against adverse health effects due to long-term ingestion of and dermal exposure to contaminated soil in an industrial or commercial II land use.

The selected criteria were chosen to provide a conservative basis for screening the existing data. Tables 5 and 6 present data comparisons for each AOI or AOI Group with respect to the RDW and IDC criteria.

5.1.2 Soil Boring, Monitoring Well, and Piezometer Completion

The RFI scope of work proposed for each AOI includes the completion of one or more of the following:

- *Monitoring Wells* – proposed at locations where both groundwater quality and groundwater elevation data is needed.
- *Piezometers* – proposed at locations where groundwater elevation data only is needed.
- *Soil Borings* – proposed at locations where soil analytical data only is needed. Groundwater quality data is generally available at nearby locations.
- *Soil Borings with Grab Groundwater Sample Collection* – proposed at locations where soil and groundwater analytical data is needed, but groundwater elevation data are not needed.
- *Soil Borings/Possible Monitoring Wells* – proposed at locations where LNAPL delineation is needed and wells may be installed dependent on observed subsurface conditions.
- *Surface Soil Samples* – proposed to represent 0- to 2-foot depth interval soils within unpaved areas for purposes of human health risk assessment.

Figure 2 illustrates a decision logic flow chart developed to allow for flexibility in the field in response to observed subsurface conditions. For example, as shown on Figure 2, the observance of LNAPL at a boring location will prompt an evaluation of the need for the installation of a monitoring well and the need to step out and complete

- One other soil sample may be collected based on high PID readings (greater than 10 units) or visual/~~olfactory~~ **shake test** evidence of contamination.

In addition, surface soil sampling (0- to 2-foot depth interval) or shallow soil sampling (≤10 feet) is proposed at a number of locations.

Soil samples will be analyzed for analytes listed in Table 2 of the FSP/QAPP. These analytes include Target Compound List (TCL) VOCs, TCL SVOCs, PCBs, toxic inorganic constituents present on the Target Analyte List (TAL), and several additional constituents previously detected at the Site that may affect human health risk assessment. The constituents in the overall Project Analyte List (PAL) presented in Table 2 of the FSP/QAPP are hereinafter referred to as the PAL constituents. Polychlorinated dibenzo-p-dioxins, polychlorinated dibenzofurans, pesticides, and herbicides will not be analyzed.

5.1.4 Groundwater Elevation Measurement and Groundwater Sample Collection

Before the start of RFI sample collection at the Site, an attempt will be made to collect a round of groundwter elevation measurements at all on-site wells and to develop a more current groundwater contour map (last round of contours was developed in 1995). This information will be used to potentially reposition proposed sampling locations, if necessary, to ensure that RFI data collection objectives are satisfied.

Additionally, before each round of groundwater sampling, groundwater elevation measurements will be made at each Site well proposed for sampling (as access allows). Measurements will be made to the nearest 0.01 feet, and all measurements will be completed within a 24-hour period.

In order to evaluate vertical groundwater gradients at the Site, well clusters will be installed at three locations (existing well 36-100 and new well RFI-36-35, new wells RFI-05-19S, and RFI-05-19D, and new wells RFI-07-08S, and RFI-07-08D.) At each location, one well will be installed with a 10-foot section of screen straddling the water table, and one well will be installed with a 5-foot section of screen extending to the top of the clay till. If the saturated overburden is of limited thickness and the above procedure would result in overlapping screens, the screen lengths may be decreased to allow for a vertical separation between the wells.

After installation and development of the monitoring wells, two rounds of groundwater sampling will be conducted in accordance with the low-flow sampling procedures described in the FSP/QAPP. Specific capacity test data will be collected during well purging, before groundwater sampling at each location. The first round of groundwater sampling will consist of sampling all new wells and select existing wells. A subsequent round of groundwater samples will be collected at wells in those areas where constituents were detected at concentrations greater than their respective MI Part 201Criteria. Analyses will be completed for those chemical groupings (e.g., VOCs) for which one or more analyte concentration exceeded criteria in the area.

Groundwater samples collected during the first round of sampling will be analyzed for PAL constituents. Groundwater samples collected during the second round of sampling will be analyzed for an appropriate subset of analytes, based on the results of the first round of analyses.

5.1.5 LNAPL Delineation and Sample Collection

LNAPL has been identified at a number of locations at the Site, and one of the objectives of the RFI is to define the extent of LNAPL. Flexibility has been built into the RFI Work Plan to allow the drilling program to be modified as needed in the field to define LNAPL extent. As illustrated on Figure 2, observations will be made at boring locations where LNAPL may be of concern to determine if LNAPL is likely to be present. Based on the presence or absence of LNAPL indicators, a decision will be made as to the need for a well at that location. A monitoring well will be installed if needed to:

- Differentiate between two distinct LNAPL types/sources in an area where LNAPL may be commingled;
- Monitor LNAPL thickness to refine our understanding of LNAPL distribution or to monitor the progress of IMs; or
- Verify if LNAPL is present in sufficient quantity to accumulate in a well).

If LNAPL has been identified at a boring location, and a monitoring well is not needed based on the above evaluation, the boring will be abandoned, and a supplemental boring(s) will be completed to define LNAPL extent.

If a previously unknown LNAPL area is identified during the RFI, the LNAPL will be sampled for PAL constituents.

5.1.6 Dense Nonaqueous Phase Liquid (DNAPL) Delineation

DNAPL has not been observed at the Site during historical investigation activities. However, to assess potential DNAPL presence during RFI field activities, both visual observations as well as comparative data analysis of groundwater constituent concentrations will be performed.

Specifically, visual observations will be made at all new boring locations during RFI field activities, and oil-water shake testing will be performed at locations where DNAPL could potentially occur based on the review of historical groundwater analytical data

As new groundwater data are generated (existing and newly installed wells), ~~a~~ **an individual** comparison will be made involving the measured groundwater concentrations of specific DNAPL-related constituents and the associated threshold concentration ~~of~~ **equal to** 1% of their respective **effective** solubility limits. Locations exhibiting the presence of a dissolved-phase- DNAPL-related constituent(s) at a concentration(s) equal to or greater than 1% of its respective **effective** solubility limit will be further evaluated for the potential presence of DNAPL.

At locations exhibiting a potential DNAPL presence, care will be taken to install monitoring wells slightly into the upper contact of the Silty Clay Unit (first confining layer) to allow for DNAPL accumulation in the well, if present.

5.1.7 Site Survey

Before the start of sampling collection activities as related to the RFI, a Site survey will be completed, including the following:

- Preparation of a comprehensive Sitewide topographic map, using up-to-date aerial photography and incorporating the topographic map into the Sitewide GIS;
- Performance of a Site boundary survey and incorporation of the survey into the Sitewide GIS; and
- Survey the horizontal coordinates and vertical elevations of the Sitewide monitoring well network and incorporate the locations and elevations into the Sitewide GIS.

Once this survey control is established, future sampling locations will be surveyed as described in Section 11.1.9 of the FSP/QAPP.

5.2 AOIs North of Leith Street

Proposed RFI activities for Northend AOIs are described below.

Detailed descriptions of the AOIs located north of Leith Street are provided in the Northend DOCC and are summarized in Table 5. Figures 3 through 11 show the locations of the Northend AOIs at the Site.

5.2.1 AOI 38-1

This AOI is located in the northern portion of Building 38 and consists of several process waste sumps, trenches, and former car lifts. To assess potential impacts from hydraulic and waste oil handled in these areas, GM proposes to drill new soil borings and to install three new groundwater monitoring wells along the northern site perimeter at this AOI. Two existing monitoring wells (36-101 and 38-120) will be sampled. Monitoring well 36-101 will be sampled to provide upgradient groundwater quality information, and monitoring well 38-120 will be sampled due to a previous detection of lead above the screening criteria.

Figure 4 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.2 AOI 36-1

This AOI is located in the northern and central portions of Building 36 and was associated with engine manufacturing and metal machining processes. To assess the extent of historical releases of hydraulic oils, cooling/cutting oils/fluids, and process waste oils, GM proposes to install 15 new groundwater monitoring wells at this AOI, including one monitoring well (RFI-36-35) that will be installed to assess the potential presence of DNAPL identified based on historical data collected from existing monitoring well 36-100. (Seven of these wells were installed in December 2000.) In addition, seven new soil borings will be completed to assess the extent of LNAPL. Four existing monitoring wells (36-100, 36-120, 36-121, 36-FP1) will be sampled. Monitoring wells 36-120 and 36-121 will be sampled to provide upgradient groundwater quality information, and monitoring wells 36-100 and 36-FP1 will be sampled due to previous criteria exceedances. One new piezometer will be installed to provide upgradient flow direction data.

Figure 5 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.3 AOI 36-2

This AOI is the basement area located along the eastern side of the central portion of Building 36 and is associated with metal chip processing. To further delineate the extent of LNAPL associated with process waste oils, GM proposes to drill two new soil borings to delineate LNAPL and to install two new groundwater monitoring wells at this AOI. Three existing monitoring wells (36-FP2, 36-FP4, 36-FP5) will be sampled due to previous criteria exceedances.

Figure 5 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.4 AOI 36-3

This AOI is the basement area located beneath the southeastern corner of Building 36 and is associated with a final engine assembly area. GM proposes to install four new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to further delineate the extent of a process oil release. Existing monitoring well 36-FP8 will be sampled due to previous criteria exceedance.

Figure 5 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.5 AOI 36-4

This AOI is located in the south-central and southeastern portions of Building 36 and is associated with former "wet" metal machining operations and several active engine assembly operations. GM proposes to install two new groundwater monitoring wells at this AOI. (These wells were installed in December 2000.) Samples from monitoring wells RFI-36-11 and RFI-36-12 (both installed in December 2000) will be collected to expand the database.

Figure 5 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.6 AOI 36-5

This AOI is located immediately south of Building 36 and is associated with a former UST farm and an active contained AST farm. GM proposes drilling one new soil boring and installing one new groundwater monitoring well at this AOI. Soil and groundwater samples, as well as groundwater samples from existing wells, will be collected to assess the extent of a release associated with cooling, cutting, and process waste oils. Five existing monitoring wells (20-100, 20-102, 20-500, 20-505D, 37-01) will be sampled to provide perimeter dissolved-phase groundwater data.

Figure 5 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.7 AOI 55-1

This AOI is located around the Site's industrial wastewater treatment facilities (Buildings 55, 55A, and 55B) and is associated with process wastewater and waste oil storage facilities, clarifiers, and mixing tanks. GM proposes to drill six new soil borings and to install three new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess the downgradient extent of VOCs. Six existing monitoring wells (55-1, 55-2, 55-3, 55-4, 55-5, 20-120) will be sampled due to previously detected VOC concentrations above criteria.

Figure 6 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.8 AOI 10-1

This AOI consists of the overall area of Building 20, including its basement area, manufacturing operations, external areas, and several tanks. GM proposes to install one new groundwater monitoring well at this AOI to characterize groundwater near Building 20. Three existing monitoring wells (20-121, 20-145, 43-167) will be sampled. Monitoring wells 20-121 and 43-167 will be sampled to provide upgradient groundwater quality data. Monitoring well 20-145 will be sampled due to previously detected VOC concentrations above criteria.

Figure 6 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.9 AOI 10-2

This AOI is located immediately east of Building 20 and immediately south of Building 22, Tank 24, and Tank 25. GM proposes to drill three new soil borings and to install four new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess potential releases immediately downgradient of the solid waste transfer station. Existing monitoring well 20-104 will be sampled to provide upgradient groundwater quality data.

Figure 6 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.10 AOI 10-3

This AOI consists of the basement area of Building 22, including two process waste sumps that collect leaking oil from compressors. GM proposes to install four new groundwater monitoring wells and collect surface soil samples at two additional locations at this AOI. Soil and groundwater samples will be collected to assess upgradient and downgradient conditions associated with releases of hydraulic and process waste oils. Three existing monitoring wells (20-101, 20-103N, 20-105) will be sampled to provide current analytical data at locations with prior criteria exceedances.

Figure 6 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.11 AOI 10-4

This AOI consists of the scrapyard area immediately south of Building 20 and was used for scrap material storage, vehicle dismantling, and vehicle equipment storage. GM proposes to install one new groundwater monitoring well at this AOI. Soil and groundwater samples will be collected to assess downgradient VOCs and TPH associated with process waste, coolings/cutting, transmission, and hydraulic oils. Five existing monitoring wells (20-504, 20-FP6, 20-FP10, 20-FP11, 30-100) will be sampled to provide current quality data at the LNAPL perimeter.

Figure 6 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.12 AOI 05-1

This AOI consists of the basement area along the southeast portion of Building 43 and is associated with a metal machining chip processing operation. GM proposes to install one new monitoring well at this AOI. However, groundwater samples will be collected at two downgradient monitoring wells to assess VOCs, SVOCs, PCBs, metals, and TPH associated with cooling/cutting and process waste oils. Three existing monitoring wells (30-120, 43-166, 43-168) will be sampled to provide current groundwater quality data at the LNAPL perimeter.

Figure 7 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.13 AOI 05-2

This AOI consists of the east-central portion of Building 43 and is associated with a "Filtration Room," "Oil Room," a below-grade vault, and an elevator pit. GM proposes to install two new groundwater monitoring wells at this AOI. (One of these wells was installed in January 2001.) Soil and groundwater samples will be collected to assess downgradient VOCs, SVOCs, metals, and TPH associated with process waste oils. Monitoring well RFI-05-02 (installed in January 2001) will be sampled to assess the upgradient extent of VOCs.

Figure 7 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.14 AOI 05-3

This AOI consists of a basement area in Building 43 beneath transmission component heat treating operations and in contains process waste oil sumps and drains. GM proposes to install four new groundwater monitoring wells at this AOI. (Two of these wells were installed in January 2001.) Soil and groundwater samples will be collected to assess the downgradient extent of VOCs associated with process waste oils. Monitoring wells 43-100 and 43-101

will be sampled due to previous criteria exceedances and will be analyzed for constituents associated with process waste oils. Existing monitoring wells RFI-05-04 and RFI-05-05 (installed in January 2001) will be sampled to assess upgradient groundwater quality.

Figure 7 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.15 AOI 05-4

This AOI consists of the "Cold Former Room" and is associated with various metal forming operations and recirculation trenches and sumps. GM proposes to install one new groundwater monitoring well at this AOI. (This well was installed in January 2001.) Soil and groundwater samples will be collected to assess the downgradient extent of VOCs associated with process waste oils. Existing monitoring well 43-103 and monitoring well RFI-05-07 (installed in January 2001) will be sampled to provide additional upgradient and downgradient groundwater quality data.

Figure 7 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.16 AOI 05-5

This AOI is in the northern portion of Building 43 and consists of active process machinery, collection trenches, and sumps for both "wet" and "dry" operations. GM proposes to install four new groundwater monitoring wells at this AOI. (Three of these wells were installed in January 2001.) GM also proposes to drill one new soil boring for LNAPL delineation and install one new piezometer to provide upgradient groundwater elevation data at this AOI. Soil and groundwater samples will be collected to assess the upgradient and downgradient extent of constituents associated with cooling/cutting oils, process waste oils, and solvents. Two existing monitoring wells (43-120 and 43-220) and the three January 2001 monitoring wells (RFI-05-10, RFI-05-11, and RFI-05-12) will be sampled to provide current groundwater quality data.

Figure 7 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.17 AOI-05-6

This AOI is in the southern portion of Building 43 and areas south of Building 43. It consists of active process machinery, collection trenches, and sumps for both "wet" and "dry" operations. GM proposes to drill three new soil borings for LNAPL delineation and install one new piezometer to provide upgradient groundwater elevation data. GM also proposes to install two new groundwater monitoring wells to assess prior downgradient criteria exceedances. Six existing monitoring wells (30-140, 43-140, 43-141, 43-142, RFI-05-13 [installed in January 2001], and RFI-05-14 [installed in January 2001]) will be sampled. Monitoring well 43-141 will be sampled to provide current groundwater quality data. Monitoring wells 30-140, 43-140, and 43-242 will be sampled due to previous criteria exceedances.

Figure 7 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.18 AOI 03-1

This AOI consists of the overall area of the Factory 03 building complex, including various quenching and cooling oil systems used for various metal forging, quenching, and cooling operations. GM proposes to drill one new soil boring for LNAPL delineation and to install four new groundwater monitoring wells at this AOI. (Two of these wells were installed in January 2001.) Soil and groundwater samples, and groundwater samples from existing wells, will be collected to assess the presence of residual contamination resulting from a prior free-product occurrence associated with hydraulic, quench, and process waste oils. Sixteen existing monitoring wells (03-101, 03-102, 03-104, 03-105, 03-106, 03-109, 13-111, 03-112, 03-113, 13-114, 03-01, 03-02, 70-100, 70-109, 30-100, and 20-FP11) will be sampled. Monitoring wells 03-101, 03-102, 03-104, 03-105, 03-106, 03-109, 13-111, 03-112, 03-113, 13-114, 03-01, 03-02, 70-100, and 70-109 will be sampled to provide dissolved-phase groundwater data. Monitoring wells 30-100 and 20-FP11 will be sampled due to previous criteria exceedences.

Figure 8 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.19 AOI 81-1

This AOI consists of the basement area beneath the southern and central portions of Building 71B and is associated with three metal machining chip/cooling and cutting oil filtration/processing operations, as well as an inactive hydraulic elevator, several process waste sumps and tanks, a drum storage are, and an active hazardous waste accumulation area. GM proposes to install two new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess the likelihood of a release associated with hydraulic, cooling/cutting, and process waste oils. No existing monitoring wells will be sampled.

Figure 9 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.20 AOI 81-2

This AOI consists of active metal welding and machining, and torque converter assembly operations performed in Buildings 70, 70B, 71, 72, 73, 73A, 73B, and 74. GM proposes drilling three new soil borings (one of these borings was installed in January 2001), installing four new groundwater monitoring wells, and sampling at five new surface soil locations at this AOI. Soil and groundwater samples will be collected to assess the extent, if any, of free-floating product associated with hydraulic oils, cooling/cutting oils, and process waste oils. Four existing monitoring wells (70-102, 70-160, 70-163, 70-165) will be sampled due to historical criteria exceedances and to provide current downgradient groundwater quality data.

Figure 9 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.21 AOI 81-3

This AOI is the basement area of Building 70 and is associated with former foundry operations, an elevator pit along the west side of Building 70A, areas of "wet" metal machining is eastern portions of Building 73, and a forklift battery charging area in the northwest corner of Building 69. GM proposes drilling two new soil borings and installing three new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with hydraulic oils, cooling/cutting oils, process waste oils, and acids.

Existing monitoring wells 86-100, 07-01, and 07-02 will be sampled to provide additional downgradient groundwater quality data.

Figure 9 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.22 AOI 81-4

This AOI consists the basement areas of Buildings 69A and 69B and is associated with facility air compressor operations. Past operations in these basements involved the draining of oils from facility air compressor operations. GM proposes to install one new monitoring well at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with compressor oils. No existing monitoring wells will be sampled.

Figure 9 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.23 AOI 81-5

This AOI consists of Tanks 69A-1 through 69A-4, 116, 117, 118, and 142 identified on the 1973 and 1991 Site Drawings, and it consists of Tanks 86-1 through 86-5 identified on the 1991 Site Drawing. GM proposes drilling one new soil boring at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with automatic transmission fluids and fuel oils. No existing monitoring wells will be sampled.

Figure 9 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.24 AOI 21-1

This AOI is the overall area of Building 21 and the area immediately southeast of Building 21 and is associated with former metal chip, briquetting operations and current metal welding/tool grinding operations. GM proposes

drilling three new soil borings at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with cooling/cutting oils. No existing monitoring wells will be sampled.

Figure 9 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.25 AOI 65-1

This AOI consists of the overall area of Building 65 and is associated with a facility air compressor station and a main process waste pump station for the Site's wastewater treatment system. GM proposes to install one new groundwater monitoring well at this AOI. Soil and groundwater samples will be collected to assess the likelihood of a release from Building 65 associated with process waste oils. No existing monitoring wells will be sampled.

Figure 10 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.26 AOIs 83/84-1 through 83/84-3

These three AOIs consist of areas of various former and existing machining operations in Buildings 11, 32 (including two basements), and 66A/66D (both "wet" and "dry" operations). GM proposes drilling three new soil borings (two of these borings were installed in Janary 2001) and installing three new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with hydraulic and process waste oils. Existing monitoring wells 11-120 and 11-140 will be sampled to provide additional upgradient groundwater quality data.

Figure 10 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.27 AOI 83/84-4

This AOI consists for former "wet" metal machining operations in the central portion of Building 66, including three process oil collection/recirculation sumps, and an inactive rail loading area (including associated sumps along the north side of Building 66C). GM proposes drilling two new soil borings at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with process waste oils. No existing monitoring wells will be sampled.

Figure 10 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.28 AOI 83/84-5

This AOI consists of various inactive or former process trenches and pits and an inactive heat treating tunnel located in Building 66. GM proposes drilling one new soil boring at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with process waste oils. No existing monitoring wells will be sampled.

Figure 10 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.29 AOI 83/84-6

This AOI consists of a forklift battery charging area and an associated trench and pit in the central portion of Building 83A and a drum storage area in the southern portion of Building 83 used for metal working fluids and corrosion inhibitors. GM proposes drilling one new soil boring at this AOI. (This boring was installed in January 2001.) No existing monitoring wells will be sampled.

Figure 10 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.30 AOI 83/84-7

This AOI consists of 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. GM proposes to install one new groundwater monitoring well at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with gasoline, lubricants, quench oil, and thinners. Existing monitoring wells 88-2, 88-7, 88-8, and 88-9 will be sampled to provide current groundwater quality data.

Figure 10 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.31 AOI 85-1

This AOI consists of an elevator pit along the north-central side of Building 85 and is associated with trenches and a basement vault area related to the engine test area in the eastern portion of the building. GM proposes drilling two new soil borings and installing four new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with hydraulic and process waste oils. No existing monitoring wells will be sampled.

Figure 11 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.32 AOI 86-1

This AOI is the overall area of Building 86 and areas immediately southeast and west of Building 86, collectively associated with a hazardous waste drum accumulation area, a process waste pump station, a waste transport vehicle storage area, and Tanks 59 through 65. GM proposes drilling two new soil borings and installing six new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with gasoline, process waste oils, and other oils. Existing monitoring wells 86-3, 87-FP2, 87-FP3, and 87-FP5 will be sampled due to historical criteria exceedances.

Figure 11 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.33 AOI 07-1

This AOI consists of a former coalyard immediately north of Building 07 and several other process facilities along the north side of Building 07. GM proposes drilling three new soil borings and installing two new groundwater monitoring wells at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with process waste oils and coalyard residuals. Existing monitoring well 07-02 will be sampled to provide upgradient groundwater quality data.

Figure 11 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.34 AOI 07-2

This AOI consists of an inactive lime "Slaker House" and adjacent inactive lime slurry tank adjacent to the southwest corner of Building 07. GM proposes drilling one new soil boring at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with caustics. No existing monitoring wells will be sampled.

Figure 11 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.2.35 AOI 07-3

This AOI consists of two elevator pits in the north-central and south-central portions of Building 07 associated with a bulk acid AST in the southeast corner of Building 07. GM proposes drilling two new soil borings and install one new groundwater monitoring well at this AOI. Soil and groundwater samples will be collected to assess the extent of constituents associated with hydraulic oils and acids. Existing monitoring well 07-01 will be sampled to provide upgradient groundwater quality data.

Figure 11 and Tables 1, 3, and 5 present additional information regarding the history of this AOI, and the proposed investigation activities.

5.3 AOIs South of Leith Street – Sampling and Analysis Plan

Proposed RFI activities for Southend AOIs are described below.

Detailed descriptions of the AOIs located south of Leith Street are provided in the Southend DOCC and are summarized in Table 6. Figures 3 and 12 through 15 collectively show the location of the Southend AOI groups at the Site.

5.3.1 AOI Group 94-A

This AOI Group includes AOI 94-5, AOI 94-6, and AOI 94-7. These AOIs are associated with Building 94 and relate to sumps, pits, and trenches in oil change pits and chemical storage areas. GM proposes drilling one new boring at this AOI Group during the RFI activities. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI group, and the proposed investigation activities.

5.3.2 AOI Group 94-B

This AOI Group includes AOI 94-2 and AOI 94-10. These AOIs are associated with Building 94 and relate to a sump in the "South Lube Pit" and a deep trench that discharged to the process wastewater system. GM proposes drilling one new boring at this AOI Group during the RFI activities. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils and battery acids. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI group, and the proposed investigation activities.

5.3.3 AOI Group 94-C

This AOI Group includes AOI 94-1, AOI 94-9, and AOI 94-17. These AOIs are associated with Building 94 and relate to sumps, trenches, and hydraulic lift cylinders in hydraulic oil storage areas. GM proposes drilling two new borings at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste and hydraulic oils. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.4 AOI Group 94-D

This AOI Group includes AOI 94A-14. This AOI is associated with Building 94A and relates to a pit for a cable-operated car elevator. GM proposes installing one new groundwater monitoring well at this AOI Group during the RFI activities. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.5 AOI Group 94-E

This AOI Group includes AOI 03-3. This AOI is associated with Building 03 and relates to a car-loading device and hydraulic oil on the floor. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.6 AOI Group 84-A

This AOI Group includes AOI 28-3, AOI 28-4, AOI 84-3, AOI 84-51, AOI 84-55, and AOI 84-56. These AOIs are associated with Buildings 84 and 23 and relate to pits for cable-operated elevators, sumps, a machine shop area, hydraulic cylinders, and a hydraulic lift. GM proposes drilling two new soil borings and installing one new groundwater monitoring well at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of gasoline, solvents, and process waste, hydraulic, cutting, and cooling oils. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.7 AOI Group 84-B

This AOI Group includes AOI 84-9, AOI 84-24, AOI 84-27, AOI 84-36, AOI 84-48, AOI 84-54, AOI 84-58, AOI 84-59, and AOI 84-60. These AOIs are associated with Building 84 and relate to sumps, floor drains, a pit, a basement flooded with water, and a below grade vault. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of gasoline, solvents, and process waste and hydraulic oils. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.8 AOI Group 84-C

This AOI Group includes AOI 84-10, AOI 84-14, AOI 84-28, and AOI 84-40. These AOIs are associated with Building 84 and relate to sumps, a trench, and an oil/water separator pit near a car wash. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of waste gasoline, process waste oils, and hydraulic oils. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.9 AOI Group 84-D

This AOI Group includes AOI 84-49 and AOI 84-64. These AOIs are associated with Building 84 and relate to several tanks shown on the 1973 and 1991 Site drawings and in the PR/VSI Report; a former UST farm immediately north of Building 84; a recessed AST farm located north of the UST farm; and a drum storage area. GM proposes installing one new groundwater monitoring well at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of new and waste product gasoline, oils, and solvents. Existing wells 84-2 and 84-6 will be sampled due to previous criteria exceedances.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.10 AOI Group 17-A

This AOI Group includes AOI 17-1. This AOI is associated with Building 17 and relates to a pit for a cable-operated elevator. GM proposes drilling one new soil boring and installing one new groundwater well cluster to assess regional groundwater characteristics at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group and in the adjacent parking lot to this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 12 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.11 AOI Group 02-A

This AOI Group includes AOI 02-7. This AOI is associated with Building 02 and relates to a sump for a process wastewater station. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.12 AOI Group 02-B

This AOI Group includes AOI 02-17. This AOI is associated with Building 02 and relates to a pit for an elevator. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.13 AOI Group 02-C

This AOI Group includes AOI 02-3. This AOI is associated with Building 02 and relates to a sump in the Materials Laboratory. GM proposes drilling one new boring at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of various laboratory chemicals. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.14 AOI Group 02-D

This AOI Group includes AOI 02-12. This AOI is associated with Building 02 and relates to a pit for a large press machine. GM proposes drilling one new soil boring at this AOI Group. Soil and grab groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.15 AOI Group 02-E

This AOI Group includes AOI 02-23. This AOI is associated with Building 02 and relates to Tank 66 on the 1973 Site Drawing. GM proposes installing one new groundwater monitoring well at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of gasoline. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.16 AOI Group 02-F

This AOI Group includes AOI 02-22. This AOI is associated with Building 02 and relates to a hydraulic oil AST and a pump used for the operation of the "Hydraulic Anchor Pac Area." GM proposes drilling one new soil boring and installing one new groundwater monitoring well at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.17 AOI Group 23-A

This AOI Group includes AOI 23-3, AOI 23-4, AOI 23-7, and AOI 23-8. These AOIs are associated with Building 23 and relate to sumps discharging to the process wastewater system, dock levelers, and basements used for treatment of water used in the heat treat process. GM proposes installing two new groundwater monitoring wells at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils, and monitoring wells will be used to monitor the potential of basement flooding at this AOI Group. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.18 AOI Group 29-A

This AOI Group includes AOI 29-5 and AOI 29-8. These AOIs are associated with Building 29 and relate to a pit for a cable-operated elevator and former work pads with oil staining. GM proposes drilling one new soil boring at this AOI Group. Soil and grab groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic, cooling, and cutting oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.19 AOI Group 12-A

This AOI Group includes the following AOIs:

AOI 12-11, AOI 12-12, AOI 12-13, AOI 12-15, AOI 12-16, AOI 12-17, AOI 12-30, AOI 12-31, AOI 12-32, AOI 12-33, AOI 12-43, AOI 12-44, AOI 12-45, AOI 12-46, AOI 12-47, AOI 12-48, AOI 12-51, AOI 12-52, AOI 12-54,

AOI 12-55, AOI 12-56, AOI 12-63, AOI 12-64, AOI 12-65, AOI 12-66, AOI 12-67, AOI 12-67, AOI 12-68, AOI 12-69, AOI 12-71, and AOI 12-75.

These AOIs are associated with Building 12 and relate several sumps, pits, trenches, traps, stains, AST and other observed area. GM proposes drilling five new soil borings at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste and hydraulic oils. Existing monitoring well 04-121 will be sampled to provide upgradient groundwater quality.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.20 AOI Group 12-B

This AOI Group includes AOI 12-3. This AOI is associated with Building 12 and relates to a deep drain leading to a deep sump that discharged to the process wastewater system. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils and grease. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.21 AOI Group 12-C

This AOI Group includes AOI 12-8, AOI 12-39, and AOI 12-40. These AOIs are associated with Building 12 and relate to a sump that collected runoff from a battery charging area, a deep steam pipe, and an old utility pit with oil and water present. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of battery acids and process waste oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.22 AOI Group 12-D

This AOI Group includes AOI 12-62. This AOI is associated with Building 12 and relates to an abandoned, flooded utility tunnel running north from east of Building 12, under Division Street, to the former powerhouse area. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.23 AOI Group 04-A

This AOI Group includes AOI 04-3 and AOI 04-13. These AOIs are associated with Building 04 and relate to the "Process Waste Room" and the "Foam Depressor Process Waste Pit 3," both of which discharged to the process wastewater system. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of process waste oils and other fluids. No existing monitoring wells will be sampled.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.24 AOI Group 04-B

This AOI Group includes AOI 04-7, AOI 4-8, and AOI 04-9. These AOIs are associated with Building 04 and relate to a pit for a passenger elevator and two pits for freight elevators. GM proposes drilling two new borings at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.25 AOI Group 04-C

This AOI Group includes AOI 04-10. This AOI is associated with Building 04 and relates to a pit for a cable-operated elevator. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.26 AOI Group 04-D

This AOI Group includes AOI 04-12. This AOI is associated with Building 04 and relates to Waste Thinner Tanks identified in PR/VSI Report as SWMUs 92 through 95. GM proposes sampling existing downgradient monitoring wells 04-1, 04-2, 04-3, 04-4, and 04-5, and using existing and sampling proposed borings adjacent to AOI 09-B at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of solvents and thinners. No existing monitoring wells will be sampled.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.27 AOI Group 16-A

This AOI Group includes AOI 16-3, AOI 16-17, AOI 16-18. These AOIs are associated with Building 16 and relate to a deep pit that collected fluid runoff of cars in a vehicle fill-up station, an automatic transmission pump house containing a gravity floor drain, and a gas pump station for cars in the finishing stage. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of gasoline, transmission fluid, and other oils. No existing monitoring wells will be sampled.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.28 AOI Group 16-B

This AOI Group includes AOI 16-B. This AOI is associated with Building 16 and relates to pit for a hydraulic elevator. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.29 AOI Group 16-C

This AOI Group includes AOI 16-11 and AOI 16-12. These AOIs are associated with Building 16 and relates to a hydraulic motor with external AST that was used for hydraulic lift to a Dumpster and Tanks P, Q, 75, 113, 114, and 115 on the 1973 Site Drawing. GM proposes drilling two new soil borings and installing one groundwater monitoring well at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of fuel, hydraulic oils, and transmission oils. No existing monitoring wells will be sampled.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.30 AOI Group 16-D

This AOI Group includes AOI 16-13 and AOI 04-2. These AOIs are associated with Building 16 and relates to Tank 104 on the 1973 Site Drawing (AOI 16-3) and a deep sump that discharged to the process wastewater system (AOI 04-2). GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of gasoline and process waste oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.31 AOI Group 40-A

This AOI Group includes AOI 40-1. This AOI is associated with Building 40 and relates to Tanks 67 through 74 on the 1973 Site Drawing. GM proposes drilling one new soil boring at this AOI Group. Seven existing monitoring wells 40-1, 40-2, 40-3, 40-4, 40-5, 40-6, and 40-7 will be sampled to provide current groundwater quality data. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of gasoline, solvents, and transmission oils.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.32 AOI Group 40-B

This AOI Group includes AOI 40-8. This AOI is associated with Building 40 and relates to a pit for an elevator. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 13 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.33 AOI Group 40-C

This AOI Group includes AOI 40-7. This AOI is associated with Building 40 and relates to a pit for a cable-operated elevator. GM proposes drilling one new soil boring at this AOI Group. Soil and groundwater grab samples will be collected downgradient of this AOI Group to assess the potential for release of hydraulic oils. No existing monitoring wells will be sampled.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.34 AOI Group 40-D

This AOI Group includes AOI 40-12. This AOI is associated with Building 40 and relates to a basement/tunnel area flooded with water. GM proposes sampling existing perimeter wells 40-301, 40-302, 40-303, 40-304, 40-305, and water within the tunnel to assess the potential for release of process waste and hydraulic oils.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.35 AOI Group 44-A

This AOI Group includes:

AOI 44-1, AOI 44-2, AOI 44-3, AOI 44-4, AOI 44-5, AOI 44-6, AOI 44-9, AOI 44-10, AOI 44-11, AOI 44-12, AOI 44-13, AOI 44-14, AOI 44-15, AOI 44-16, AOI 44-17, AOI 44-22, AOI 44-23, AOI 44-24, AOI 44-25, AOI 44-26, AOI 44-27, AOI 44-28, AOI 44-29, AOI 44-30, AOI 44-31, AOI 44-32, AOI 44-34, AOI 44-37, AOI 04-5, AOI 04-6, and AOI 08-2.

These AOIs are associated with Buildings 44, 04, and 08 and relate to several sumps, pits, trenches, drains, stains, AST, and other observed areas. GM proposes drilling three new soil borings and installing two new groundwater monitoring wells at this AOI Group. Soil and groundwater samples will be collected downgradient (along the perimeter of Building 44) of this AOI Group to assess the potential for release of acids, caustics, paints, thinners, solvents, and hydraulic and process waste oils. Existing monitoring wells 04-120, 04-140, and 04-160 will be sampled to provide current groundwater quality data.

Figure 14 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.36 AOI Group 09-A

This AOI Group includes AOI 09-2, AOI 09-3, AOI 09-4, and AOI 09-6. These AOIs are associated with Building 09 and relate to a floor trench/UST leading that discharged to the process wastewater system, floor trenches over

a holding tank in the "vehicle wash area," a concrete containment for a former AST, and Tank MM identified on the 1973 Site Drawing. GM proposes drilling two new soil borings and installing two new groundwater monitoring wells at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release of waste oils from vehicle and equipment maintenance and other fuel oils. No existing monitoring wells will be sampled.

Figure 15 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

5.3.37 AOI Group 09-B

This AOI Group includes AOI 09-5. This AOI is associated with Building 09 and relates to the Former Building 31/Hamilton Avenue Tank Farm, which includes Tanks 81 through 92, 132, and 133 identified on the 1973 Site Drawing. GM proposes drilling one new soil boring, installing four new groundwater monitoring wells, and sampling existing monitoring wells at this AOI Group. Soil and groundwater samples will be collected downgradient of this AOI Group to assess the potential for release gasoline, solvents, and fuel oils. Existing monitoring wells 31-5, 31-6, and 31-8 will be sampled to provide current groundwater quality data.

Figure 15 and Tables 2, 4, and 6 present additional information regarding the history of this AOI Group, and the proposed investigation activities.

6. Data Evaluation

6.1 Objectives

The purpose of the investigation is to determine whether potential risk to human health and the environment associated with hazardous constituents released at AOIs identified for investigation warrant interim or corrective measures. Data collected during the investigation will be used as presented previously in Section 1.3.

During the investigation, data collection will be conducted in phases. After each phase, adequacy of the data for these data uses will be evaluated as discussed in Section 6.2 to determine whether additional data collection is warranted. When data of sufficient quality and quantity have been collected, the data will be used to support decisions regarding the need for interim or corrective measures as discussed in Section 6.3.

6.2 Evaluation of Need for Additional Investigations

The primary purpose of data collection during the investigation is to provide sufficient characterization of the nature and extent of any release of constituents to allow a reliable quantification of potential exposures from AOI-related constituent concentrations. The analytical data collected during the investigation must be adequate for:

- Determining whether the concentration of a constituent in an environmental medium at an AOI is significantly above background levels (i.e., levels not attributable to the Site's operations) in that medium;

- Estimating the exposure concentration of a constituent in the medium in which the constituent was measured; and

- Estimating the exposure concentration of a constituent in a medium to which the constituent may migrate (e.g., volatilization of a soil constituent into ambient air).

To ensure adequacy for these intended uses, the analytical data will be evaluated in accordance with the procedures outlined in USEPA guidance on baseline risk assessments.

One element in the evaluation of the analytical data will be a qualitative review of the data with respect to adequacy of the samples in characterizing the average concentrations of constituents for each exposure pathway identified as potentially relevant during the investigation. The qualitative review, using professional judgment, will include an examination of the following:

- Consistency in the types of constituents found in all sampled media at each AOI vis-a-vis expectations based on history of operations and chemical properties of the constituents, which may indicate potential for false negative or false positive identification of constituents;

- Lateral and vertical distribution of constituent concentrations to detect any obvious spatial trends, which may indicate that concentrations significantly higher than the measured concentrations may be likely in unsampled areas or depths; and

- Presence of unusually high constituent concentrations, which may indicate the presence of NAPL.

If the qualitative review identifies conditions that are likely to cause risk-based assessments of the data to provide unreliable conclusions regarding the need for interim or corrective measures, further sampling or other actions (e.g., checking for laboratory errors) will be taken to address such conditions.

In conjunction with the qualitative review, the data will be evaluated using appropriate, conservative risk-based screening levels to identify potentially significant concentrations. This screening will be conducted on each data point generated during the investigation. The presence of concentrations higher than screening levels will not necessarily mean that additional investigation is warranted. Similarly, the absence of concentrations higher than screening levels will not necessarily mean that additional investigation is unnecessary. Rather, decisions regarding the need for further investigation will be made based on professional judgment considering the screening results and results of the qualitative review discussed above, including the magnitude of the concentrations, their spatial distribution, and other factors (e.g., background levels, as discussed below).

The analytical data also will be reviewed to identify constituents present at concentrations in an environmental medium that are within background levels in that medium.

- For constituent concentrations measured in soil, the constituent concentrations will be compared with Site-specific background levels in soil using a statistical prediction interval at a 0.01 level of significance. If a soil constituent is determined to be within background levels in soil, then it would not be considered for quantitative exposure assessment for soil-related exposure pathways.

- For constituents in groundwater, the concentration of a constituent in a monitoring well downgradient of an AOI will be compared with the concentration measured in the monitoring wells upgradient of the Site. If a groundwater constituent is determined to be within Site-specific background levels in groundwater, then it would not be considered for quantitative exposure assessment for groundwater-related exposure pathways.

