Worldwide Facilities Group
Remediation Team

MC 483-520-190
2000 Centerpoint Parkway
Pontiac, Michigan 48341

April 22, 1005

Mr. Daniel Patulski, DP-8J
United States Environmental Protection Agency, Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604-3507

Dear Mr. Patulski:

RE: AOI 31 PCB Cleanup Report
13000 Eckles Road Site (U.S. EPA ID No. MID 005 356 621)
Livonia, Michigan

Enclosed please find the AOI 31 PCB Cleanup Report. This report documents the activities completed during the removal of PCB-impacted soils at AOI 31at the 13000 Eckles Road Site in Livonia, Michigan.

Please feel free to contact me at (248) 753-5798 if you have any questions regarding this document, or if you require any further information.

Yours truly,

GENERAL MOTORS CORPORATION,

Clifford L. Lewis
Project Manager

CM/am/12607/Rpt 36/Det.
Encl.

c.c.: Richard Conforti (MDEQ)
Jean Caufield (GM)
James Reid (CRA)
Ian Richardson (CRA)

April 22, 2005

PCB CLEANUP REPORT
AOI 31 – FORMER FIRE TRAINING AREA

13000 ECKLES ROAD
LIVONIA, MICHIGAN

U.S. EPA No. MID 005 356 621

Prepared for:

General Motors
Remediation and Liability Management

APRIL 22, 2005
REF. NO. 12607 (36)

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1.0 INTRODUCTION

Conestoga-Rovers & Associates (CRA) has prepared this "PCB Cleanup Report" (Report), on behalf of Remediation and Liability Management Company, Inc. (REALM), an environmental subsidiary of General Motors Corporation (GM), to document the polychlorinated biphenyls (PCB) cleanup activities completed for the former Fire Training Area (hereafter referred to as AOI 31), located at 13000 Eckles Road, Livonia, Michigan (Site). The Site has the United States Environmental Protection Agency (U.S. EPA) identification number MID 005 356 621. The Site location is presented on Figure 1.1. The Site Plan and the location of AOI 31 are presented on Figure 1.2.

High occupancy uses may be considered for the Site's redevelopment, therefore, cleanup activities were completed to address soils containing PCBs at a concentration greater than 1 ppm to insure that future use of the land will not be restricted (i.e., may be used for residential or commercial development). The cleanup activities were completed pursuant to Title 40 of the Code of Federal Regulations Part 761 (40 CFR 761), and consistent with the "PCB Cleanup Work Plan" (CRA, July 2003).

1.1 BACKGROUND

This section presents a brief summary of the activities that preceded the implementation of the PCB cleanup. Further details are presented in the PCB Investigation Summary and Cleanup Plan, dated June 2003 and the Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) report, dated February 2004.

During the course of due diligence investigations at AOI 31 between June 1997 and November 2001, PCBs were determined to be present in the soil at concentrations above the Michigan Act 451, Part 201 Generic Industrial Direct Contact Criteria (DCC) and in groundwater at concentrations above the Michigan Act 451, Part 201 Generic Industrial Drinking Water Criteria (IDWC).

GM retained GZA GeoEnvironmental (GZA) to supervise the removal of PCB impacted soil in 1998. PCB soil verification samples were collected and the excavation was backfilled.

CRA conducted Stages I through IV of the RFI for AOI 31 under the direction of GM/REALM to identify the nature and extent of any releases of hazardous constituents at or from AOI 31. The investigations were conducted between June 2002 and January

2003. During the investigations, total PCBs were detected at concentrations between 1 and 110 ppm at varying depths within the soil at AOI 31.

Following the completion of the RFI, the PCB Investigation and Cleanup Plan (Cleanup Plan), and an attached PCB Cleanup Work Plan (Work Plan) which presented the details of the proposed cleanup activities, was prepared and submitted to the United States Environmental Protection Agency (U.S. EPA) in July 2003. The Cleanup Plan presented the results of the investigations and proposed a self-implementing cleanup approach according to 40 CFR 761.

The PCB cleanup activities were conducted in three stages between August and December 2003 in accordance with the Cleanup Plan and Work Plan with excavation backfilling occuring in June 2004. Pursuant to the Work Plan, soils containing PCB concentrations above 1 ppm were successfully removed and properly disposed. The remainder of this report presents the details of the cleanup.

2.0 HEALTH AND SAFETY

A Site-specific health and safety plan (HASP) was prepared and implemented consistent with Occupational Safety and Health Administration (OSHA) 29 CFR 1910.1200 to ensure that all on Site personnel were properly protected from potential exposure to Site-related constituents. The HASP documented potential hazards at the Site, the level of personal protective equipment necessary for use during the cleanup activities, and the personal decontamination procedures required to control any potential personal exposures during implementation of the Work Plan. Modified level C PPE was worn by all personnel entering the work area.

The HASP included provisions for air monitoring for volatile organic compounds (VOCs) and dust during the PCB cleanup activities. A photoionization detector (PID) was used to monitor for VOCs and a MIE miniram was used to monitor for dust. No exceedances of action levels were detected.

3.0 SCOPE OF WORK – ON-SITE ACTIVITIES

The following sections describe the cleanup activities related to on-Site work completed during the PCB cleanup activities:

3.1 Contractor Procurement
3.2 Pre-Mobilization Activities
3.3 Mobilization/Site Preparation
3.4 Soil Excavation
3.5 Verification Sampling
3.6 Transportation and Off-Site Disposal
3.7 Backfilling
3.8 Decontamination
3.9 Site Restoration and Demobilization

3.1 CONTRACTOR PROCUREMENT

CRA Services, the construction division of CRA, from Kalamazoo, Michigan acted as the general contractor responsible for all temporary facilities (including a decontamination area and staging area). CRA Services conducted the PCB soils removal, backfilling, and Site restoration.
In addition, the following subcontractors were procured to perform various services as identified below:

- Waste Management, Inc. of Wayne, Michigan - disposal of soils containing less than 50 ppm;
- The Environmental Quality Company (EQ) of Belleville, Michigan - disposal of soils containing greater than 50 ppm materials;
- Severn Trent Laboratories, Inc. (STL) of North Canton, Ohio - analytical services;

3.2 PRE-MOBILIZATION ACTIVITIES

Activities completed prior to mobilization included marking all areas in which removal activities were required.

3.3 MOBILIZATION/SITE PREPARATION

CRA Services mobilized to the Site for three separate stages of excavation activities on August 20, 2003 (Stage I), November 3, 2003 (Stage II) and December 10, 2003 (Stage III). Activities completed during the mobilizations included the following: establishing an exclusion zone, contaminant reduction, support zones, and a laydown area for equipment and materials; establishing sanitary facilities; and constructing a decontamination pad.

3.4 SOIL EXCAVATION

In order to remove all soils containing PCBs above 1 ppm, three stages of excavation were necessary (August 2003 – Stage I, November 2003 – Stage II, and December 2003 – Stage III). Soils containing concentrations of PCBs > 1 ppm were excavated using a PC 220 hydraulic excavator. The limits of each excavation were marked in the field prior to excavation. Figure 3.1 shows the final excavation area and depths. Excavated soils were transferred directly from the excavation into haul trucks or roll-off boxes which were lined with polyethylene sheeting. The polyethylene sheeting was also draped over the side of the roll-off box/haul truck to prevent contact with the soil during transfer from the excavation.

A total of approximately 49.8 tons or 29.3 cubic yards (cy) (based on a conversion of 1.7 tons per cy) of soil containing PCBs at concentrations greater than or equal to 50 ppm were disposed of at EQ Wayne Disposal in Belleville, Michigan, and approximately 652 tons of soil containing PCBs at concentrations less than 50 ppm were disposed of at Woodland Meadows in Wayne, Michigan.

3.5 VERIFICATION SAMPLING

Verification sampling was conducted consistent with 40 CFR 761 Subpart O "Sampling to Verify Completion of Self-Implementing Cleanup and On-Site Disposal of Bulk PCB Remediation Waste and Porous Surfaces." The cleanup activities were completed in three stages as a result of the detection of PCBs at concentrations above 1 ppm in several verification samples. Table 3.1 presents a sample key for the final verification samples. Verification samples which contained PCBs at concentrations above 1 ppm were

excavated with the respective floor or sidewall, therefore, these samples are not included in the results)[1].

During the first stage of excavation activities (August 2003), verification samples were collected at five foot intervals horizontally and vertically. The soils were composited in the field and sent to the laboratory for analysis. Laboratory analytical results from the August 2003 excavation activities indicated that PCBs remained at concentrations above 1 ppm within some areas of the excavation floor and sidewalls, therefore, a second stage of excavation activities was conducted in November 2003.

Prior to collecting verification samples for laboratory analysis following the second stage of excavation activities, discrete verification samples were collected and field screened using the Enviroguard PCB Immunoassay test to identify the approximate PCB concentrations at each sample location. If PCBs were identified above 1 ppm, an additional 2 feet of soil was excavated horizontally and vertically from the sidewall or floor where the sample was collected. This process was continued until the field screening resulted in all samples near or below 1 ppm. Discrete samples were then collected and submitted to the laboratory for analysis. A portion of each of the samples was composited by the analytical laboratory and the remaining portion was placed on hold.

Preliminary analytical results from the November 2003 excavation activities indicated that PCBs in several composite samples were above 1 ppm. Subsequently, the remaining portion of the discrete samples that comprised each of the composite samples exceeding 1 ppm were analyzed individually. Analytical results from the discrete samples indicated that PCBs remained at concentrations above 1 ppm at certain areas on the excavation floor and sidewalls; therefore, a third stage of excavation activities was conducted in December 2003.

Following the third and final stage of excavation activities, discrete samples were collected and field screened using the Enviroguard PCB Immunoassay test which provided estimated PCB concentrations in the soil samples. The results of this round of field screening were all near or below 1 ppm. Subsequently, discrete samples were re-collected and submitted to the laboratory for compositing and analysis. The PCB concentrations of these composite samples were less than 1 ppm.

[1] Since the composite samples from which the discrete samples in Table 3.1 came from did not exist at the final stage of the excavation (the composite sample analytical result was above 1 ppm), the composite sample itself was not included in the sample key.