Although all laboratory analytical data collected during the investigation will be validated as discussed in the FSP/QAPP, the evaluation of data will be conducted prior to completion of data validation. This allows for timely decisions regarding the need for modifying field investigations. Decisions regarding the need for interim or corrective measures will be based on validated data.

6.3 Use of Investigation Data

The objective of the investigation is to determine whether potential risk to human health and the environment associated with hazardous constituents released from the AOIs identified for investigation warrants interim or corrective measures. The determination will rely on a risk-based assessment (which could be a baseline risk assessment) that will characterize the potential human health risk associated with each AOI from reasonable maximum exposures under current and reasonably expected future land and groundwater uses at and near the Site. The risk assessments will include development of exposure scenarios, consistent with current and reasonably expected future land and groundwater uses, that describe potential exposure pathways by which on-site and off-site human and ecological populations may become exposed to constituents released from an AOI. Documentation to confirm reasonably expected future land and groundwater uses will be developed during the investigation for the baseline risk assessments. The physical characteristics of the Site, including topography, hydrology, hydrogeology, and geology, will be evaluated in conjunction with chemical data to assess chemical fate and transport mechanisms. This information will be used to assess the current and potential future impact, if any, of the releases identified at an AOI.

7. Reporting

The following submittals are anticipated during the investigation phase of corrective action:

- Description of Current Conditions reports were submitted on May 30, 2000 (Southend) and November 26, 2000 (Northend);
- Progress reports will continue to be submitted quarterly;
- Phase I Investigation Report will be submitted on or before June 30, 2002;
- Phase II Investigation Report will be submitted on or before March 31, 2003;
- Human Health Environmental Indicators Report will be submitted on or before June 30, 2004; and
- Groundwater Migration Environmental Indicators Report will be submitted on or before June 30, 2005.

7.1 Progress Reports

Progress reports will detail work performed during the reporting period, data collected, problems encountered, project schedule, and percent completed. Progress reports will be submitted to USEPA by the 15th day of each month following a quarter.

Periodic meetings and/or conference calls will be scheduled with USEPA to review progress and discuss findings to date.

7.2 Phase I and Phase II Investigation Reports

The Phase I and Phase II Investigation Reports will present all data that have been gathered as part of the RFI, an analysis of the data, and conclusions about the status of the Site and the need for corrective measures. The data analysis and conclusions presented in these reports will form the basis for the Environmental Indicators Report and Corrective Measures Proposal.

7.3 Environmental Indicators Reports

The Environmental Indicators Reports will consist of two submittals: 1) documentation of Environmental Indicator Determination on Current Human Exposures Under Control (CA725); and 2) documentation of Environmental Indicator Determination for Migration of Contaminated Groundwater Under Control (CA750).

The objectives of the Environmental Indicators Reports, as stated in the Consent Order, are to demonstrate that:

> All current human exposures to contamination at or from the Facility are under control. That is, for all media known or reasonably suspected to be contaminated with hazardous wastes or hazardous constituents above risk-based levels, for which there are complete pathways between contamination and human receptors, significant or unacceptable exposures do not exist.

and

> Migration of contaminated groundwater at or from the Facility is stabilized. That is, the migration of all groundwater known or reasonably suspected to be contaminated with hazardous wastes or hazardous constituents above acceptable levels is stabilized to remain within any existing areas of contamination as defined by monitoring locations designated at the time of the demonstration. In addition, any discharge of groundwater to surface water is either insignificant or shown to be currently acceptable according to an appropriate interim assessment.

Supplemental RFI documentation will be prepared as necessary to provide any data gathered subsequent to preparation of the Phase I and Phase II Investigation Reports to update the risk assessment to incorporate additional findings and evaluate the effects of any IMs implemented. Any IMs implemented will be documented separately.

8. RFI Schedule

The RFI will be completed in accordance with the schedule presented on Figure 16.

9. References

Blasland, Bouck & Lee, Inc. (BBL). 2000. *Description of Current Conditions for Areas South of Leith Street.* May 30, 2000.

BBL. 2000. *Description of Current Conditions for Areas North of Leith Street.* November 26, 2000.

Dorr, J.A., and D.F. Eschman. 1970. *Geology of Michigan.* Ann Arbor: University of Michigan Press.

EnecoTech Midwest Inc. (EMI). 1996. *Site Investigation and Hydrogeological Report Fenceline/CSX Investigation, GM-CLCD North, NAO Flint Operations, Flint, Michigan.* March 1996.

Geraghty & Miller (G&M). 1986. *Ground-water Investigation at the Wastewater Aeration Lagoon Site, General Motors – Buick Division Plant, Flint, Michigan.* June 27, 1986.

Wiitala, S.W., Vanlier, K., and Kreiger, K. 1963. *Water Resources of the Flint Area, Michigan, U.S. Geological Survey, Water Supply Paper 1499-E.*

Tables

TABLE 1

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

SUMMARY OF AOIs - NORTH OF LEITH STREET

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/fluids) and "dry" (i.e., no use of cutting and/or cooling oils/fluids) 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/fluids 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 process waste oil collection/processing operations, and several former USTs. The former USTs ranged in size from 300 to 12,000 gallons, and contained gasoline, diesel fuel, and/or process waste oils. 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/fluids) 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 Building 36 involving a former UST farm and active contained AST farm, as well as a 6' wide x 6' high subsurface tunnel which connected the former UST farm with Building 36. The ASTs and former USTs range(d) in size from 6,000 to 15,000 gallons, and contain(ed) gasoline, motor oil, hydraulic oil, mineral seal oil, naphtha, and various cooling/cutting oils/fluids. 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 industrial wastewater treatment facilities, involving various process wastewater and 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 basement areas, manufacturing operations, external areas immediately surrounding the building, and several existing and former ASTs ranging in size from 1,000 to 20,000 gallons. The ASTs contain(ed) various lubricating oils, automatic transmission fluid, solvents, and process waste oils. 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 east of Building 20 and south of Buildings 22 and 24. Two 200,000-gallon ASTs containing process waste oils and #2 fuel oil were formerly present in this area. 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 sump that is routinely emptied.
10-3	Basement area of Building 22, including a 200-gallon AST which contained diesel fuel and two process waste sumps which collect oil leaks from compressors via floor drains, and the area immediately north of Building 22 (formerly the site of a World War I Liberty Aircraft engine plant and more recently a storage area for scrap USTs and ASTs).
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.

TABLE 1

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

SUMMARY OF AOIs - NORTH OF LEITH STREET

AOI ID	AOI Summary Description
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	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.
05-3	Basement area of Building 43 beneath transmission component heat treating operations, containing a relatively large process waste sump, various other smaller sumps and drains, and intermittent pooling of oil on floor surfaces. Several former and existing ASTs and USTs are/were located along the east side of the building adjacent to the basement area. These ASTs and USTs ranged in size from 275 to 12,000 gallons, and contained quench oils, hydraulic oils, lubricating oils, gasoline, and diesel fuel.
05-4	"Cold Former Room," involving various metal forming operations utilizing various process oils and other fluids and recirculation trenches and sumps.
05-5	Northern portion of Building 43, involving various active machining processes, 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.
05-6	Southern portion of Building 43, involving various active machining processes, 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. This AOI also includes the area south of Building 43 in the vicinity of Building 99.
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.
Factory 81 Area	
81-1	Basement area beneath the southern and central portions of Building 71B, involving former foundry operations and three metal machining chip/cooling and cutting oil filtration/processing operations, as well as an inactive hydraulic elevator, several process waste sumps and tanks, a drum storage area, and an inactive hazardous waste accumulation 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	A containment area for several existing and former ASTs. The ASTs range(d) in size from 2,500 to 20,000 gallons, and contain(ed) diesel fuel and automatic transmission fluid. The concrete secondary containment area associated with these tanks contain standing transmission fluid, and the integrity of this containment is unknown.

TABLE 1

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

SUMMARY OF AOIs - NORTH OF LEITH STREET

AOI ID	AOI Summary Description
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.
Building 65 Area	
65-1	Overall area of Building 65, involving a facility air compressor station and 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 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 of motor oil 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).
83/84-7	An area of several former USTs ranging in size from 3,000 to 12,000 gallons that contained gasoline, various cooling/cutting oils, quench oils, and lubricating oils. A prior release(s) from these tanks has been documented.
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 accumulation area, a process waste pump station (integrity unknown), a waste transport vehicle storage area (pavement staining; integrity unknown), a former 6,000-gallon UST containing gasoline, and a former UST farm which contained tanks ranging in size from 2,000 gallons to 12,000 gallons. The former USTs contained diesel fuel, mineral seal, and various cooling/cutting, and lubricating oils.
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 ASTs) 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 AST sulfuric acid storage area in the southeast corner of Building 07 (integrity unknown).

Note:

1. Refer to GM's Buick Motor Division Drawing No. 42361-M, dated 1973, and Flint Automotive Division Drawing No. C70444-M, dated 1991, for further information on the former ASTs and USTs.

TABLE 2

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

SUMMARY OF POST-CLEANING AOI EVALUATION - SOUTH OF LEITH STREET

AOI ID	Building No.	Prior AOI Type Designation	AOI Description	Date of Visual Evaluation	Post-Cleaning Visual Evaluation Results	Post-Cleaning Visual Evaluation Determination/Recommendations
Areas of Bldgs. 03, 10, 17, 17A, 84, 84A, 84B, 94, and 94A						
03-1	03	Trench	Catch basin. Staining present.	6/14/00	Catch basins are part of floor surface runoff collection system. Basins are full of water; however, no sheens or staining observed. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
03-2	03	Additional	Flooded basement/utility tunnel. Sheen present.	6/14/00	No sheen noted. The inside staircase/basement connects to a below-grade utility trench. Trench is 6' x 10' x unknown length and filled with water.	Analyses of water in trench in 1995 detected only trace concentrations of metals; no priority pollutant organic constituents were detected above laboratory detection limits. No further investigation as an AOI is warranted.
03-3	03	Additional	Hydraulic oil present on floor in area associated with a car loading device.	6/14/00	Oil staining observed in approx. 5' x 15' area. Concrete flooring cracked in area of staining (i.e., potential release).	Further investigation is warranted.
03-4	03	Additional	Screw drive loading ramps, oil and grease used.	6/14/00	Minor surface staining noted. All equipment is above-grade. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
10-1	10	Trench	1' x 40' x 2' deep gravity floor drain/trench discharging to outdoor trench.	6/14/00	Trench is a shallow unlined storm drainage trench that handled surface runoff throughout area. No oil or grease staining noted, as well as no other visual indications of potential release.	Prior sampling of equipment reservoirs in this area indicated the presence of PCBs in oil in the equipment reservoirs; however, these equipment reservoirs are not connected to the trench identified in this AOI. Equipment reservoirs were emptied as part of building decommissioning activities. No further investigation as an AOI is warranted.
10-2 and 10-6 (combined)	10	Pit	Two 2' x 2' x 4' deep pits, each located in the middle of four scale pads. Used to house scale equipment. Build-up of grease present.	6/14/00	Pits are located within two former car weighing stations. Pits were used to collect drips from cars as they passed through weighing stations. Pits are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
10-3	10	Pit	2' x 2' x 4' deep pit contained water with oil film. Discharge location is unknown.	6/14/00	No post-cleaning oil film or sheen noted. Pit served as floor drain, and is not likely to have managed hazardous waste or hazardous constituents. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
10-4 and 10-5 (combined)	10	Pit	Two 12' x 8' x 2' deep pits contained grease and oil located in car unloading area.	6/14/00	Pits are unlined concrete. No post-cleaning staining observed, and no other evidence of oil or grease. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
10-7	10	Sump	20' x 12' x 1' deep pan and sump contained dirt and grease. Discharged to process wastewater system.	6/14/00	Pan and sump are above-grade and constructed of steel. No staining of surrounding floor area. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
10-8	10	Tank - AST	1.5' x 1.5' x 4' tall "Chain Oil" AST. Floor surrounding AST tank covered with grease and oil.	6/14/00	Oil and grease presence limited to surficial staining within the area (approx. 1' diameter) immediately surrounding AST. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
10-9	10	Additional	Oil and grease staining on floor beneath the conveyor.	6/14/00	Staining appears to be limited to surficial impacts. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
17-1	17	Pit	Pit for cable-operated elevator.	6/14/00	Elevator pit not yet cleaned. Surface residue (grease/debris) noted within pit.	Release not likely; however, pit cannot be visually evaluated. Prior analytical data indicated presence of PCBs at 19 mg/kg scrape sample. Further investigation is warranted.
17-2	17	Pit	2' x 2' x 1' deep pit with water and pipe leading from north; strong oil-type odor. Unable to locate where pit drains.	6/14/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
17-3	17	Pit	1' x 1' x unknown depth floor drain	6/14/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
17-4	17A	Pit	1' x 1' x 1' deep floor drain on bay ramp with 1" pipe leading to unknown discharge location. Approximately 1" of sediment in trench.	6/14/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
17-5	17A	Trench	1' x 1' x 1' deep floor drain/trench with pipe leading to unknown discharge location.	6/14/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
17-6	17A	Tanks - AST	Tanks PP and 107 on 1973 Site Drawing and Tank PP 17-2 on 1991 Site Drawing.	6/14/00	No visual evidence of surface contamination in area of former AST.	No further investigation as an AOI is warranted.

TABLE 2

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

SUMMARY OF POST-CLEANING AOI EVALUATION - SOUTH OF LEITH STREET

AOI ID	Building No.	Prior AOI Type Designation	AOI Description	Date of Visual Evaluation	Post-Cleaning Visual Evaluation Results	Post-Cleaning Visual Evaluation Determination/Recommendations
28-1	28	Sump, Trench, Additional	Collection sump for the hazardous materials storage area in column/bay 32E and 32F. Sump collected liquid from the containment trench in column/bay 32E and 32F and discharged to process wastewater system. Containment trench for hazardous materials storage room identified in Building 40 column/bay 28E and 29E. The trench drained to a sump located in Building 28 within 32E and 32F, which discharged to process wastewater system, and hazardous materials storage area for drums of motor oil, transmission fluid, and coolant. Staining on floor.	6/14/00	Trench and pit are lined with steel. Floor of hazardous material storage area is polished concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
28-2	28	Trench	40' x 2' x 3' deep utility trench that is dry with minimal dust and dirt present.	6/14/00	Trench is dry and free of any staining. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
28-3	84	Pit	Pit for cable-operated elevator.	6/14/00	Floor appears to be clean, but standing water noted in select areas. Visual evaluation could not be performed.	Prior analytical data indicated presence of PCBs at 38 mg/kg in sediments. Pit cannot be visually evaluated. Further investigation is warranted.
28-4	84	Pit	Pit for cable-operated elevator.	6/14/00	Pit has not yet been cleaned. Pit contains dry sediment.	Prior analytical data indicated presence of PCBs at 2.6 mg/kg and concentrations of various metals in sediment. Pit cannot be visually evaluated. Further investigation is warranted.
28-5 and 28-6 (combined)	28	Pits	Pneumatic dock leveler pits. Debris present.	6/14/00	Dock levelers are pneumatically operated. No oil or grease staining present in the vicinity of levelers. Some oil and grease staining within loading bays; however, such staining is limited to surficial impacts. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
52-1	52/17A	Additional	Former PCB storage area identified as SWMU 102 in PR/VSI Report.	6/14/00	Bldg. 52 no longer exists. No staining present at site of former building. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-1	84	Sump	Oil collection sump for DeVlieg Milling Machine. 15' x 4' x 3' deep sump housed chip conveyer. Oil was collected, filtered, and reused by the machine.	6/15/00	Pit is lined with steel and coated with epoxy. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-2	84	Sump	4' x 10' x 4' deep sump collected discharge from pentenone dip tanks. Sump discharged to process waste. Approx. 3' of liquid and sediment present.	6/15/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-3	84	Sump	30" x 30" x 24" deep sump. Contained oil residue from draining engines. The sump discharged to process wastewater system.	6/14/00	Sump is lined with steel; however, lining is severely corroded (i.e., potential release).	Further investigation is warranted.
84-4	84	Sump	Hazardous materials storage room with sump that discharged to process wastewater system.	6/14/00	Sump is unlined concrete. Flooring of overall storage area is concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-5, 84-25 and 84-26 (combined)	84	Sump and Trenches	AOI 84-5: 2' x 4' x 5' deep sump for trenches in physical test area. Sump collected oil from leaking equipment within area. Oil was subsequently filtered and recirculated back into the hydraulic system for area. AOI 84-25: trench under bolted-down lid; and AOI 84-26: approximate 2' deep trench containing residual oils.	6/15/00 and 8/9/00	Trenches are unlined concrete; sump is lined with stainless steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-6	84	Sump	Six 1' x 1' x 1' deep sumps along hold down table draining to a 2' x 3' x 4' deep sump located in column/bay 13I. Oil was subsequently filtered and recirculated back into the hydraulic system for area.	6/15/00	Sumps are lined with stainless steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-7	84	Sump	3' x 3' x 4' deep sump that discharged to process wastewater system.	6/15/00	Sump is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-8	84	Sump	Possible sump under 6' x 12' cover.	6/15/00	Steel grate referenced as part of this AOI simply covers an access to basement.	No further investigation as an AOI is warranted.
84-9	84	Sump	4' x 6' x 6' deep sump that discharged to process wastewater system.	6/15/00 and 8/10/00	Significant loss of concrete wall noted around influent pipe (wall lost and rebar exposed for approximately 6" around influent pipe) along with various cracks and spawling along floor/wall joint (i.e., potential release).	Further investigation is warranted.

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AOI ID	Building No.	Prior AOI Type Designation	AOI Description	Date of Visual Evaluation	Post-Cleaning Visual Evaluation Results	Post-Cleaning Visual Evaluation Determination/Recommendations
84-10 and 84-40 (combined)	84	Sump and Pit	AOI 84-10: 5' x 6' x 7' deep sump that discharged to process wastewater system and 8' x 24' x 3' deep car wash pit that collected water from the washing process and discharged to sump. AOI 84-40: 3' x 3' x unknown depth pit with no access.	6/15/00	AOI designated 84-40 appears to be an oil/water separator pit for the adjacent car wash designated AOI 84-10. This separator pit is unlined concrete, with cracks approximately 1" wide around effluent piping on south side (i.e., potential release). Residual oil pooling also noted within pit. Pit appears to have discharged to sump referenced as part of AOI 84-10. Both the sump and pit also show residual oil staining on floors and walls. Sump is unlined concrete. No visual indications of potential release noted related to the sump.	Further actions related to sump not warranted; however, further investigation is warranted for potential release related to car wash pit and adjacent oil/water separator pit.
84-11 and 84-12 (combined)	84	Sumps	Possible sumps under a bolted-down manhole cover.	6/15/00	Manholes provide access to sanitary sewer. No hazardous waste or hazardous constituents managed via this unit.	No further investigation as an AOI is warranted.
84-13 and 84-63 (combined)	84	Sump, Additional	AOI 84-13: main sump that discharged to process wastewater system. AOI 84-63: waste pump station that routed process waste from Factory 94 to process wastewater system. Staining present.	6/15/00	Sump is unlined concrete. Oil staining present on walls and floors of sump. Staining previously designated AOI 84-63 is collocated with this sump. Staining appears to be limited to surficial impacts. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-14	84	Sump	5' x 5' x unknown depth sump for the flow room. Sump discharged to process wastewater system.	6/15/00	Sump is lined with steel, and believed to have received waste fuel (gasoline) from adjacent fuel filtration equipment and condensate from adjacent compressor and vacuum pumps. Lining of sump noted to be severely corroded (i.e., potential release).	Further investigation is warranted.
84-15, 84-16, and 84-32 (combined)	84	Sump, Trench	AOI 84-15 and AOI 84-16: two 2' x 2' x unknown depth sumps discharging to process wastewater system. AOI 84-32: 6' wide x 12' deep conduit and electrical tunnel that runs the length of test cells outside of Bldg. 84. Supplied fuel for test cells.	6/15/00	Previously described sumps designated AOIs 84-15 and 84-16 are actually access ports for trench designated AOI 84-32. This trench serves as a pipe chase for antifreeze and fuel supply pipes for engine test cells. Trench is epoxy-coated concrete. Various locations of trench were visually evaluated. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-17	84	Sump	16" x 16" x 6" deep sump with gravity drain. Collected runoff from cars parked inside and discharged to process wastewater system.	6/16/00	Pit is dry and contains some debris; however, there is no staining or other visual indications of potential release.	No further investigation as an AOI is warranted.
84-18	84	Sump	3' x 3' x 4' deep sump collected water from Bupi parts cleaner and discharged to process wastewater system.	6/14/00	Sump is lined with steel. Primary materials managed were detergent-based cleaning fluids. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-19	84	Sump and Trench	2' x 4' x 4' deep sump used to collect water from adjacent car wash and floor trenches in the area. Also used as a dumping pit. Discharged to process wastewater system. Series of trenches used to collect runoff from cars parked in building. Trenches discharged to sump.	6/14/00 and 8/10/00	Portions of these trenches are lined with steel, while others are unlined concrete. Some cracks of concrete portions of trench noted; however, these trenches collected only runoff from cars within the vicinity (i.e., no hazardous waste or hazardous constituents managed). Sump also lined with steel, and no visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-20	84	Sump	30" x 30" x 24" deep sump used to collect runoff from cars within the wheel alignment area. Sump discharged to process wastewater system.	6/14/00	Sump is unlined concrete. Sump was used for runoff (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
84-21, 84-24, 84-57, 84-58, 84-59, and 84-60 (combined)	84 Basement	Sump, Additional	AOI 84-21: 6' x 4' x 6' deep sump that collected floor drain runoff and discharged to process wastewater system. AOI 84-24: four drains in floor; discharge location unknown. AOI 84-57: hydraulic oil staining on elevated dynamometer equipment pad; oil leaking from carriage. AOI 84-58, AOI 84-59, and AOI 84-60: oil-stained floors.	6/15/00	Entire basement is flooded with approximately 3 to 4" of water. A complete visual evaluation of these AOIs could not be performed due to the flooding; however, it was noted that the floor drains designated as AOI 84-24 are located on the first floor above the basement, and assessment of potential release related to these drains should be preformed as part of assessment(s) of other basement AOIs and overall basement.	Floor drains designated as AOI 84-24 should be evaluated as part of other basement AOIs. AOIs 84-21, 84-58, 84-59, and 84-60 cannot be visually evaluated.
84-22	84B	Sump	Inaccessible sump located in janitors' closet. Sump discharged to process wastewater system. Size of sump unknown.	6/16/00	Sump is a sanitary sewer sump for adjacent men/women's locker rooms. No hazardous waste or hazardous constituents managed via this sump.	No further investigation as an AOI is warranted.

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84-23	84	Sump	Sump collected residual fluids from vehicle engine test area.	6/16/00	Sump is unlined concrete. Oil staining present on walls and floors of sump; however, no cracks noted or other indications of potential release.	No further investigation as an AOI is warranted.
84-27	84	Trench	Utility trenches within area housing steam lines.	6/15/00	Trench appears to have been used as a pipe chase for hydraulic oil pipes and process waste pipes. Floor of trench is oil-stained throughout. Trench is unlined concrete. Approximately 1/2-inch gap noted along wall/floor joint, and various cracks in the walls and floor of one inch or more noted in select areas, including the area adjacent to the former UST in AOI 84-48 and adjacent to the sump in AOI 84-9 (i.e., potential release).	Further investigation is warranted.
84-28	84	Trench	2' x 40' x unknown depth trench with bolted down covers.	6/15/00 and 8/10/00	Trenches are unlined concrete. Various cracks (up to approximately 0.5") noted along floors of both trenches, approximately 3" diameter hole in floor noted at west end of south trench (i.e., potential release).	Further investigation is warranted. Prior analytical data indicated PCBs at 15.1 mg/kg in residue.
84-29 and 84-30 (combined)	84	Trench	AOI 84-29: collection trench around former equipment pads. AOI 84-30: 1' x 1.5' deep x 80' long trench surrounding former machine. Stained concrete equipment pad. No sump associated with trench.	6/14/00	Trenches are lined with steel and hydraulically connected. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-31 and 84-62 (combined)	84	Trench	AOI 84-31: 6' wide x 15' deep trench running from gasoline AST farm to four fuel pumps. Bottom of trench contained water and staining; sheen floating on top of water. AOI 84-62: reclaim fuel piping that runs approximately 100' on east side of building. Staining present.	6/16/00	The reclaim fuel piping designated AOI 84-62 is the same piping contained within the trench designated AOI 84-31. This trench is unlined concrete. Access to this trench is limited to the endpoints. Visual evaluation could not be performed.	This trench is located immediately adjacent to the former UST farm referenced in AOI 84-49. Any releases from this trench would be addressed as part of those known to have occurred related to the former UST farm.
84-33	84	Trench and Pit	Conduit and electrical trench with odor present; and 4' x 4' x 4' deep gravity pit that collected runoff from adjoining trench.	6/16/00	Trench is unlined concrete and contains electrical and emissions testing conduits. Minor surficial staining noted in area of emissions testing conduit ports; however, hazardous waste or hazardous constituents were not managed via this trench. The pit referenced as part of this AOI is not connected or associated with the electrical trench. It is a storm sewer manhole.	No further investigation as an AOI is warranted.
84-34	84	Pit	2' x 2' x 3' deep steel-lined oil pit used to collect hydraulic fluid leaks from belt test equipment. Fluid subsequently filtered and recirculated back into hydraulic system.	6/15/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-35	84	Pit	2' x 2' x 3' deep pit with steel cover.	6/15/00 and 8/9/00	Pit housed valve for steam line (i.e., no hazardous waste or hazardous constituents managed via this pit).	No further investigation as an AOI is warranted.
84-36	84	Pit	Pit for car lift. Area also includes subgrade hydraulic cylinder and associated piping present in abovegrade reservoir.	6/15/00	Pit could not be visually evaluated since the car lift is inoperable.	Pit cannot be visually evaluated. Further investigation is warranted.
84-37	84	Pit	Hot well under floor for chiller tower system.	6/15/00	Pit is unlined concrete and was used for cooling water. No hazardous waste or hazardous constituents were managed via this pit.	No further investigation as an AOI is warranted.
84-38	84	Pit	Cold well under floor for chiller tower system.	6/15/00	Pit is unlined concrete and used for cooling water. No hazardous waste or hazardous constituents were managed via this pit.	No further investigation as an AOI is warranted.
84-39	84	Pit	Three 6' x 20' x 2' deep equipment pits housing dynamometer equipment.	6/15/00	Pits are unlined concrete. One pit has a steel-lined 2' x 2' x 2' sump. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-41	84	Pit	Possible pit under 3' x 3' cover.	6/15/00	The pit contains sand and debris; however, no staining or other indications of potential release noted.	No further investigation as an AOI is warranted.
84-42	84	Pit	Pit for hydraulic elevator. Cylinders above grade.	6/14/00	Pit is unlined concrete. Hydraulic equipment is above grade. No visual indications of potential release noted.	No further investigation as an AOI is warranted.

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84-43, 84-44, 84-45, 84-46, 84-47 and 84-61 (combined)	84B	Pit	AOIs 84-43 through 84-47: five 25' x 15' x 3' deep emission roll / dynamometer equipment vaults. 3' deep subfloor beneath each area. Utilities and conduit controlling test area running under flooring. AOI 84-61: gasoline piping throughout basement for running dynamometer equipment.	6/16/00	These AOIs all involve a series of dynamometer units. The pits of each unit are unlined concrete. These units did not manage hazardous waste or hazardous constituents. Basement area designated AOI 84-61 is simply a larger pit for a larger dynamometer. There are no gasoline lines within this pit. Piping in this pit served emissions control system. Pit contains approximately 1' of water. No sheen present, and the water is noted to be clear. Pit contains a sump in the southwest corner. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-48	84	Tanks-UST	UST with bolted-down hatch located beneath manhole cover.	6/15/00	UST appears to have been removed based on evidence of new concrete flooring over an area of approximately 15' x 20'.	Tank closure documentation is not currently available. Release potential cannot be assessed without intrusive investigation.
84-49 and 84-64 (combined)	84	Tanks-AST, Additional	AOI 84-49: area includes Tanks NN and 94 through 103 on 1973 Site Drawing, Tanks T84-1 through T84-7, T84-1A, T84, 2A, T84-5B, T84 7B, and T84-8A on 1991 Site Drawing, and SWMUs 41 and 42 identified in PR/VSI Report. AOI 84-64: drum storage area identified as AOC 6 in PR/VSI Report used to store oil, transmission fluid and gasoline waste prior to off-site disposal.	6/16/00	AOI 84-49 includes the former UST farm immediately north of Building 84. AOI 84-64 is collated with this former UST farm. Within the area of the former UST farm there exists an approximately 2' diameter by 20' deep brick-lined manhole which appears to be a former storm sewer manhole. Various cracks in lining noted. A sheen and strong odor were noted. AOI 84-49 also includes a recessed AST farm which is located immediately north of former UST farm. This AST farm contains several empty ASTs formerly used for gasoline/solvent storage. Secondary containment consists of a concrete vault. This area is subject to ongoing investigations due to the former known releases associated with the former UST farm.	Continue ongoing investigation.
84-50	84 Basement	Tanks-AST	Two cooling tower ASTs, one hot well, one cold well (total dimensions 16' x 6' x 7.5' tall).	6/15/00	ASTs are empty steel ASTs. Tanks were used for recirculation cooling water from engine test areas on the first floor. Hazardous waste or hazardous constituents were not managed via these tanks.	No further investigation as an AOI is warranted.
84-51	84	Additional	Machine shop area. Wood block flooring stained with oil (approximately 14,500 sq. ft.). Concrete equipment pads also stained.	6/14/00	Wood block flooring has been removed. Areas of oil-stained concrete flooring throughout area. Concrete flooring cracked at various locations (i.e., potential release). Prior analytical data indicated the present of hazardous constituents in wood block floor.	Further investigation is warranted.
84-52	84	Additional	Large hydraulic pump used for operating equipment in the physical test area. Contained approximately 300 gallons of oil. Floor and walls are oil-stained.	6/15/00	Previously noted oil staining of walls and floor has been cleaned. The floor is ceramic tile. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-53	84	Additional	Chiller room. Chiller equipment contained anhydrous ammonia. Staining on floor.	6/15/00	Some surficial staining noted, but only in one area approximately 5' in diameter. The floor is ceramic tile. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
84-54	84	Additional	Former electric vault below grade. Accessed through manhole. Vault approximately 15' x 15' x 10' deep.	6/15/00	Vault appears to have been filled with concrete. Visual evaluation cannot be performed.	Prior analytical data indicated presence of PCBs at 3.1 mg/kg in grease. Release potential cannot be assessed without intrusive investigation.
84-55	84	Additional	Two subgrade hydraulic cylinders used as car hoist.	6/14/00 and 8/9/00	1.5' x 11' x 7.5' deep pit for hydraulic lift mechanism. Pit contains 1.5' diameter x 5' tall hydraulic oil AST containing 2' of oil. Pit has not yet been cleaned. Various cracks in floor noted near floor/wall joint as well as pooled oil along west end of pit (e.g., potential release).	Further investigation is warranted.
84-56	84	Additional	Former subgrade hydraulic lift. Piston removed and cylinder filled with concrete.	6/14/00	Visual evaluation cannot be performed.	Release potential cannot be assessed without intrusive investigation.
94-1	94	Sump	4' x 4' x 3' deep sump that discharged to process wastewater system.	6/13/00	Sump is lined with steel; however, much of the lining lost due to corrosion (i.e., potential release).	Further investigation is warranted.

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94-2 and 94-10 (combined)	94	Sump, Trench	AOI 94-2: 30" x 30" x unknown depth sump in "South Lube Pit." AOI 94-10: 1' x 100' x 1' deep trench in work area that discharged to sump. Liquid in trench ultimately discharged to process wastewater system.	6/13/00	The most recent use of this area appears to have been for charging tow motor batteries. Trench discharges to sump. Both sump and trench are lined with steel. Steel lining along west end of trench severely corroded (i.e., potential release).	Further investigation is warranted.
94-3	94	Sump	4' x 3' x unknown depth sump that handled water from 1' x 12' x 1' deep drain in car wash area. Sump discharged to process wastewater system.	6/13/00	Sump and trench are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
94-4	94	Sump	4' x 8' x 2' deep sump that handled runoff from test area (90% of the water is recirculated and 10% is pumped to process wastewater system).	6/13/00	Sump is unlined concrete and located within a vehicle high-pressure wash testing area. Sump recirculated water (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
94-5	94 basement	Sump, Additional	3' x 8' x 6' deep sump located in oil change pit. Pit handled oil from three bays having separate drains running into sump. Sump received oil runoff from 34' x 4' x 2' deep trench associated with oil change pit. Sump discharged to process wastewater system; and 1' x 1' x unknown depth floor drain that handled runoff in oil change pit and discharged to sump.	6/13/00	1' x 1' x 1.5' deep floor drain is lined with steel. 34' x 4' x 2' deep trench is unlined concrete. No visual indications of potential release noted related to floor drain. Sump is unlined concrete and appears to have contained oil regularly. Walls and floor of sump cracked and fractured (i.e., potential release).	No further investigation of floor drain or trench warranted; however, further investigation of sump is warranted.
94-6 and 94-7 (combined)	94	Sump, Trench	AOI 94-6: 8' x 6' x 4' deep self-contained sump located in center of chemical storage area. AOI 94-7: 42' x 2' x 1' deep trench running the length of chemical storage and car wash areas. Trench drained to a 3' x 8' x unknown depth sump.	6/13/00	Sump and trench designated AOIs 94-6 and 94-7, respectively, are hydraulically connected to each other as well as to the sump referenced in AOI 94-5. The 8' x 6' x 4' deep sump referenced in AOI 94-6 appears to have served as an oil/water separator. This sump and the trench referenced in AOI 94-7 are unlined concrete. Relatively large cracks noted along north side of sump at approx. 3' below regular fluid level (i.e., potential release). The walls and floor of the sump and trench are saturated with oil.	Further investigation is warranted. The investigations of AOIs 94-5, 94-6, and 94-7 should be combined.
94-8	94	Trench	1' x 75' x 2' deep trench contained oil and grease. Discharged to process wastewater system. Staining on floor throughout bay in vicinity of trench.	6/13/00	Trench is unlined concrete. No post-cleaning staining noted within trench or surrounding area. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
94-9	94	Trench	1' x 25' x 1' deep trench in hydraulic oil storage area, and a 1' x 6' x 6" deep floor drain, both lead to a 2' x 2' x 4' deep dry sump. Sump discharged to process wastewater system.	6/13/00	Sump, drain, and trench are lined with steel. No visual indications of potential release noted related to sump, drain, and most of trench; however, a hole (approx. 4" diameter) was noted in lining of west end of trench (i.e., potential release).	Further investigation should be focused on west end of trench.
94-11	94	Pit	5' x 10' x 2' deep containment pit with AST; oil staining on floor.	6/13/00	AST used for steam condensate. Only residual surface staining noted within pit; however, no hazardous waste or hazardous constituents were managed via this tank.	No further investigation as an AOI is warranted.
94-12	94	Pit	6' x 160' x 2' deep pit.	6/13/00	Unit is actually a conveyer trench (not a pit as previously referenced). Trench (vehicle conveyor) is unlined concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
94-13	94	Pit	5' x 10' x 6" deep work pit contained oil and grease on floor.	6/13/00	Oil and grease presence appears to be limited to surficial impacts. Portions of pit are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
94-14	94A	Pit	Pit for cable-operated car elevator.	6/13/00	Elevator pit (approx. 15' x 30' x unknown depth) contains several feet of water. Visual evaluation could not be performed due to flooding.	Prior sampling and analysis of sediment and grease indicated the presence of PCBs at 3 mg/kg. Further investigation is warranted.
94-15	94A	Pit	24' x 12' x 6' deep under carriage inspection pit with a 1' x 1' floor drain, oil staining on floor.	6/13/00	Pit is unlined concrete and used as an observation pit. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
94-16	94	Tanks-AST	AST visible through caged area; no access to cage "pump room."	6/13/00	AST used for steam condensate (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
94-17	94A	Additional	Former hydraulic lift cylinders filled with concrete.	6/13/00	Visual evaluation cannot be performed.	Release potential cannot be further evaluated without intrusive investigation.
94-18	94A	Additional	Manhole #3 contained a 12' x 4' x 15' deep floor vault with steel shelves. Vault dry. Manhole located adjacent to Manhole #3. Manhole contained a 12' x 4' x 15' deep floor vault. Vault dry.	6/13/00	No visual indications of potential release noted.	No further investigation as an AOI is warranted.

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94-19	94A	Additional	Oil staining around hydraulic oil drums.	6/13/00	No post-cleaning staining noted. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
94-20	94A	Additional	Old electrical room with stairwell leading to unknown depth. Room flooded.	6/13/00	Stairwell appears to lead to a relatively shallow basement/crawl space. Basement/crawl space is flooded with water. No sheen or staining noted. Former use of basement/crawl space involve electrical power transfer and switching (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.

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Areas of Bldgs. 02, 12, 23, and 29						
02-1	02	Additional	Hazardous waste facility identified as SWMU 43 in PR/VSI Report used to store drums containing off-spec resins prior to off-site disposal.	6/19/00	No visual evidence of hazardous waste facility remains. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-2 and 02-21 (combined)	02A	Additional, ASTs	AOI 02-2: Drum Storage Area identified as SWMU 48 and AOC 1 in the PR/VSI Report. AOI 02-21: seven ASTs present in former "Oil Reclamation Area." Tanks within 60' x 30' x 1' bermed area with no drain. This area also includes SWMUs 85 - 91 identified in PR/VSI Report.	6/19/00	Concrete containment area surrounded by 12 inch by 16 inch concrete wall. Some minor surface staining noted; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-3	02	Sump	2' x 2' x unknown depth sump located in Materials Laboratory. Sump discharged to process wastewater system.	6/19/00 and 9/14/00	3' deep unlined concrete sump. Significant spawling and erosion of concrete noted (i.e., potential release).	Further investigation is warranted.
02-4 and 02-11 (combined)	02	Sump	AOI 02-4: Process Wastewater Pump Station #2 with 4' x 3' x unknown depth sump. Oil and grease staining on floors of pump station. AOI 02-11: series of sumps and oil/water separators are present in the "Oil Reclamation Room" (room is approximately 20' x 20'). Oil staining on walls and floor.	6/19/00 and 9/14/00	Sump referenced as part of AOI 02-4 is included as part of the sumps and oil/water separators referenced as part of AOI 02-11. These sumps and oil/water separators are unlined concrete. No visual indications of potential release noted.	Composite sample of oil from separators analyzed for PCBs. No PCBs detected at laboratory detection limit (1 mg/kg). No further investigation as AOI is warranted.
02-5 and 02-26 (combined)	02	Sump	AOI 02-5: 2' x 2' x 1' deep sump located in resin tank room to collect spillage from ASTs. Sump discharged to process wastewater system. AOI 02-26: containment area for resin tanks.	6/19/00 and 9/14/00	No hazardous waste or hazardous constituents were managed via this system.	No further investigation as an AOI is warranted.
02-6 and 02-19 (combined)	02	Sump	AOI 02-6: self-contained sump valved to allow flushing of coolant to process wastewater system or into a filtration system for reuse at a grinding machine. AOI 02-19: 12' x '12' x unknown depth pit that collected lubricant around grinding machine. The pit drained to a sump where it was filtered for recirculation.	6/19/00 and 8/9/00	Pit referenced as part of AOI 02-19 is 2' deep and unlined concrete. Sump referenced as part of AOI 02-6 is actually recessed inside a steel-lined pit. No visual indications of potential release noted for either pit or sump.	No further investigation as an AOI is warranted.
02-7	02	Sump	5' x 6' x 8' deep sump for process wastewater station.	6/19/00 and 9/14/00	Sump is lined with steel; however, lining is severly corroded and mostly lost (i.e., potential release).	Further investigation is warranted.
02-8	02	Pit, Trench, and Sump	Located in the Automatic Air Compressor Station Room: 40' x 35' x 10' deep pit surrounding compressor and air tank; Oil and grease staining present on floor of pit; 30' x 15' x 5' deep utility trench surrounding compressor; and 12' x 4' x 4' deep sump in the pit that conveyed water to the process wastewater system.	6/19/00 and 8/9/00	Staining of floor has been cleaned. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-9	02A	Trench and Sump	45' x 1' x '1' deep floor drain leading to a sump, used to handle runoff in the fork lift battery charging area; and 2' x 2' x 3' deep sump that discharged to process wastewater system.	6/19/00 and 8/9/00	Both the sump and trench are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-10	02	Trench and Sump	1' x 1' x 1' deep trench surrounding "Omnimil" machine leading to sump; and 3' x 3' x 4' sump connected to trenches surrounding "Omnimil" machine. Sump collected and recirculated coolant back to the machine for reuse. Oil staining on floor surrounding the machine.	6/19/00 and 8/9/00	Staining around the equipment limited to surficial impacts. Both the sump and trenching are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-12	02	Pit	Pit for large press machine contained oil.	6/19/00 and 9/14/00	Pit is approximately 15' x 20' x 7.5' deep and houses a large metal press. Pit could not be visually assessed.	Further investigation is warranted.
02-13	02	Trench	18' x 2' x unknown depth utility trench.	6/19/00	Depth of trench is 6". Trench is unlined concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-14	02	Trench	21' x 1' x 1' deep utility trench running width of bay door containing water line.	6/19/00	Trench served as a pipe chase for radiator condensate (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
02-15	02	Trench	18' x 2' x 1' deep trench channeled waste to Process Wastewater Pump Station #2.	6/19/00 and 8/9/00	Trench is lined with steel. Some surficial staining noted on surrounding floor; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-16	02	Pit	3' x 3' x 2' deep pit channeled waste runoff to Process Wastewater Pump Station #2.	6/19/00 and 8/9/00	Pit is lined with steel. Some surficial staining noted on surrounding floor; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.