Figure 3.2 presents the verification sample locations and the composite sampling scheme. Figure 3.3 presents the final area and depths of the verification samples. Table 3.2 presents the analytical results for the final verification samples. The complete data deliverables provided by the laboratories that performed the analysis of the samples during the PCB cleanup activities are available upon request. The data validation memorandum is provided in Appendix A. The data presented in the tables, figures, and Appendix A are for final verification samples only. Data pertaining to all samples collected from excavated surfaces is provided in Appendix B.

3.6 TRANSPORTATION AND OFF-SITE DISPOSAL

Transportation and disposal were required for two waste streams in accordance with 40 CFR 761.61: PCB remediation waste containing PCBs greater than or equal to 50 ppm and PCB remediation waste containing PCBs less than 50 ppm. The soils containing PCBs greater than or equal 50 ppm were disposed of at EQ Wayne Disposal in Belleville, Michigan. The waste manifests for these soils were prepared in accordance with 40 CFR 761 Subpart K *PCB Waste Disposal Records and Reports* and are contained in Appendix C.

The soils containing PCBs less than 50 ppm, non-liquid cleaning materials (e.g., rags), and personal protective equipment generated during implementation of the cleanup (consistent with 40 CFR 761.61(a)(5)(v) *Cleanup Wastes*) were disposed of at Woodland Meadows Landfill in Wayne, Michigan. A list of soil volumes and weights for these soils is contained in Appendix C on the Woodland Meadows detail report. Note that approximately one third of the soils under manifest #52901 (August 21, 2003) and all the soils under manifest #59928 (December 11, 2003) were for soils containing benzo(a)pyrene from a separate excavation at another AOI.

Water generated during decontamination activities was contained in a 55-gallon drum. Prior to disposal a sample was collected from the drum and analyzed with the Toxic Substances Leaching Procedure for the VOCs, SVOCs, PCBs, metals, reactivity, corrosivity, and ignitability (RCI). The decontamination water was disposed of at Dynecol's water treatment facility in Detroit, Michigan. What are the results of the sample and where are the results?

3.7 BACKFILLING AND COMPACTION

The sides of the excavation were surveyed to document the limits of excavation prior to backfilling. The excavation was backfilled on June 30, 2004 with an inert fill imported

from American Aggregate Company in Milford, Michigan via haul trucks. As the fill was placed into the excavation, the fill was spread by a dozer in approximate 1-foot lifts and compacted by a roller to at least 95% of the standard proctor. Appendix D presents the compaction test locations and results.

3.8 DECONTAMINATION

Decontamination was completed in accordance with the Work Plan and the self-implementing procedures described in 40 CFR 761.79(c)(2). Equipment which contacted PCB-impacted material, including the excavator and front end loader buckets, was decontaminated using a diesel soaked rag to wipe down the equipment before cleaning with a high-pressure steam cleaner. Decontamination materials were disposed of consistent with 40 CFR 761.61 (a)(5). The diesel rags used for decontamination were disposed of in the EQ roll-off boxes. All decontamination water was stored in a 55-gallon drum (see Section 3.6).

3.9 SITE RESTORATION AND DEMOBILIZATION

All temporary fencing, the decontamination pad, equipment, and other materials and supplies brought onto the Site for the cleanup activities were removed following the final stage of the backfilling activities.

3.10 DOCUMENTATION

During completion of the cleanup activities, a logbook was maintained to document all activities completed on Site including weather, personnel participating in the cleanup activities, cleanup activities conducted, and other relevant information. Records will be kept consistent with 40 CFR 761.61(a)(9) for 5 years.