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02-17	02	Pit	Pit for elevator.	6/19/00 and 9/14/00	Pit is approximately 10' x 20' x 5.5' deep. Pit could not be visually assessed.	Prior analytical data indicated presence of PCBs at 0.68 mg/kg in scrape sample. Further investigation is warranted.
02-18	02	Pit	Pit for hydraulic elevator.	6/19/00	Pit is approximately 20' x 20' x 6' deep. Pit is unlined concrete. Some minor surface staining noted; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-20	02	Tank-AST	1,000-gal. AST in elevator pump room.	6/19/00	Capacity of AST previously referenced incorrectly as 1,000 gallons. Capacity of tank is 2,000 gallons. Some minor surface staining around AST noted; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-22	02A	Tank-AST	Hydraulic oil AST and pump used for operation of the "Hydraulic Anchor Pac Area." Hydraulic oil staining around the equipment.	6/19/00 and 8/9/00	AST is located within steel secondary containment pan. Floor cracks (~1") noted at joint with wall.	Further investigation is warranted.
02-23	02	Tank - AST	Tank 66 on 1973 Site Drawing.	6/19/00	Tank has been removed, but timeframe unknown. Release potential unknown.	Tank closure documentation is not currently available. Release potential cannot be assessed without intrusive investigation.
02-24	02	Tanks - AST	Tanks 67 - 70 on 1973 Site Drawing.	6/19/00	Subject to ongoing investigations based on reports by Global Engineering, Inc. (1997).	Continue ongoing investigation.
02-25	02	Tanks - AST	Tank 02-15 and 02-16 on 1991 Site Drawing	6/19/00	ASTs are approximately 12'diameter x 74' tall plastic resin silos. No hazardous waste or hazardous constituents managed via these silos.	No further investigation as an AOI is warranted.
02-27	02	Additional	Oil staining on floors under machine area.	6/19/00 and 8/9/00	Staining limited to surficial impacts. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-28	02	Additional	Oil and grease staining on floors.	6/19/00 and 8/9/00	Staining limited to surficial impacts. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
02-29	02	Additional	Oil staining on floor around metal cutting equipment.	6/19/00	Oil staining is limited to surficial impacts within a 10' diameter area. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-1 and 12-9 (combined)	12 Complex	Additional	AOI 12-1: drum storage area identified as AOC 11 in PR/VSI Report used for storing oils and synthetic coolant (new). AOI 12-9: oil and sealer storage room containing a 1' x 1' trench running the perimeter of room and leading to a 4' x 4' x 6' deep drain leading into a 6' x 6' x 6' deep sump that pumped liquid into a 300-gal. AST. Bottom of trench contained oil and grease.	6/20/00 and 9/14/00	6'x6'x6' sump is lined with steel; all other components are unlined concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-2 and 12-5 (combined)	12 Complex	Sump	AOI 12-2: 2' x 2' x 4' deep process wastewater sump that collected liquid from strip drain. AOI 12-5: 1' wide x 1' deep strip drain leading to sump that discharged to process wastewater system.	6/20/00 and 9/14/00	A sump is located at each end of the trench. The two sumps are steel-lined. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-3	12 Complex	Sump	30' x 1' x 1' deep drain leading to 3' x 3' x 3' deep sump that discharged to process wastewater system.	6/20/00 and 9/14/00	Truck well in which these units are located was used as settling basin for washing debris during pre-demolition cleaning efforts. Units could not be visually evaluated.	Further investigation is warranted.
12-4	12 Complex	Sump	Two 9' x 1' x 2' deep floor drains (in steam booth used to clean equipment) leading into a 3' x 2' x 4' deep floor drain that handled runoff in car wash area and leads to a 3' x 4' x 4' deep sump that discharged to process wastewater system.	6/20/00	Trenches/sump are lined with steel. No hazardous waste or hazardous constituents managed via these units.	No further investigation as an AOI is warranted.
12-6	12 Complex	Sump	4' x 4' x unknown depth sump in Process Waste Pump Station #4.	6/20/00 and 9/14/00	Sump is unlined concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-7	12 Complex	Sump	2' x 2' x 3' deep sump that discharging to process wastewater system.	6/20/00 and 9/14/00	Sump is lined with steel; no visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-8	12 Complex	Sump	2' x 3' x 4' deep sump that handled runoff from 36' x 1' x 1' deep trench in battery charging area. Sump discharged to process wastewater system.	6/20/00	Two parallel systems exist. Trenches and pits are lined with steel. Most of the steel lining has been lost, and the underlining concrete is severely corroded (i.e., potential release).	Further investigation is warranted.

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12-10	12 Complex	Sump	Steam cleaning room for equipment has two 6' x 8" x 2' deep strip drains that lead to a 3' x 5' x 6' deep sump that handled runoff from equipment cleaning area. This sump discharged to process wastewater system. Oil and grease staining on the walls and floor.	6/20/00	The sump and trench are steel-lined. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-11 and 12-15 (combined)	12 Complex Basement	Sump and Trench	Two 4' x 4' x unknown depth sumps with associated floor trench and drains; contained oil and water. System discharged to process wastewater system.	6/20/00 and 9/14/00	Sumps are located in a flooded portion of the basement. Visual evaluation could not be performed.	Further investigation is warranted.
12-12, 12-13, 12-14, 12-16, 12-17, and 12-48	12 Complex Basement	Sump and Trenches	AOI 12-12: 2' x 2' x unknown depth sump connected to a 20' x 1' x 1' deep trench and 30' x 1' x 1' deep strip drain. Surrounding area had oil staining on the floor. Several sets of concrete footings are present that appear to be former equipment stands. AOI 12-13: 2' x 2' x 4' sump connected to floor drains. Oil and grease staining on surrounding floor. Concrete footings present that appear to be former press stands. AOI 12-16: oil staining around conveyor system and associated sump. AOI 12-17: 2' x 2' x 4' deep sump in chip conveyor room; and AOI 12-48: 2' x 2' x 3' pit with oil and water in conveyor tunnel. Tunnel is approximately 200' long. Absorbent material present on floor for oil and grease. Entire floor in tunnel area stained with oil and grease. End of the tunnel is sealed with brick.	6/20/00 and 9/14/00	Floor of basement is saturated with oil. Sumps are lined with steel; however, lining of many noted to be corroded and separated from sump walls (i.e., potential release).	Further investigation is warranted.
12-18	12 Complex	Trench	1' x 15' x 1' deep "L" shaped utility trench.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-19	12 Complex	Trench	30' x 1' x 3' deep utility trench and a 1' x 1' x 3' utility trench.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-20	12 Complex	Trench	2' x 15' x 2' deep utility trench.	6/20/00 and 9/14/00	Trench is an electrical conduit chase (i.e., no hazardous waste and/or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-21	12 Complex	Trench	1' x 35' x 1' deep utility trench.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-22	12 Complex	Trench	1' x 30' x 1' deep utility trench and a 1' x 1' x 3' floor drain.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-23	12 Complex	Trench	1' x 15' x 1' deep utility trench.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-24	12 Complex	Trench	1' x 5' x 1' deep utility trench.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-25	12 Complex	Trench	1' x 45' x 1' deep utility trench.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-26	12 Complex	Trench	1' x 6' x 1' deep utility trench exits area of welding line and forms a "T" with a 1' x 10' x 1' deep utility trench.	6/20/00	Trench is lined with steel. Trench served as electrical conduit chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-27	12 Complex	Trench	1' x 40' x unknown depth utility trench.	6/20/00	Trench is lined with steel. Trench served as water/steam pipe chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-28	12 Complex	Trench	1' x 8' x 4' deep trench in welding area.	6/20/00	Trench served as an electrical conduit chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.

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12-29	12 Complex	Trench	1' x 20' x 1' deep strip drain used for runoff on car conveyer system. Drain discharged to process wastewater system.	6/20/00 and 9/14/00	North end of the trench drains to a 2' x 2' x 2' deep pit. The pit and trench are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-30, 12-31, 12-32, 12-33, 12-43, 12-44, 12-45, 12-46, 12-47, 12-51, 12-52, 12-54, 12-55, 12-56, 12-57, 12-63, 12-64, 12-65, 12-66, 12-67, 12-68, 12-69, 12-71, and 12-75 (combined)	12 Complex Basement	Trenches, Pits, Sumps, Tanks, Additional	AOI 12-30: 12" floor drain filled with oil-saturated absorbent material. AOI 12-31: 10' x 6" x 6" deep floor trench running to floor drain. Trench filled with oil. AOI 12-32: 60' x 6" x 1' deep "v" shaped trench. AOI 12-33: 10' x 6" x 6" deep trench running to 3' x 1' x 2' deep floor drain associated with conveyor system. Oil-saturated absorbent material on oil-stained floor. AOIs 12-43 through AOI 12-47: grease traps associated with chip conveyor. AOI 12-51: 3' x 1' x 2' deep pit connected to a floor drain. AOI 12-52: twenty 24" diameter x 1' deep hydraulic press footings. AOI 12-54: 500-gal. AST containing oil. AOI 12-55: 300-gal. AST containing oil. AOI 12-56: four 500-gal. ASTs containing oil. AOI 12-63 through AOI 12-69: oil-stained wood block flooring. AOI 12-71: large hydraulic presses in pits. AOI 12-75: significant amounts of grease on floor directly under drive track throughout entire conveyor system within tunnel.	6/20/00 and 9/14/00	Oil-stained wood block flooring referenced as part of AOIs 12-63 to 12-69 is located above basement area containing numerous other AOIs. All of these basement area AOIs are related to former metal chip processing operations. The area could not be visually evaluated.	Further investigation is warranted. Wood block flooring-related AOIs should be evaluated as part of the overall basement related AOIs. Basement area AOIs should be evaluated collectively.
12-34	12 Complex	Trench	6" x 100' x 3" deep trench with oil, water, and machine runoff.	6/20/00	Pit and trench are both lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-35, 12-49, 12-50, and 12-73 (combined)	12 Complex	Trench, Pits, Additional	AOI 12-35: 6' wide and 4' deep conveyer trench filled with oil, water, grease, and machine runoff. AOI 12-49: 3' x 5' x 15' pit in body wash station containing water. This area contained a series of tanks and filtering equipment. Water discharged to process wastewater system. AOI 12-50: 8' x 25' x 15' recirculation pit for car body wash. Pit contained soap, water, and an unknown amount of sediment buildup. AOI 12-73: staining on the floor throughout the entire body wash area. White etching on floor near ChemKleen AST and oil and grease staining present around pumps.	6/20/00 and 9/14/00	All of these AOIs are part of a chassis wash process. Pits and trenches are lined with steel; no visual evidence potential release noted.	No further investigation as an AOI is warranted.
12-36	12 Complex	Trench	6' wide x 4' deep conveyer trench with dirt, grease, and debris accumulation.	6/20/00 and 9/14/00	Trench is associated with a chassis wash process, separate from AOIs 12-35, 12-49, 12-50, and 12-73. Trench is lined with steel; no visual indications of potential release noted.	No further evaluation as an AOI is warranted.
12-37	12 Complex	Pit	35' x 15' x 4' deep pit contained oil and grease. Pit used to house robotic equipment.	6/20/00 and 9/14/00	Area actually includes two identical unlined concrete pits. No visual indications of potential release noted.	Oil in equipment sampled by GM and contained <1 mg/kg PCBs. No further investigation as an AOI is warranted.
12-38	12 Complex	Pit	Utility pit with 3' x 3' access hatch.	6/20/00	Pit served as an electrical and steam conduit chase (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
12-39 and 12-40 (combined)	12 Complex	Pits	AOI 12-39: 2' x 10' x 8' deep steam pipe utility pit located where pipes enter the building. AOI 12-40: 9' x 4' x 18' deep old utility pit.	6/20/00	Pits referenced as part of these AOIs are connected. Oil and water present within pits. Relatively large cracks noted in walls of pit (i.e., potential release).	Further investigation is warranted.
12-41	12 Complex	Pit	Pit for cable-operated elevator.	6/20/00 and 9/14/00	Elevator is actually a hydraulic elevator. Pit is approximately 20' x 20' x 5' deep. Pit could not be visually evaluated.	Prior analytical data indicated presence of PCBs at 2.6 mg/kg in scrape sample. Further investigation is warranted
12-42	12 Complex	Pit	A self-contained utility pit and associated trenches covering a 30' x 30' area runs underneath equipment. The pit contained conveyer equipment for separating metal cuttings from the cutting fluids. The trenches lead to oil-cleaning equipment.	6/20/00	Trenching and pit associated with the equipment are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-53	12 Complex	Tank-AST	2' x 3' x 2' deep hydraulic lube tank.	6/20/00	The AST is a self-contained steel tank. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-58	12 Complex	Tanks-ASTs	Tanks 12-1, 12-2, 12-3, and 12-4 on 1991 Site Drawing.	6/20/00	Tank has been removed. No staining or other visual indications of potential release noted.	No further investigation as an AOI is warranted.

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12-59	12 Complex	Additional	1' x 10' x 1' deep floor drain used to collect indoor runoff from loading dock. Light oil staining on floor.	6/20/00 and 9/14/00	Oil staining limited to surficial staining within three 1'-diameter areas. Trench is unlined concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-60	12 Complex	Additional	1' x 1' x 3' deep floor drain and a 30' x 1' x 3' deep floor drain.	6/20/00	Trench served as a utility chase and is lined with steel. No hazardous waste or hazardous constituents were managed via this trench.	No further investigation as an AOI is warranted.
12-61	12 Complex	Additional	"Satellite Waste Accumulation Area" for paints and oils.	6/20/00	No visual evidence of waste accumulation area exists. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-62	12 Complex	Additional	Abandoned utility tunnel flooded with water. Tunnel runs north from east side of Building 12, under Division Street, to the former power house area.	6/20/00 and 8/10/00	Access port located east of the chip handling system located along east side of Bldg. 12. Pit is filled with water. Oily sheen was noted. Portions of Trench historically filled with flowable fill.	Further investigation is warranted. Evaluate trench as part of the metal chip handling and loading bays.
12-70	12 Complex	Additional	Indoor railcar unloading area had oil staining on floor throughout area.	6/20/00	Oil staining appears to be limited to surficial impacts. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-72	12 Complex	Additional	Oil staining on floor around spindle oil pump station.	6/20/00	No visual evidence of prior staining exists. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
12-74	12 Complex	Additional	Chain oil pump station that carried grease to production line. Grease staining present on floor surrounding the pump station.	6/20/00	No visual evidence of prior staining exists. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
23-1	23	Additional	Former Cyanide Waste Storage Room identified as SWMU 3 in PR/VSI Report.	6/19/00	No evidence of former Cyanide Waste Storage room exists. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
23-2 and 23-9	29	Sump, Trenches, Tank - AST	5' x 5' x 5' AST containing fluids, gases, and ammonia; and 4' x 2' x 2' deep sump containing oil and grease. The sump used to collect fluid from 4' x 12' x 2' deep and 4' x 6' x 2' deep trenches around dipping tanks and adjacent 2' x 1' x 1' trench.	6/19/00	Trenches referenced in association with dipping tanks as part of this AOI are actually unlined concrete pits which housed dipping tanks. 2' x 2' x 1' trench is lined with steel. This trench served as a pipe chase for drains from AST referenced as part of AOI 23-5. AST referenced as part of AOI 23-5 is a steel AST. Some minor surface staining noted around tank. 2' x 2' x 4' sump referenced as part of AOI 23-2 no longer exists. It appears that this sump consisted of a 2' x 2' x 4' steel AST recessed into the floor. AST has been removed and floor filled with concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
23-3, 23-4, 23-7, and 23-8 (combined)	23	Sumps, Pits, and Additional	AOI 23-3: 3' x 3' x unknown depth sump with associated piping discharged to process wastewater system. AOI 23-4: main Process Wastewater Sump #17, which is 10' x 5' x 8'. This sump collected water from former heat treat operations in building as well as from sumps located north of Leith Street. AOI 23-7: two dock levelers with heavy oil and grease staining on surrounding floor. AOI 23-8: basement that was used for treatment of water used in former heat treat operation on first floor. System consisted of six basins used for oil/water (one 9' x 9' x 7' basin, one 9' x 24' x 7' basin, two 2' x 24' x 7' basins, two 12' x 4' x 7' basins), one 2' x 2' x 2' sump, and one 6' x 4' x 6' pit that housed equipment.	6/19/00 and 9/14/00	6/19/00: Basement is flooded with several feet of oil, and related AOIs could not be visually evaluated. However, the following observations were noted: 1) sump referenced as part of AOI 23-3 is actually an access port to the basement (AOI 23-8); 2) sump referenced as part of AOI 23-4 is actually located within the basement (AOI 23-8); and 3) dock levelers referenced as part of AOI 23-7 appear to be located above the basement. 9/14/00: Oil removed from basement. Basement was not entered for full evaluation due to health and safety concerns; however, the floor and walls of basement at the entrance were noted to be saturated with oil and various cracks were noted in the walls and floor of the basement near the entrance (i.e., potential release).	Composite sample of oil from basins in basement analyzed for PCBs. No PCBs detected at laboratory detection limit (1 mg/kg); however, further investigation is warranted.
23-5	23	Pit	4' x 4' x 10' deep self-contained "Quench Oil Pit."	6/19/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
23-6	23	Pit	4' x 4' x 10' deep self-contained "Caustic Soda Pit."	6/19/00	Pit is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
29-1	29	Trench	Manhole and utility trench.	6/19/00	System is part of sanitary sewer system for adjacent bathrooms (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
29-2	29	Trench	36' x 2' x 4' deep utility trench.	6/19/00	Trench is lined with steel. Integrity noted as good. Trench serves as a pipe chase for steam condensate piping (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.

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29-3	29	Trench	18' x 2' x unknown depth utility trench.	6/19/00	Trench is unlined concrete. Trench served as a pipe chase for water and steam pipes (I.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
29-4	29	Trench and Pit	10' x 1' x 1' deep trench drains to 3' x 3' x unknown depth pit.	6/19/00	Both pit and trench are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
29-5	29	Pit	Pit for cable-operated elevator.	6/19/00 and 9/14/00	9' x 17' x 5' deep elevator pit. Oil present in portions of pit; however, the pit could not be accessed for a full visual evaluation.	Further investigation is warranted.
29-6	29	Pit	Pit with 2' x 4' wooden cover.	6/19/00 and 9/14/00	Wooden cover closes the access to a valve pit for a roof drains (i.e., no hazardous wastes or hazardous constitiuents managed via this pit).	No further investigation as an AOI is warranted.
29-7	29	Additional	Heavy oil and grease staining on floor.	6/19/00	Prior oil and grease staining limited to surficial impacts. No evidence of post-cleaning staining. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
29-8	29	Additional	Former work pads with heavy oil staining on floor.	6/19/00	AOI actually includes three equipment pads with oil staining located within 9C, 9D, and 10D. Various cracks in underlying flooring (i.e., potential release). Concrete appears to be saturated with oil/grease.	Further investigation is warranted.

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Areas of Bldgs. 01, 04, 08, 09, 16, 18, 40, and 44						
04-1	04	Sump	3' x 3' x 4' deep sump (located inside of caged area) that discharged to process wastewater system.	8/9/00	Sump used for boiler blowdown and chiller condensate (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
04-2	04	Sump	2' dia. x 10' deep sump that discharged to process wastewater system.	9/14/00	Sump cannot be visually evaluated	Further investigation is warranted.
04-3 and 04-13 (combined)	04	Pit and Sump	AOI 04-3: "Process Waste Room" with a 6' x 6' x 4' high containment wall around a floor drain that discharged to process wastewater sump. AOI 04-13: 5' x 6' x unknown depth "Foam Depressor Process Waste Pit #3" that discharged to process wastewater system.	9/14/00	Spawling and joint gaps noted in walls of sump and pit (i.e., potential release).	Further investigation is warranted.
04-4	04	Additional	Drum Storage Area identified in PR/VSI Report as SWMU 49 used to store waste adhesives and sealers.	8/9/00	No staining or other visual indications of potential release noted.	No further investigation as an AOI is warranted.
04-5	04	Pit	Pit for elevator.	9/14/00	Pit could not be visually evaluated.	Material from pit (scrape samples) previously analyzed for PCBs. No PCBs detected above laboratory detection limits (1 mg/kg); however, further investigation is warranted.
04-6	04	Pit	Pit for hydraulic elevator.	9/14/00	Pit could not be visually evaluated.	Prior analytical data indicated presence of PCBs at 13 mg/kg in sediment. Further investigation is warranted.
04-7 and 04-8 (combined)	04	Pit	Pit for passenger elevator.	9/14/00	Pit could not be visually evaluated.	Prior analytical data indicated presence of PCBs at 1.5 mg/kg in scrape sample. Further investigation is warranted.
04-9	04	Pit	Pit for cable-operated elevator.	9/14/00	Pit could not be visually evaluated.	Prior analytical data indicated presence of PCBs at 12.6 mg/kg in scrape sample. Further investigation is warranted.
04-10	04	Pit	Pit for cable-operated elevator.	9/14/00	Pit could not be visually evaluated.	Prior analytical data indicated presence of PCBs at 71,000 mg/kg in scrape sample. Further investigation is warranted.
04-10	04	Pit	Pit for cable-operated elevator.	Not yet evaluated.	Not yet cleaned.	Not yet cleaned.
04-11	04	Pit	50' x 10' x 6' deep "Robotic Pit" with oil and grease staining on the floor. Liquids drain to nearby sump.	Not yet evaluated.	Pit is unlined concrete. No cracking or other visual indications of potential release noted.	No further investigation as an AOI is warranted.
04-12	04	UST	Waste Thinner Tanks identified in PR/VSI Report as SWMUs 92 through 95 (also Tanks 76 - 80 on 1973 Site Drawing).	8/10/00	USTs previously removed.	Tank closure documentation is currently not available. Release potential cannot be evaluated without intrusive investigation.
08-1	08 Basement	Sump	Sump area located beneath a dynamometer test area. Sump collected groundwater that infiltrated into basement. Sump discharged to process wastewater system.	6/21/00 and 9/14/00	Basement used for headlight alignment operations; sump used for recovering infiltrating groundwater (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
08-2	08	Sump	3' x 3' x 3' deep process waste sump containing transmission fluid.	6/21/00 and 9/14/00	Sump could not be visually evaluated.	Further investigation is warranted.
08-3	08	AST	Tank 08-1 on 1991 Site Drawing.	6/21/00	No visual evidence of tank remains. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
08-4	08	Additional	6' x 9' waste accumulation area used for the storage of drum paint and solvent.	6/21/00	Minor surface staining noted. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
08-5	08	Additional	11' x 10' waste accumulation area used for the storage of drummed oil, greases, and gas rags.	6/21/00	Concrete floor is painted. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
09-1	09	Trench and Pit	12' x 2' x 6" deep trench leading to a 2' x 2' x 4' deep pit with associated floor drains.	9/14/00	Trench and sump lined with steel; no visual indications of potential release.	No further investigation as an AOI is warranted.
09-2	09	Trench and Tank-UST	145' x 1' x 1' deep floor trench leading to 1,000-gal. UST that discharged to process wastewater system.	9/15/00	Trench is lined with steel; however, lining is severly corroded (i.e., potential release). UST is a collection pit for the trench referenced as part of this AOI. Pit could not be accessed for visual evaluation.	Further investigation is warranted.
09-3	09	Trench and Tank-UST	Three 2' x 2' x unknown depth floor trench over holding tank in "vehicle wash area." Trench drains to 1,000-gal. "Vehicle Wash Area" holding UST.	9/15/00	Drains are access ports for UST which actually a baffled, steel-lined holding pit. A portion of pit contains water eminating a strong gasoline odor. Steel lining of pit is severely corroded.	Further investigation is warranted.

TABLE 2

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

SUMMARY OF POST-CLEANING AOI EVALUATION - SOUTH OF LEITH STREET

AOI ID	Building No.	Prior AOI Type Designation	AOI Description	Date of Visual Evaluation	Post-Cleaning Visual Evaluation Results	Post-Cleaning Visual Evaluation Determination/Recommendations
09-4	09	Sump and Tank-AST	20' x 60' x 2' deep concrete containment for former 12,000-gal. fuel oil AST (Tank FF on 1973 Site Drawing).	9/15/00	Tank has been removed. Portions of containment area contain dirt/gravel over concrete, while others are covered with cracked asphalt. Full visual evaluation could not be performed.	Further investigation is warranted.
09-5	09	Tank-AST	Former tank farm which included Tanks 81 through 92, 132, and 133 identified on 1973 Site Drawing.	9/15/00	Former tank farm subject to ongoing investigations	Continue ongoing investigation.
09-6	09	Tank-AST	Tanks MM identified on 1973 Site Drawing.	9/15/00	Area of former tank is concrete covered (approx. 20'x30'), while the surrounding area is covered with asphalt. Former tank appears to have been a UST.	Further investigation is warranted.
09-7	09	Additional	Staining noticed on pavement in area used to store light equipment.	9/15/00	Staining no longer present.	No further investigation as an AOI is warranted.
16-1	16	Sump	2' x 2' x 2' deep sump that conveyed runoff in conveyor area to process wastewater system.	6/21/00 and 9/14/00	No hazardous waste or hazardous constituents managed via this sump.	No further investigation as an AOI is warranted.
16-2	16	Sump	Fork lift battery-charging area contains 45' x 6" x 6" deep floor drain that discharged to 3' x 2' x 3' deep sump that discharged to process wastewater system.	6/21/00 and 9/14/00	Drain and sump are lined with steel; no visual indications of potential release noted.	No further investigation as an AOI is warranted.
16-3, 16-17, and 16-18 (combined)	16	Pit, Additional	AOI 16-3: 100' x 15' x 2' deep pit that collected fluid runoff of cars in vehicle fill-up station, located under conveyor system and discharged to process wastewater system. AOI 16-17: automatic transmission pumphouse containing a gravity floor drain that discharged to process wastewater system. AOI 16-18: gas pump station for cars in finish stage, containing lines and pumps.	6/21/00 and 9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
16-4 and 16-5 (combined)	16	Pit	Two identical pits surrounding bolt fastening machines contained oil and grease around machine. The pits are 5' x 5' x 1' deep with no outlet.	6/21/00 and 9/14/00	Surficial staining and debris noted; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.
16-6	16	Pit	Pit under conveyor for "Final Prep and Car Wash Area" is 300' x 35' x 10' deep and discharged to process wastewater system.	6/21/00 and 9/14/00	Pit is unlined concrete; no visual indications of potential release noted.	No further investigation as an AOI is warranted.
16-7	16	Pit	6' x 6' x 1' deep air lift with pit containing dirt and runoff from floor.	6/21/00	Pit is unlined concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
16-8	16	Pit	Two 8' x 8' x 2" deep pits used for cars unloading off conveyor system containing oil and grease.	6/21/00	Pits are unlined concrete. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
16-9	16	Pit	Pit for hydraulic elevator.	6/21/00 and 9/14/00	Pit could not be visually evaluated.	Material (scrape samples) from elevator pit analyzed for PCBs. No PCBs detected above laboratory detection limits (1 mg/kg); however, further investigation is warranted.
16-10	16	Pit	Utility pit located between Buildings 16 and 40 between the two northern bridges connecting two buildings.	8/10/00	Pit housed valve for fire control main (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
16-11	16	Tanks-AST	Hydraulic motor with 3' x 5' x 4' tall AST used as hydraulic lift for Dumpster, heavy hydraulic staining on floor around motor and pit.	6/21/00 and 9/14/00	Floor throughout area noted to be saturated with oil.	Further investigation is warranted.
16-12	16	Tanks-UST	Tanks P, Q, 75, 113, 114, and 115 on 1973 Site Drawing.	6/21/00	Visual evaluation cannot be performed.	Tank closure documentation is currently not available. Release potential cannot be evaluated without intrusive investigation.
16-13	16	Tanks-UST	Tank 104 on 1973 Site Drawing.	6/21/00	Visual evaluation cannot be performed.	Tank closure documentation is currently not available. Release potential cannot be evaluated without intrusive investigation.
16-14	16	Additional	Hydraulic staining of floor around mobile hydraulic lifts.	6/21/00	Concrete surface is painted. Minor surface staining noted on painted concrete; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.
16-15	16	Additional	Hydraulic fluid staining on floor around mobile hydraulic lifts.	6/21/00	Concrete surface is painted. Minor surface staining noted on painted concrete; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.

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SUMMARY OF POST-CLEANING AOI EVALUATION - SOUTH OF LEITH STREET

AOI ID	Building No.	Prior AOI Type Designation	AOI Description	Date of Visual Evaluation	Post-Cleaning Visual Evaluation Results	Post-Cleaning Visual Evaluation Determination/Recommendations
16-16 and 16-19 (combined)	16	Additional	AOI 16-16: heavy oil staining on floor around brake fluid transfer pump. AOI 16-19: 1' x 1' x 1' deep floor drain that discharged to process wastewater system.	6/21/00 and 9/14/00	Staining limited to surficial impact; drain is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
18-1	18	Sump	Process wastewater sump	9/15/00	4' diameter x approximately 10' deep unlined concrete sump used to collect steam condensate and infiltrating groundwater (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
25-1	25	Tank	Tank LL on 1973 Site Drawing.	9/15/00	No visual indications of potential release noted.	No further investigations as an AOI is warranted.
40-1	40	Tanks-UST	Tanks 71 through 74 on the 1973 Site Drawing (also referred to as SWMUs 96 -99 in PR/VSI Report) .	6/21/00	Subject to ongoing investigation based on reports by Global Engineering, Inc. (1997).	Continue ongoing investigation.
40-2	40	Sump	36" diameter 6' deep sump located inside concrete berm. Sump collected liquids within the bermed area (10' x 6' x 6" deep) and discharged to process wastewater system.	6/21/00 and 9/14/00	Area was used for steam filtration (i.e., no hazardous waste or hazardous constituents were managed).	No further investigation as an AOI is warranted.
40-3	40	Sump	4' x 2' x 3' deep sump with a 6" x 15' floor drain leading into it. System was used to collect liquid runoff in battery charging room. Sump discharged to process wastewater system.	6/21/00 and 9/14/00	Drain and sump are lined with steel; no visual indications of potential release noted.	No further investigation as an AOI is warranted.
40-4 and 40-10 (combined)	40	Pit and Sump	14' x 20' x 9' deep pit for "Road Lab Simulator" equipment, with 2' x 2' x 4' deep sump that discharged to process wastewater system.	6/21/00 and 9/14/00	Pit is unlined concrete; sump is lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
40-5 (SWMU #81)	40	Additional	Drum storage area identified as AOC 2 in PR/VSI Report used to store ash and chromium waste products.	6/21/00	No drums present. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
40-6 and 40-9 (combined)	40	Trench	AOI 40-6: 14' x 20' x 9' deep pit containing test equipment. AOI 40-9: 17' x 2' x 2' deep trench containing hydraulic lines.	6/21/00	Trench is actually grating above floor level. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
40-7	40	Pit	Pit for cable-operated elevator.	6/21/00 and 9/14/00	Pit could not be visually evaluated.	Prior analytical data indicated presence of PCBs at 7.3 mg/kg in sediment. Further investigation is warranted.
40-8	40	Pit	Pit for elevator.	6/21/00 and 9/14/00	Pit could not be visually evaluated.	Prior analytical data indicated presence of PCBs at 18 mg/kg in sediment. Further investigation is warranted.
40-11	40	Pit	2' x 4' x 10' utility pit.	6/21/00	Pit contains electrical and steam lines (i.e., no hazardous waste or hazardous constituents managed).	No further investigation as an AOI is warranted.
40-12	40	Additional	Basement/tunnel area flooded with water.	6/21/00	Basement is flooded. (Grid coordinates identify staircase access to basement area.)	Concentrations of PCBs have been detected in oil floating on water. Further investigation is warranted.
44-1, 44-11, 44-22, and 44-23 (combined)	44	Sump, Trench, and Tanks-ASTs	AOI 44-1: 20' x 24' x 1' deep strip drain contained hydrochloric acid, sodium hydroxide, oil and hydraulic fluid. The drain leads to a 4' x 4' x 4' deep sump that discharged to process wastewater system. AOI 44-11: 75' x 1' x 1' deep floor drain used for runoff; discharged to process wastewater system. AOI 44-22: 5000-gal. AST containing glycol. Although glycol is not considered a hazardous waste, staining and pitting was noted on floor within bermed area. AOI 44-23: 8" concrete bermed area surrounds area that contains ASTs, including: a hydrochloric acid AST (200 gal.), a liquid caustic AST (200 gal.), a sodium hydroxide AST (500 gal.), a hydrochloric acid AST (500 gal.).	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
44-2, 44-13, 44-17, and 44-29 (combined)	44	Pits, Sump, Trench, and Tanks-ASTs	AOI 44-2: Four 20' x 60' x 10' deep containment pits for four 30,000-gal. Uniprime ASTs; and 5' x 8' x 5' sump in the bottom of one of the pits. Sump discharged to the process wastewater system. Pit floors stained. AOI 44-13: 6' x 12' x 2' deep utility trench discharging to Uniprime pits. AOI 44-17: 8' x 75' x 8' deep pit for phosphoric acid AST. 2' x 2' x 3' deep sump located at bottom of the pit used to handle overflow. Sump discharged to process wastewater system. AOI 44-29: Tank 44-19 on 1991 Site Drawing.	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.

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44-3	44	Sump and Trench	4' x 4' x 4' deep Process Wastewater Sump #3 collected liquid from a 60' x 2' x 2' deep "C" shaped trench that contained oil and grease.	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
44-4, 44-12, 44-34, and 44-37 (combined)	44	Sump, Trench, and Additional	AOI 44-4: 5' x 5' x 3' deep sump handled runoff from "Phosphate System Stage #3 Chemkleen 47L Immersion" and "Stage #8 Spray Chromic Acid Rinse." Heavy acid staining on floor. This sump discharged to process wastewater system. AOI 44-12: 2' x 8' x 2' deep strip drain associated with "Phosphate System Stage #2 Chemkleen 47L Immersion" and " Stage #8 Chromic Acid Storage Dip Tank." Trench discharged to process wastewater system. AOI 44-34: 8" concrete berm surrounds "Phosphate System Stage #5 Rinse Conditioner Immersion" system and the "Phosphate System Stage #6 - Chemtos #168" system. Area inside the berm stained white. AOI 44-37: Two 2' wide x 2' deep floor drains that handled runoff in walkway and discharged to the process wastewater system.	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
44-5, 44-14, and 44-27 (combined)	44 Basement	Sump, Pit, and Tanks-AST	AOI 44-5: 2' x 2' x 2' deep sump that handled fluid accumulation in basement where elevator pump house was located. Heavy oil and hydraulic staining on floor. Sump discharged to process wastewater system. AOI 44-14: Pit for hydraulic elevator. AOI 44-27: Hydraulic elevator sump equipment with a 4' x 6' x 2' deep reservoir.	8/10/00	Full visual evaluation could not be peformed.	Material (scrape samples) from elevator pit analyzed for PCBs. No PCBs detected above laboratory detection limits (0.33 mg/kg).Oil from elevator reservoir analyzed for PCBs. No PCBs detected above laboratory detection limits (1 mg/kg). However, further evaluation is warranted.
44-6	44	Sump	3' x 3' x 3' deep process sump with two pumps running in parallel. Area flooded with water. Oil staining present; also associated with sump is a 1' x 1' x 3' deep gravity floor drain and a 4" x 85' x 6" deep trench surrounding 8" tall concrete bermed area containing "High- Pressure Pump #2". Oil staining on floor. Liquids in trench discharged to process wastewater system via sump.	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
44-7	44	Sump	Two 1' x 90' x 3' deep strip drains connected to a 4' x 4' x 3' deep centrally-located sump. Sump discharged to the Uniprime waste treatment pit.	8/10/00	Trenches and sump are lined with steel. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-8	44	Additional	Drum storage area identified as AOC 3 in PR/VSI Report used to store new paint products.	8/10/00	3" to 6" concrete berm surrounding area. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-9, 44-10, and 44-15 (combined)	44	Trenches and Pits	AOI 44-9: 9' x 1' x 1' deep strip drain located in front of bay door led to 3' x 3' x 4' deep self-contained sump that led to the process waste pumphouse. Both trench and sump located in hazardous waste storage area. Sediment present within trench. AOI 44-10: 112' x 1' x 1' deep floor strip drain discharged to the process wastewater system. AOI 44-15 12' x 1' x 1' deep floor drain in hazardous waste dumpster area collected runoff in loading and unloading area. Sediment present within floor drain.	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
44-16	44	Pit	"Sludge system pit" containing pumps and floor drains throughout. Pit handled all water from the paint system. Location of pit also proximate to SWMUs 103 and 104 and AOC 2 identified in the PR/VSI Report.	8/10/00	Pit measures approximately 40' x 60' x 12' deep and is unlined concrete. Pit cannot be visually evaluated (too large).	Pit cannot be evaluated without intrusive investigation.
44-18	44	Tanks-AST	Containment area for 13 ASTs (one 12,000 gal. regular and premium grade gas AST, two 12,000-gal. hazardous waste ASTs, two 20,000-gal. unleaded gas ASTs, one 12,000-gal. sealer thinner AST, one 20,000-gal. ethylene glycol AST, one 12,000-gal. power steering fluid AST, and one empty 6,000-gal. AST. Area also includes SWMUs 100 and 101 identified in PR/VSI Report.	8/10/00	Containment area for tanks is unlined concrete. Various cracks in floor noted; however, such cracks were subject to routine sealing and repair. No visual indications of potential release noted.	No further investigation as an AOI is warranted.