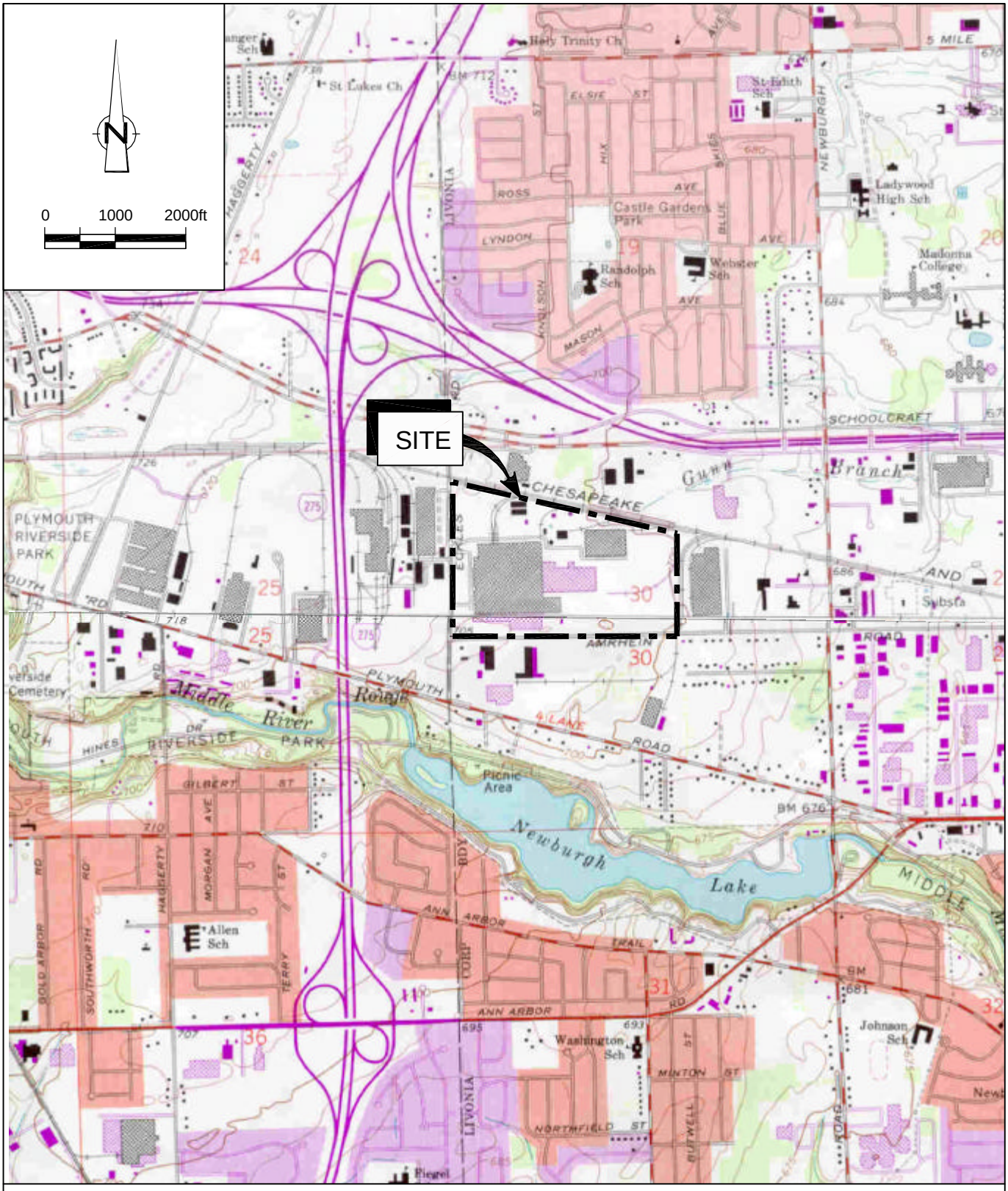
4.0 DEVIATIONS FROM PROPOSED ACTIVITIES

The following deviations from the Work Plan were implemented during the field activities:

1) The Environguard immunoassay kit was used to screen discrete samples collected from sidewalls and floors of the excavation. The results of the screening were used to determine whether further excavation was necessary prior to collecting samples for submittal to the analytical laboratory.

2) Verification sampling locations were determined in the field following each stage of excavation activities based on the final area of the excavation.