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44-19	44	Tanks-AST	Waste Thinner Tank identified as AOC 21 in PR/VSI Report.	8/10/00	Tank removed; timeframe unkown. Area most recently used for empty hazardous waste drum storage. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-20	44	Tanks-AST	Two 15' x 10' x 5' ASTs. One was "Second Recirculated Permeate Rinse-Spray" and the second was "First Recirculated Permeate Rinse Spray."	8/10/00	Tanks constructed of steel within concrete bermed area. Some surficial staining (primer) noted; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-21	44	Tanks-AST	One-4000 gal. AST containing "Chemkleen 163 LF." The tank is surrounded by a 6" berm.	Not yet evaluated.	Tank constructed of steel; no visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-24, 44-25, 4-30 and 44-31(combined)	44	Tanks-AST	AOI 44-24: 4000 gal. AST containing phosphoric acid. AOI 44-25: One 500 gal. AST containing phosphoric acid. AOI 44-30: Tank 44-20 on 1991 Site Drawing. AOI 44-31: Tank 44-21 on 1991 Site Drawing.	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
44-26 and 44-32 (combined)	44	Tanks-AST	AOI 44-26: 3' high retaining wall surrounding three 5,500-gal. ASTs, one containing pigment, the remaining two containing resin. A 3' x 3' x unknown depth self- contained collection sump located within retaining wall. AOI 44-32: Tanks 44-24 and 44-25 from the 1991 Site Drawing.	9/14/00	Full visual evaluation could not be peformed.	Further investigation is warranted.
44-28	44	Tanks-UST	Tanks 105 and 131 on 1973 Site Drawing.	8/10/00	Tanks removed, but timeframe unknown. Visual evaluation cannot be performed.	Tank closure documentation is currently not available. Release potential cannot be evaluated without intrusive investigation.
44-33	44	Additional	Material fill station containing phosphoric acid and heavy acid staining on floor below filling station.	8/10/00	Staining limited to surficial staining. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-35	44	Additional	Uniprime spray convey booth; heavy grey staining on floor.	8/10/00	Staining limited to surficial staining. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-36	44	Additional	Heavy grey staining on floors; staining associated with dye tank booth.	8/10/00	Staining limited to surficial staining. No visual indications of potential release noted.	No further investigation as an AOI is warranted.
44-38	44	Additional	2' x 2' x 2' deep floor drain located inside 8" bermed area surrounding two 1,000-gal. ASTs containing caustic. Any liquids collected were handled through the process wastewater system.	8/10/00	Area is unlined concrete; however, no visual indications of potential release noted.	No further investigation as an AOI is warranted.

TABLE 3

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
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OVERVIEW OF PROPOSED RFI ACTIVITIES - NORTHEND AOIs
(Refer to Tables 5 through 7 for Details)

AOI ID	AOI Summary Description	Proposed New Soil Borings	Proposed New Soil Borings with Grab Groundwater Samples	Proposed New Surface Soil Samples	Proposed New LNAPL Delineation Soil Borings/ Possible Monitoring Wells	Proposed New Piezometers	Proposed New Monitoring Wells	Proposed Existing Monitoring Wells to be Sampled
38-1	Building 38 Area	RFI-38-01 RFI-38-02 RFI-38-03	--	--	--	--	RFI-38-04 RFI-38-05 RFI-38-06	36-101 38-120
36-1	Northern and central portions of Building 36	--	--	--	RFI-36-24 RFI-36-25 RFI-36-26 RFI-36-27 RFI-36-28 RFI-36-30 RFI-36-31	RFI-36-01	RFI-36-02 RFI-36-17 RFI-36-18 RFI-36-21 RFI-36-22 RFI-36-23 RFI-36-29 RFI-36-35	RFI-36-03 (installed Dec. 2000) RFI-36-04 (installed Dec. 2000) RFI-36-05 (installed Dec. 2000) RFI-36-06 (installed Dec. 2000) RFI-36-07 (installed Dec. 2000) RFI-36-15 (installed Dec. 2000) RFI-36-16 (installed Dec. 2000) 36-100 36-120 36-121 36-FP1
36-2	Building 36 basement area (east-central)	--	--	--	RFI-36-33 RFI-36-34	--	RFI-36-19 RFI-36-32	36-FP2 36-FP4 36-FP5
36-3	Building 36 (southeast) basement area	--	--	--	--	--	RFI-36-08 RFI-36-09 RFI-36-10 RFI-36-20	36-FP8
36-4	Building 36 (southwest) area	--	--	--	--	--	--	RFI-36-11 (installed Dec. 2000) RFI-36-12 (installed Dec. 2000)
36-5	Former Tank Farm 37	--	RFI-36-13	--	--	--	RFI-36-14	20-100 20-102 20-500 20-505D 37-01
55-1	Wastewater Treatment Plant area	RFI-55-03 (shallow) RFI-55-04 (shallow) RFI-55-05 (shallow) RFI-55-06 (shallow) RFI-55-07 (shallow) RFI-55-08 (shallow)	--	--	--	--	RFI-55-01 RFI-55-02 RFI-55-09	55-1 55-2 55-3 55-4 55-5 20-120

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AOI ID	AOI Summary Description	Proposed New Soil Borings	Proposed New Soil Borings with Grab Groundwater Samples	Proposed New Surface Soil Samples	Proposed New LNAPL Delineation Soil Borings/ Possible Monitoring Wells	Proposed New Piezometers	Proposed New Monitoring Wells	Proposed Existing Monitoring Wells to be Sampled
10-1	Factory 10, Building 20 interior	--	--	--	--	--	RFI-10-01	20-121 20-145 43-167
10-2	Solid waste transfer station, and Tanks 24 and 25	RFI-10-12 RFI-10-13 RFI-10-14	--	--	--	--	RFI-10-02 RFI-10-03 RFI-10-04 RFI-10-05	20-104
10-3	Building 22 basement and Tank 24-1	--	--	RFI-10-09 RFI-10-10	--	--	RFI-10-06 RFI-10-07 RFI-10-08 RFI-10-15	20-101 20-103N 20-105
10-4	Factory 10, Building 20 Scrapyard	--	--	--	--	--	RFI-10-11	20-504 20-FP6 20-FP10 20-FP11 30-100
05-1	Factory 05, Building 43	--	--	--	--	--	RFI-05-21	43-166 43-168 30-120
05-2	Factory 05, Building 43 (east-central)	--	--	--	--	--	RFI-05-01	RFI-05-02 (installed Jan. 2001)
05-3	Factory 05, Building 43 Heat Treat basement	--	--	--	--	--	RFI-05-03 RFI-05-06	RFI-05-04 (installed Jan. 2001) RFI-05-05 (installed Jan. 2001) 43-100 43-101
05-4	Factory 05, Building 43 Cold Former Room	--	--	--	--	--	--	RFI-05-07 (installed Jan. 2001) 43-103
05-5	Factory 05, Building 43 interior (north)	--	--	--	RFI-05-15	RFI-05-08	--	RFI-05-10 (installed Jan. 2001) RFI-05-11 (installed Jan. 2001) RFI-05-12 (installed Jan. 2001) 43-120 43-220

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AOI ID	AOI Summary Description	Proposed New Soil Borings	Proposed New Soil Borings with Grab Groundwater Samples	Proposed New Surface Soil Samples	Proposed New LNAPL Delineation Soil Borings/ Possible Monitoring Wells	Proposed New Piezometers	Proposed New Monitoring Wells	Proposed Existing Monitoring Wells to be Sampled
05-6	Factory 05, Building 43 interior (south)	--	--	--	RFI-05-16 RFI-05-17 RFI-05-18	RFI-05-09	RFI-05-19 RFI-05-20	RFI-05-13 (installed Jan. 2001) RFI-05-14 (installed Jan. 2001) 30-140 43-140 43-141 43-242
03-1	Factory 03, Building 30 Complex	--	--	--	RFI-03-02	--	RFI-03-01 RFI-03-03 RFI-03-04	03-101 03-102 03-104 03-105 03-106 03-109 03-111 03-112 03-113 03-114 03-01 03-02 20-FP11 30-100 70-100 70-109
81-1	Factory 81, Building 71/71B basement	--	--	--	--	--	RFI-81-01 RFI-81-02	--
81-2	Factory 81 (northeast)	RFI-81-04 (installed Jan. 2001)	RFI-81-05 RFI-81-20	RFI-81-15 RFI-81-16 RFI-81-17 RFI-81-18 RFI-81-19	--	--	RFI-81-03 RFI-81-13 RFI-81-21 RFI-81-22	70-102 70-160 70-163 70-165
81-3	Factory 81, Building 70A	--	RFI-81-06 RFI-81-07	--	--	--	RFI-81-08 RFI-81-11 RFI-81-12	07-01 07-02 86-100
81-4	Factory 81, Buildings 69A and 69B basement	--	--	--	--	--	RFI-81-09	--

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81-5	Factory 81, Building 69 AST Farm	--	RFI-81-10	--	--	--	--	--
21-1	Building 21	--	RFI-21-01 RFI-21-02 RFI-21-03	--	--	--	--	--
65-1	Building 65	--	--	--	--	--	RFI-65-01	--
83/84-1 through 83/84-3	Factory 83/84, Building 11	RFI-83/84-3 (installed Jan. 2001) RFI-83/84-4 (installed Jan. 2001)	RFI-83/84-05	--	--	--	RFI-83/84-01 RFI-83/84-02 RFI-83/84-06	11-140 11-120
83/84-4	Factory 83/84, Building 66 (north)	--	RFI-83/84-07 RFI-83/84-08	--	--	--	--	--
83/84-5	Factory 83/84, Building 66 (south)	--	RFI-83/84-09	--	--	--	--	--
83/84-6	Factory 83/84, Buildings 83 and 83A	RFI-83/84-10 (installed Jan. 2001)	--	--	--	--	--	--
83/84-7	UST Area East of Building 66C	--	--	--	--	--	RFI-83/84-11	88-2 88-7 88-8 88-9
85-1	Building 85 Complex	--	RFI-85-01 RFI-85-02	--	--	--	RFI-85-03 RFI-85-04 RFI-85-05 RFI-85-06	--

TABLE 3

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

OVERVIEW OF PROPOSED RFI ACTIVITIES - NORTHEND AOIs
(Refer to Tables 5 through 7 for Details)

AOI ID	AOI Summary Description	Proposed New Soil Borings	Proposed New Soil Borings with Grab Groundwater Samples	Proposed New Surface Soil Samples	Proposed New LNAPL Delineation Soil Borings/ Possible Monitoring Wells	Proposed New Piezometers	Proposed New Monitoring Wells	Proposed Existing Monitoring Wells to be Sampled
86-1	Building 86/86A area	--	RFI-86-07 RFI-86-08	--	--	--	RFI-86-01 RFI-86-02 RFI-86-03 RFI-86-04 RFI-86-05 RFI-86-06	86-3 87-FP2 87-FP3 87-FP5
07-1	Former coal yard and sludge dump station	RFI-07-09	RFI-07-02 RFI-07-04	--	--	--	RFI-07-01 RFI-07-03	07-02
07-2	Lime slurry tank	--	RFI-07-05	--	--	--	--	--
07-3	Building 07/Powerhouse	--	RFI-07-06 RFI-07-07	--	--	--	RFI-07-08	07-01
Totals:		**17**	**22**	**8**	**14**	**3**	**68**	**97**

TABLE 4

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

OVERVIEW OF PROPOSED RFI ACTIVITIES - SOUTHEND AOIs
(Refer to Tables 5 through 7 for Details)

AOI ID	Building Association	AOI Summary Description	Proposed New Soil Borings	Proposed New Soil Borings with Grab Groundwater Samples	Proposed New Surface Soil Samples	Proposed New LNAPL Delineation Soil Borings/ Possible Monitoring Wells	Proposed New Piezometers	Proposed New Monitoring Wells	Proposed Existing Monitoring Well Samples
94-A	94	Building 94 (southeast) sumps and trenches	--	RFI-94-01	--	--	--	--	--
94-B	94	Building 94 (northeast) sump and trench	--	RFI-94-02	--	--	--	--	--
94-C	94	Building 94 (central) sumps, trenches, lifts	--	RFI-94-03 RFI-94-04	--	--	--	--	--
94-D	94A	Building 94A elevator pit	--	--	--	--	--	RFI-94-05	--
94-E	03	Building 03 car loading area	--	RFI-94-06	--	--	--	--	--
84-A	84 & 23	Building 84 (south) pits, sumps, and lifts	--	RFI-84-01 RFI-84-02	--	--	--	RFI-84-06	--
84-B	84	Building 84 (central) pits, sumps, basement	--	RFI-84-03	--	--	--	--	--
84-C	84	Building 84 (north) pits, sumps, trenches	--	RFI-84-04	--	--	--	--	--
84-D	84	Former Building 84 Tank Farm	--	--	--	--	--	RFI-84-05	84-2 84-6
17-A	17	Building 17 elevator pit	--	RFI-17-01	--	--	--	RFI-17-02	--
02-A	02	Building 02 sump	--	RFI-02-01	--	--	--	--	--
02-B	02	Building 02 elevator pit	--	RFI-02-02	--	--	--	--	--
02-C	02	Building 02 sump	--	RFI-02-03	--	--	--	--	--
02-D	02	Building 02 machine pit	--	RFI-02-04	--	--	--	--	--
02-E	02	Tank 66	--	--	--	--	--	RFI-02-05	--

TABLE 4

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

OVERVIEW OF PROPOSED RFI ACTIVITIES - SOUTHEND AOIs
(Refer to Tables 5 through 7 for Details)

AOI ID	Building Association	AOI Summary Description	Proposed New Soil Borings	Proposed New Soil Borings with Grab Groundwater Samples	Proposed New Surface Soil Samples	Proposed New LNAPL Delineation Soil Borings/ Possible Monitoring Wells	Proposed New Piezometers	Proposed New Monitoring Wells	Proposed Existing Monitoring Well Samples
02-F	02	Building 02 hydraulic oil AST	RFI-02-06	--	--	--	--	RFI-02-07	--
23-A	23	Building 23 basement process waste station	--	--	--	--	--	RFI-23-01 RFI-23-02	--
29-A	29	Elevator pit, floor staining	--	RFI-29-01	--	--	--	--	--
12-A	12	Building 12 basement	--	RFI-12-01 RFI-12-02 RFI-12-03 RFI-12-07 RFI-12-08	--	--	--	--	04-121
12-B	12	Building 12 truck well sump	--	RFI-12-05	--	--	--	--	--
12-C	12	Building 12 fork truck charging area	--	RFI-12-06	--	--	--	--	--
12-D	12	Building 12 abandoned utility tunnel	--	RFI-12-04	--	--	--	--	--
04-A	04	Process waste room	--	RFI-04-01	--	--	--	--	--
04-B	04	Elevator pits	--	RFI-04-02 RFI-04-03	--	--	--	--	--
04-C	04	Elevator pit	--	RFI-04-04	--	--	--	--	--
04-D	04	Waste thinner tanks	--	--	--	--	--	--	04-1 04-2 04-3 04-4 04-5
16-A	16	Fluid filling station	--	RFI-16-01	--	--	--	--	--
16-B	16	Elevator pit	--	RFI-16-02	--	--	--	--	--
16-C	16	Former USTs	--	RFI-16-03 RFI-16-05	--	--	--	RFI-16-04	--

TABLE 4

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

OVERVIEW OF PROPOSED RFI ACTIVITIES - SOUTHEND AOIs
(Refer to Tables 5 through 7 for Details)

AOI ID	Building Association	AOI Summary Description	Proposed New Soil Borings	Proposed New Soil Borings with Grab Groundwater Samples	Proposed New Surface Soil Samples	Proposed New LNAPL Delineation Soil Borings/ Possible Monitoring Wells	Proposed New Piezometers	Proposed New Monitoring Wells	Proposed Existing Monitoring Well Samples
16-D	16 & 04	UST and sump	--	RFI-16-06	--	--	--	--	--
40-A	02 & 40	USTs 67 through 74	--	RFI-40-01	--	--	--	--	40-1 40-2 40-3 40-4 40-5 40-6 40-7
40-B	40	Elevator pit	--	RFI-40-02	--	--	--	--	--
40-C	40	Elevator pit	--	RFI-40-03	--	--	--	--	--
40-D	40	Building 40 tunnel	--	--	--	--	--	--	40-301 40-302 40-303 40-304 40-305 Tunnel water
44-A	44	Building 44	--	RFI-44-01 RFI-44-02 RFI-44-03	--	--	--	RFI-44-04 RFI-44-05	04-120 04-140 04-160
09-A	09	Building 09 area	--	RFI-09-02 RFI-09-03	--	--	--	RFI-09-01 RFI-09-04	--
09-B	09	Former Building 31/Hamilton Avenue Tank Farm	--	RFI-09-05	--	--	--	RFI-09-06 RFI-09-07 RFI-09-08 RFI-09-09	31-5 31-6 31-8
Totals:			**1**	**41**	**0**	**0**	**0**	**17**	**27**

TABLE 5

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI ACTIVITIES – NORTHEND AOIs
(See Notes on Table 7)

AOI Group ID	Building Association	AOI Description	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
					Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
38-1	38	Northern portion of Building 38, including several process waste sumps, trenches, and former car lifts, and a former 8,000-gallon fuel oil UST.	Hydraulic oils, fuel oils, and process waste oils.	SB-1 Through SB–10 SB-6N(A) SB-8N(A) 36-101 38-120	None	--	--	Arsenic Lead	130 300	50 4	Soil borings RFI-38-01, -02, and -03 positioned adjacent to and downgradient of representative primary components of AOI (e.g., sumps/trenches/hydraulic lifts) to assess potential soil impacts. Monitoring wells RFI-38-04, -05, and -06 positioned downgradient of representative primary components to assess potential groundwater impacts, and to monitor groundwater quality at the northern property boundary. Existing monitoring well 38-120 is to be sampled to provide upgradient groundwater quality information. Existing monitoring well 36-101 is to be sampled due to a previous detection of lead above the IDW criteria. Existing monitoring well 38-120 to be sampled to provide upgradient groundwater quality data.	36-101 38-120
36-1	36	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/fluids) and "dry" (i.e., no use of cutting and/or cooling oils/fluids) metal machining operations. Due to the nature of the operations (i.e., full production), it is difficult to visually assess whether releases have occurred.	Hydraulic oils, cooling/cutting oils, and process waste oils.	36-100 36-120 36-121 36-FP1 SB-11 through –20 SBFL1-30 through –36 RFI-36-03 through –07 RFI-36-15 RFI-36-16	None	--	--	1,1,1-Trichloroethane 1,1-Dichloroethane 1,1-Dichloroethene 1,2-Dichloroethane Benzene Methylene chloride Trichloroethene Vinyl chloride Lead	2,000 1,200 87 10 1,000 8.0 71 16 5.0	200 880 7 5 5 5 5 2 4	Seven soil borings were installed in December 2000 downgradient of representative primary components of AOI. LNAPL was detected in RFI-36-06, RFI-36-07, RFI-36-15, and RFI-36-16. Several SVOCs were detected in soils collected from RFI-36-04; however, none of the concentrations exceeded the RDWP criteria. No constituents were detected at RFI-36-03 or RFI-36-05 at concentrations exceeding the RDWP criteria. Proposed activities: Piezometer RFI-36-01 positioned upgradient of AOI to obtain upgradient groundwater elevation measurements. **Geotechnical samples (to be analyzed for grain size, total organic carbon, and bulk density) to be collected from the sand unit and clay till unit at this location. A sample will also be collected from the clay till unit to determine Atterberg Limits, and flex wall permeability (if a shelby tube can be pushed to obtain a relatively undisturbed sample).** Monitoring well RFI-36-02 positioned downgradient of representative primary components of AOI to assess potential release. Deep monitoring well RFI-36-35 positioned to provide deep groundwater quality data adjacent to existing monitoring well 36-100 (high VOCs) and to assess the potential for DNAPL presence. Monitoring wells RFI-36-17 and RFI-36-18 positioned downgradient of AOI to assess potential off-site migration of impacted groundwater. Monitoring wells RFI-36-21 through –23 and RFI-36-29 positioned to delineate LNAPL identified in monitoring wells installed in December 2000, and to provide information regarding possible co-mingling of several distinct LNAPL areas. Soil borings/possible well locations RFI-36-24 through –28, RFI-36-30, and RFI-36-31 positioned to delineate LNAPL extent. Two contingency soil boring/possible well locations positioned to delineate LNAPL, if necessary. Existing wells 36-120 and 36-121 to be sampled to provide upgradient groundwater quality information. Existing monitoring wells 36-100 and 36-FP1 to be sampled due to previous criteria exceedences.	36-100 36-120 36-121 36-FP1
36-2	36	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/fluids from metal machining chips. Free-floating product is located immediately downgradient of this basement area.	Cooling/cutting oils, and process waste oils.	36-FP2 36-FP4 36-FP5 SB-21 through -23 SB-28 SB-29 SBFL-37 SBFL-38	None	--	--	1,2-Dichloroethane Benzene Chloroethane Methylene chloride Vinyl chloride Anthracene Benzo(a)anthracene Chrysene Phenanthrene Lead	22 2,700 830 56 7.0 83 34 21 59 5.8	5 5 430 5 2 43 2.1 5 52 4	An interim measure (IM) is currently under design in this area. LNAPL delineation soil borings/possible well locations RFI-36-33 and RFI-36-34 positioned to further delineate LNAPL presence. Monitoring wells RFI-36-19 and RFI-36-32 positioned downgradient of AOI to assess extent of dissolved constituents off site. Existing monitoring wells 36-FP2, 36-FP4, and 36-FP5 to be sampled due to previous criteria exceedences.	36-FP2 36-FP4 36-FP5
36-3	36	Basement area located beneath the southeastern corner of Building 36, involving a final engine assembly area, several process waste oil collection/processing operations, and several former USTs. The former USTs ranged in size from 300 to 12,000 gallons, and contained gasoline, diesel fuel, and/or process waste oils. Oil has been historically observed on the floor of the basement at various locations.	Gasoline and fuel oil, and process waste oils.	36-FP8 SB-24 through -27 SBFL1-39 through -41	None	--	--	Benzene Trichloroethene	800 210	5 5	Monitoring wells RFI-36-08, RFI-36-09, and RFI-36-10 positioned immediately downgradient of target areas of AOI. Existing monitoring well 36-FP8 to be sampled due to previous criteria exceedences. Monitoring well RFI-36-20 placed further downgradient to assess extent of release.	36-FP8

TABLE 5

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI ACTIVITIES – NORTHEND AOIs
(See Notes on Table 7)

AOI Group ID	Building Association	AOI Description	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
					Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
36-4	36	Southcentral and southeastern portions of the Building 36, involving a former "wet" (i.e., use of cutting and/or cooling oils/fluids) 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.	Cooling/cutting oils, and process waste oils.	RFI-36-11 RFI-36-12	None	--	--	None	--	--	Monitoring well RFI-36-11 and soil boring RFI-36-12 were installed in December 2000 immediately downgradient of representative components of this AOI. No constituents were detected in soil samples at concentrations exceeding the RDWP criteria; therefore, no additional investigation is proposed.	None
36-5	36	Area located immediately south of Building 36 involving a former UST farm and active contained AST farm, as well as a 6' wide x 6' high subsurface tunnel which connected the former UST farm with Building 36. The ASTs and former USTs range(d) in size from 6,000 to 15,000 gallons, and contain(ed) gasoline, motor oil, hydraulic oil, mineral seal oil, naphtha, and various cooling/cutting oils/fluids. A prior release(s) from the UST farm in this area has been documented, and floor staining has been observed in the tunnel.	Gasoline, motor oil, hydraulic oils, cooling/cutting oils, and solvents.	20-100 and 20-103 20-103N and 20-103S 20-500 and -501 20-505D and 20-505S 20-506 20-701 37-01 37-101 through –106 SB-1A through –4A SBFL2-40 and –41	Ethylbenzene Toluene Xylenes	190 260 680	140 250 150	Vinyl chloride Arsenic Lead	6.0 62 5.0	2 50 4	An active product recovery well is currently in operation within this AOI. Downgradient extent of release adequately defined during 1993 investigations. Monitoring well RFI-36-14 positioned immediately downgradient of AOI to confirm prior data. Soil boring/possible monitoring well RFI-36-13 positioned to assess upgradient extent of LNAPL. Existing monitoring wells 20-100, 20-102, 20-500, 20-505D, and 37-01 to be sampled to provide perimeter dissolved-phase groundwater data.	20-100 20-102 20-500 20-505D 37-01
55-1	55, 55A, & 55B	Overall area of the Site's industrial wastewater treatment facilities, involving various process wastewater and 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.	Process waste oils.	20-209 20-120 20-220 55-1 through –5	None	--	--	1,2-Dichloropropane Trichloroethene Vinyl chloride	50 14 83	5 5 2	Monitoring wells RFI-55-01 and RFI-55-02 positioned to determine downgradient extent of VOCs detected in this area. **Geotechnical samples (to be analyzed for grain size, total organic carbon, and bulk density) to be collected from the sand unit and clay till unit at RFI-55-01. A sample will also be collected from the clay till unit to determine Atterberg Limits, and flex wall permeability (if a shelby tube can be pushed to obtain a relatively undisturbed sample).** Monitoring well RFI-55-09 positioned to assess extent of VOC criteria exceedences. Soil borings RFI-55-03 through –08 to be installed by hand to 10-foot depth (approximate) and positioned to assess potential soil impacts. Existing wells 55-1, 55-2, 55-3, 55-4, 55-5, and 20-120 are to be sampled due to previously detected VOC concentrations above criteria.	55-1 55-2 55-3 55-4 55-5 20-120
10-1	20, 22, & 24	Overall area of Building 20, including basement areas, manufacturing operations, external areas immediately surrounding the building, and several existing and former ASTs ranging in size from 1,000 to 20,000 gallons. The ASTs contain(ed) various lubricating oils, automatic transmission fluid, solvents, and process waste oils. Past investigations of the Building 20 Area have indicated impacts to underlying soil and groundwater resulting from releases from associated operations.	Solvents, hydraulic oils, lubricating oils, and process waste oils.	20-106 20-121 and –122 20-140 through -146 20-160 20-166 and –169 20-205 through -208 20-210 20-246 through -249 20-251 through –256 20-262 20-274 and -278 20-460 and -462 20-472 and –702 20-FP2 and –FP3 RW-3/3A through -7 RW-3A-P1 RW-3A-P2 RW-6-P1 RW-7-P1	Lead	1,200	900	1,1,1-Trichloroethane 1,1-Dichloroethene 1,2-Dichloroethane cis-1,2-Dichloroethene Trichloroethene Vinyl chloride Benzo(a)anthracene bis(2-Ethylhexyl)phthalate Aroclor-1242 Arsenic Barium Chromium Lead	220 16 16 1,000 170 650 6.0 150 220 170 17,000 170 54,000	200 7 5 70 5 2 2.1 6 0.5 50 2,000 100 4	An IM is currently in operation for NAPL and groundwater associated with Building 20. The most recent Effectiveness Evaluation Report (GZA, Feb. 21, 2000 -- Draft) indicates the current system is effective for TCA plume, but not as yet effective for recovery of PCB and free-product plume. An additional IM is currently under design to address this plume. Monitoring well RFI-10-01 positioned to characterize groundwater downgradient of the northeast corner of Building 20. Existing monitoring wells 20-121 and 43-167 to be sampled to provide current upgradient groundwater quality data. Existing monitoring well 20-145 to be sampled due to previously detected VOC criteria exceedences.	20-121 20-145 43-167
10-2	20	Solid waste transfer station located east of Building 20 and south of Buildings 22 and 24. Two 200,000-gallon ASTs containing process waste oils and #2 fuel oil were formerly present in this area. 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 sump that is routinely emptied.	Fuel oils, and process waste oils.	20-104 SB-7A through –10A SBFL2-44 through –46	None	--	--	1,1,1-Trichloroethane 1,1-Dichloroethene 1,1-Dichloroethene Chloroethane Methylene chloride Trichloroethene Vinyl chloride Lead	9,100 1,000 180 980 98 6.0 6.0 31	200 880 7 430 5 5 2 4	Monitoring well RFI-10-02 positioned adjacent to pit located within the AOI. Monitoring well RFI-10-03 positioned to assess potential releases immediately downgradient of the Site's solid waste transfer station. Monitoring wells RFI-10-04 and RFI-10-05 to be installed downgradient of AOI to investigate groundwater quality at the property boundary and off site. Soil borings RFI-10-12 through -14 positioned to assess potential soil contamination within AOI. The locations of these borings will be adjusted in the field to target areas of cracked pavement that were noted during Site reconnaissance. Existing monitoring well 20-104 to be sampled to provide current groundwater quality data for that location.	20-104
10-3	22 & 24	Basement area of Building 22, including a 200-gallon AST which contained diesel fuel and two process waste sumps which collect oil leaks from compressors via floor drains, and the area immediately north of Building 22 (formerly the site of a World War I Liberty Aircraft engine plant and more recently a storage area for scrap USTs and ASTs).	Fuel oils, process waste oils, and solvents.	20-101 20-105 20-202 SB-36 (ASI) SB-5A SB-6A SBFL2-42 SBFL2-43	None	--	--	1,1,1-Trichloroethane 1,1-Dichloroethene Chloroethane Methylene chloride Vinyl chloride Arsenic	8,400 90 1,000 29 41 61	200 7 430 5 2 50	Monitoring wells RFI-10-07 and RFI-10-08 positioned to assess potential releases immediately downgradient of Buildings 22 and 24, respectively. Surface soil samples RFI-10-09 and RFI-10-10 positioned to assess surface soil conditions in an unpaved active plant area. Monitoring wells RFI-10-06 and RFI-10-15 positioned to further assess extent of VOCs in soil and/or groundwater downgradient of this AOI.	20-101 20-103N 20-105

TABLE 5

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI ACTIVITIES – NORTHEND AOIs
(See Notes on Table 7)

AOI Group ID	Building Association	AOI Description	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
					Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
											Existing monitoring wells 20-101, 20-103N, and 20-105 to be sampled to provide current analytical data at locations with prior criteria exceedences.	
10-4	20	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.	Hydraulic oils and process waste oils.	20-171 and 20-273 20-275 through 20-277 20-279 and -463 20-465 through 20-468 20-470 and -504 20-FP1 and –FP1A 20-FP5 and 20-FP6 20-FP9 and 20-FP10 36-161 SB-24 (ASI) SB-11A through SB-14A	Lead	9,200	900	Aroclor-1242 Aroclor-1254 Aroclor-1260 Barium Cadmium Lead	12 15 9.0 12,000 5.5 56,000	0.5 0.5 0.5 2,000 5 4	A free-product IM is currently under design for this area. An effectiveness evaluation will be performed at an appropriate time following construction and implementation. The LNAPL plume is well defined. Monitoring well RFI-10-11 positioned to further assess VOCs detected downgradient of this AOI. Existing monitoring wells 20-504, 20-FP6, 20-FP10, 20-FP11, and 30-100 to be sampled to provide current groundwater quality data at the LNAPL perimeter.	20-504 20-FP6 20-FP10 20-FP11 30-100
05-1	43	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.	Process waste oils, cooling/cutting oils, and transmission and hydraulic oils.	20-147 30-202 30-223 30-224 30-242 43-166 and 43-167 43-401 through 43-406	None	--	--	1,1,2-Trichloroethane Aroclor-1242 Arsenic Lead	38 3.4 110 14	5 0.5 50 4	Monitoring well RFI-05-21 positioned to further delineate LNAPL in the southern portion of this area. A free-product IM is currently operating downgradient of this area. It appears based on downgradient analytical data that this system is effective in addressing these impacts. Existing monitoring wells 30-120, 43-166, and 43-168 will be sampled to provide current groundwater quality data at the LNAPL perimeter.	30-120 43-166 43-168
05-2	43	East-central portion of Building 43, involving a "Filtration Room," an "Oil Room," a below-grade vault, and an elevator pit. Greater than 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.	Cooling/cutting oils, and other process waste oils.	43-102 43-160 43-168 43-169	None	--	--	Methylene chloride Trichloroethene Vinyl chloride Arsenic Lead	10 26 27 100 310	5 5 2 50 4	Monitoring well RFI-05-01 positioned to assess potential release downgradient of the below-grade vault. Monitoring well RFI-05-02 (installed in January 2001) positioned to assess upgradient extent of VOC release from this AOI.	None
05-3	43	Basement area of Building 43 beneath transmission component heat treating operations, containing a relatively large process waste sump, various other smaller sumps and drains, and intermittent pooling of oil on floor surfaces. Several former and existing ASTs and USTs are/were located along the east side of the building adjacent to the basement area. These ASTs and USTs ranged in size from 275 to 12,000 gallons, and contained quench oils, hydraulic oils, lubricating oils, gasoline, and diesel fuel.	Cooling/cutting oils, hydraulic oils, quench oils, lubricating oils, gasoline, fuel oils, and process waste oils.	43-100 43-101 43-204 43-301 43-269 RFI-05-04 RFI-05-05	None	--	--	Arsenic	300	50	Monitoring wells RFI-05-03 through -06 positioned to further assess upgradient and downgradient extent of VOCs in groundwater at this AOI. (Monitoring wells RFI-05-04 and RFI-05-05 installed January 2001). Existing monitoring wells 43-100 and 43-101 to be sampled due to previous criteria exceedences.	43-100 43-101
05-4	43	"Cold Former Room", involving various metal forming operations utilizing various process oils and other fluids and recirculation trenches and sumps.	Process waste oils.	43-103 43-208 RFI-05-07	None	--	--	Lead	47	4	Monitoring well RFI-05-07 (installed January 2001) positioned to assess upgradient extent of constituents detected within and downgradient of this area. Existing monitoring well 43-103 to be sampled to provide additional downgradient groundwater quality data.	43-103
05-5	43	Northern portion of Building 43, involving various active machining processes, 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.	Cooling/cutting oils, process waste oils, and solvents.	43-207 43-220 43-120 RFI-07-10 RFI-05-12	None	--	--	None	--	--	Piezometer RFI-05-08 positioned to provide groundwater elevation data. Monitoring wells RFI-05-07 and RFI-05-10 through -12 (installed January 2001) positioned to assess potential releases from representative primary components of these areas. LNAPL was detected in monitoring well RFI-05-11. Soil boring/possible monitoring well RFI-05-15 is proposed to define the LNAPL extent to the west. Existing monitoring wells 43-120 and 43-220 to be sampled to provide current groundwater quality data.	43-120 43-220
05-6	43	Southern portion of Building 43, involving various active machine processes, 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. This AOI also includes the area south of Building 43 in the vicinity of Building 99.	Cooling/cutting oils, process waste oils, and solvents.	30-140 30-222 30-241 30-243 43-140 and 43-141 43-241 through 43-244 43-267 and 43-268	None	--	--	1,1-Dichloroethene 1,2-Dichloroethane trans-1,2-Dichloroethene Trichloroethene Benzo(b)fluoranthene Aroclor-1016 Aroclor-1248 Arsenic Lead	13 8.5 130 1,400 15 0.60 0.72 89 120	7 5 100 5 2 0.5 0.5 50 4	Piezometer RFI-05-09 positioned to provide groundwater elevation data. **Geotechnical samples (to be analyzed for grain size, total organic carbon, and bulk density) to be collected from the sand unit and clay till unit at this location. A sample will also be collected from the clay till unit to determine Atterberg Limits, and flex wall permeability (if a shelby tube can be pushed to obtain a relatively undisturbed sample).** Monitoring wells RFI-05-13 and -14 (installed January 2001) positioned to assess potential releases from representative primary components of these areas. LNAPL was detected in monitoring wells RFI-05-13 and RFI-05-14. Soil boring/possible monitoring wells RFI-05-16 through RFI-05-18 are proposed to define the LNAPL extent. **Monitoring well cluster RFI-05-19S/RFI-05-19D positional to allow evaluation of vertical hydraulic gradients.** Monitoring well ~~RFI-05-19 and~~ RFI-05-20 positioned to further assess prior downgradient VOC criteria exceedence. Existing monitoring wells 30-140, 43-140 and 43-242 will be sampled due to previous criteria exceedences.	43-140 43-141 43-242 30-140

TABLE 5

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PROPOSED RFI ACTIVITIES – NORTHEND AOIs
(See Notes on Table 7)

AOI Group ID	Building Association	AOI Description	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
					Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
											Existing monitoring well 43-141 will be sampled to provide current upgradient groundwater quality data.	
03-1	30 Complex	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.	Hydraulic oils, quench oils, and process waste oils.	03-01 and 03-02 03-101 and 03-102 03-104 through 03-106 03-109 through 03-114 30-100 30-120 and 30-121 30-140 30-201 70-219 and 70-220	None	--	--	Vinyl chloride Lead	16 17	2 4	Monitoring well RFI-03-01 positioned to provide additional coverage of representative primary components of this AOI. LNAPL was detected in existing monitoring well 03-03. Soil boring/possible monitoring well RFI-03-02 positioned to assess downgradient extent of LNAPL. Monitoring well RFI-03-03 and RFI-03-04 positioned to assess downgradient groundwater quality. Existing monitoring wells 03-101, 03-102, 03-104, 03-105, 03-106, 03-109, 03-111, 03-112, 03-113, 03-114, 03-01, 03-02, 70-100, and 70-109 to be sampled to provide dissolved phase groundwater data for this area. Existing monitoring wells 30-100 and 20-FP11 to be sampled due to a prior VOC criteria exceedence and/or to provide current groundwater quality data.	03-101 03-102 03-104 03-105 03-106 03-109 03-111 03-112 03-113 03-114 03-01 03-02 20-FP11 30-100 70-100 70-109
81-1	71 & 71B	Basement area beneath the southern and central portions of Building 71B, involving former foundry operations and three metal machining chip/cooling and cutting oil filtration/processing operations, as well as an inactive hydraulic elevator, several process waste sumps and tanks, a drum storage area, and an inactive hazardous waste accumulation area. Oils intermittently pool throughout the basement area.	Hydraulic oils, cooling/cutting oils, and process waste oils.	None	No data available	--	--	No data available	--	--	Monitoring wells RFI-81-01 and RFI-81-02 positioned downgradient of basement area to assess likelihood of release from representative primary components of AOI. The contingency soil borings will be installed in basement area to assess soil quality if LNAPL is not found at the two monitoring well locations.	None
81-2	70, 70B, 71, 72, 73, 73A, 73B, & 74	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.	Hydraulic oils, cooling/cutting oils, process waste oils, and oil-impregnated foundry sand.	SBFL2-47 through –53 SBFL2-55 SB1-15A through –30A 20-FP11 and –FP12 70-100 and –102 70-107 and –109 70-160 through –165 70-210 and –212 70-214 and –218 70-221 through –226 70-260	None	--	--	1,2-Dichloroethene (total) Methylene chloride Trichloroethene Vinyl chloride Lead	150 7.0 14 3.0 19	70 5 5 2 4	An IM is currently operating to address free-floating product associated with this area. Monitoring well RFI-81-22 positioned to further assess extent of LNAPL in this area. Monitoring wells RFI-81-03 and RFI-81-13, soil boring RFI-81-04 (installed January 2001) and soil boring/grab groundwater sample collection locations RFI-81-05 and RFI-81-20 positioned downgradient of representative primary components of this area. Monitoring well RFI-81-21 positioned to assess downgradient extent of prior VOC criteria exceedences. Surface soil sampling locations RFI-81-15 through -19 positioned within the unpaved areas of this AOI. Existing monitoring wells 70-102, 70-160, 70-163, and 70-165 to be sampled due to historical criteria exceedences and/or to provide downgradient groundwater quality data.	70-102 70-160 70-163 70-165
81-3	69, 70A, 70B, & 70C	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.	Hydraulic oils, cooling/cutting oils, process waste oils, and acids.	SB-31A through SB-35A 86-100	Lead	1,100	900	Trichloroethene Vinyl chloride Lead	110 230 57	5 2 4	Soil boring/grab groundwater sample collection locations RFI-81-06 and RFI-81-07, and monitoring well RFI-81-08 positioned downgradient of representative primary components of this area. Monitoring wells RFI-81-11 and RFI-81-12 positioned further downgradient of overall AOI to further assess downgradient extent of prior VOC and/or lead criteria exceedences. Existing monitoring wells 07-01, 07-02, and 86-100 to be sampled to provide additional downgradient groundwater quality data.	07-01 07-02 86-100
81-4	69A & 69B	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.	Compressor oils.	None	No data available	--	--	No data available	--	--	Monitoring well RFI-81-09 positioned generally downgradient of basement area.	None
81-5	69A & 69B	A containment area for several existing and former ASTs. The ASTs range(d) in size from 2,500 to 20,000 gallons, and contain(ed) diesel fuel and automatic transmission fluid. The concrete secondary containment area associated with these tanks contain standing transmission fluid, and the integrity of this containment is unknown.	Automatic transmission fluids and fuel oils.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-81-10 and RFI-21-03 positioned upgradient and downgradient of tank farm.	None
21-1	21	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.	Cooling and cutting oils.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-21-01, -02, and -03 positioned downgradient of Building 21.	None