FIGURES



SOURCE: USGS QUADRANGLE MAPS;
NORTHVILLE AND WAYNE, MICHIGAN

figure 1.1

SITE LOCATION
13000 ECKLES ROAD SITE
Livonia, Michigan

12607-229(036)GN-DE001 APR 21/2005

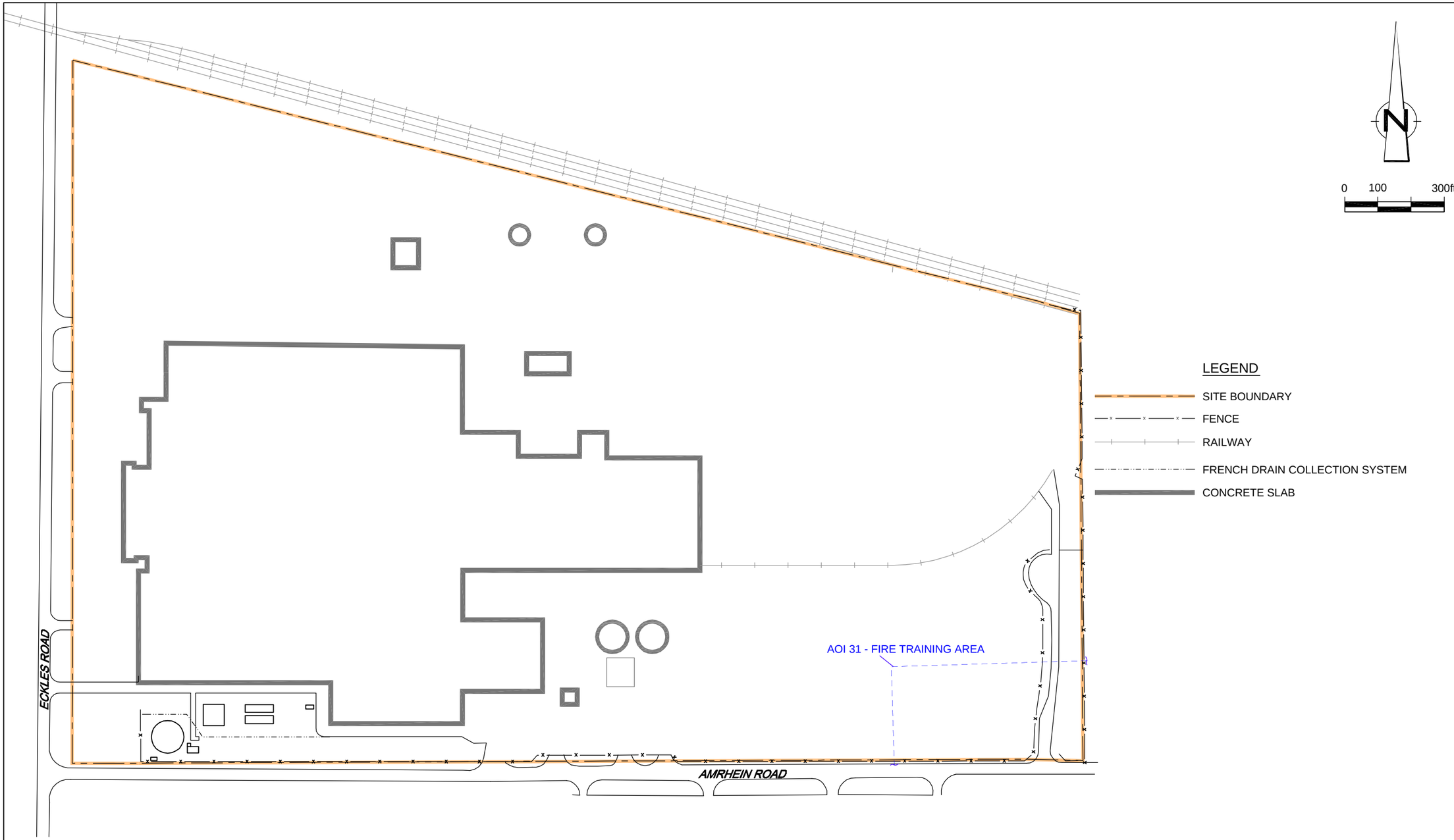


figure 1.2

SITE PLAN
13000 ECKLES ROAD SITE
Livonia, Michigan

12607-229(036)GN-DE002 APR 21/2005

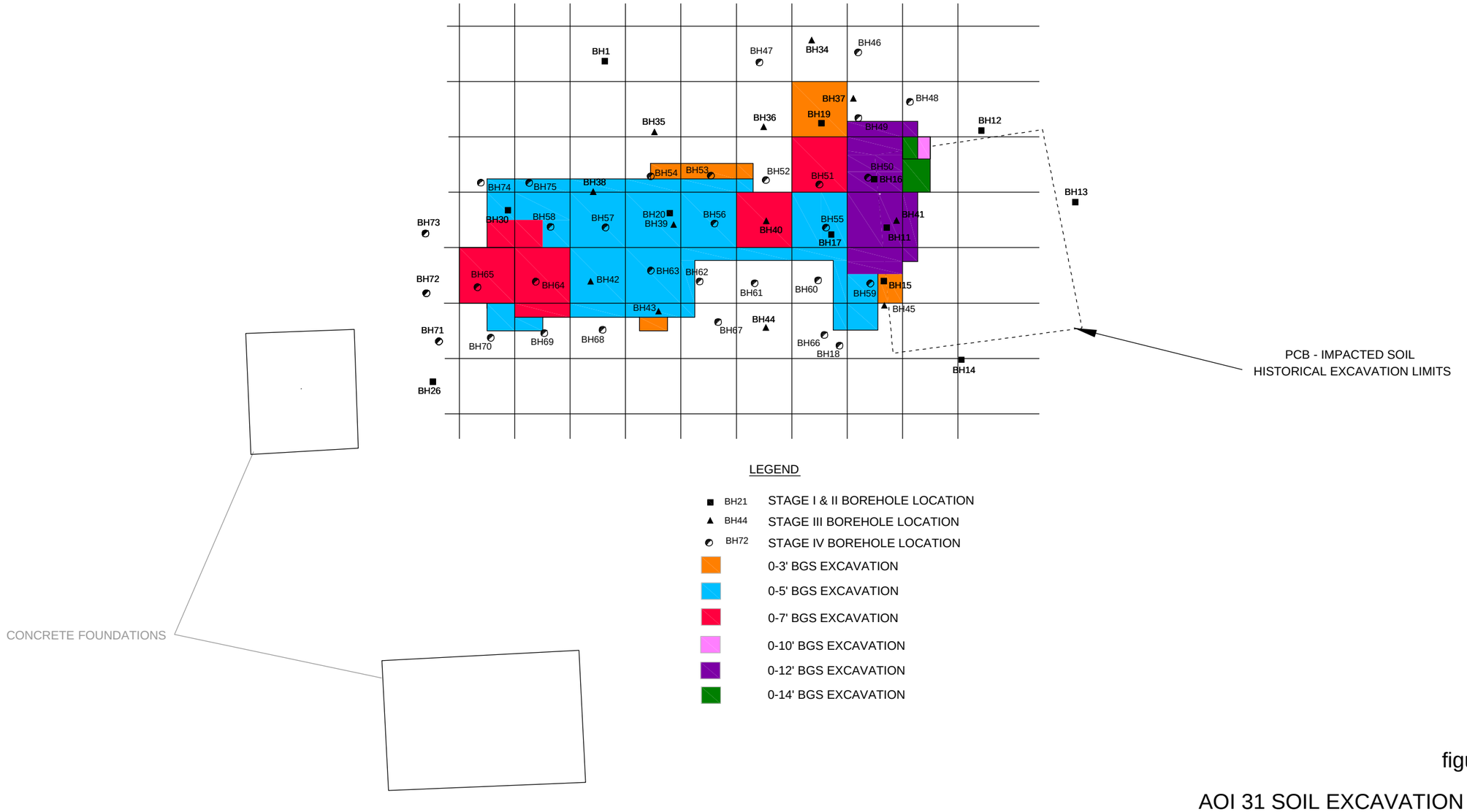


figure 3.1

AOI 31 SOIL EXCAVATION AREA
13000 ECKLES ROAD SITE
Livonia, Michigan

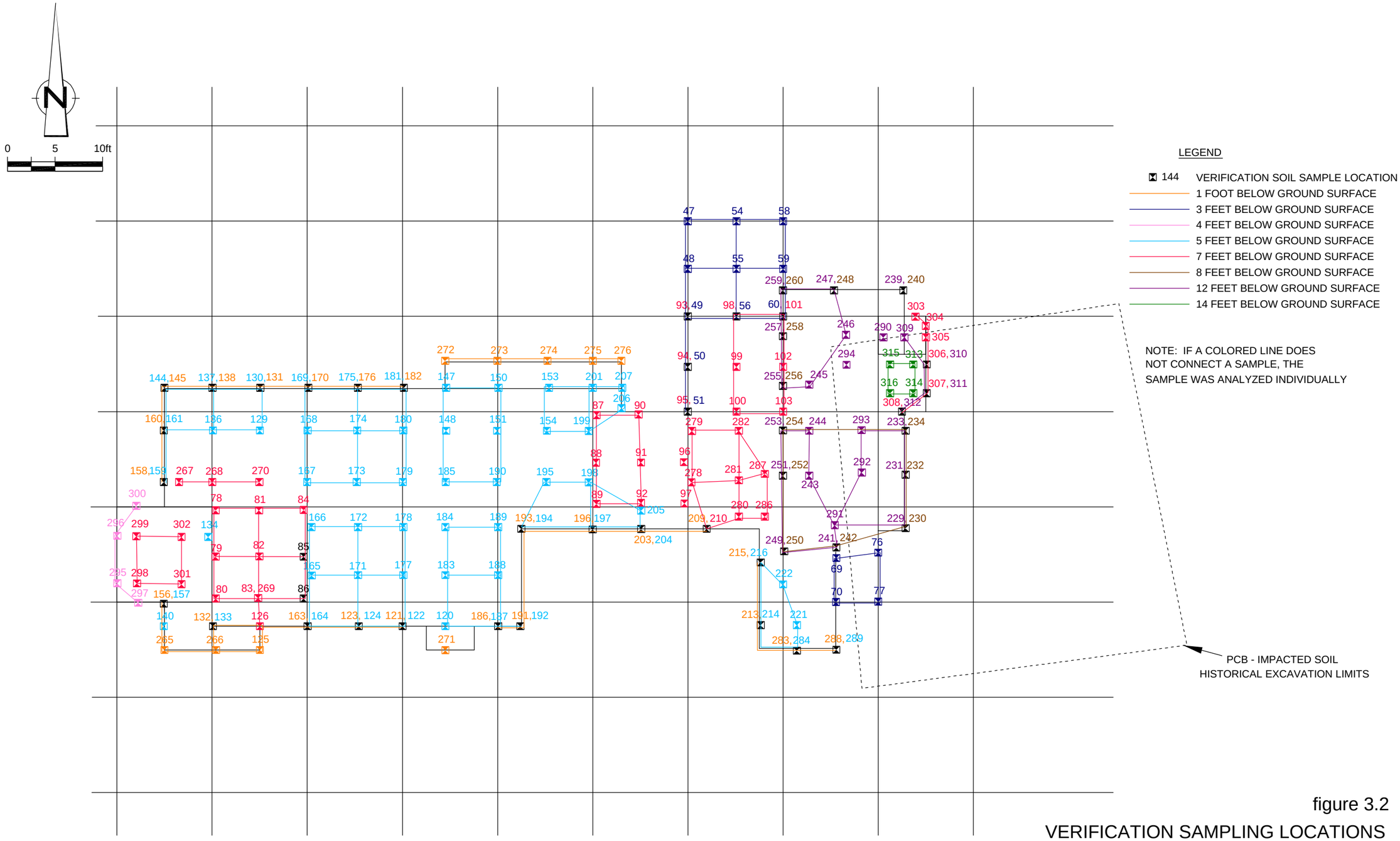


figure 3.2

VERIFICATION SAMPLING LOCATIONS
AND COMPOSITE SAMPLES
13000 ECKLES ROAD SITE
Livonia, Michigan

12607-228(036)GN-DE003 APR 21/2005

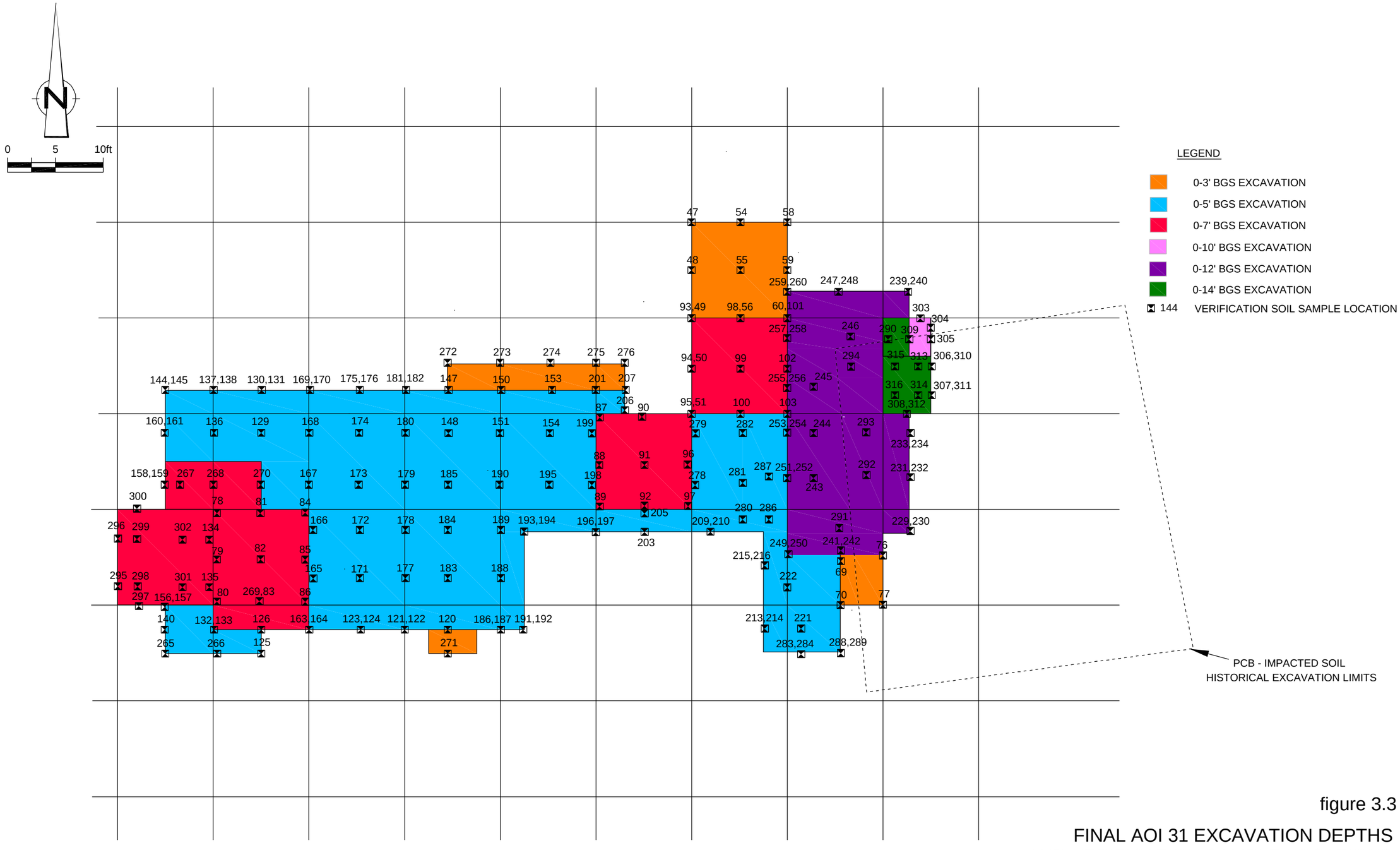


figure 3.3

FINAL AOI 31 EXCAVATION DEPTHS
AND VERIFICATION SAMPLE LOCATIONS
13000 ECKLES ROAD SITE
Livonia, Michigan

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TABLES

TABLE 3.1

VERIFICATION SAMPLE SUMMARY
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	*Sample Location*	*Sample Type*	*Composite Sample ID*	*Depth (ft bgs)*	*Sample Date*
Composite Samples					
S-12607-082103-AM-C004		Floor/Sidewall	C-004	7'	8/21/2003
S-12607-082103-AM-C006		Sidewall	C-006	7'	8/21/2003
S-12607-082103-AM-C007		Floor/Sidewall	C-007	7'	8/21/2003
S-12607-082103-AM-C018		Sidewall	C-018A	3'	8/21/2003
S-12607-082103-AM-C019		Floor	C-019A	3'	8/21/2003
S-12607-082103-AM-C020		Sidewall	C-020A	3'	8/21/2003
S-110703-AM-131	S-131	Sidewall	C-18	1'	11/7/2003
S-110703-AM-138	S-138	Sidewall		1'	11/7/2003
S-110703-AM-145	S-145	Sidewall		1'	11/7/2003
S-110703-AM-158	S-158	Sidewall		1'	11/7/2003
S-110703-AM-160	S-160	Sidewall		1'	11/7/2003
S-110703-AM-170	S-170	Sidewall		1'	11/7/2003
S-110703-AM-176	S-176	Sidewall		1'	11/7/2003
S-110703-AM-182	S-182	Sidewall		1'	11/7/2003
S-110703-AM-121	S-121	Sidewall	C-19	1'	11/7/2003
S-110703-AM-123	S-123	Sidewall		1'	11/7/2003
S-110703-AM-125	S-125	Sidewall		1'	11/7/2003
S-110703-AM-132	S-132	Sidewall		1'	11/7/2003
S-110703-AM-156	S-156	Sidewall		1'	11/7/2003
S-110703-AM-163	S-163	Sidewall		1'	11/7/2003
S-110703-AM-165	S-265	Sidewall		1'	11/7/2003
S-110703-AM-266	S-266	Sidewall		1'	11/7/2003
S-110703-AM-186	S-186	Sidewall	C-20	1'	11/7/2003
S-110703-AM-191	S-191	Sidewall		1'	11/7/2003
S-110703-AM-193	S-193	Sidewall		1'	11/7/2003
S-110703-AM-196	S-196	Sidewall		1'	11/7/2003
S-110703-AM-203	S-203	Sidewall		1'	11/7/2003
S-110703-AM-209	S-209	Sidewall		1'	11/7/2003
S-110703-AM-271	S-271	Sidewall		1'	11/7/2003
S-110703-AM-213	S-213	Sidewall	C-21	1'	11/7/2003
S-110703-AM-215	S-215	Sidewall		1'	11/7/2003
S-110703-AM-283	S-283	Sidewall		1'	11/7/2003
S-110703-AM-288	S-288	Sidewall		1'	11/7/2003