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(See Notes on Table 7)

AOI Group ID	Building Association	AOI Description	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
					Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
65-1	65	Overall area of Building 65, involving a facility air compressor station and 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.	Process waste oils.	None	No data available	--	--	No data available	--	--	Monitoring well RFI-65-01 positioned to assess potential of release from Building 65.	None
83/84-1 through 83/84-3	11, 32, 66A, & 66D	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 of motor oil near the center of Building 32 has been documented.	Motor oil, hydraulic oils and process waste oils.	32-101 11-140	None	--	--	Bis(2-ethylhexyl)phthalate Arsenic	60 73	6 50	Historical free-product presence addressed with an IM. Monitoring wells RFI-83/84-01, RFI-83/84-02, and RFI-83/84-06, existing soil borings RFI-83/84-03 and RFI-83/84-04 (installed January 2001), and soil boring/grab groundwater sampling location RFI-83/84-05 positioned downgradient of representative primary components of this AOI. Existing monitoring wells 11-120 and 11-140 to be sampled to provide additional upgradient groundwater quality data.	11-120 11-140
83/84-4	66 & 66C	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).	Process waste oils.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sampling locations RFI-83/84-07 and -08 positioned downgradient of representative primary components of this area.	None
83/84-5	66	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.	Process waste oils.	11-120	None	--	--	None	--	--	Soil boring/grab groundwater sampling location RFI-83/84-09 positioned downgradient of representative primary components of this area.	None
83/84-6	83 & 83A	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).	Cooling and cutting oils, process waste oils, and battery acids.	None	No data available	--	--	No data available	--	--	Soil boring RFI-83/84-10 (installed January 2001) positioned downgradient of representative primary components of this area.	None
83/84-7	32 & 66C	An area of several former USTs ranging in size from 3,000 to 12,000 gallons that contained gasoline, various cooling/cutting oils, quench oils, and lubricating oils. A prior release(s) from these tanks has been documented.	Gasoline, lubricants, quench oils, and thinners.	88-1 through 88-10 88-101 through 88-104 88-106	None	--	--	Benzene Trichloroethene Vinyl chloride	10 240 23	5 5 2	Monitoring well RFI-83/84-11 positioned to further assess downgradient extent of VOCs detected in this area. Existing monitoring wells 88-2, 88-7, 88-8, and 88-9 will be sampled to provide current groundwater quality data surrounding the AOI.	88-2 88-7 88-8 88-9
85-1	85	Elevator pit along the northcentral 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.	Hydraulic oils, gasoline, and process waste oils.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sampling locations RFI-85-01 and RFI-85-02 positioned downgradient of representative primary components of this area. Monitoring wells RFI-85-03, RFI-85-04, RFI-85-05, and RFI-85-06 positioned to assess groundwater quality related to this AOI.	None
86-1	86 & 86A	Overall area of Building 86 and areas immediately southeast and west of Building 86, collectively involving a hazardous waste drum accumulation area, a process waste pump station (integrity unknown), a waste transport vehicle storage area (pavement staining; integrity unknown), a former 6,000-gallon UST containing gasoline, and a former UST farm which contained tanks ranging in size from 2,000 gallons to 12,000 gallons. The former USTs contained diesel fuel, mineral seal, and various cooling/cutting, and lubricating oils.	Fuel oils, cooling/cutting oils, lubricating oils, and process waste oils.	SB36A through SB-39A 86-2 and 86-3 86-101 through 86-105 87-101 through 87-107 87-FP1 through 87-FP5 SBFL3-18	None	--	--	Chloroethane cis-1,2-Dichloroethene 1,2-Dichloroethene (total) Ethylbenzene Methylene chloride Trichloroethene Vinyl chloride Benzo(a)pyrene Benzo(g,h,i)perylene Chrysene Arsenic Lead	550 290 890 86 7.0 410 630 20 20 10 320 300	430 70 70 74 5 5 2 5 5 5 50 4	An IM is currently under design for free-product in this area. Effectiveness will be evaluated at an appropriate time following construction and implementation. Monitoring wells RFI-86-01 through -04 and RFI-86-06 and soil borings/grab groundwater sampling location RFI-86-07 positioned to further assess downgradient extent of VOCs detected in groundwater in this area. Soil boring/grab groundwater sampling location RFI-86-08 positioned downgradient of representative primary components of this AOI. Monitoring well RFI-86-05 and contingency well positioned to further assess extent of releases associated with former USTs west of Building 86. Existing monitoring wells 86-3, 87-FP2, 87-FP3, and 87-FP5 will be sampled due to historical criteria exceedences.	86-3 87-FP2 87-FP3 87-FP5
07-1	07	Former coal yard immediately north of Building 07 (unlined) and several other process facilities (e.g., waste sludge dump station and waste sludge ASTs) along north side of Building 07 (integrity unknown).	Process waste oils and coal yard residuals.	07-02 07-121 through 07-126	None	--	--	None	--	--	Soil borings/grab groundwater samples RFI-07-02 and –04, and monitoring wells RFI-07-01 and -03 positioned downgradient of coal yard and other representative primary components of this area. Soil boring RFI-07-09 positioned in the central portion of the coal yard. Existing monitoring well 07-02 to be sampled to provide upgradient groundwater quality data.	07-02
07-2	07	Inactive lime "Slaker House" and adjacent inactive lime slurry tank adjacent to the southwest corner of Building 07 (integrity unknown).	Caustics.	07-141 07-142	None	--	--	Methylene chloride Trichloroethene	6.7 6.8	5 5	Soil boring/grab groundwater sampling location RFI-07-05 positioned downgradient of lime slurry tank.	None

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(See Notes on Table 7)

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					Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
07-3	07	Two elevator pits in the northcentral and southcentral portions of Building 07 and bulk AST acids storage area in the southeast corner of Building 07 (integrity unknown).	Hydraulic oils, acids, and caustics.	07-01 07-120 07-140	None	--	--	Methylene chloride	8.5	5	Soil boring/grab groundwater sampling locations RFI-07-06 and -07 positioned downgradient of representative primary components of this AOI. ~~Monitoring well RFI-07-08 positioned to provide~~ **Monitoring well cluster RFI-07-08S/RFI-07-08D positioned to allow evaluation of vertical hydraulic gradients, and to provide** overall downgradient groundwater quality data and groundwater elevation data. **Geotechnical samples (to be analyzed for grain size, total organic carbon, and bulk density) to be collected from the sand unit and clay till unit at this location. A sample will also be collected from the clay till unit to determine Atterberg Limits, and flex wall permeability (if a shelby tube can be pushed to obtain a relatively undisturbed sample).** Existing monitoring well 07-01 to be sampled to provide upgradient groundwater quality data.	07-01

TABLE 6

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PROPOSED RFI ACTIVITIES – SOUTHEND AOIs
(See Notes on Table 7)

AOI Group ID	AOIs in Group	Building Association	AOI Description (most cases – precleaning conditions)	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil/Residue Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
						Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
94-A	94-5 94-6 94-7	94	94-5: 3' x 8' x 6' deep sump located in oil change pit. Pit handled oil from three bays having separate drains running into sump. Sump received oil runoff from 34' x 4' x 2' deep trench associated with oil change pit. Sump discharged to process wastewater system; and 1' x 1' x unknown depth floor drain that handled runoff in oil change pit and discharged to sump. 1' x 1' x 1.5' deep floor drain is lined with steel. 34' x 4' x 2' deep trench is unlined concrete. No visual indications of potential release noted related to floor drain. Sump is unlined concrete and appears to have contained oil regularly. Walls and floor of sump cracked and fractured. 94-6: 8' x 6' x 4' deep self-contained sump located in center of chemical storage area. 94-7: 42' x 2' x 1' deep trench running the length of chemical storage and car wash areas. Trench drained to a 3' x 8' x unknown depth sump. Sump and trench designated AOIs 94-6 and 94-7, respectively, are hydraulically connected to each other as well as to the sump referenced in AOI 94-5. The 8' x 6' x 4' deep sump referenced in AOI 94-6 appears to have served as an oil/water separator. This sump and the trench referenced in AOI 94-7 are unlined concrete. Relatively large cracks noted along north side of sump at approx. 3' below regular fluid level. The walls and floor of the sump and trench are saturated with oil.	Process waste oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-94-01 positioned downgradient of this AOI.	None
94-B	94-2 94-10	94	94-2: 30" x 30" x unknown depth sump in "South Lube Pit". 94-10: 1' x 100' x 1' deep trench in work area that discharged to sump. Liquid in trench ultimately discharged to process wastewater system. The most recent use of this area appears to have been for charging tow motor batteries. Trench discharges to sump. Both sump and trench are lined with steel. Steel lining along west end of trench severely corroded.	Process waste oils and battery acids	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-94-02 positioned downgradient of this AOI. **Geotechnical samples (to be analyzed for grain size, total organic carbon, and bulk density) to be collected from the sand unit and clay till unit at this location. A sample will also be collected from the clay till unit to determine Atterberg Limits, and flex wall permeability (if a shelby tube can be pushed to obtain a relatively undisturbed sample).**	None
94-C	94-1 94-9 94-17	94	94-1: 4' x 4' x 3' deep sump that discharged waste oil to process wastewater system. Sump is lined with steel; however, much of the lining lost due to corrosion. 94-9: 1' x 25' x 1' deep trench in hydraulic oil storage area, and a 1' x 6' x 6" deep floor drain, both lead to a 2' x 2' x 4' deep dry sump. Sump discharged to process wastewater system. Sump, drain, and trench are lined with steel. No visual indications of potential release noted related to sump, drain, and most of trench; however, a hole (approx. 4" diameter) was noted in lining of west end of trench. 94-17: Former hydraulic lift cylinders filled with concrete. Visual evaluation could not be performed.	Hydraulic oils and process waste oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-94-03 and RFI-94-04 positioned downgradient of primary components of this AOI.	None
94-D	94A-14	94A	Pit for cable-operated car elevator. Elevator pit (approx. 15' x 30' x unknown depth) contains several feet of water. Visual evaluation could not be performed due to flooding.	Hydraulic oils	Residue and grease samples	PCBs	3.0	1.0 (TSCA Subpart D)	No data available	--	--	Monitoring well RFI-94-05 positioned downgradient of this AOI.	None
94-E	03-3	03	Hydraulic oil present on floor in area associated with a car loading device. Oil staining observed in approx. 5' x 15' area. Concrete flooring cracked in area of staining.	Hydraulic oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-94-06 positioned immediately downgradient of this AOI.	None
84-A	28-3 28-4 84-3 84-51 84-55 84-56	84 & 23	28-3: Pit for cable-operated elevator. Floor appears to be clean, but standing water noted in select areas. Visual evaluation could not be performed. 28-4: Pit for cable-operated elevator. Pit has not yet been cleaned. Pit contains dry Residue. 84-3: 30" x 30" x 24" deep sump. Contained oil residue from draining engines. The sump discharged to process wastewater system. Sump is lined with steel; however, lining is severely corroded (i.e., potential release). 84-51: Machine shop area. Wood block flooring stained with oil (approximately 14,500 sq. ft.). Concrete equipment pads also stained. Wood block flooring has been removed. Areas of oil-stained concrete flooring throughout area. Concrete flooring cracked at various locations (i.e., potential release). Prior analytical data indicated the present of hazardous constituents in wood block floor. 84-55: Two subgrade hydraulic cylinders used as car hoist. 1.5' x 11' x 7.5' deep pit for hydraulic lift mechanism. Pit contains 1.5' diameter x 5' tall hydraulic oil AST containing 2' of oil. Pit has not yet been cleaned. Various cracks in floor noted near floor/wall joint as well as pooled oil along west end of pit (e.g., potential release). 84-56: Former subgrade hydraulic lift. Piston removed and cylinder filled with concrete.	Hydraulic oils, process waste oils, gasoline, solvents, and cooling/cutting oils	Residue samples	PCBs	38	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-84-01 and RFI-84-02, and monitoring well RFI-84-06 positioned downgradient of this AOI.	None

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AOI Group ID	AOIs in Group	Building Association	AOI Description (most cases – precleaning conditions)	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil/Residue Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
						Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
84-B	84-9 84-24 84-27 84-36 84-48 84-54 84-58 84-59 84-60	84	84-9: 4' x 6' x 6' deep sump that discharged to process wastewater system. Significant loss of concrete wall noted around influent pipe (wall lost and rebar exposed for approximately 6" around influent pipe) along with various cracks and spalling along floor/wall joint (i.e., potential release). 84-21: 6' x 4' x 6' deep sump that collected floor drain runoff and discharged to process wastewater system. 84-24: Four drains in floor; discharge location unknown. 84-27: Utility trenches within area housing steam lines. Trench appears to have been used as a pipe chase for hydraulic oil pipes and process waste pipes. Floor of trench is oil-stained throughout. Trench is unlined concrete. Approximately 1/2-inch gap noted along wall/floor joint, and various cracks in the walls and floor of one inch or more noted in select areas, including the area adjacent to the former UST in AOI 84-48 and adjacent to the sump in AOI 84-9. 84-36: Pit for car lift. Area also includes subgrade hydraulic cylinder and associated piping present in above grade reservoir. Pit could not be visually evaluated since the car lift is inoperable. 84-48: UST with bolted-down hatch located beneath manhole cover. UST appears to have been removed based on evidence of new concrete flooring over an area of approximately 15' x 20'. 84-54: Former electric vault below grade. Accessed through manhole. Vault approximately 15' x 15' x 10' deep. Vault appears to have been filled with concrete. Visual evaluation cannot be performed. 84-57: Hydraulic oil staining on elevated dynamometer equipment pad; oil leaking from carriage. 84-58, 84-59, and 84-60: Basement area with oil-stained floors. Entire basement is flooded with approximately 3 to 4" of water. A complete visual evaluation of these AOIs could not be performed due to the flooding; however, it was noted that the floor drains designated as AOI 84-24 are located on the first floor above the basement, and assessment of potential release related to these drains should be preformed as part of assessment(s) of other basement AOIs and overall basement.	Hydraulic oils and process waste oils	Grease Sample	PCBs	3.1	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-84-03 positioned downgradient of this AOI.	None
84-C	84-10 84-14 84-28 84-40	84	84-10: 5' x 6' x 7' deep sump that discharged to process wastewater system and 8' x 24' x 3' deep car wash pit that collected water from the washing process and discharged to sump. 84-14: 5' x 5' x unknown depth sump for the flow room. Sump discharged to process wastewater system. Sump is lined with steel, and believed to have received waste fuel (gasoline) from adjacent fuel filtration equipment and condensate from adjacent compressor and vacuum pumps. Lining of sump noted to be severely corroded. 84-28: 2' x 40' x unknown depth trench with bolted down covers. Trenches are unlined concrete. Various cracks (up to approximately 0.5") noted along floors of both trenches, approximately 3" diameter hole in floor noted at west end of south trench. 84-40: 3' x 3' x unknown depth pit with no access. AOI designated 84-40 appears to be an oil/water separator pit for the adjacent car wash designated AOI 84-10. This separator pit is unlined concrete, with cracks approximately 1" wide around effluent piping on south side. Residual oil pooling also noted within pit. Pit appears to have discharged to sump referenced as part of AOI 84-10. Both the sump and pit also show residual oil staining on floors and walls. Sump is unlined concrete. No visual indications of potential release noted related to the sump.	Process waste oils, waste gasoline, and hydraulic oils	Residue sample	PCBs	15	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-84-04 positioned downgradient of this AOI.	None
84-D	84-49 84-64	84	84-49: This AOI includes a former UST farm immediately north of Building 84, and also a recessed AST farm which is located immediately north of former UST farm. The former USTs ranged in size from 6,000 to 15,000 gallons, and contained new and waste gasoline, fuel oils, and new and waste solvents. The AST farm contains several empty ASTs (ranging in size from 5,000 to 12,000 gallons) formerly used for gasoline/solvent storage. Secondary containment for the ASTs consists of a concrete vault.	New and waste product gasoline, oils, and solvents.	84-1 84-2 84-3 84-4 84-5 84-6	None	--	--	None	--	--	This area is subject to recent investigations due to the former known releases associated with the former UST farm. Monitoring well RFI-84-05 positioned to further assess downgradient extent of releases related to this AOI. Existing monitoring wells 84-2 and 84-6 to be sampled to provide current groundwater quality data.	84-2 84-6

TABLE 6

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
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PROPOSED RFI ACTIVITIES – SOUTHEND AOIs
(See Notes on Table 7)

AOI Group ID	AOIs in Group	Building Association	AOI Description (most cases – precleaning conditions)	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil/Residue Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
						Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
84D (Cont'd)	84-49 84-64 (Cont'd)	84 (Cont'd)	84-64: Drum storage area identified as AOC 6 in PR/VSI Report. Area was used to store oil, transmission fluid and gasoline waste prior to off-site disposal. AOI 84-64 is co-located with this former UST farm. Within the area of the former UST farm there exists an approximately 2' diameter by 20' deep brick-lined manhole which appears to be a former storm sewer manhole. Various cracks in lining noted. A sheen and strong odor were noted.	New and waste product gasoline, oils, and solvents.	84-1 84-2 84-3 84-4 84-5 84-6	None	--	--	None	--	--	This area is subject to recent investigations due to the former known releases associated with the former UST farm. Monitoring well RFI-84-05 positioned to further assess downgradient extent of releases related to this AOI. Existing monitoring wells 84-2 and 84-6 to be sampled to provide current groundwater quality data.	84-2 84-3 84-5
17-A	17-1	17	Pit for cable-operated elevator. Elevator pit not yet cleaned. Surface residue (grease/debris) noted within pit.	Hydraulic oils	Scrape sample	PCBs	19	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-17-01 positioned immediately downgradient of this AOI. Well cluster RFI-17-02 positioned in the parking lot adjacent to this AOI to assess regional groundwater characteristics.	None
02-A	02-7	02	5' x 6' x 8' deep sump for process wastewater station. Sump is lined with steel; however, lining is severely corroded and mostly lost.	Process waste oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-02-01 positioned immediately downgradient of this AOI.	None
02-B	02-17	02	Pit for elevator. Pit is approximately 10' x 20' x 5.5' deep. Pit could not be visually assessed.	Hydraulic oils	Scrape sample	PCBs	0.68	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-02-02 positioned immediately downgradient of this AOI.	None
02-C	02-3	02	2' x 2' x unknown depth sump located in Materials Laboratory. Sump discharged to process wastewater system. 3' deep unlined concrete sump. Significant spalling and erosion of concrete noted.	Various laboratory chemicals	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-02-03 positioned immediately downgradient of this AOI.	None
02-D	02-12	02	Pit for large press machine contained oil. Pit is approximately 15' x 20' x 7.5' deep and houses a large metal press. Pit could not be visually assessed.	Hydraulic oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-02-04 positioned immediately downgradient of this AOI.	None
02-E	02-23	02	A former 12,000-gallon AST which contained unleaded gasoline. The tank has been removed, but timeframe unknown. Release potential unknown.	Gasoline	None	No data available	--	--	No data available	--	--	Monitoring well RFI-02-05 positioned immediately downgradient of this AOI.	None
02-F	02-22	02	Hydraulic oil AST and pump used for operation of the "Hydraulic Anchor Pac Area." Hydraulic oil staining around the equipment. AST is located within steel secondary containment pan. Floor cracks (~1") noted at joint with wall.	Hydraulic oils	None	No data available	--	--	No data available	--	--	Soil boring location RFI-02-06 positioned immediately downgradient of this AOI. Monitoring well RFI-02-07 positioned outside of the building and downgradient of this AOI.	None
23-A	23-3 23-4 23-7 23-8	23	23-3: 3' x 3' x unknown depth sump with associated piping discharged to process wastewater system. 23-4: Main Process Wastewater Sump #17, which is 10' x 5' x 8'. This sump collected water from former heat treat operations in building as well as from sumps located north of Leith Street. 23-7: Two dock levelers with heavy oil and grease staining on surrounding floor. 23-8: Basement that was used for treatment of water used in former heat treat operation on first floor. System consisted of six basins used for oil/water (one 9' x 9' x 7' basin, one 9' x 24' x 7' basin, two 2' x 24' x 7' basins, two 12' x 4' x 7' basins), one 2' x 2' x 2' sump, and one 6' x 4' x 6' pit that housed equipment. 6/19/00: Basement is flooded with several feet of oil, and related AOIs could not be visually evaluated. However, the following observations were noted: 1) sump referenced as part of AOI 23-3 is actually an access port to the basement (AOI 23-8); 2) sump referenced as part of AOI 23-4 is actually located within the basement (AOI 23-8); and 3) dock levelers referenced as part of AOI 23-7 appear to be located above the basement. 9/14/00: Oil removed from basement. Basement was not entered for full evaluation due to health and safety concerns; however, the floor and walls of basement at the entrance were noted to be saturated with oil and various cracks were noted in the walls and floor of the basement near the entrance.	Process waste oils	Composite sample of oil from basins in basement	PCBs	Not detected	--	No data available	--	--	Monitoring wells RFI-23-01 and RFI-23-02 positioned downgradient of this AOI.	None

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(See Notes on Table 7)

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						Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
29-A	29-5 29-8	29	29-5: Pit for cable-operated elevator. 9' x 17' x 5' deep elevator pit. Oil present in portions of pit; however, the pit could not be accessed for a full visual evaluation. 29-8: Former work pads with heavy oil staining on floor. AOI actually includes three equipment pads with oil staining located within 9C, 9D, and 10D. Various cracks in underlying flooring. Concrete appears to be saturated with oil/grease.	Hydraulic oils, and cooling and cutting oils.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-29-01 positioned downgradient of this AOI.	None
12-A	12-11 12-12 12-13 12-15 12-16 12-17 12-30 12-31 12-32 12-33 12-43 12-44 12-45 12-46 12-47 12-48 12-51 12-52 12-54 12-55 12-56 12-63 12-64 12-65 12-66 12-67 12-68 12-69 12-71 12-75	12	12-11 and 12-15: Two 4' x 4' x unknown depth sumps with associated floor trench and drains; contained oil and water. System discharged to process wastewater system. Sumps are located in a flooded portion of the basement. Visual evaluation could not be performed. 12-12: 2' x 2' x unknown depth sump connected to a 20' x 1' x 1' deep trench and 30' x 1' x 1' deep strip drain. Surrounding area had oil staining on the floor. Several sets of concrete footings are present that appear to be former equipment stands. 12-13: 2' x 2' x 4' sump connected to floor drains. Oil and grease staining on surrounding floor. Concrete footings present that appear to be former press stands. 12-16: Oil staining around conveyor system and associated sump. 12-17: 2' x 2' x 4' deep sump in chip conveyor room. 12-30: 12" floor drain filled with oil-saturated absorbent material. 12-31: 10' x 6" x 6" deep floor trench running to floor drain. Trench filled with oil. 12-32: 60' x 6" x 1' deep "v" shaped trench. 12-33: 10' x 6" x 6" deep trench running to 3' x 1' x 2' deep floor drain associated with conveyor system. Oil-saturated absorbent material on oil-stained floor. 12-41: 20' x 20' x 5' deep pit for hydraulic elevator. Pit could not be visually evaluated. 12-43 through 12-47: Grease traps associated with chip conveyor. 12-48: 2' x 2' x 3' pit with oil and water in conveyor tunnel. Tunnel is approximately 200' long. Absorbent material present on floor for oil and grease. Entire floor in tunnel area stained with oil and grease. End of the tunnel is sealed with brick. Floor of basement is saturated with oil. Sumps are lined with steel; however, lining of many noted to be corroded and separated from sump walls. 12-51: 3' x 1' x 2' deep pit connected to a floor drain. 12-52: Twenty 24" diameter x 1' deep hydraulic press footings. 12-54: 500-gal. AST containing oil. 12-55: 300-gal. AST containing oil. 12-56: Four 500-gal. ASTs containing oil. 12-63 through 12-69: Oil-stained wood block flooring. 12-71: Large hydraulic presses in pits. 12-75: Significant amounts of grease on floor directly under drive track throughout entire conveyor system within tunnel. Oil-stained wood block flooring referenced as part of AOIs 12-63 to 12-69 is located above basement area containing numerous other AOIs. All of these basement area AOIs are related to former metal chip processing operations. The area could not be visually evaluated.	Process waste oils and hydraulic oils.	Scrape sample	PCBs	2.6	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-12-01, RFI-12-02, RFI-12-03, RFI-12-07, and RFI-12-08 positioned downgradient of primary components of this AOI. Existing monitoring well 04-121 to be sampled to provide current upgradient groundwater quality data for this location.	04-121
12-B	12-3	12	30' x 1' x 1' deep drain leading to 3' x 3' x 3' deep sump that discharged to process wastewater system. Truck well in which these units are located was used as settling basin for washing debris during pre-demolition cleaning efforts. Units could not be visually evaluated.	Process waste oils and grease	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-12-05 positioned immediately downgradient of this AOI.	None

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12-C	12-8 12-39 12-40	12	12-8: 2' x 3' x 4' deep sump that handled runoff from 36' x 1' x 1' deep trench in battery charging area. Sump discharged to process wastewater system. Two parallel systems exist. Trenches and pits are lined with steel. Most of the steel lining has been lost, and the underlining concrete is severely corroded. 12-39: 2' x 10' x 8' deep steam pipe utility pit located where pipes enter the building. 12-40: 9' x 4' x 18' deep old utility pit. Pits referenced as part of these AOIs are connected. Oil and water present within pits. Relatively large cracks noted in walls of pit.	Battery acids, process waste oils.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-12-06 positioned within this AOI.	None
12-D	12-62	12	Abandoned utility tunnel flooded with water. Tunnel runs north from east side of Building 12, under Division Street, to the former power house area. Access port located east of the chip handling system located along east side of Bldg. 12. Pit is filled with water. Oily sheen was noted. Portions of Trench historically filled with flowable fill.	Process waste oils	None.	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-12-04 positioned downgradient of the access port of this AOI.	None
04-A	04-3 04-13	04	04-3: "Process Waste Room" with a 6' x 6' x 4' high containment wall around a floor drain that discharged to process wastewater sump. 04-13: 5' x 6' x unknown depth "Foam Depressor Process Waste Pit #3" that discharged to process wastewater system. Spalling and joint gaps noted in walls of sump and pit.	Process waste oils and other fluids.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-04-01 positioned adjacent to this AOI.	None
04-B	04-7 04-8 04-9	04	04-7: Pit for passenger elevator. 04-8: Pit for freight elevator. 04-9: Pit for freight elevator. None of these pits could be visually evaluated.	Hydraulic oils	Scrape sample	PCBs	13	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-04-02 positioned adjacent to primary component of this AOI.	None
04-C	04-10	04	Pit for cable-operated elevator. Pit could not be visually evaluated.	Hydraulic oils	Scrape sample	PCBs	71,000	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-04-03 positioned adjacent to this AOI.	None
04-D	04-12	04	Several former 15,000-gallon USTs containing hydraulic oil, waste thinner, and process waste.	Solvents and thinners.	04-1 04-2 04-3 04-4 04-5	None.	--	--	Aroclor-1248 Cadmium Lead Zinc	2.7 16 440 92,000	0.5 5 4 2,400	Downgradient extent of potential releases will be evaluated through existing monitoring wells 04-1 through 04-5, and from existing or proposed soil borings/monitoring wells located in the adjacent and downgradient AOI (09-B). Existing monitoring wells 04-1 through 04-5 to be sampled to provide current groundwater data at these locations.	04-1 04-2 04-3 04-4 04-5
16-A	16-3 16-17 16-18	16	16-3: 100' x 15' x 2' deep pit that collected fluid runoff of cars in vehicle fill-up station, located under conveyor system and discharged to process wastewater system. 16-17: Automatic transmission pumphouse containing a gravity floor drain that discharged to process wastewater system. 16-18: Gas pump station for cars in finish stage, containing lines and pumps. Full visual evaluation could not be performed.	Gasoline, transmission fluid, and other oils.	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-16-01 positioned immediately downgradient of this AOI.	None
16-B	16-9	16	Pit for hydraulic elevator. Pit could not be visually evaluated.	Hydraulic oils	Scrape samples	PCBs	Not detected	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-16-02 positioned immediately downgradient of this AOI.	None
16-C	16-11 16-12	16	16-11: Hydraulic motor with 3' x 5' x 4' tall AST used as hydraulic lift for Dumpster, heavy hydraulic staining on floor around motor and pit. Floor throughout area noted to be saturated with oil. 16-12: Several former USTs ranging in size from 2,500 to 10,000 gallons and containing gasoline, fuel oil, automatic transmission fluid, solvents, and lubricants. Visual evaluation could not be performed.	Fuel, hydraulic, and transmission oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-16-03 and RFI-16-05 positioned downgradient of this AOI. Monitoring well RFI-16-04 positioned to assess groundwater quality in this area.	None
16-D	16-13 04-2	16	16-13: A former 550-gallon UST containing gasoline. Visual evaluation could not be performed. 04-2: 2' dia. x 10' deep sump that discharged to process wastewater system. Sump could not be visually evaluated.	Gasoline, process waste oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-16-06 positioned downgradient of this AOI.	None

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40-A	40-1	40	Several former 10,000-gallon USTs containing regular and unleaded gasoline.	Gasoline	40-1 through 40-7 40-201 through 40-205 02-201 through 02-205 02-160 SBFL3-24	Xylenes Lead	410 950	150 900	1,2-Dichloroethane Benzene Ethylbenzene Xylenes Aroclor-1248 Chromium Lead	150 10,000 230 1,000 1.6 150 280	5 5 74 280 0.5 100 4	Soil boring/grab groundwater sample collection location RFI-40-01 positioned to further assess downgradient extent of release from these tank farms. Existing monitoring wells 40-1, 40-2, 40-3, 40-4, 40-5, 40-6, and 40-7 to be sampled to provide current groundwater data at these locations.	40-1 40-2 40-3 40-4 40-5 40-6 40-7
40-B	40-8	40	Pit for elevator. Pit could not be visually evaluated.	Hydraulic oils	Residue sample	PCBs	18	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-40-02 positioned immediately downgradient of this AOI.	None
40-C	40-7	40	Pit for cable-operated elevator. Pit could not be visually evaluated.	Hydraulic oils	Residue sample	PCBs	7.3	1.0 (TSCA Subpart D)	No data available	--	--	Soil boring/grab groundwater sample collection location RFI-40-03 positioned immediately downgradient of this AOI.	None
40-D	40-12	40	Basement/tunnel area flooded with water. Basement is flooded.	Process waste and hydraulic oils	40-301 40-302 40-303 40-304 40-305 Various grab samples collected from water and floating oil within the basement tunnel	PCBs (oil sample)	80	1.0 (TSCA Subpart D)	PCBs	23	0.5	Analytical data available outside of tunnel do not show evidence of release from the tunnel; however, groundwater samples will be collected from the five perimeter wells. Additionally, an IM will be designed to address the water and oil within the tunnel. Existing monitoring wells 40-301 through 40-305 to be sampled to provide current groundwater data at these locations. Water present within the tunnel to be sampled to provide current data at this location.	40-301 40-302 40-303 40-304 40-305
44-A	44-1 44-2 44-3 44-4 44-5 44-6 44-9 44-10 44-11 44-12 44-13 44-14 44-15 44-16 44-17 44-22 44-23 44-24 44-25 44-26 44-27 44-28 44-29 44-30 44-31 44-32 44-34 44-37 04-5 04-6 08-2	44, 04, and 08	44-1: 20' x 24' x 1' deep strip drain contained hydrochloric acid, sodium hydroxide, oil and hydraulic fluid. The drain leads to a 4' x 4' x 4' deep sump that discharged to process wastewater system. 44-2: Four 20' x 60' x 10' deep containment pits for four 30,000-gal. Uniprime ASTs; and 5' x 8' x 5' sump in the bottom of one of the pits. Sump discharged to the process wastewater system. Pit floors stained. 44-3: 4' x 4' x 4' deep Process Wastewater Sump #3 collected liquid from a 60' x 2' x 2' deep "C" shaped trench that contained oil and grease. Full visual evaluation could not be performed. 44-4: 5' x 5' x 3' deep sump handled runoff from "Phosphate System Stage #3 Chemkleen 47L Immersion" and "Stage #8 Spray Chromic Acid Rinse." Heavy acid staining on floor. This sump discharged to process wastewater system. 44-5: 2' x 2' x 2' deep sump that handled fluid accumulation in basement where elevator pump house was located. Heavy oil and hydraulic staining on floor. Sump discharged to process wastewater system. 44-6: 3' x 3' x 3' deep process sump with two pumps running in parallel. Area flooded with water. Oil staining present; also associated with sump is a 1' x 1' x 3' deep gravity floor drain and a 4" x 85' x 6" deep trench surrounding 8" tall concrete bermed area containing "High- Pressure Pump #2". Oil staining on floor. Liquids in trench discharged to process wastewater system via sump. Full visual evaluation could not be performed. 44-9: 9' x 1' x 1' deep strip drain located in front of bay door led to 3' x 3' x 4' deep self-contained sump that led to the process waste pumphouse. Both trench and sump located in hazardous waste storage area. Residue present within trench. 44-10: 112' x 1' x 1' deep floor strip drain discharged to the process wastewater system. 44-11: 75' x 1' x 1' deep floor drain used for runoff; discharged to process wastewater system. 44-12: 2' x 8' x 2' deep strip drain associated with "Phosphate System Stage #2 Chemkleen 47L Immersion" and " Stage #8 Chromic Acid Storage Dip Tank." Trench discharged to process wastewater system. 44-13: 6' x 12' x 2' deep utility trench discharging to Uniprime pits. 44-14: Pit for hydraulic elevator.	Acids, caustics, hydraulic oils, paints and thinners, solvents, and process waste oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-44-01, RFI-44-02, and RFI-44-03 positioned along the downgradient perimeter of Building 44 to assess potential releases. Monitoring wells RFI-44-04 and RFI-44-05 positioned to assess groundwater quality. Existing monitoring well 04-160 to be sampled to provide current overall downgradient groundwater quality data. Existing monitoring wells 04-120 and 04-140 to be sampled to provide additional upgradient groundwater quality data.	04-120 04-140 04-160

TABLE 6

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AOI Group ID	AOIs in Group	Building Association	AOI Description (most cases – precleaning conditions)	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil/Residue Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
						Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
44A (Cont'd)	44-1, etc. (Cont'd)	44, 04, and 08 (cont'd)	44-15: 12' x 1' x 1' deep floor drain in hazardous waste dumpster area collected runoff in loading and unloading area. Residue present within floor drain. Full visual evaluation could not be performed. 44-16: "Sludge system pit" containing pumps and floor drains throughout. Pit handled all water from the paint system. Location of pit also proximate to SWMUs 103 and 104 and AOC 2 identified in the PR/VSI Report. Pit measures approximately 40' x 60' x 12' deep and is unlined concrete. Pit could not be visually evaluated (too large). 44-17: 8' x 75' x 8' deep pit for phosphoric acid AST. 2' x 2' x 3' deep sump located at bottom of the pit used to handle overflow. Sump discharged to process wastewater system. 44-22: 5,000-gal. AST containing glycol. Although glycol is not considered a hazardous waste, staining and pitting was noted on floor within bermed area. 44-23: 8" concrete bermed area surrounds area that contains ASTs, including: a hydrochloric acid AST (200 gal.), a liquid caustic AST (200 gal.), a sodium hydroxide AST (500 gal.), a hydrochloric acid AST (500 gal.). Full visual evaluation could not be performed. 44-24: 4,000 gal. AST containing phosphoric acid. 44-25: 500 gal. AST containing phosphoric acid. 44-26: 3' high retaining wall surrounding three 5,500-gal. ASTs, one containing pigment, the remaining two containing resin. A 3' x 3' x unknown depth self- contained collection sump located within retaining wall. 44-27: Hydraulic elevator sump equipment with a 4' x 6' x 2' deep reservoir. Full visual evaluation could not be performed. 44-28: Former 750-gallon UST containing diesel fuel, and a former 1,000-gallon UST containing gasoline. The tanks have been removed, but timeframe unknown. Visual evaluation could not be performed. 44-29: Former 2,000-gallon AST containing waste thinner. Full visual evaluation could not be performed. 44-30: Former AST (unknown size and unknown contents). Tank has been removed, but timeframe unknown. 44-31: Former AST (unknown size and unknown contents). Tank has been removed, but timeframe unknown. 44-32: Two former ASTs (unknown size and unknown contents). Tanks have been removed, but timeframe unknown. 44-34: "Phosphate System Stage #5 Rinse Conditioner Immersion" system and "Phosphate System Stage #6 – Chemtos #168" system surrounded by an 8" concrete berm. Area inside the berm stained white. 44-37: Two 2' wide x 2' deep floor drains that handled runoff in walkway and discharged to the process wastewater system. Full visual evaluation could not be performed. 04-5: Pit for elevator. Pit could not be visually evaluated. 04-6: Pit for hydraulic elevator. Pit could not be visually evaluated. 08-2: 3' x 3' x 3' deep process waste sump containing transmission fluid. Sump could not be visually evaluated.	Acids, caustics, Hydraulic oils, paints and thinners, solvents, and process waste oils	None	No data available	--	--	No data available	--	--	Soil boring/grab groundwater sample collection locations RFI-44-01, RFI-44-02, and RFI-44-03 positioned along the downgradient perimeter of Building 44 to assess potential releases. Monitoring wells RFI-44-04 and RFI-44-05 positioned to assess groundwater quality. Existing monitoring well 04-160 to be sampled to provide current overall downgradient groundwater quality data. Existing monitoring wells 04-120 and 04-140 to be sampled to provide additional upgradient groundwater quality data.	04-120 04-140 04-160
09-A	09-2 09-3 09-4 09-6	09	09-2: 145' x 1' x 1' deep floor trench leading to 1,000-gal. UST that discharged to process wastewater system. Trench is lined with steel; however, lining is severely corroded (i.e., potential release). Pit could not be accessed for visual evaluation. 09-3: Three 2' x 2' x unknown depth floor trenches over holding tank in "vehicle wash area." Trench drains to 1,000-gal. baffled, steel-lined holding pit. A portion of pit contains water emitting a strong gasoline odor. Steel lining of pit is severely corroded.	Waste oils and other run-off materials resulting from vehicle and equipment maintenance; fuel oils.	SBFL3-33 SBFL3-34 SBFL3-35 SBFL3-36 SBFL3-37	None	--	--	Trichloroethene Vinyl chloride	13 3.0	5 2	Monitoring wells RFI-09-01 and RFI-09-04, and soil boring/grab groundwater sample collection locations RFI-09-02 and RFI-09-03 positioned downgradient of primary components of this AOI to further assess the presence of VOCs and metals in this area.	None

TABLE 6

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI ACTIVITIES – SOUTHEND AOIs
(See Notes on Table 7)

AOI Group ID	AOIs in Group	Building Association	AOI Description (most cases – precleaning conditions)	Summary of Primary Hazardous Materials Managed	Primary Soil boring/grab groundwater sample collection locations/ Monitoring Wells Used to Characterize AOI	Summary of Relevant Existing/Available Soil/Residue Analytical Data			Summary of Relevant Existing/Available Groundwater Analytical Data			Proposed Initial RFI Activities	Proposed Existing Monitoring Well Sampling
						Analyte Detected Above Michigan Part 201 IDC Criteria in One or More Sample(s)	Maximum Concentration (ppm)	Michigan Part 201 IDC Criteria (ppm)	Analyte Detected Above Generic Michigan Part 201 RDW Criteria in One or More Sample(s)	Maximum Concentration (ppb)	Michigan Part 201 RDW Criteria (ppb)		
09-A (con't)	09-2 09-3 09-4 09-6 (con't)	09 (con't)	09-4: 20' x 60' x 2' deep concrete containment for former 12,000-gallon fuel oil AST. Tank has been removed. Portions of containment area contain dirt/gravel over concrete, while others are covered with cracked asphalt. Full visual evaluation could not be performed. 09-6: Former 6,000-gallon AST containing fuel oil.	Waste oils and other run-off materials resulting from vehicle and equipment maintenance; fuel oils.	SBFL3-33 SBFL3-34 SBFL3-35 SBFL3-36 SBFL3-37	None	--	--	Trichloroethene Vinyl chloride	13 3.0	5 2	Monitoring wells RFI-09-01 and RFI-09-04, and soil boring/grab groundwater sample collection locations RFI-09-02 and RFI-09-03 positioned downgradient of primary components of this AOI to further assess the presence of VOCs and metals in this area.	None
09-B	09-5	09	Former Building 31/Hamilton Avenue Tank Farm. This area included several USTs, each 12,000 gallons in size, and containing gasoline, anti-freeze, power steering fluid, diesel fuel, freon, and other lubricants. This area is subject to ongoing investigations.	Gasoline, solvents, and fuel oils.	31-1 through 31-6 31-8 31-101 through 31-111 SBFL3-30 SBFL3-31 SBFL3-32	None	--	--	1,2-Dichloroethane Benzene Ethylbenzene Toluene m&p-Xylene o-Xylene Barium Lead	13 980 1,600 11,000 4,800 1,700 2,400 31	5 5 74 790 280 280 2,000 4	Free product has been identified in this area. Soil boring/grab groundwater sample collection location RFI-09-05 and monitoring wells RFI-09-06 through RFI-09-09 positioned downgradient of AOI. Several contingent monitoring well locations identified to assess extent of LNAPL. Existing monitoring wells 31-5, 31-6 & 31-8 to be sampled to provide current groundwater data at these locations.	31-5 31-6 31-8

TABLE 7

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

NOTES FOR TABLES 3 THROUGH 6 (PROPOSED RFI ACTIVITIES)

1. Detected constituents presented in this table include VOCs, SVOCs, PCBs, and metals.

2. Relevant data include those constituents with detected concentrations greater than the associated MI Part 201 criteria (IDW and/or RDW for groundwater, and IDC for soils).

3. All sampling and analysis activities will be performed in general accordance with the FSP/QAPP and HASP.

4. Soil borings will be installed using the following procedures (methodologies detailed in the FSP/QAPP):
   a. Soil borings will be installed to the encountered water table interface, or 10 feet, whichever is deeper.
   b. Soil samples will be collected at representative (2- or 4-foot) depth intervals as dictated by the installation method: split spoon samplnig (ASTM D-1586) or direct-push methods;
   c. Field oil-water shake tests will be conducted on soil samples, based on visual/olfactory and PID readings. If there is no evidence of contamination, oil-water shake tests will be performed on the samples collected at and immediately above the water table.
   d. Up to four soil samples will be collected for laboratory analysis from each soil boring:
      i. One soil sample will be collected from the ground surface **to a depth of 2 feet** or immediately beneath pavement (e.g., **0.5 to 2.5-foot** depth **increment** below 6 inches of pavement).
      ii. One soil sample will be collected from the 8- to 10-foot depth increment (utility worker scenario).
      iii. One soil sample will be collected from the 2-foot depth increment immediately above the water table (saturated zone).
      iv. Up to one other soil sample may be collected based on high PID readings (greater than 10 units) or visual evidence of contamination.
      v. No sampling will be performed on surface cover materials (i.e., concrete or asphalt pavement or floors).

4. Monitoring wells will be generally constructed as follows:
   a. The well riser will be constructed of 2-inch diameter Schedule 40 Polyvinyl Chloride (PVC) pipe, with a 5-foot section of 0.010-inch slotted Schedule 40 PVC screen straddling the encountered water table.
   b. The annulus surrounding the screened section will be filled with a sand pack to a level approximately 1 foot above the top of the screened section.
   c. Bentonite pellets will be used to seal the remainder of the annulus surrounding the well riser up to approximately 0.5 feet bgs.
   d. A locking well cap will be installed in the well riser.
   e. The well will be finished by installing a 9-inch diameter protective curb box in concrete so that the protective cover is installed flush with the surrounding surface.
   f. Monitoring wells installed inside factory buildings will be constructed of 1.5-inch diameter Schedule 40 PVC or larger well materials with similar well construction details (b through e, above).

5. If a monitoring well is proposed for a sample location, the soil boring will be immediately converted to a monitoring well. In addition, upon collection of soil samples, if high PID readings are noted within a soil boring, and/or there is visual evidence of contamination at the water table, that particular soil boring may be converted to a monitoring well following collection of soil samples.

TABLE 7

GENERAL MOTORS CORPORATION, NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

NOTES FOR TABLES 3 THROUGH 6 (PROPOSED RFI ACTIVITIES)

6. If NAPL is observed during installation of a soil boring, a monitoring well may be installed, and a new soil boring(s) may be proposed nearby in an attempt to delineate the extent of NAPL in the area. These new soil borings will be installed following approval of locations by GM and USEPA, and appropriate utility clearance, and in the same manner as the other planned soil borings.

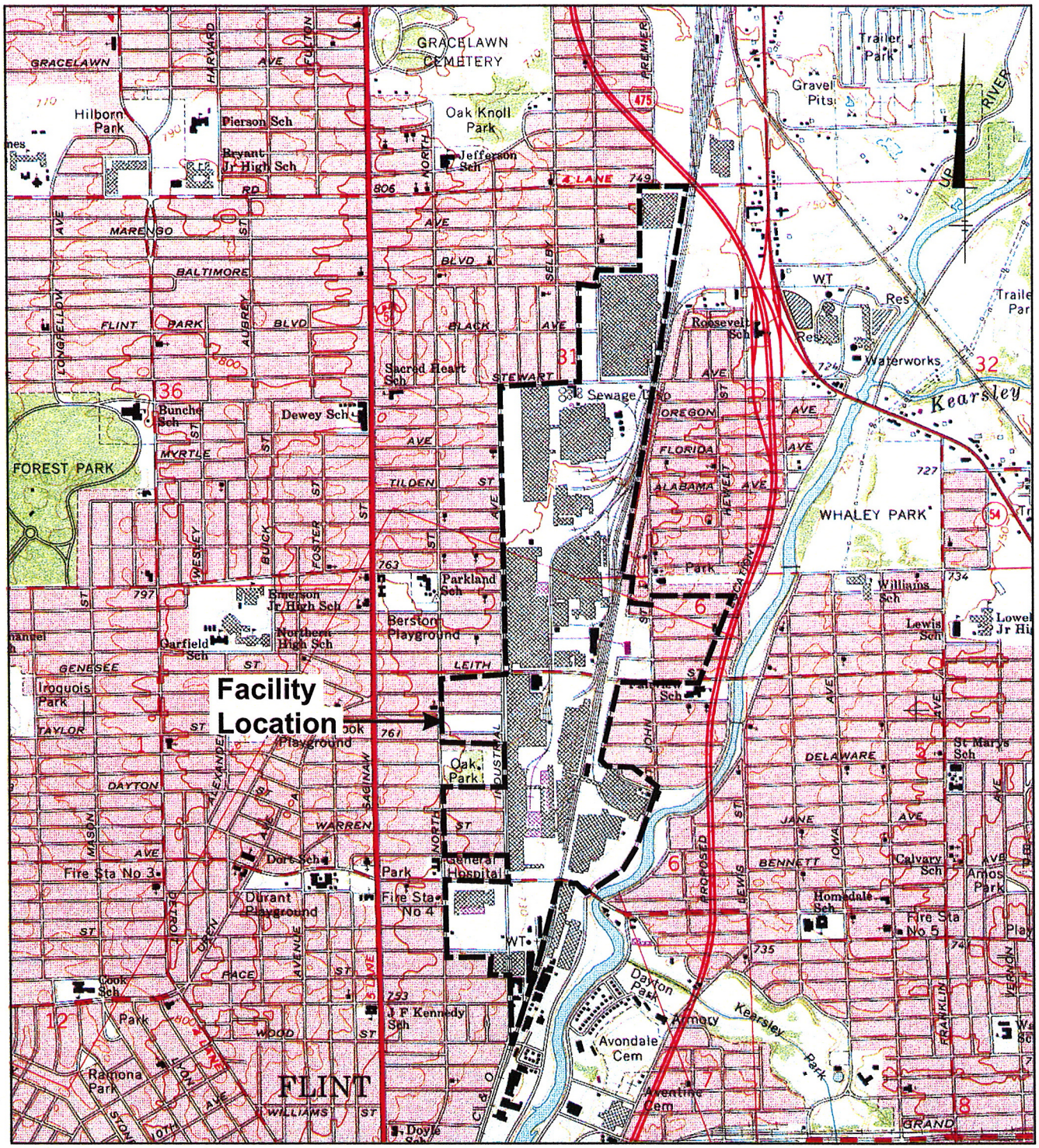
7. Following installation and development of monitoring wells, two rounds of groundwater sampling will be conducted. The first round of groundwater sampling will consist of sampling all new wells and those existing wells selected for additional sampling. A subsequent round of groundwater samples will be collected only from those wells where constituents were detected at concentrations greater than their respective MI Part 201 Criteria.

8. **Soil, groundwater, and NAPL** samples submitted for laboratory analysis will be analyzed for constituents on the Project Analyte List (PAL) **either the full PAL, specific fractions of the PAL, or industrial constituents of the PAL.**

9. Acronyms/abbreviations:

AOI	Area of Interest
dioxins/furans	polychlorinated dibenzo-p-dioxins/polychlorinated dibenzofurans
FSP	Field Sampling Plan
HASP	Health and Safety Plan
IDC	Industrial Direct Contact Criteria (soil)
IDW	Industrial & Commercial II, III, and IV Drinking Water (groundwater)
IM	Interim Measure
MI Part 201	Part 201 of the Michigan Natural Resources and Environmental Protection Act, 1994 PA 451, as amended.
NAPL	Nonaqueous phase liquid
PAL	Project Analyte List
PCBs	polychlorinated biphenyls
PID	Photoionization Detector
QAPP	Quality Assurance Project Plan
RDW	Residential & Commercial I Drinking Water Criteria (groundwater)
SVOCs	semivolatile organic compounds
VOCs	volatile organic compounds

Figures



REFERENCE: Base Map Source: USGS 7.5 Min. Topo. Quad., Flint North, Mich. (1969, Photorevised 1975).

2,000' 0 2,000'

APPROX. SCALE 1" = 2,000'

Area Enlargement

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS

RCRA FACILITY INVESTIGATION WORK PLAN

SITE LOCATION MAP

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

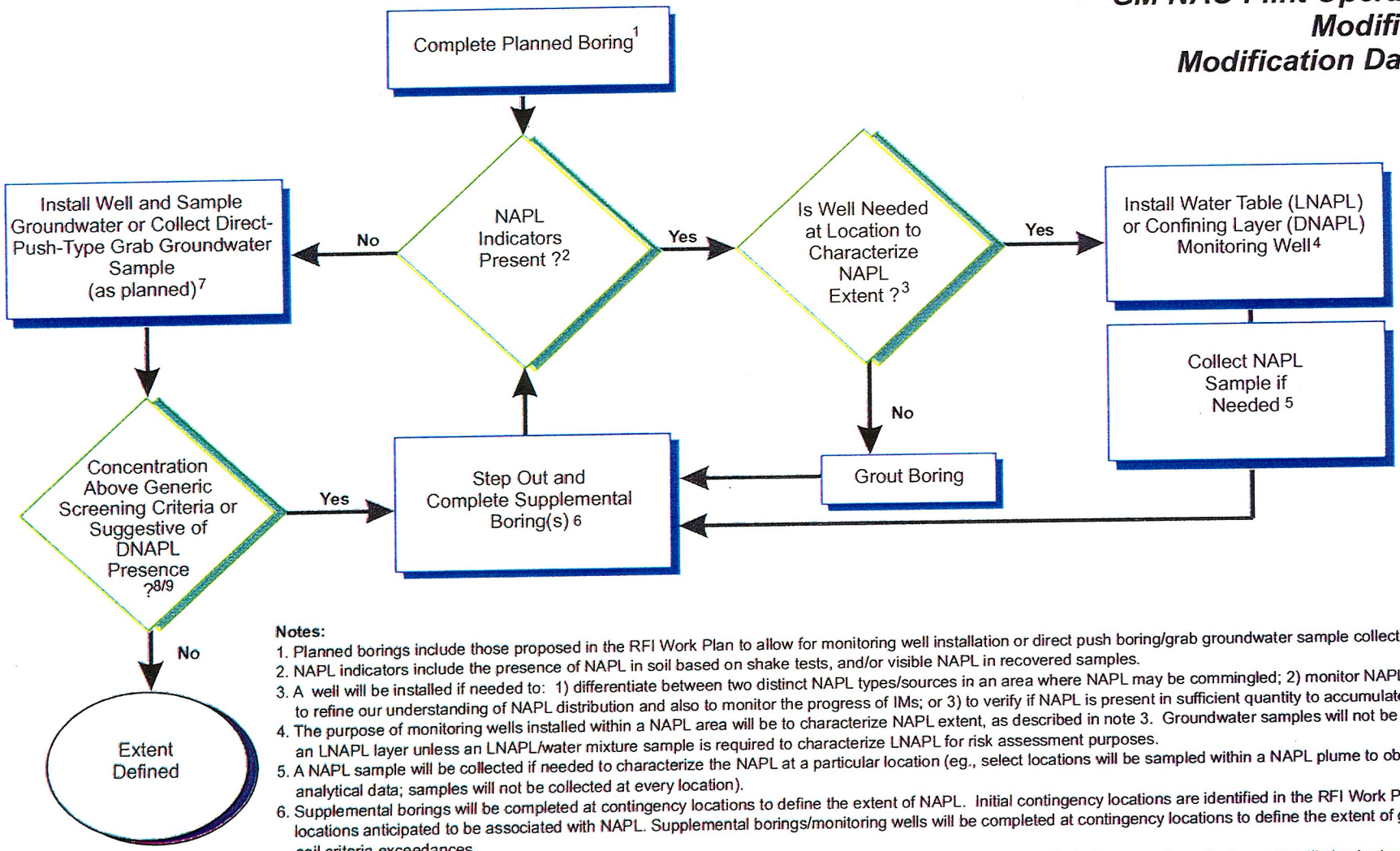
FIGURE 1

03/01 SYR-D54-DJH YCC LAS
64410012/64410n02.CDR

Decision Logic Flow Chart for Groundwater and NAPL Sample Collection

Figure 2

RFI Work Plan
GM NAO Flint Operations Site
Modification # 1
Modification Date: 7/5/01



Notes:

1. Planned borings include those proposed in the RFI Work Plan to allow for monitoring well installation or direct push boring/grab groundwater sample collection.
2. NAPL indicators include the presence of NAPL in soil based on shake tests, and/or visible NAPL in recovered samples.
3. A well will be installed if needed to: 1) differentiate between two distinct NAPL types/sources in an area where NAPL may be commingled; 2) monitor NAPL thickness in order to refine our understanding of NAPL distribution and also to monitor the progress of IMs; or 3) to verify if NAPL is present in sufficient quantity to accumulate in the well.
4. The purpose of monitoring wells installed within a NAPL area will be to characterize NAPL extent, as described in note 3. Groundwater samples will not be collected through an LNAPL layer unless an LNAPL/water mixture sample is required to characterize LNAPL for risk assessment purposes.
5. A NAPL sample will be collected if needed to characterize the NAPL at a particular location (eg., select locations will be sampled within a NAPL plume to obtain representative analytical data; samples will not be collected at every location).
6. Supplemental borings will be completed at contingency locations to define the extent of NAPL. Initial contingency locations are identified in the RFI Work Plan for those boring locations anticipated to be associated with NAPL. Supplemental borings/monitoring wells will be completed at contingency locations to define the extent of groundwater and soil criteria exceedances.
7. In areas associated with previous PCB detections in groundwater, permanent monitoring wells will be installed. Permanent monitoring wells will also be installed if groundwater elevation data are required. Grab groundwater samples will be collected at other locations.
8. Groundwater data will be compared to the Generic MDEQ screening criteria, as follows:
   - Groundwater analytical data collected at site interior locations will be screened against Industrial Drinking Water Criteria and the Groundwater Contact Criteria;
   - Groundwater analytical data collected at non-river site perimeter locations will be screened against Residential Drinking Water Criteria and Groundwater Contact Criteria;
   - Groundwater analytical data collected at river perimeter locations will be screened against GSI Criteria and Groundwater Contact Criteria.
9. For identifying potential DNAPL presence, the concentrations of DNAPL-related constituents detected in groundwater (if any) will be individually compared to the corresponding threshold concentration equal to 1% of their respective effective solubility.

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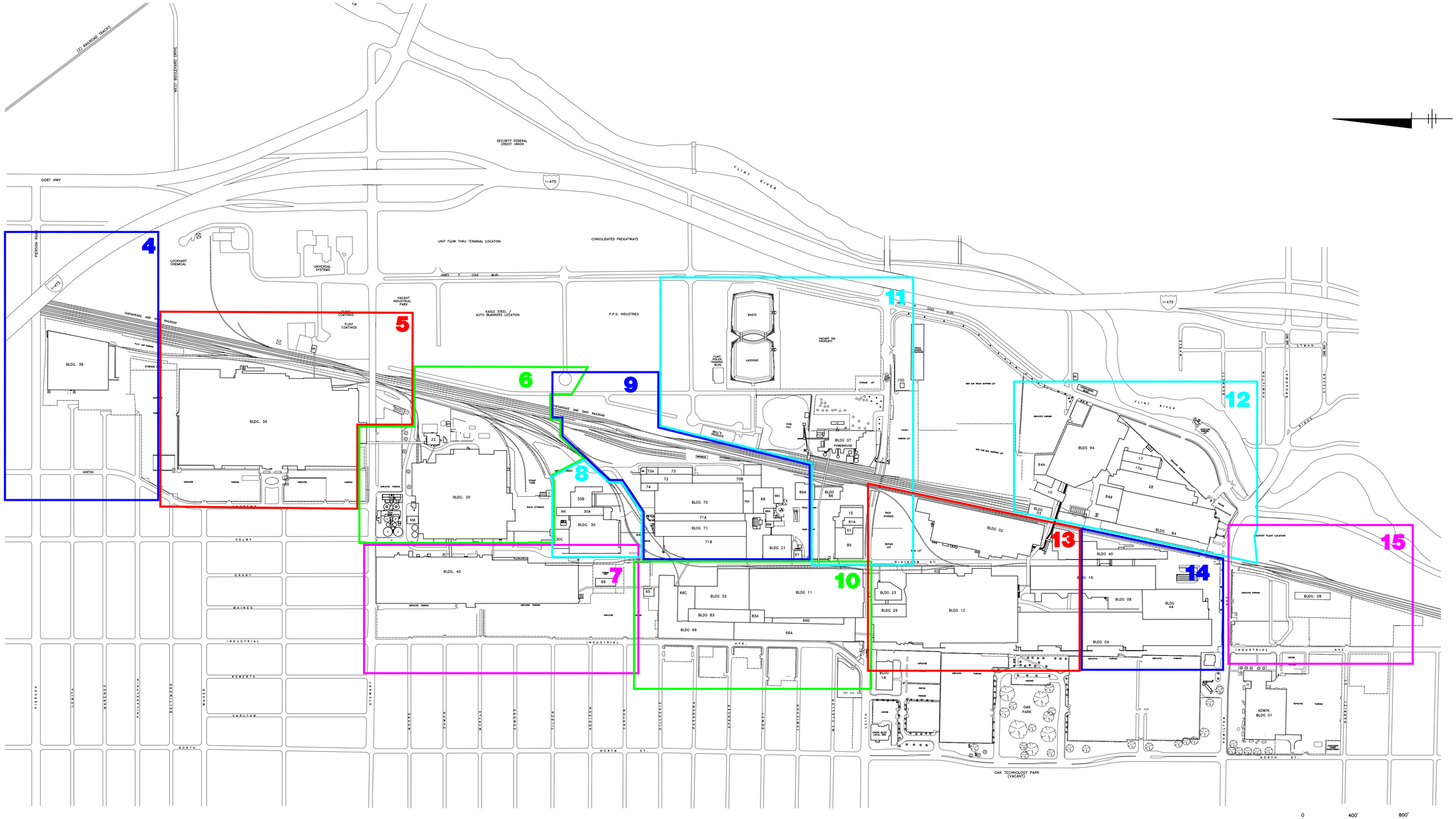


8

APPROXIMATE FIGURE COVERAGE

NOTES:

1. THIS MAP DEPICTS THE APPROXIMATE EXTENT OF COVERAGE OF EACH OF THE FIGURES 4 THROUGH 15.
2. BASE MAP SUPPLIED BY GENERAL MOTORS CORPORATION.

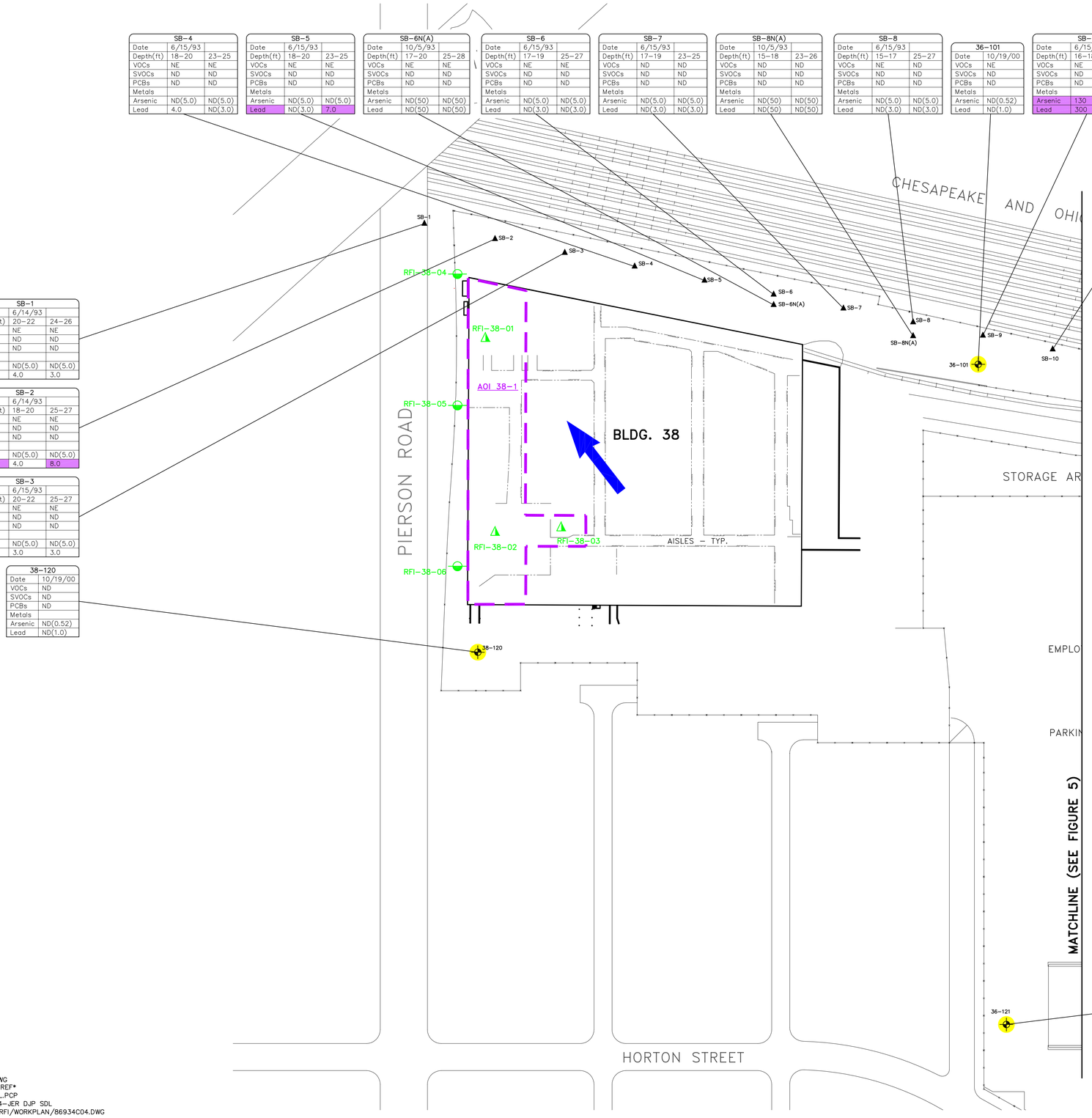
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

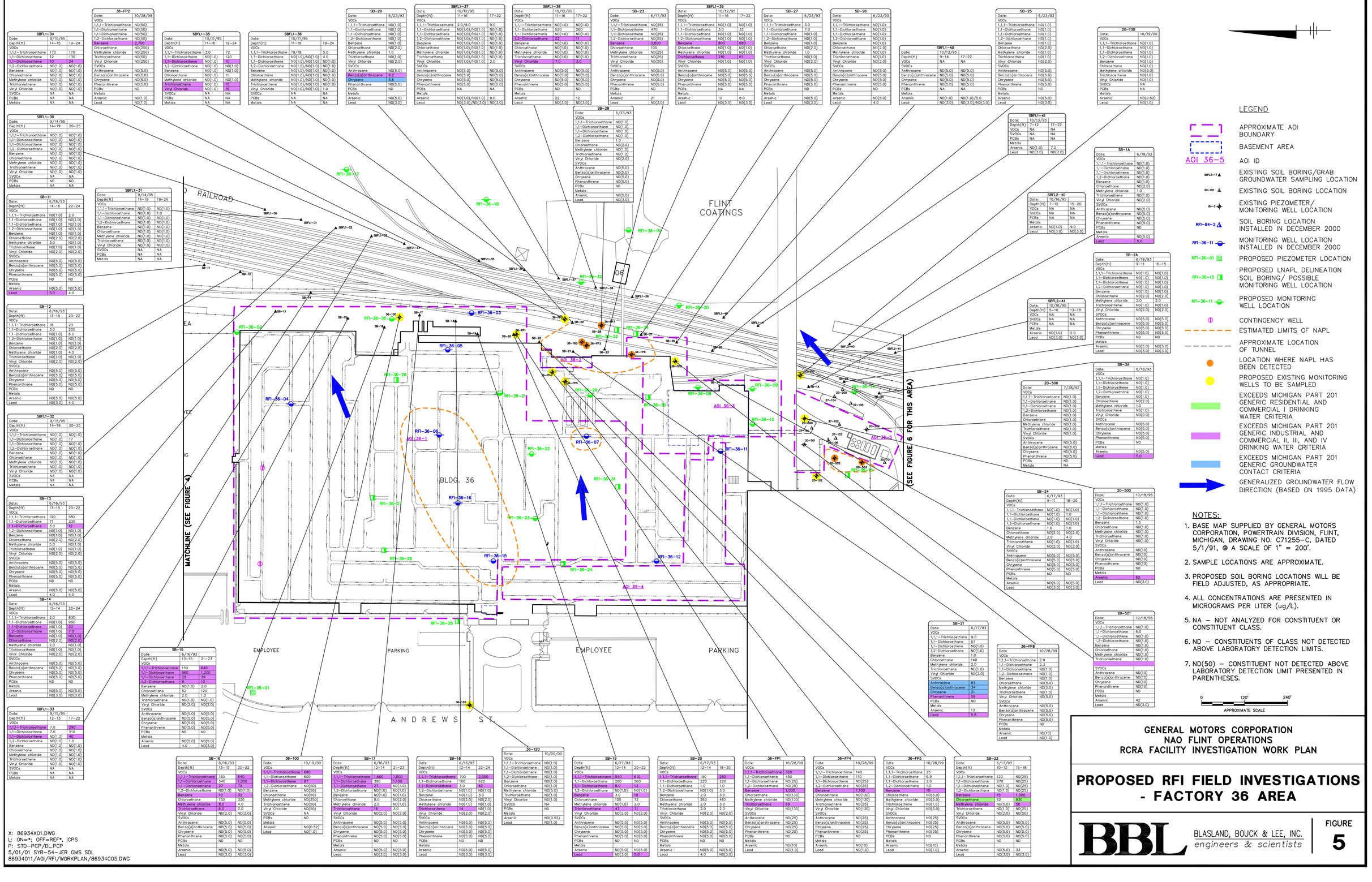
FIGURE KEY FOR COVERAGE AREAS - FIGURES 4 THROUGH 15

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 3

L: ON=*; OFF=REF*
P: STD-PCP/DL
5/01/01 SYR-54-GMS DJP SDL
86934011/AOI/RFI/WORKPLAN/86934B02.DWG


SB-4
Date 6/15/93
Depth(ft) 18–20 23–25
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead 4.0 ND(3.0)
SB-5
Date 6/15/93
Depth(ft) 18–20 23–25
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead ND(3.0) 7.0
SB-6N(A)
Date 10/5/93
Depth(ft) 17–20 25–28
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(50) ND(50)
Lead ND(50) ND(50)
SB-6
Date 6/15/93
Depth(ft) 17–19 25–27
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead ND(3.0) ND(3.0)
SB-7
Date 6/15/93
Depth(ft) 17–19 23–25
VOCs ND ND
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead ND(3.0) ND(3.0)
SB-8N(A)
Date 10/5/93
Depth(ft) 15–18 23–26
VOCs ND ND
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(50) ND(50)
Lead ND(50) ND(50)
SB-8
Date 6/15/93
Depth(ft) 15–17 25–27
VOCs NE ND
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead ND(3.0) ND(3.0)
36-101
Date 10/19/00
VOCs NE
SVOCs ND
PCBs ND
Metals
Arsenic ND(0.52)
Lead ND(1.0)
SB-9
Date 6/15/93
Depth(ft) 16–18 23–25
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic 130 ND(5.0)
Lead 300 ND(3.0)
SB-10
Date 6/16/93
Depth(ft) 15–17 22–24
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead ND(3.0) ND(3.0)
SB-1
SB-2
SB-3
SB-6N(A)
SB-7
SB-8
SB-8N(A)
SB-9
SB-10
RFI-38-04
RFI-38-01
AOI 38-1
RFI-38-05
RFI-38-02
RFI-38-03
RFI-38-06
BLDG. 38
AISLES – TYP.
PIERSON ROAD
CHESAPEAKE AND OHI
STORAGE AR
EMPLO
PARKIN
HORTON STREET
MATCHLINE (SEE FIGURE 5)
SB-1
Date 6/14/93
Depth(ft) 20–22 24–26
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead 4.0 3.0
SB-2
Date 6/14/93
Depth(ft) 18–20 25–27
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead 4.0 8.0
SB-3
Date 6/15/93
Depth(ft) 20–22 25–27
VOCs NE NE
SVOCs ND ND
PCBs ND ND
Metals
Arsenic ND(5.0) ND(5.0)
Lead 3.0 3.0
38-120
Date 10/19/00
VOCs ND
SVOCs ND
PCBs ND
Metals
Arsenic ND(0.52)
Lead ND(1.0)
36-121
Date: 10/19/00
VOCs ND
SVOCs NA
PCBs ND
Metals
Arsenic ND(0.52)
Lead ND(1.0)
LEGEND
APPROXIMATE AOI BOUNDARY
AOI 38-1
AOI ID
SBFL3-17
EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
84-3
EXISTING PIEZOMETER/ MONITORING WELL LOCATION
RFI-84-2
PROPOSED SOIL BORING LOCATION
RFI-36-11
PROPOSED MONITORING WELL LOCATION
GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA
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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.
7. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
8. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.
0 80' 160'
GRAPHIC SCALE
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN
PROPOSED RFI FIELD INVESTIGATIONS - BUILDING 38 AREA
BBL BLASLAND, BOUCK & LEE, INC. engineers & scientists
FIGURE 4
X: 86934X01.DWG
L: ON=*; OFF=REF*
P: STD-PCP/DL.PCP
5/1/01 SYR-54-JER DJP SDL
86934011/AOI/RFI/WORKPLAN/86934C04.DWG



LEGEND

▭	APPROXIMATE AOI BOUNDARY
▭	BASEMENT AREA
AOI 36-5	AOI ID
SBFL3-17 ▲	EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
20-701 △	EXISTING SOIL BORING LOCATION
84-3 ⊕	EXISTING PIEZOMETER/ MONITORING WELL LOCATION
RFI-84-2 △	SOIL BORING LOCATION INSTALLED IN DECEMBER 2000
RFI-36-11 ⊖	MONITORING WELL LOCATION INSTALLED IN DECEMBER 2000
RFI-36-01 ▣	PROPOSED PIEZOMETER LOCATION
RFI-36-13 ◧	PROPOSED LNAPL DELINEATION SOIL BORING/ POSSIBLE MONITORING WELL LOCATION
RFI-36-11 ⊖	PROPOSED MONITORING WELL LOCATION
◐	CONTINGENCY WELL
– – – –	ESTIMATED LIMITS OF NAPL
— — — —	APPROXIMATE LOCATION OF TUNNEL
●	LOCATION WHERE NAPL HAS BEEN DETECTED
●	PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
🟩	EXCEEDS MICHIGAN PART 201 GENERIC RESIDENTIAL AND COMMERCIAL I DRINKING WATER CRITERIA
🟪	EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA
🟦	EXCEEDS MICHIGAN PART 201 GENERIC GROUNDWATER CONTACT CRITERIA
➡	GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
7. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 120' 240'
APPROXIMATE SCALE

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - FACTORY 36 AREA

BBL
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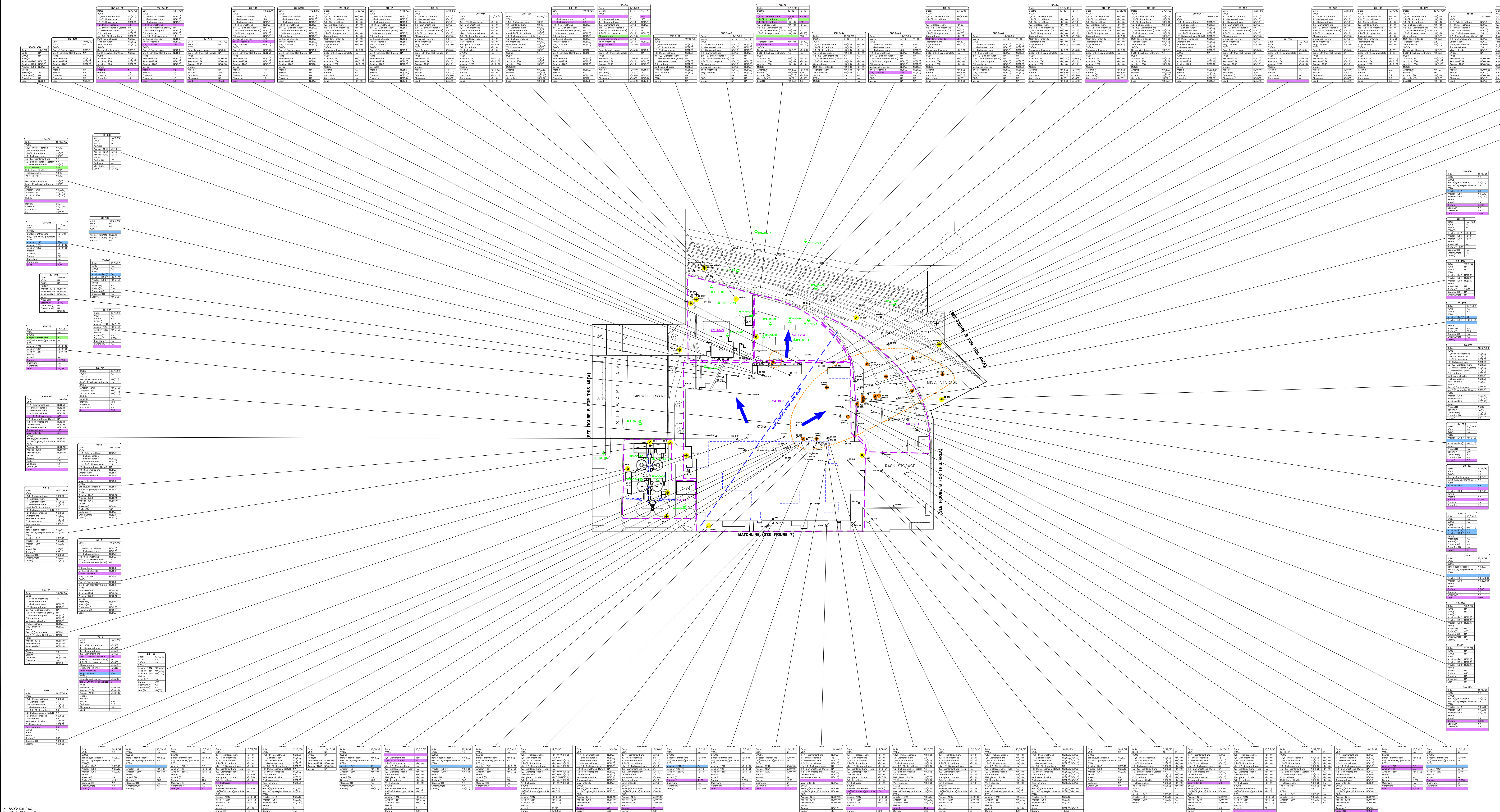
FIGURE
5

X: 86934X01.DWG
L: ON=*; OFF=REF*, |CPS
P: STD-PCP/DL.PCP
5/01/01 SYR-54-JER GMS SDL
86934011/AOI/RFI/WORKPLAN/86934C05.DWG



LEGEND

- APPROXIMATE AOI BOUNDARY
- BASEMENT AREA
- AOI 81-1 — AOI ID
- SBFL3-17 — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 20-469 — EXISTING SOIL BORING LOCATION
- 84-3 — EXISTING PIEZOMETER/ MONITORING WELL LOCATION
- RW-6 — EXISTING RECOVERY WELL
- RFI-36-11 — PROPOSED MONITORING WELL LOCATION
- RFI-55-7 — PROPOSED SURFACE SOIL SAMPLE LOCATION
- RFI-10-14 — PROPOSED SOIL BORING LOCATION
- RFI-55-03 — PROPOSED SHALLOW SOIL BORING LOCATION
- RFI-55-08 — PROPOSED SHALLOW SOIL BORING LOCATION INSTALLED IN MARCH 2001
- ESTIMATED LIMITS OF NAPL
- LOCATION WHERE NAPL HAS BEEN DETECTED
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC RESIDENTIAL AND COMMERCIAL I DRINKING WATER CRITERIA
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA
- EXCEEDS MICHIGAN PART 201 GENERIC GROUNDWATER CONTACT CRITERIA
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.
7. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
8. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 120' 240'
APPROXIMATE SCALE

X: 86934X01.DWG
L: ON=*, OFF=REF*
P: 64x32.PCP
5/1/01 SYR-54-JER GMS SDL
86934011/AOI/RFI/WORKPLAN/86934C06.DWG

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - BUILDINGS 55, 55A, 55B & FACTORY 10 AREAS

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 6

43-103	
Date	10/20/00
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	NA
PCBs	
Aroclor-1016	ND(0.10)
Aroclor-1242	ND(0.10)
Aroclor-1248	ND(0.10)
Metals	
Arsenic	ND(0.52)
Lead	ND(1.0)

43-269		
Date	5/12/94	
Depth(ft)	16	24
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	1.7	3.7
Trichloroethene	1.1	ND(1.0)
Vinyl chloride	ND(5.0)	ND(5.0)
SVOCs		
Benzo(b)fluoranthene	ND(5.0)	ND(5.0)
PCBs		
Aroclor-1016	ND(1.0)	ND(0.62)
Aroclor-1242	ND(1.0)	ND(0.62)
Aroclor-1248	ND(1.0)	ND(0.62)
Metals		
Arsenic	ND(1.0)	ND(1.0)
Lead	ND(3.0)	ND(3.0)

43-100	
Date	10/18/95
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(10)
PCBs	
Aroclor-1016	ND(0.10)
Aroclor-1242	ND(0.10)
Aroclor-1248	ND(0.10)
Metals	
Arsenic	2.0
Lead	ND(3.0)

43-101	
Date	10/18/95
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(10)
PCBs	
Aroclor-1016	ND(0.10)
Aroclor-1242	ND(0.10)
Aroclor-1248	ND(0.10)
Metals	
Lead	ND(3.0)