S-110703-AM-272	S-272	Sidewall	C-22	1'	11/7/2003
S-110703-AM-273	S-273	Sidewall		1'	11/7/2003
S-110703-AM-274	S-274	Sidewall		1'	11/7/2003
S-110703-AM-275	S-275	Sidewall		1'	11/7/2003
S-110703-AM-276	S-276	Sidewall		1'	11/7/2003
S-110703-AM-129	S-129	Floor	C-24	5'	11/7/2003
S-110703-AM-130	S-130	Sidewall		5'	11/7/2003
S-110703-AM-136	S-136	Floor		5'	11/7/2003
S-110703-AM-137	S-137	Sidewall		5'	11/7/2003
S-110703-AM-144	S-144	Sidewall		5'	11/7/2003
S-110703-AM-159	S-159	Sidewall		5'	11/7/2003
S-110703-AM-161	S-161	Sidewall		5'	11/7/2003

TABLE 3.1

VERIFICATION SAMPLE SUMMARY
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	*Sample Location*	*Sample Type*	*Composite Sample ID*	*Depth (ft bgs)*	*Sample Date*
S-110703-AM-167	S-167	Floor		5'	11/7/2003
S-110703-AM-168	S-168	Floor		5'	11/7/2003
S-110703-AM-169	S-169	Sidewall		5'	11/7/2003
S-110703-AM-173	S-173	Floor		5'	11/7/2003
S-110703-AM-174	S-174	Floor	C-25	5'	11/7/2003
S-110703-AM-175	S-175	Sidewall		5'	11/7/2003
S-110703-AM-179	S-179	Floor		5'	11/7/2003
S-110703-AM-180	S-180	Foor		5'	11/7/2003
S-110703-AM-181	S-181	Sidewall		5'	11/7/2003
S-110703-AM-122	S-122	Sidewall		5'	11/7/2003
S-110703-AM-124	S-124	Sidewall		5'	11/7/2003
S-110703-AM-164	S-164	Sidewall		5'	11/7/2003
S-110703-AM-165	S-165	Floor		5'	11/7/2003