43-301	
Date	10/1/91
VOCs	NA
SVOCs	NA
PCBs	
Aroclor-1016	ND(0.70)
Aroclor-1242	ND(0.70)
Aroclor-1248	ND(0.70)
Metals	
Arsenic	10
Lead	ND(1.0)

43-102	
Date	10/18/95
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	26
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(10)
PCBs	
Aroclor-1016	ND(0.10)
Aroclor-1242	ND(0.10)
Aroclor-1248	ND(0.10)
Metals	
Arsenic	14
Lead	ND(3.0)

43-160	
Date	11/14/91
VOCs	
1,1,2-Trichloroethane	ND(3.0)/ND(3.0)
1,1-Dichloroethene	ND(2.0)/ND(2.0)
1,2-Dichloroethane	ND(2.0)/ND(2.0)
trans-1,2-Dichloroethene	NA
Trichloroethene	2.0/3.0
Vinyl chloride	23/27
SVOCs	
Benzo(b)fluoranthene	ND(1.3)/ND(1.3)
PCBs	
Aroclor-1016	ND(1.0)/ND(0.55)
Aroclor-1242	ND(1.0)/ND(0.55)
Aroclor-1248	ND(1.0)/ND(0.55)
Metals	
Arsenic	100/94
Lead	310/290

43-406	
Date	7/21/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(0.20)
Aroclor-1242	ND(0.20)
Aroclor-1248	ND(0.20)
Metals	
Arsenic	11
Lead	ND(3.0)

43-405	
Date	7/21/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(0.20)
Aroclor-1242	ND(0.20)
Aroclor-1248	ND(0.20)
Metals	
Arsenic	ND(1.0)
Lead	ND(3.0)

20-147		
Date	3/12/93	
Depth(ft)	9	14
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	7.0
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs	NA	NA
PCBs		
Aroclor-1016	NA	ND(0.10)
Aroclor-1242	NA	3.4
Aroclor-1248	NA	ND(0.10)
Metals		
Arsenic	NA	NA
Lead	NA	NA

43-404	
Date	7/21/94
VOCs	
1,1,2-Trichloroethane	38
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(0.20)
Aroclor-1242	ND(0.20)
Aroclor-1248	ND(0.20)
Metals	
Arsenic	7.0
Lead	ND(3.0)

30-120	
Date	10/18/95
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(10)
PCBs	
Aroclor-1016	ND(0.10)
Aroclor-1242	ND(0.10)
Aroclor-1248	ND(0.10)
Metals	
Arsenic	14
Lead	ND(3.0)

43-402	
Date	7/20/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(0.20)
Aroclor-1242	ND(0.20)
Aroclor-1248	ND(0.20)
Metals	
Arsenic	27
Lead	ND(3.0)

30-224		
Date	3/12/93	
Depth(ft)	10	18
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs	NA	NA
PCBs		
Aroclor-1016	ND(0.10)	NA
Aroclor-1242	ND(0.10)	NA
Aroclor-1248	ND(0.10)	NA
Metals		
Arsenic	NA	NA
Lead	NA	NA

43-208		
Date	5/13/94	
Depth(ft)	16	24
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	1.9	4.3
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(5.0)	ND(5.0)
SVOCs		
Benzo(b)fluoranthene	ND(5.0)	ND(5.0)
PCBs		
Aroclor-1016	ND(1.2)	ND(1.2)
Aroclor-1242	ND(1.2)	ND(1.2)
Aroclor-1248	ND(1.2)	ND(1.2)
Metals		
Arsenic	ND(1.0)	4.0
Lead	ND(3.0)	47

43-207	
Date	5/13/94
Depth(ft)	23
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	1.8
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(0.60)
Aroclor-1242	ND(0.60)
Aroclor-1248	ND(0.60)
Metals	
Arsenic	ND(1.0)
Lead	ND(3.0)

43-220		
Date	5/13/94	
Depth(ft)	13	23
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	3.2	4.8
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(5.0)	ND(5.0)
SVOCs		
Benzo(b)fluoranthene	ND(5.0)	ND(5.0)/ND(5.0)
PCBs		
Aroclor-1016	ND(1.2)	ND(1.1)/ND(1.1)
Aroclor-1242	ND(1.2)	ND(1.1)/ND(1.1)
Aroclor-1248	ND(1.2)	ND(1.1)/ND(1.1)
Metals		
Arsenic	ND(1.0)	ND(1.0)
Lead	ND(3.0)	ND(3.0)

30-243		
Date	3/12/93	
Depth(ft)	10	18
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	8.5
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs		
Benzo(b)fluoranthene	NA	NA
PCBs		
Aroclor-1016	ND(0.10)	NA
Aroclor-1242	ND(0.10)	NA
Aroclor-1248	ND(0.10)	NA
Metals		
Arsenic	NA	NA
Lead	NA	NA

30-140	
Date	10/18/95
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(10)
PCBs	
Aroclor-1016	ND(0.10)
Aroclor-1242	ND(0.10)
Aroclor-1248	ND(0.10)
Metals	
Arsenic	ND(1.0)
Lead	ND(3.0)

30-241		
Date	3/12/93	
Depth(ft)	9	18
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	26	26
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs		
Benzo(b)fluoranthene	NA	NA
PCBs		
Aroclor-1016	ND(0.10)	NA
Aroclor-1242	ND(0.10)	NA
Aroclor-1248	ND(0.10)	NA
Metals		
Arsenic	NA	NA
Lead	NA	NA

30-223		
Date	3/12/93	
Depth(ft)	10	18
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	1.4	ND(1.0)
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs		
Benzo(b)fluoranthene	NA	NA
PCBs		
Aroclor-1016	ND(0.10)	NA
Aroclor-1242	ND(0.10)	NA
Aroclor-1248	ND(0.10)	NA
Metals		
Arsenic	NA	NA
Lead	NA	NA

43-140	
Date	10/20/00
VOCs	
1,1,2-Trichloroethane	ND(10)
1,1-Dichloroethene	ND(10)
1,2-Dichloroethane	ND(10)
trans-1,2-Dichloroethene	ND(10)
Methylene chloride	ND(50)
Trichloroethene	240
Vinyl chloride	ND(10)
SVOCs	
Benzo(b)fluoranthene	NA
PCBs	
Aroclor-1016	ND(0.10)
Aroclor-1242	ND(0.10)
Aroclor-1248	ND(0.10)
Metals	
Arsenic	ND(0.52)
Lead	ND(1.0)

43-403	
Date	7/20/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(0.20)
Aroclor-1242	ND(0.20)
Aroclor-1248	ND(0.20)
Metals	
Arsenic	110
Lead	ND(3.0)

43-120		
Date	2/4/99	
VOCs		
1,1,2-Trichloroethane	ND(1.0)	
1,1-Dichloroethene	ND(1.0)	
1,2-Dichloroethane	ND(1.0)	
trans-1,2-Dichloroethene	ND(1.0)	
Methylene chloride	ND(1.0)	
Trichloroethene	ND(1.0)	
Vinyl chloride	ND(1.0)	
SVOCs		
Benzo(b)fluoranthene	NA	
PCBs		
Aroclor-1016	ND(0.10)	
Aroclor-1242	ND(0.10)	
Aroclor-1248	ND(0.10)	
Metals		
Arsenic	ND(1.0)	
Lead	ND(3.0)	

43-401	
Date	7/20/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(0.20)
Aroclor-1242	ND(0.20)
Aroclor-1248	ND(0.20)
Metals	
Arsenic	50
Lead	14

43-241		
Date	5/9/94	
Depth(ft)	13.5	21
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	1.6	ND(1.0)
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(5.0)	ND(5.0)
SVOCs		
Benzo(b)fluoranthene	ND(5.0)	ND(5.0)
PCBs		
Aroclor-1016	0.38	0.60
Aroclor-1242	ND(0.10)	ND(0.10)
Aroclor-1248	ND(0.10)	ND(0.10)
Metals		
Arsenic	3.0	4.0
Lead	ND(3.0)	4.0

43-268		
Date	5/12/94	
Depth(ft)	16	20
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	ND(1.0)	ND(1.0)
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	ND(1.0)
Methylene chloride	4.6	1.4
Trichloroethene	18	ND(1.0)
Vinyl chloride	ND(5.0)	ND(5.0)
SVOCs		
Benzo(b)fluoranthene	NA	ND(5.0)
PCBs		
Aroclor-1016	NA	ND(0.56)
Aroclor-1242	NA	ND(0.56)
Aroclor-1248	NA	ND(0.56)
Metals		
Arsenic	NA	ND(1.0)
Lead	NA	ND(3.0)

43-242	
Date	8/9/99
VOCs	
1,1,2-Trichloroethane	NA
1,1-Dichloroethene	NA
1,2-Dichloroethane	NA
trans-1,2-Dichloroethene	NA
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	
Benzo(b)fluoranthene	NA
PCBs	
Aroclor-1016	NA
Aroclor-1242	NA
Aroclor-1248	NA
Metals	
Arsenic	ND(2.7)
Lead	ND(1.6)

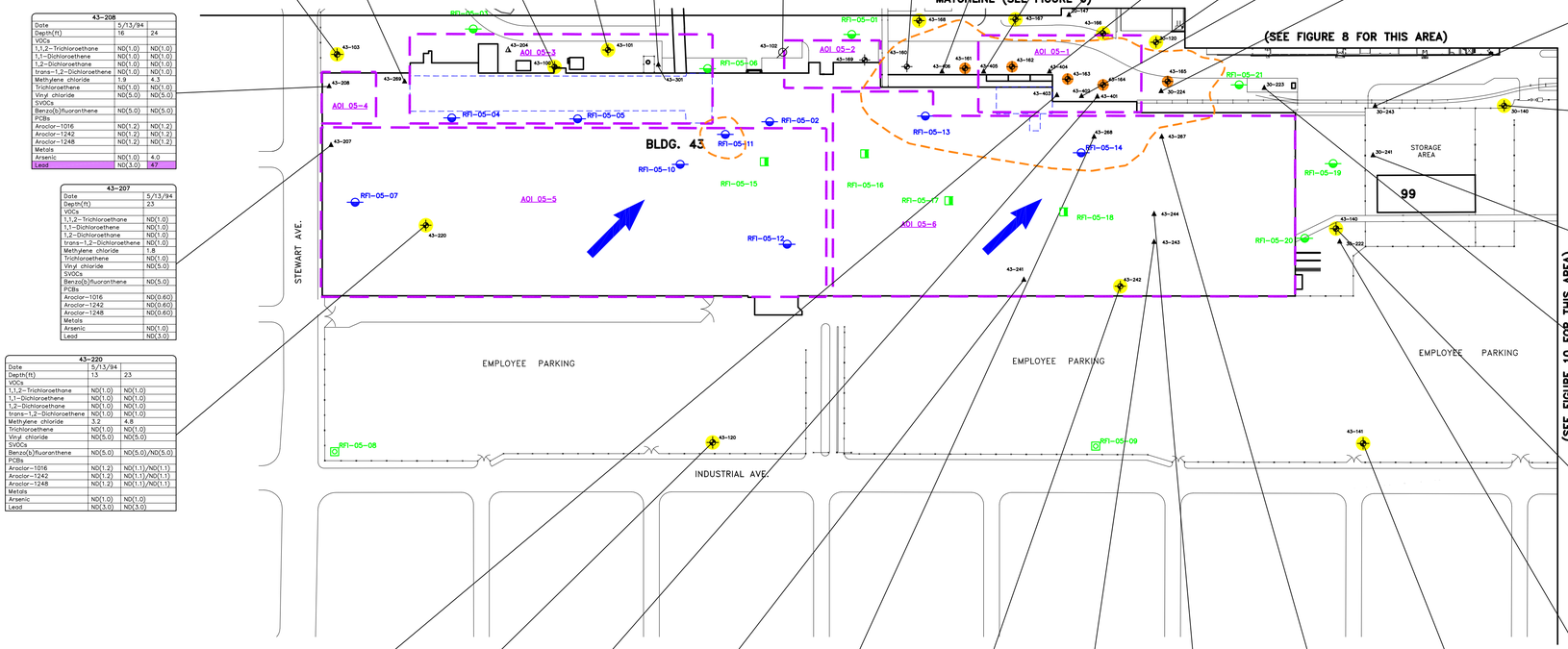
43-243	
Date	5/10/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	2.7
trans-1,2-Dichloroethene	2.2
Methylene chloride	2.2
Trichloroethene	2.2
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(1.0)
Aroclor-1242	ND(1.0)
Aroclor-1248	ND(1.0)
Metals	
Arsenic	89
Lead	120

43-244	
Date	5/11/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)
1,1-Dichloroethene	ND(1.0)
1,2-Dichloroethane	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(b)fluoranthene	15
PCBs	
Aroclor-1016	ND(1.3)
Aroclor-1242	ND(1.3)
Aroclor-1248	ND(1.3)
Metals	
Arsenic	38
Lead	ND(3.0)

43-267	
Date	5/13/94
VOCs	
1,1,2-Trichloroethane	ND(1.0)/ND(1.0)
1,1-Dichloroethene	ND(1.0)/ND(1.0)
1,2-Dichloroethane	ND(1.0)/ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)/ND(1.0)
Methylene chloride	1.5/1.9
Trichloroethene	ND(1.0)/ND(1.0)
Vinyl chloride	ND(5.0)/ND(5.0)
SVOCs	
Benzo(b)fluoranthene	ND(5.0)
PCBs	
Aroclor-1016	ND(1.2)
Aroclor-1242	ND(1.2)
Aroclor-1248	ND(1.2)
Metals	
Arsenic	1.0
Lead	ND(3.0)

43-141		
Date	10/20/00	
VOCs		
1,1,2-Trichloroethane	ND(1.0)	
1,1-Dichloroethene	ND(1.0)	
1,2-Dichloroethane	ND(1.0)	
trans-1,2-Dichloroethene	ND(1.0)	
Methylene chloride	ND(5.0)	
Trichloroethene	ND(1.0)	
Vinyl chloride	ND(1.0)	
SVOCs		
Benzo(b)fluoranthene	NA	
PCBs		
Aroclor-1016	ND(0.11)	
Aroclor-1242	ND(0.11)	
Aroclor-1248	ND(0.11)	
Metals		
Arsenic	ND(0.52)	
Lead	ND(1.0)/ND(1.0)	

30-222		
Date	3/12/93	
Depth(ft)	10	18
VOCs		
1,1,2-Trichloroethane	ND(1.0)	ND(1.0)
1,1-Dichloroethene	2.5	13
1,2-Dichloroethane	ND(1.0)	ND(1.0)
trans-1,2-Dichloroethene	ND(1.0)	130
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	1,100	1,400
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs		
Benzo(b)fluoranthene	NA	NA
PCBs		
Aroclor-1016	ND(0.10)	NA
Aroclor-1242	ND(0.10)	NA
Aroclor-1248	0.72	NA
Metals		
Arsenic	NA	NA
Lead	NA	NA



LEGEND

- APPROXIMATE AOI BOUNDARY
- BASEMENT AREA
- AOI 05-1 — AOI ID
- SBFL3-17 ▲ — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 43-204 ▲ — EXISTING SOIL BORING LOCATION
- 84-3 — EXISTING PIEZOMETER/MONITORING WELL LOCATION
- RFI-05-08 — PROPOSED MONITORING WELL LOCATION
- RFI-36-01 — PROPOSED PIEZOMETER LOCATION
- RFI-36-13 — PROPOSED LNAPL DELINEATION SOIL BORING/ POSSIBLE MONITORING WELL LOCATION
- RFI-05-14 — MONITORING WELL LOCATION INSTALLED IN JANUARY 2001
- 43-102 — MONITORING WELL SCHEDULED FOR DECOMMISSION AND ABANDONMENT
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- ESTIMATED LIMITS OF NAPL
- LOCATION WHERE NAPL HAS BEEN DETECTED
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA
- EXCEEDS MICHIGAN PART 201 GENERIC GROUNDWATER CONTACT CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 120' 240'
APPROXIMATE SCALE

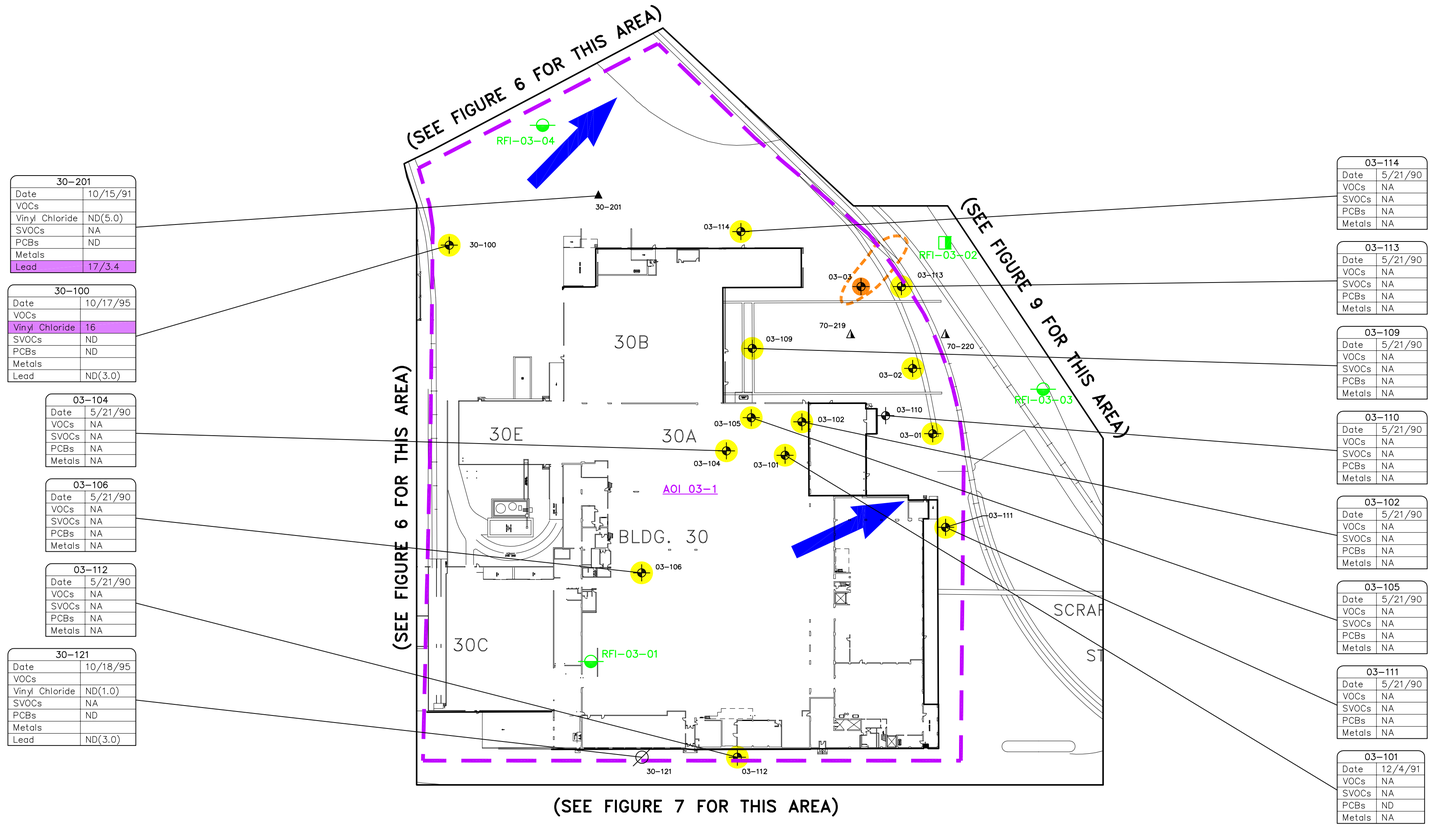
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - FACTORY 05 AREA

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

FIGURE 7

X: 86934X01.DWG
L: ON=*; OFF=REF*
P: STD-PCP/DL.PCP
5/01/01 SYR-54-JER DJP SDL
86934011/A01/RFI/WORKPLAN/86934C07.DWG



LEGEND

- APPROXIMATE AOI BOUNDARY
- AOI 03-1 — AOI ID
- SBFL3-17 — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 70-220 — EXISTING SOIL BORING LOCATION
- 84-3 — EXISTING PIEZOMETER/ MONITORING WELL LOCATION
- RFI-36-13 — PROPOSED LNAPL DELINEATION SOIL BORING/ POSSIBLE MONITORING WELL LOCATION
- RFI-36-11 — PROPOSED MONITORING WELL LOCATION
- 20-142 — MONITORING WELL SCHEDULED FOR DECOMMISSION AND ABANDONMENT
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- ESTIMATED LIMITS OF NAPL
- LOCATION WHERE NAPL HAS BEEN DETECTED
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
7. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 80' 160'
GRAPHIC SCALE

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - FACTORY 03 AREA

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 8

X: 86934X01.DWG
L: ON=*; OFF=REF*
P: STD-PCP/DL.PCP
5/1/01 SYR-54-JER GMS SDL
86934011/AOI/RFI/WORKPLAN/86934C08.DWG

SBFL2-51	
Date	10/18/95
Depth(ft)	3–8 / 9–14
VOCs	
1,2–Dichloroethene (total)	ND(1.0) / ND(1.0)
Methylene chloride	ND(1.0) / ND(1.0)
Trichloroethene	ND(1.0) / 5.0
Vinyl chloride	ND(1.0) / 3.0
SVOCs	NA / NA
PCBs	ND / ND
Metals	
Lead	ND(3.0) / ND(3.0)

SB-19A	
Date	6/21/93
VOCs	
1,2–Dichloroethene (total)	150
Methylene chloride	3.0
Trichloroethene	8.0
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SBFL2-52		
Date	10/18/95	
Depth(ft)	3–8	9–14
VOCs		
1,2–Dichloroethene (total)	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(1.0)	1.0
SVOCs	NA	NA
PCBs	ND	ND
Metals		
Lead	ND(3.0)	ND(3.0)

SB-20A		
Date	6/21/93	
Depth(ft)	5–7	10–12
VOCs		
1,2–Dichloroethene (total)	ND(1.0)	77
Methylene chloride	6.0	6.0
Trichloroethene	ND(1.0)	9.0
Vinyl chloride	ND(2.0)	ND(2.0)
SVOCs	ND	ND
PCBs	ND	ND
Metals (filtered)		
Lead	19	ND(3.0)

70-163	
Date	10/20/00
VOCs	ND
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	NA
PCBs	ND
Metals	
Lead	ND(1.0)

SB-21A		
Date	6/21/93	
Depth(ft)	5–7	10–12
VOCs		
1,2–Dichloroethene (total)	4.0	2.0
Methylene chloride	7.0	6.0
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(2.0)	ND(2.0)
SVOCs	ND	ND
PCBs	ND	ND
Metals		
Lead	ND(3.0)	ND(3.0)

SB-22A		
Date	6/22/93	
VOCs		
1,2–Dichloroethene (total)	ND(1.0)	
Methylene chloride	2.0	
Trichloroethene	ND(1.0)	
Vinyl chloride	ND(2.0)	
SVOCs	ND	
PCBs	ND	
Metals		
Lead	ND(3.0)	

70-164	
Date	2/4/99
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	NA
PCBs	ND
Metals	
Lead	ND(3.0)

70-102	
Date	10/17/95
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SB-23A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SBFL2-53	
Date	9/14/95
VOCs	NA
SVOCs	NA
PCBs	NA
Metals	
Lead	9.0

SB-24A	
Date	6/22/93
VOCs	
1,2–Dichloroethene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SB-25A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	2.0
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

70-165	
Date	10/19/00
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	NA
PCBs	ND
Metals	
Lead	ND(1.0)

SB-26A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SB-29A	
Date	6/23/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SB-30A	
Date	6/23/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SB-32A	
Date	6/23/93
VOCs	
1,2–Dichloroethene (total)	25
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	4.0

SB-36A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	59
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	5.0
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SB-35A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	NE
PCBs	ND
Metals	
Lead	57

SBFL2-50		
Date	10/18/95	
Depth(ft)	3–8	9–14
VOCs		
1,2–Dichloroethene (total)	ND(1.0)/ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)/ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)/ND(1.0)	4.0
Vinyl chloride	ND(1.0)/ND(1.0)	3.0
SVOCs	NA	NA
PCBs	ND	ND
Metals		
Lead	ND(3.0)/ND(3.0)	ND(3.0)

SBFL2-47		
Date	10/17/95	
Depth(ft)	3–8	9–14
VOCs		
1,2–Dichloroethene	NA	NA
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs	NA	NA
PCBs	ND	ND
Metals	NA	NA

SBFL2-48		
Date	10/17/95	
Depth(ft)	3–8	9–14
VOCs		
1,2–Dichloroethene (total)	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	4.0
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs	NA	NA
PCBs	ND	ND
Metals	NA	NA

SBFL2-49		
Date	10/18/95	
Depth(ft)	3–8	9–14
VOCs		
1,2–Dichloroethene (total)	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	7.0
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs	NA	NA
PCBs	ND	ND
Metals	NA	NA

SB-15A		
Date	6/21/93	
Depth(ft)	8–10	9–11
VOCs		
1,2–Dichloroethene (total)	NA	3.0
Methylene chloride	NA	5.0
Trichloroethene	NA	7.0
Vinyl chloride	NA	ND(2.0)
SVOCs	ND	ND
PCBs	ND	ND
Metals		
Lead	NA	ND(3.0)

SB-16A	
Date	6/21/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	6.0
Trichloroethene	14
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	11

SB-17A	
Date	6/21/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	4.0
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

20-FP11	
Date	10/27/99
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	ND
PCBs	ND
Metals (filtered)	
Lead	1.3

SB-18A	
Date	6/21/93
Depth(ft)	6–8
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	2.0
Trichloroethene	3.0
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	3.4

70-161	
Date	8/4/99
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	2.1/2.6
Trichloroethene	ND(1.0)/1.0
Vinyl chloride	ND(1.0)/ND(1.0)
SVOCs	NA
PCBs	NA
Metals	
Lead	1.7/ND(1.6)

20-FP12	
Date	10/27/99
VOCs	
1,2–Dichloroethene	NA
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(1.0)

70-162	
Date	8/4/99
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	1.8
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	NA
PCBs	ND
Metals	
Lead	ND(1.6)

70-100	
Date	10/17/95
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	3.0
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

70-109	
Date	10/17/95
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

70-107	
Date	10/17/95
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

SB-27A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	3.0
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

70-160	
Date	10/19/00
VOCs	
1,2–Dichloroethene (total)	NA
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(1.0)

SB-28A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

86-100	
Date	10/20/00
VOCs	NA
SVOCs	NA
PCBs	NA
Metals	NA

SB-34A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	1,200
Methylene chloride	ND(1.0)
Trichloroethene	110
Vinyl chloride	230
SVOCs	ND
PCBs	ND
Metals	
Lead	22

SB-33A	
Date	6/22/93
VOCs	
1,2–Dichloroethene (total)	35
Methylene chloride	2.0
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	ND
PCBs	ND
Metals	
Lead	ND(3.0)

(SEE FIGURE 6 FOR THIS AREA)

CHESAPEAKE AND OHIO RAILROAD

(SEE FIGURE 11 FOR THIS AREA)

(SEE FIGURE 8 FOR THIS AREA)

(SEE FIGURE 10 FOR THIS AREA)

(SEE FIGURE 11 FOR THIS AREA)

INTERCEPTOR

ORAGE

BLDG 70

BLDG 71

BLDG 21

BLDG 85

TRUCK PA

73B 73A 73 72 74 70B 70C 70A 69 69C 69A 69B 71A 71B 86A 97

RFI-81-21 RFI-81-22 RFI-81-17 RFI-81-18 RFI-81-16 RFI-81-15 RFI-81-14 RFI-81-06 RFI-81-11 RFI-81-03 RFI-81-13 RFI-81-05 RFI-81-04 RFI-81-20 RFI-81-06 RFI-81-07 RFI-81-10 RFI-81-09 RFI-21-03 RFI-81-01 RFI-81-02 RFI-21-01 RFI-21-02

AOI 81-2 AOI 81-3 AOI 81-1 AOI 21-1

20-FP11 20-FP12 70-181 70-182 70-103 70-212 70-210 70-224 70-100 (SEC17,MW-1) 70-225 70-226 70-218 70-222 70-221 70-163 70-164 70-102 70-165 70-105 70-214 70-107 70-108 (SEC17,MW-2) 70-109 (SEC17,MW-3) 70-104 70-160 70-280 70-159

SBFL2-47 SBFL2-48 SBFL2-49 SBFL2-50 SBFL2-51 SBFL2-52 SBFL2-53 SBFL2-55

SB-15A SB-16A SB-17A SB-18A SB-19A SB-20A SB-21A SB-22A SB-23A SB-24A SB-25A SB-26A SB-27A SB-28A SB-29A SB-30A SB-31A SB-32A SB-33A SB-34A SB-35A SB-36A

X: 86934X01.DWG
L: ON=*; OFF=REF*
P: STD-PCP/DL.PCP
5/01/01 SYR-54-JER JER SDL
86934011/AOI/RFI/WORKPLAN/86934C09.DWG

LEGEND

- APPROXIMATE AOI BOUNDARY
- BASEMENT AREA
- AOI 81-1 — AOI ID
- SBFL3-17 — EXISTING SOIL BORING/GRABGROUND WATER SAMPLING LOCATION
- 70-212 — EXISTING SOIL BORING LOCATION
- 84-3 — EXISTING PIEZOMETER/ MONITORING WELL LOCATION
- RFI-81-12 — PROPOSED SURFACE SAMPLE LOCATION
- RFI-36-11 — PROPOSED MONITORING WELL LOCATION
- RFI-81-4 — SOIL BORING LOCATION INSTALLED IN JANUARY 2001
- RFI-21-03 — PROPOSED SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- CONTINGENCY WELL
- 70-104 — MONITORING WELL SCHEDULED FOR DECOMMISSION AND ABANDONMENT
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- ESTIMATED LIMITS OF NAPL
- APPROXIMATE LOCATION OF TUNNEL
- LOCATION WHERE NAPL HAS BEEN DETECTED
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
7. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.
8. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.

0 120' 240'
APPROXIMATE SCALE

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - FACTORY 81 AREA AND BUILDING 21 AREA

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

FIGURE 9

88-5	
Date	10/19/00
VOCs	
Benzene	10
Trichloroethene	76
Vinyl Chloride	ND(5.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-1	
Date	10/19/00
VOCs	
Benzene	1.0
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(5.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-2	
Date	4/25/00
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(5.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-104	
Date	7/22/96
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(1.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-101	
Date	7/22/96
VOCs	
Benzene	9.0
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(1.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-102	
Date	7/22/96
VOCs	
Benzene	ND(1.0)
Trichloroethene	240
Vinyl Chloride	23
SVOCs	NA
PCBs	NA
Metals	NA

88-103	
Date	7/22/96
VOCs	
Benzene	3.0
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(1.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-3	
Date	2/2/99
VOCs	
Benzene	ND(1.0)
Trichloroethene	58
Vinyl Chloride	ND(1.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-6	
Date	10/19/00
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(5.0)
SVOCs	NA
PCBs	NA
Metals	NA

88-4	
Date	10/19/00
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	15
SVOCs	NA
PCBs	NA
Metals	NA

32-101	
Date	10/11/95
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(15)
SVOCs	
bis(2-ethylhexyl)phthalate	60
PCBs	NE
Metals	
Arsenic	73

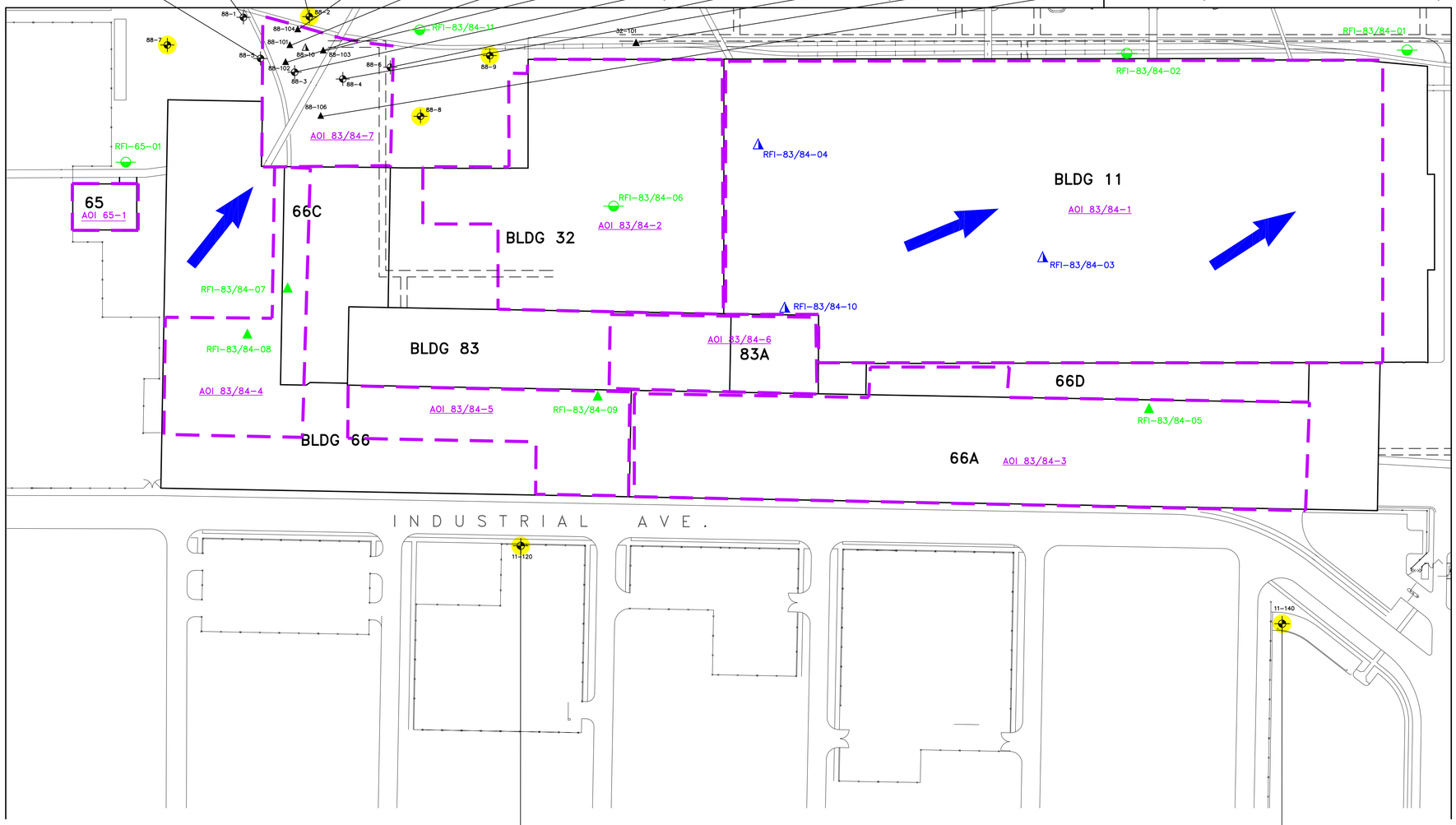
88-106	
Date	11/12/96
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(1.0)
SVOCs	NA
PCBs	NA
Metals	NA

(SEE FIGURE 9 FOR THIS AREA)

(SEE FIGURE 11 FOR THIS AREA)

(SEE FIGURE 7 FOR THIS AREA)

(SEE FIGURE 13 FOR THIS AREA)



11-120	
Date	10/20/00
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(1.0)
SVOCs	NA
PCBs	ND
Metals	
Arsenic	ND(0.52)

11-140	
Date	8/9/99
VOCs	
Benzene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(1.0)
SVOCs	NA
PCBs	ND
Metals	
Arsenic	ND(2.7)

LEGEND

- APPROXIMATE AOI BOUNDARY
- AOI 83/84-1 — AOI ID
- SBFL3-17 — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 70-220 — EXISTING SOIL BORING LOCATION
- 84-3 — EXISTING PIEZOMETER/ MONITORING WELL LOCATION
- RFI-36-11 — PROPOSED MONITORING WELL LOCATION
- RFI-21-03 — PROPOSED SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- RFI-81-4 — SOIL BORING LOCATION INSTALLED IN JANUARY 2001
- APPROXIMATE LOCATION OF TUNNEL
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.
7. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
8. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 80' 160'
GRAPHIC SCALE

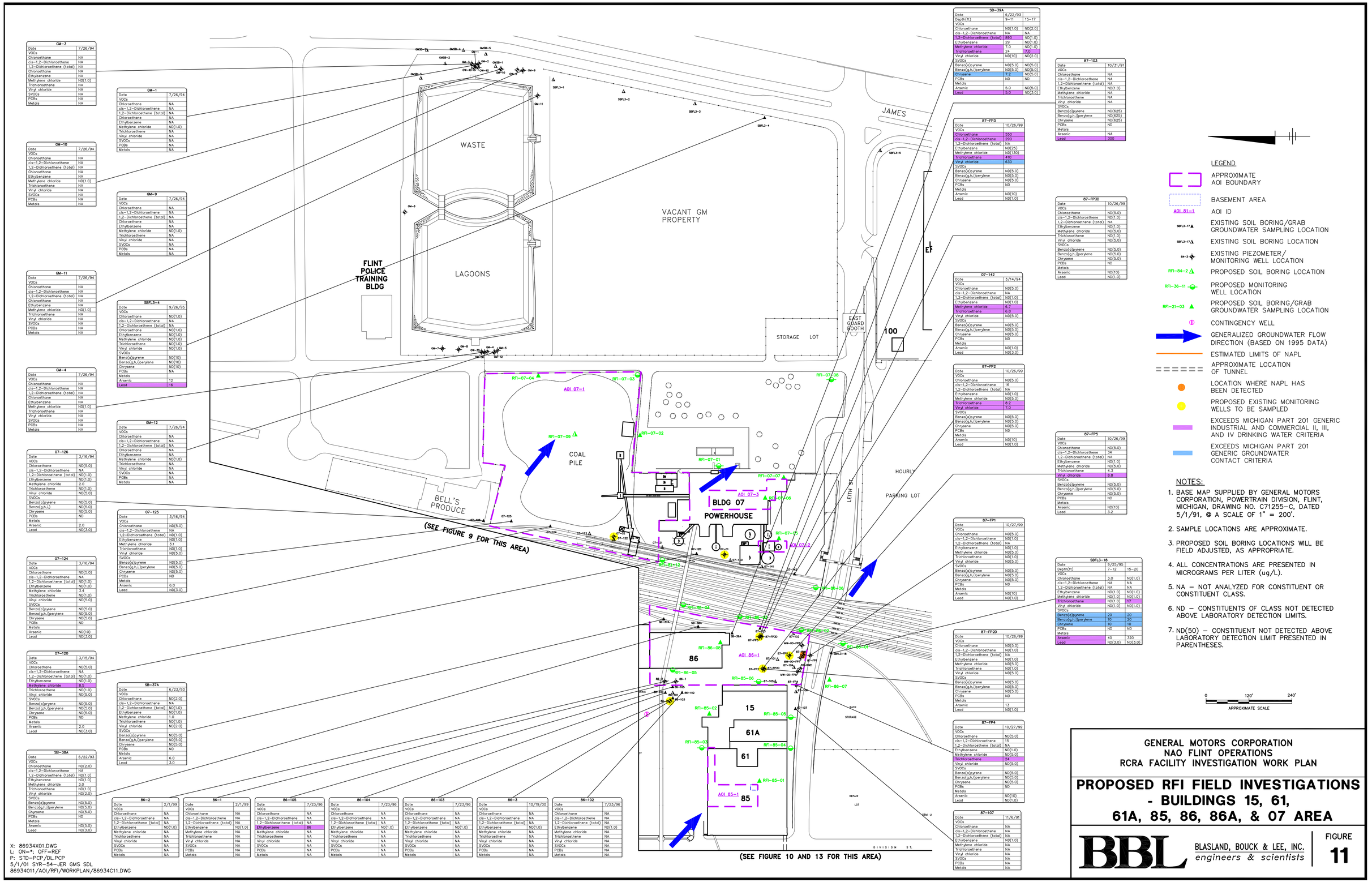
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - FACTORY 83/84 AREA AND BUILDING 65

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

FIGURE 10

X: 86934X01.DWG
L: ON=*. OFF=REF*
P: STD-PCP/DL
5/1/01 SYR-54-JER GMS SDL
86934010/AOI/RFI/WORKPLAN/86934C10.DWG



GM-3	
Date	7/26/94
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	NA
Ethylbenzene	NA
Methylene chloride	ND(1.0)
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

GM-1	
Date	7/26/94
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	NA
Ethylbenzene	NA
Methylene chloride	ND(1.0)
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

GM-10	
Date	7/26/94
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	NA
Ethylbenzene	NA
Methylene chloride	ND(1.0)
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

GM-9	
Date	7/26/94
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	NA
Ethylbenzene	NA
Methylene chloride	ND(1.0)
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

GM-11	
Date	7/26/94
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	NA
Ethylbenzene	NA
Methylene chloride	ND(1.0)
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

SBFL3-4	
Date	9/26/95
VOCs	
Chloroethane	ND(1.0)
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	ND(1.0)
Ethylbenzene	ND(1.0)
Methylene chloride	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(1.0)
SVOCs	
Benzo(a)pyrene	ND(10)
Benzo(g,h,i)perylene	ND(10)
Chrysene	ND(10)
PCBs	NA
Metals	
Arsenic	12
Lead	16

GM-4	
Date	7/26/94
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	NA
Ethylbenzene	NA
Methylene chloride	ND(1.0)
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

GM-12	
Date	7/26/94
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Chloroethane	NA
Ethylbenzene	NA
Methylene chloride	ND(1.0)
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

07-126	
Date	3/16/94
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	ND(1.0)
Ethylbenzene	ND(1.0)
Methylene chloride	2.0
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	2.0
Lead	ND(3.0)

07-125	
Date	3/16/94
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	ND(1.0)
Ethylbenzene	ND(1.0)
Methylene chloride	3.1
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	6.0
Lead	ND(3.0)

07-124	
Date	3/16/94
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	ND(1.0)
Ethylbenzene	ND(1.0)
Methylene chloride	3.4
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(10)
Lead	ND(3.0)

07-120	
Date	3/15/94
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	ND(1.0)
Ethylbenzene	ND(1.0)
Methylene chloride	8.5
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	2.0
Lead	ND(3.0)

SB-37A	
Date	6/23/93
VOCs	
Chloroethane	ND(2.0)
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	ND(1.0)
Ethylbenzene	ND(1.0)
Methylene chloride	1.0
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	6.0
Lead	3.0

SB-38A	
Date	6/22/93
VOCs	
Chloroethane	ND(2.0)
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	ND(1.0)
Ethylbenzene	ND(1.0)
Methylene chloride	3.0
Trichloroethene	ND(1.0)
Vinyl chloride	ND(2.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(5.0)
Lead	ND(3.0)

86-2	
Date	2/1/99
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

86-1	
Date	2/1/99
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

86-105	
Date	7/23/96
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	86
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

86-104	
Date	7/23/96
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

86-103	
Date	7/23/96
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

86-3	
Date	10/19/00
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

86-102	
Date	7/23/96
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

SB-39A		
Date	6/22/93	
Depth(ft)	9-11	15-17
VOCs		
Chloroethane	ND(1.0)	ND(2.0)
cis-1,2-Dichloroethene	NA	NA
1,2-Dichloroethene (total)	890	ND(1.0)
Ethylbenzene	29	ND(1.0)
Methylene chloride	7.0	ND(1.0)
Trichloroethene	24	7.0
Vinyl chloride	ND(10)	ND(2.0)
SVOCs		
Benzo(a)pyrene	ND(5.0)	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)	ND(5.0)
Chrysene	7.2	ND(5.0)
PCBs	ND	ND
Metals		
Arsenic	5.0	ND(5.0)
Lead	5.0	ND(3.0)

87-FP3	
Date	10/26/99
VOCs	
Chloroethane	550
cis-1,2-Dichloroethene	290
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(25)
Methylene chloride	ND(130)
Trichloroethene	410
Vinyl chloride	630
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(10)
Lead	ND(1.0)

87-FP2	
Date	10/26/99
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	16
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	ND(5.0)
Trichloroethene	8.2
Vinyl chloride	7.0
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(10)
Lead	ND(1.0)

87-FP1	
Date	10/27/99
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	ND(1.0)
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(10)
Lead	ND(1.0)

87-FP20	
Date	10/26/99
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	ND(1.0)
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	13
Lead	ND(1.0)

87-FP4	
Date	10/27/99
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	15
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	ND(5.0)
Trichloroethene	24
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(10)
Lead	ND(1.0)

87-107	
Date	11/6/91
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	NA
PCBs	NA
Metals	NA

87-103	
Date	10/31/91
VOCs	
Chloroethane	NA
cis-1,2-Dichloroethene	NA
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	NA
Trichloroethene	NA
Vinyl chloride	NA
SVOCs	
Benzo(a)pyrene	ND(625)
Benzo(g,h,i)perylene	ND(625)
Chrysene	ND(625)
PCBs	ND
Metals	
Arsenic	NA
Lead	300

87-FP30	
Date	10/26/99
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	ND(1.0)
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	ND(5.0)
Trichloroethene	ND(1.0)
Vinyl chloride	ND(5.0)
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(10)
Lead	ND(1.0)

87-FP5	
Date	10/26/99
VOCs	
Chloroethane	ND(5.0)
cis-1,2-Dichloroethene	34
1,2-Dichloroethene (total)	NA
Ethylbenzene	ND(1.0)
Methylene chloride	ND(5.0)
Trichloroethene	4.3
Vinyl chloride	8.8
SVOCs	
Benzo(a)pyrene	ND(5.0)
Benzo(g,h,i)perylene	ND(5.0)
Chrysene	ND(5.0)
PCBs	ND
Metals	
Arsenic	ND(10)
Lead	3.2

SBFL3-18		
Date	9/25/95	
Depth(ft)	7-12	15-20
VOCs		
Chloroethane	3.0	ND(1.0)
cis-1,2-Dichloroethene	NA	NA
1,2-Dichloroethene (total)	NA	NA
Ethylbenzene	ND(1.0)	ND(1.0)
Methylene chloride	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	97
Vinyl chloride	ND(1.0)	ND(1.0)
SVOCs		
Benzo(a)pyrene	20	20
Benzo(g,h,i)perylene	10	20
Chrysene	10	10
PCBs	ND	ND
Metals		
Arsenic	40	320
Lead	ND(3.0)	ND(3.0)

LEGEND

- APPROXIMATE AOI BOUNDARY
- BASEMENT AREA
- AOI 81-1 — AOI ID
- SBFL3-17 ▲ — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- SBFL3-17 △ — EXISTING SOIL BORING LOCATION
- 84-3 — EXISTING PIEZOMETER/ MONITORING WELL LOCATION
- RFI-84-2 △ — PROPOSED SOIL BORING LOCATION
- RFI-36-11 — PROPOSED MONITORING WELL LOCATION
- RFI-21-03 ▲ — PROPOSED SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- CONTINGENCY WELL
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- ESTIMATED LIMITS OF NAPL
- APPROXIMATE LOCATION OF TUNNEL
- LOCATION WHERE NAPL HAS BEEN DETECTED
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA
- EXCEEDS MICHIGAN PART 201 GENERIC GROUNDWATER CONTACT CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
7. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 120' 240'
APPROXIMATE SCALE

GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - BUILDINGS 15, 61, 61A, 85, 86, 86A, & 07 AREA

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

FIGURE 11

X: 86934X01.DWG
L: ON=*; OFF=REF
P: STD-PCP/DL.PCP
5/1/01 SYR-54-JER GMS SDL
86934011/AOI/RFI/WORKPLAN/86934C11.DWG

LEGEND:

- APPROXIMATE AOI BOUNDARY
- AOI 81-1 — AOI ID
- SBFL3-17 ▲ — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 84-3 (EW-103) — EXISTING MONITORING WELL LOCATION
- RFI-16-01 — PROPOSED MONITORING WELL LOCATION
- RFI-21-03 ▲ — PROPOSED SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 84-3 — MONITORING WELL SCHEDULED FOR DECOMMISSION AND ABANDONMENT
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.
7. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
8. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 80' 160'
GRAPHIC SCALE

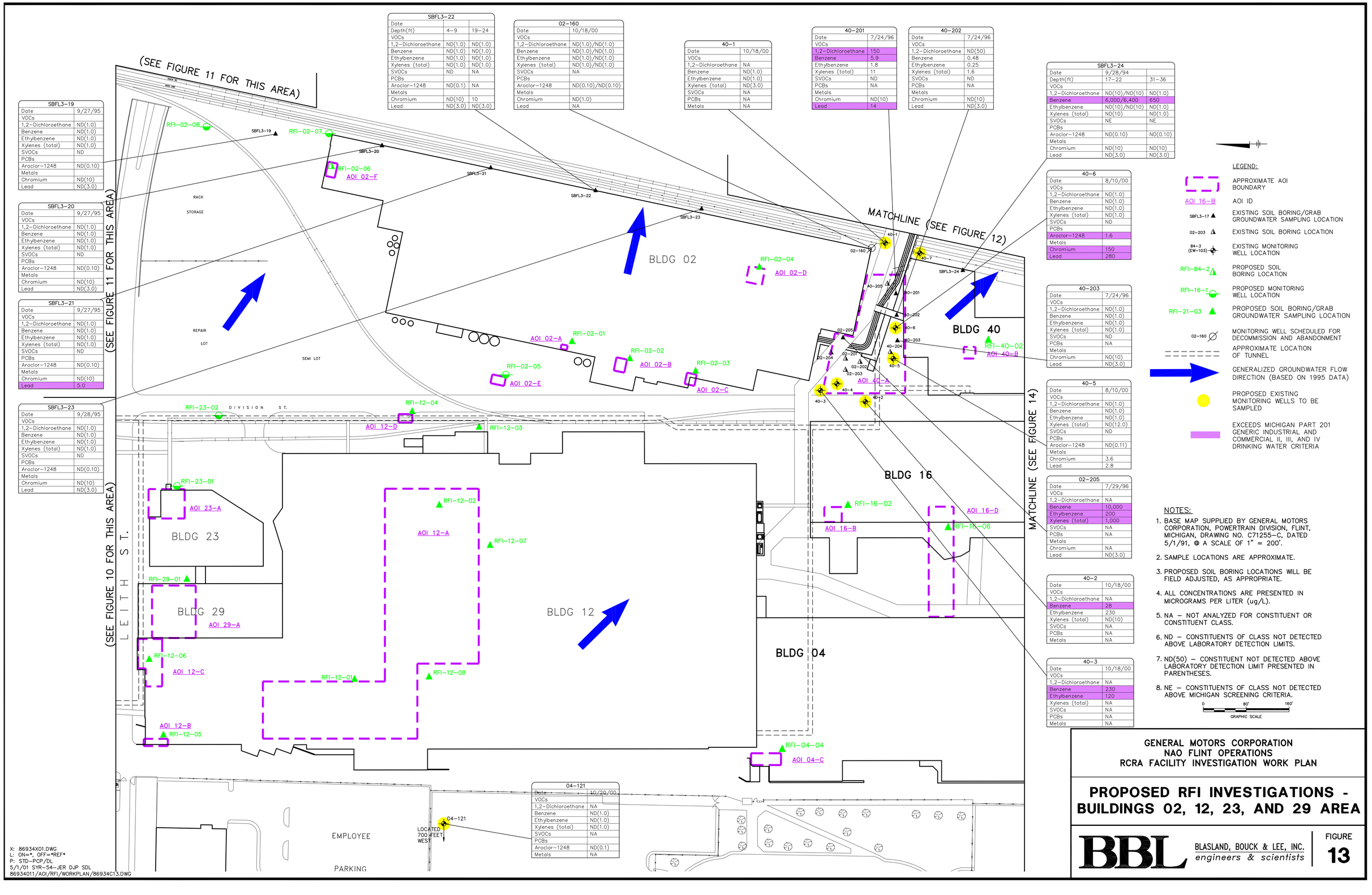
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - BUILDINGS 03, 10, 7, 17A, 28, 84, 84B, 94, AND 94 AREA

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

FIGURE 12

X: 86934X01.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/DL.PCP
5/1/01 SYR-54-JER DJP SDL
86934011/AOI/RFI/WORKPLAN/86934C12.DWG



SBFL3-19	
Date	9/27/95
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(1.0)
SVOCs	ND
PCBs	
Aroclor-1248	ND(0.10)
Metals	
Chromium	ND(10)
Lead	ND(3.0)

SBFL3-20	
Date	9/27/95
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(1.0)
SVOCs	ND
PCBs	
Aroclor-1248	ND(0.10)
Metals	
Chromium	ND(10)
Lead	ND(3.0)

SBFL3-21	
Date	9/27/95
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(1.0)
SVOCs	ND
PCBs	
Aroclor-1248	ND(0.10)
Metals	
Chromium	ND(10)
Lead	5.0

SBFL3-23	
Date	9/28/95
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(1.0)
SVOCs	ND
PCBs	
Aroclor-1248	ND(0.10)
Metals	
Chromium	ND(10)
Lead	ND(3.0)

SBFL3-22		
Date		
Depth(ft)	4-9	19-24
VOCs		
1,2-Dichloroethane	ND(1.0)	ND(1.0)
Benzene	ND(1.0)	ND(1.0)
Ethylbenzene	ND(1.0)	ND(1.0)
Xylenes (total)	ND(1.0)	ND(1.0)
SVOCs	ND	NA
PCBs		
Aroclor-1248	ND(0.1)	NA
Metals		
Chromium	ND(10)	10
Lead	ND(3.0)	ND(3.0)

02-160	
Date	10/18/00
VOCs	
1,2-Dichloroethane	ND(1.0)/ND(1.0)
Benzene	ND(1.0)/ND(1.0)
Ethylbenzene	ND(1.0)/ND(1.0)
Xylenes (total)	ND(1.0)/ND(1.0)
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.10)/ND(0.10)
Metals	
Chromium	ND(1.0)
Lead	NA

40-1	
Date	10/18/00
VOCs	
1,2-Dichloroethane	NA
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(3.0)
SVOCs	NA
PCBs	NA
Metals	NA

40-201	
Date	7/24/96
VOCs	
1,2-Dichloroethane	150
Benzene	5.9
Ethylbenzene	1.8
Xylenes (total)	11
SVOCs	ND
PCBs	NA
Metals	
Chromium	ND(10)
Lead	14

40-202	
Date	7/24/96
VOCs	
1,2-Dichloroethane	ND(50)
Benzene	0.48
Ethylbenzene	0.25
Xylenes (total)	1.6
SVOCs	ND
PCBs	NA
Metals	
Chromium	ND(10)
Lead	ND(3.0)

SBFL3-24		
Date	9/28/94	
Depth(ft)	17-22	31-36
VOCs		
1,2-Dichloroethane	ND(10)/ND(10)	ND(1.0)
Benzene	6,000/6,400	650
Ethylbenzene	ND(10)/ND(10)	ND(1.0)
Xylenes (total)	ND(10)	ND(1.0)
SVOCs	NE	NE
PCBs		
Aroclor-1248	ND(0.10)	ND(0.10)
Metals		
Chromium	ND(10)	ND(10)
Lead	ND(3.0)	ND(3.0)

40-6	
Date	8/10/00
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(1.0)
SVOCs	ND
PCBs	
Aroclor-1248	1.6
Metals	
Chromium	150
Lead	280

40-203	
Date	7/24/96
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(1.0)
SVOCs	ND
PCBs	NA
Metals	
Chromium	ND(10)
Lead	ND(3.0)

40-5	
Date	8/10/00
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(12.0)
SVOCs	ND
PCBs	
Aroclor-1248	ND(0.11)
Metals	
Chromium	3.6
Lead	2.8

02-205	
Date	7/29/96
VOCs	
1,2-Dichloroethane	NA
Benzene	10,000
Ethylbenzene	200
Xylenes (total)	1,000
SVOCs	NA
PCBs	NA
Metals	
Chromium	NA
Lead	ND(3.0)

40-2	
Date	10/18/00
VOCs	
1,2-Dichloroethane	NA
Benzene	28
Ethylbenzene	230
Xylenes (total)	ND(10)
SVOCs	NA
PCBs	NA
Metals	NA

40-3	
Date	10/18/00
VOCs	
1,2-Dichloroethane	NA
Benzene	230
Ethylbenzene	120
Xylenes (total)	NA
SVOCs	NA
PCBs	NA
Metals	NA

04-121	
Date	10/20/00
VOCs	
1,2-Dichloroethane	NA
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Xylenes (total)	ND(1.0)
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.1)
Metals	NA

LEGEND:

- APPROXIMATE AOI BOUNDARY
- AOI 16-B — AOI ID
- SBFL3-17 — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 02-203 — EXISTING SOIL BORING LOCATION
- 84-3 (EW-103) — EXISTING MONITORING WELL LOCATION
- RFI-84-2 — PROPOSED SOIL BORING LOCATION
- RFI-16-1 — PROPOSED MONITORING WELL LOCATION
- RFI-21-03 — PROPOSED SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- 02-160 — MONITORING WELL SCHEDULED FOR DECOMMISSION AND ABANDONMENT
- APPROXIMATE LOCATION OF TUNNEL
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
7. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.
8. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.

0 80' 160'
GRAPHIC SCALE

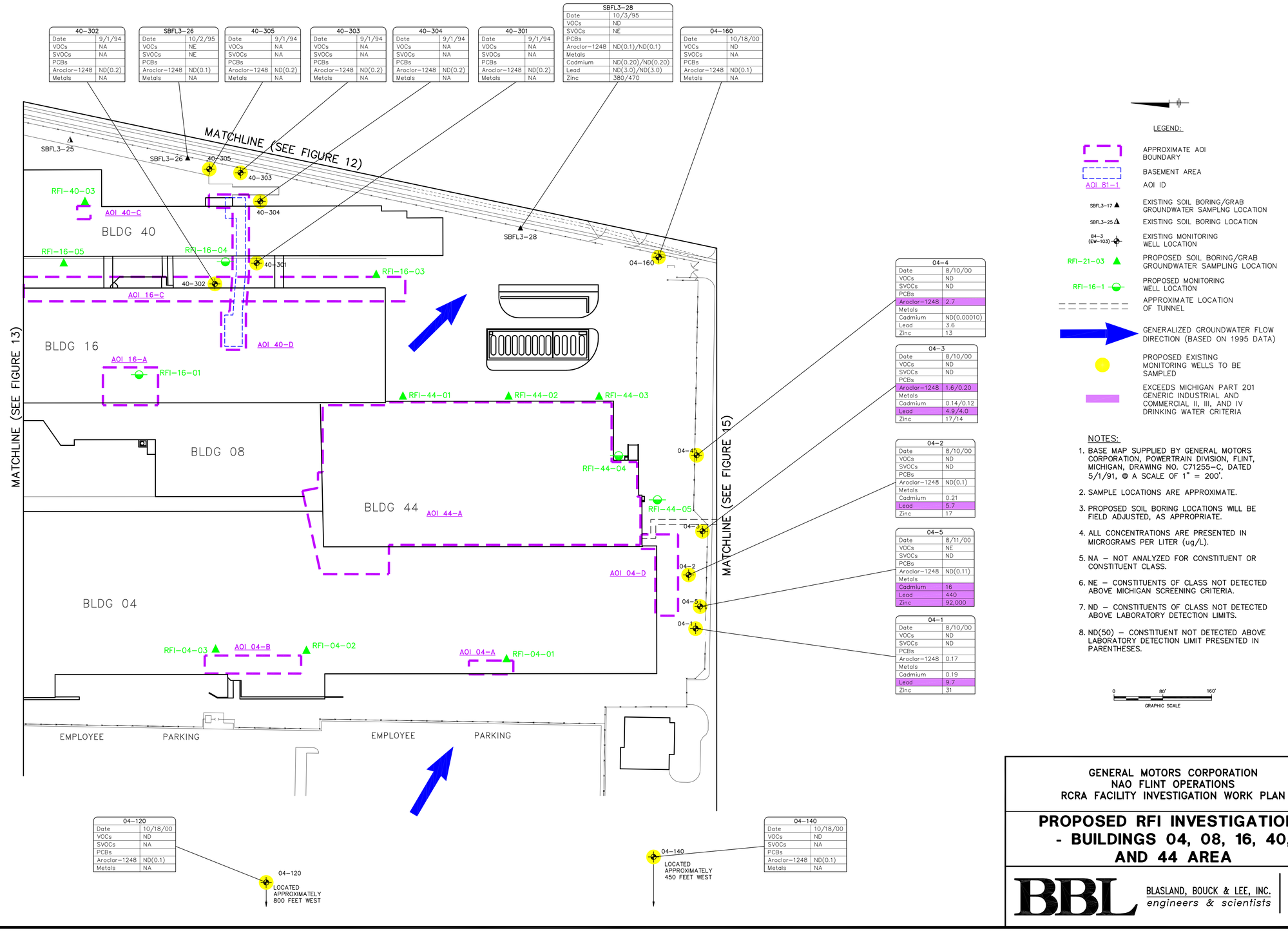
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI INVESTIGATIONS - BUILDINGS 02, 12, 23, AND 29 AREA

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 13

X: 86934X01.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/DL
5/1/01 SYR-54-JER DJP SDL
86934011/AOI/RFI/WORKPLAN/86934C13.DWG



40-302	
Date	9/1/94
VOCs	NA
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.2)
Metals	NA

SBFL3-26	
Date	10/2/95
VOCs	NE
SVOCs	NE
PCBs	
Aroclor-1248	ND(0.1)
Metals	NA

40-305	
Date	9/1/94
VOCs	NA
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.2)
Metals	NA

40-303	
Date	9/1/94
VOCs	NA
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.2)
Metals	NA

40-304	
Date	9/1/94
VOCs	NA
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.2)
Metals	NA

40-301	
Date	9/1/94
VOCs	NA
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.2)
Metals	NA

SBFL3-28	
Date	10/3/95
VOCs	ND
SVOCs	NE
PCBs	
Aroclor-1248	ND(0.1)/ND(0.1)
Metals	
Cadmium	ND(0.20)/ND(0.20)
Lead	ND(3.0)/ND(3.0)
Zinc	380/470

04-160	
Date	10/18/00
VOCs	ND
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.1)
Metals	NA

04-4	
Date	8/10/00
VOCs	ND
SVOCs	ND
PCBs	
Aroclor-1248	2.7
Metals	
Cadmium	ND(0.00010)
Lead	3.6
Zinc	13

04-3	
Date	8/10/00
VOCs	ND
SVOCs	ND
PCBs	
Aroclor-1248	1.6/0.20
Metals	
Cadmium	0.14/0.12
Lead	4.9/4.0
Zinc	17/14

04-2	
Date	8/10/00
VOCs	ND
SVOCs	ND
PCBs	
Aroclor-1248	ND(0.1)
Metals	
Cadmium	0.21
Lead	5.7
Zinc	17

04-5	
Date	8/11/00
VOCs	NE
SVOCs	ND
PCBs	
Aroclor-1248	ND(0.11)
Metals	
Cadmium	16
Lead	440
Zinc	92,000

04-1	
Date	8/10/00
VOCs	ND
SVOCs	ND
PCBs	
Aroclor-1248	0.17
Metals	
Cadmium	0.19
Lead	9.7
Zinc	31

04-120	
Date	10/18/00
VOCs	ND
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.1)
Metals	NA

04-140	
Date	10/18/00
VOCs	ND
SVOCs	NA
PCBs	
Aroclor-1248	ND(0.1)
Metals	NA

LEGEND:

- APPROXIMATE AOI BOUNDARY
- BASEMENT AREA
- AOI 81-1 — AOI ID
- SBFL3-17 ▲ — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLNG LOCATION
- SBFL3-25 ▲ — EXISTING SOIL BORING LOCATION
- 84-3 (EW-103) — EXISTING MONITORING WELL LOCATION
- RFI-21-03 ▲ — PROPOSED SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- RFI-16-1 — PROPOSED MONITORING WELL LOCATION
- APPROXIMATE LOCATION OF TUNNEL
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.
7. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
8. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.

0 80' 160'
GRAPHIC SCALE

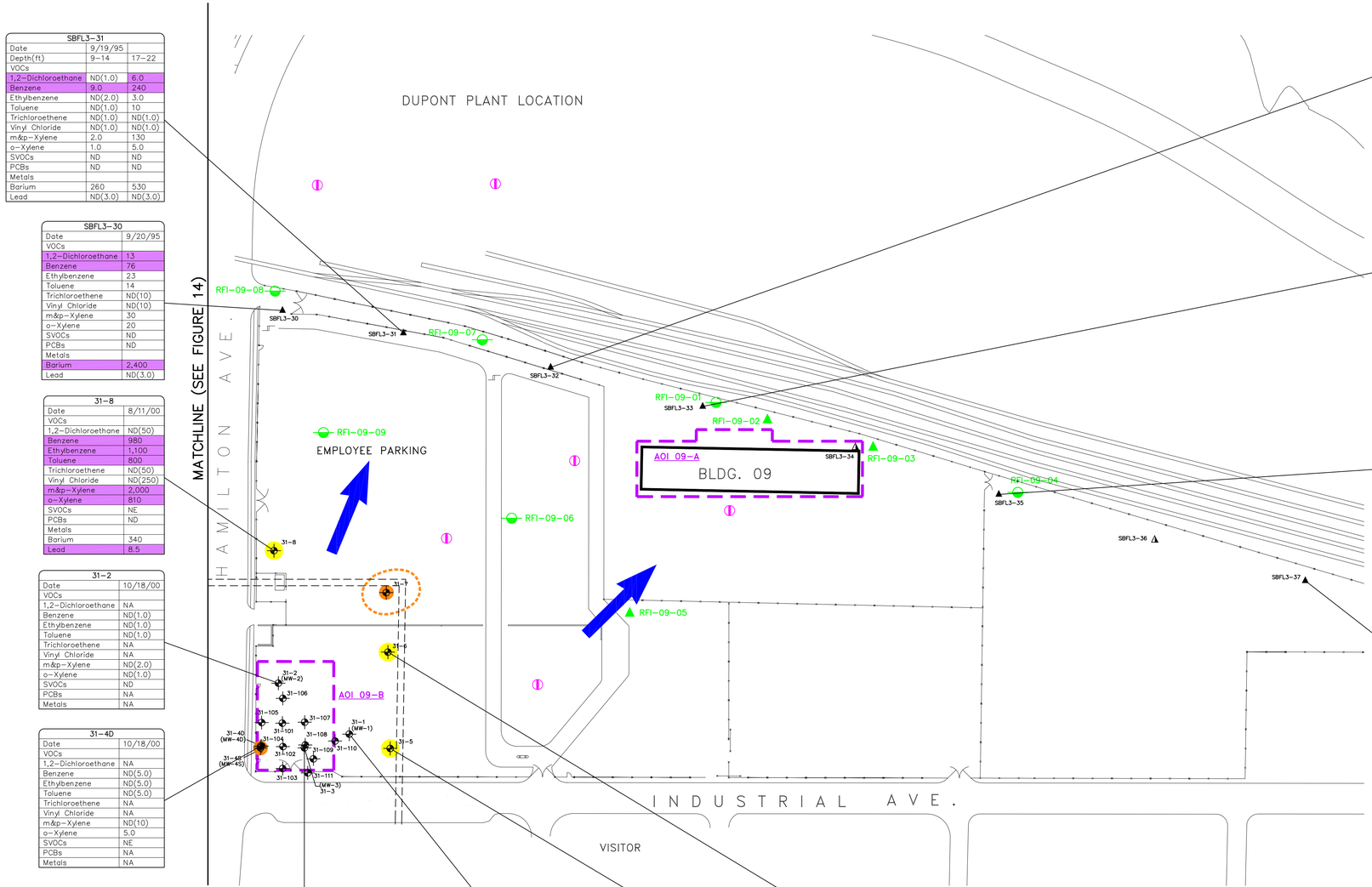
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI INVESTIGATIONS - BUILDINGS 04, 08, 16, 40, AND 44 AREA

BLASLAND, BOUCK & LEE, INC.
engineers & scientists

FIGURE 14

X: 86934X01.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/DL.PCP
5/1/01 SYR-54-JER GMS SDL
86934011/AOI/RFI/WORKPLAN/86934C14.DWG



SBFL3-31		
Date	9/19/95	
Depth(ft)	9-14	17-22
VOCs		
1,2-Dichloroethane	ND(1.0)	6.0
Benzene	9.0	240
Ethylbenzene	ND(2.0)	3.0
Toluene	ND(1.0)	10
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl Chloride	ND(1.0)	ND(1.0)
m&p-Xylene	2.0	130
o-Xylene	1.0	5.0
SVOCs	ND	ND
PCBs	ND	ND
Metals		
Barium	260	530
Lead	ND(3.0)	ND(3.0)

SBFL3-30	
Date	9/20/95
VOCs	
1,2-Dichloroethane	13
Benzene	76
Ethylbenzene	23
Toluene	14
Trichloroethene	ND(10)
Vinyl Chloride	ND(10)
m&p-Xylene	30
o-Xylene	20
SVOCs	ND
PCBs	ND
Metals	
Barium	2,400
Lead	ND(3.0)

31-8	
Date	8/11/00
VOCs	
1,2-Dichloroethane	ND(50)
Benzene	980
Ethylbenzene	1,100
Toluene	800
Trichloroethene	ND(50)
Vinyl Chloride	ND(250)
m&p-Xylene	2,000
o-Xylene	810
SVOCs	NE
PCBs	ND
Metals	
Barium	340
Lead	8.5

31-2	
Date	10/18/00
VOCs	
1,2-Dichloroethane	NA
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Toluene	ND(1.0)
Trichloroethene	NA
Vinyl Chloride	NA
m&p-Xylene	ND(2.0)
o-Xylene	ND(1.0)
SVOCs	ND
PCBs	NA
Metals	NA

31-4D	
Date	10/18/00
VOCs	
1,2-Dichloroethane	NA
Benzene	ND(5.0)
Ethylbenzene	ND(5.0)
Toluene	ND(5.0)
Trichloroethene	NA
Vinyl Chloride	NA
m&p-Xylene	ND(10)
o-Xylene	5.0
SVOCs	NE
PCBs	NA
Metals	NA

SBFL3-32		
Date	9/19/95	
Depth(ft)	9-14	15-20
VOCs		
1,2-Dichloroethane	ND(1.0)	ND(1.0)
Benzene	ND(1.0)	ND(1.0)
Ethylbenzene	ND(1.0)	ND(1.0)
Toluene	ND(1.0)	ND(1.0)
Trichloroethene	ND(1.0)	ND(1.0)
Vinyl Chloride	ND(1.0)	ND(1.0)
m&p-Xylene	ND(1.0)	ND(1.0)
o-Xylene	ND(1.0)	ND(1.0)
SVOCs	ND	ND
PCBs	ND	ND
Metals		
Barium	280	520
Lead	ND(3.0)	ND(3.0)

SBFL3-33	
Date	9/19/95
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Toluene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	3.0
m&p-Xylene	ND(1.0)
o-Xylene	ND(1.0)
SVOCs	ND
PCBs	ND
Metals	
Barium	770
Lead	ND(3.0)

SBFL3-35		
Date	9/18/95	
Depth(ft)	13-18	19-24
VOCs		
1,2-Dichloroethane	ND(1.0)	ND(1.0)
Benzene	ND(1.0)	ND(1.0)
Ethylbenzene	ND(1.0)	ND(1.0)
Toluene	1.0	1.0
Trichloroethene	13	11
Vinyl Chloride	ND(1.0)	ND(1.0)
m&p-Xylene	ND(1.0)	ND(1.0)
o-Xylene	ND(1.0)	ND(1.0)
SVOCs	ND	ND
PCBs	ND	ND
Metals		
Barium	140	160
Lead	ND(3.0)	ND(3.0)

SBFL3-37	
Date	9/18/95
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Toluene	1.0
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(1.0)
m&p-Xylene	ND(1.0)
o-Xylene	ND(1.0)
SVOCs	ND
PCBs	ND
Metals	
Barium	190
Lead	ND(3.0)

31-3	
Date	10/18/00
VOCs	
1,2-Dichloroethane	NA
Benzene	ND(100)/ND(200)
Ethylbenzene	1,000/940
Toluene	9,700/11,000
Trichloroethene	NA
Vinyl Chloride	NA
m&p-Xylene	3,800/3,300
o-Xylene	880/870
SVOCs	NE
PCBs	NA
Metals	NA

31-1	
Date	10/18/00
VOCs	
1,2-Dichloroethane	NA
Benzene	ND(500)
Ethylbenzene	1,600
Toluene	8,500
Trichloroethene	NA
Vinyl Chloride	NA
m&p-Xylene	4,800
o-Xylene	1,700
SVOCs	ND
PCBs	NA
Metals	NA

31-5	
Date	8/11/00
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Toluene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(5.0)
m&p-Xylene	ND(2.0)
o-Xylene	ND(1.0)
SVOCs	ND
PCBs	NE
Metals	
Barium	220
Lead	31

31-6	
Date	8/11/00
VOCs	
1,2-Dichloroethane	ND(1.0)
Benzene	ND(1.0)
Ethylbenzene	ND(1.0)
Toluene	ND(1.0)
Trichloroethene	ND(1.0)
Vinyl Chloride	ND(5.0)
m&p-Xylene	ND(2.0)
o-Xylene	ND(1.0)
SVOCs	ND
PCBs	NE
Metals	
Barium	100
Lead	12

LEGEND:

- APPROXIMATE AOI BOUNDARY
- AOI 81-1 — AOI ID
- SBFL3-31 ▲ — EXISTING SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- SBFL3-36 ▲ — EXISTING SOIL BORING LOCATION
- 84-3 (EW-103) — EXISTING MONITORING WELL LOCATION
- RFI-21-03 ▲ — PROPOSED SOIL BORING/GRAB GROUNDWATER SAMPLING LOCATION
- RFI-36-11 — PROPOSED MONITORING WELL LOCATION
- CONTINGENCY WELL
- GENERALIZED GROUNDWATER FLOW DIRECTION (BASED ON 1995 DATA)
- ESTIMATED LIMITS OF NAPL
- APPROXIMATE LOCATION OF TUNNEL
- LOCATION WHERE NAPL HAS BEEN DETECTED
- PROPOSED EXISTING MONITORING WELLS TO BE SAMPLED
- EXCEEDS MICHIGAN PART 201 GENERIC INDUSTRIAL AND COMMERCIAL II, III, AND IV DRINKING WATER CRITERIA

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'.
2. SAMPLE LOCATIONS ARE APPROXIMATE.
3. PROPOSED SOIL BORING LOCATIONS WILL BE FIELD ADJUSTED, AS APPROPRIATE.
4. ALL CONCENTRATIONS ARE PRESENTED IN MICROGRAMS PER LITER (ug/L).
5. NA – NOT ANALYZED FOR CONSTITUENT OR CONSTITUENT CLASS.
6. NE – CONSTITUENTS OF CLASS NOT DETECTED ABOVE MICHIGAN SCREENING CRITERIA.
7. ND – CONSTITUENTS OF CLASS NOT DETECTED ABOVE LABORATORY DETECTION LIMITS.
8. ND(50) – CONSTITUENT NOT DETECTED ABOVE LABORATORY DETECTION LIMIT PRESENTED IN PARENTHESES.
9. MONITORING WELL 31-4S CONTAINS MEASURABLE NAPL, ADJACENT WELL 31-4D DOES NOT CONTAIN NAPL; ESTIMATED LIMIT OF NAPL IS NOT SHOWN SINCE NAPL EXTENT IS LIMITED TO THIS ONE LOCATION.

0 80' 160'
GRAPHIC SCALE

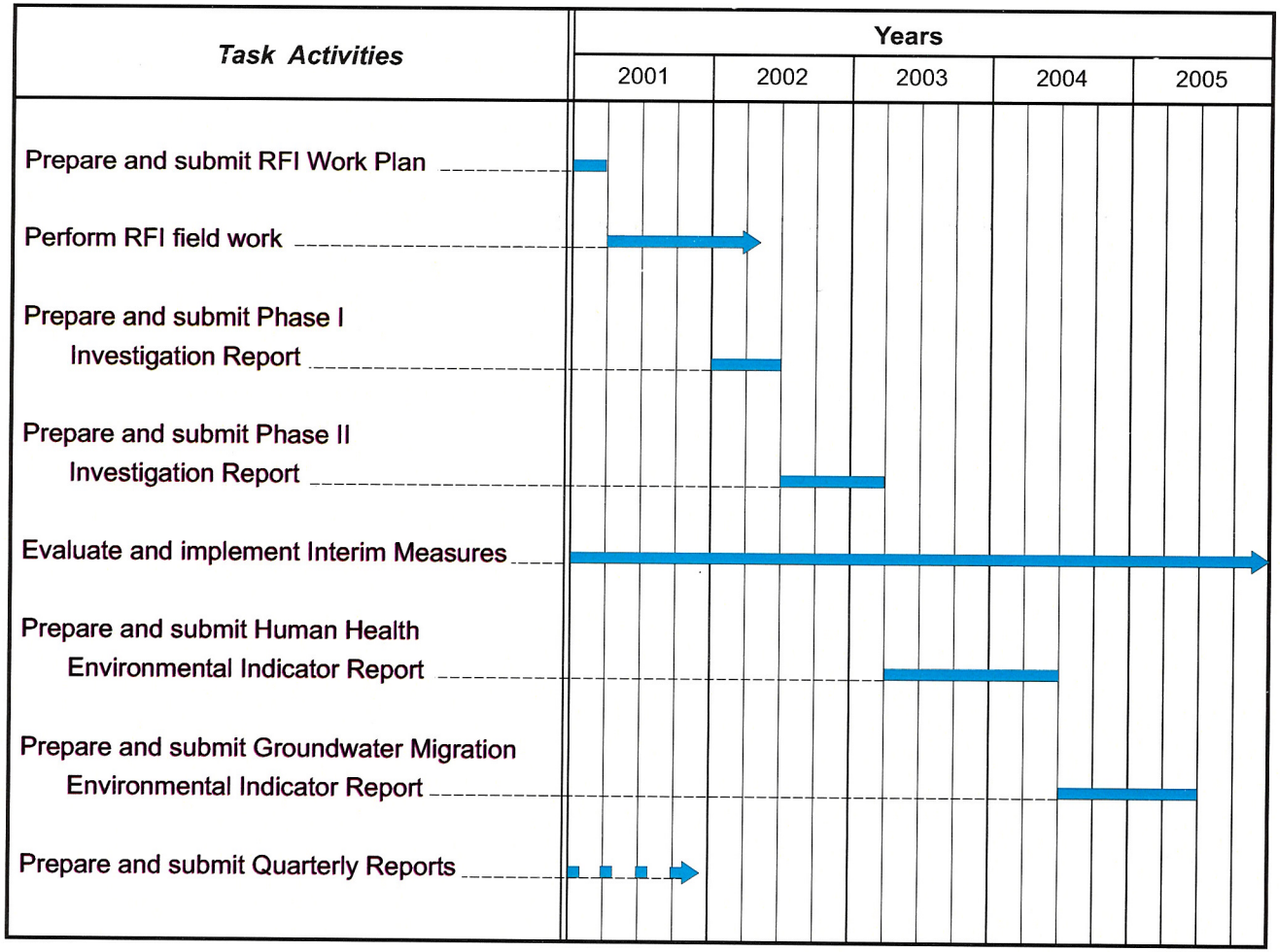
GENERAL MOTORS CORPORATION
NAO FLINT OPERATIONS
RCRA FACILITY INVESTIGATION WORK PLAN

PROPOSED RFI FIELD INVESTIGATIONS - BUILDING 09 AREA

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

FIGURE 15

X: 86934X01.DWG
L: ON=*, OFF=*REF*
P: STD-PCP/DL
3/28/01 SYR-54-JER GMS SDL
86934011/AOI/RFI/WORKPLAN/86934C15.DWG



GM NAO FLINT OPERATIONS SITE

SCHEDULE OF RFI ACTIVITIES

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

FIGURE 16

03/01 SYR-D54-DJH LBR MRC
64410012/64410j01.CDR