S-110703-AM-166	S-166	Floor	C-26	5'	11/7/2003
S-110703-AM-171	S-171	Floor		5'	11/7/2003
S-110703-AM-172	S-172	Floor		5'	11/7/2003
S-110703-AM-177	S-177	Floor		5'	11/7/2003
S-110703-AM-178	S-178	Floor		5'	11/7/2003
S-110703-AM-147	S-147	Sidewall		5'	11/7/2003
S-110703-AM-148	S-148	Floor		5'	11/7/2003
S-110703-AM-150	S-150	Sidewall	C-27	5'	11/7/2003
S-110703-AM-151	S-151	Floor		5'	11/7/2003
S-110703-AM-185	S-185	Floor		5'	11/7/2003
S-110703-AM-190	S-190	Floor		5'	11/7/2003
S-110703-AM-120	S-120	Sidewall		5'	11/7/2003
S-110703-AM-183	S-183	Floor		5'	11/7/2003
S-110703-AM-184	S-184	Floor		5'	11/7/2003
S-110703-AM-187	S-187	Sidewall	C-28	5'	11/7/2003
S-110703-AM-188	S-188	Floor		5'	11/7/2003
S-110703-AM-189	S-189	Floor		5'	11/7/2003
S-110703-AM-192	S-192	Sidewall		5'	11/7/2003
S-110703-AM-194	S-194	Sidewall		5'	11/7/2003
S-110703-AM-195	S-195	Floor		5'	11/7/2003
S-110703-AM-197	S-197	Sidewall	C-29	5'	11/7/2003
S-110703-AM-198	S-198	Floor		5'	11/7/2003
S-110703-AM-204	S-204	Floor		5'	11/7/2003
S-110703-AM-205	S-205	Floor		5'	11/7/2003
S-110703-AM-153	S-153	Sidewall		5'	11/7/2003
S-110703-AM-154	S-154	Floor		5'	11/7/2003
S-110703-AM-199	S-199	Floor	C-30	5'	11/7/2003
S-110703-AM-201	S-201	Sidewall		5'	11/7/2003
S-110703-AM-206	S-206	Sidewall		5'	11/7/2003
S-110703-AM-207	S-207	Sidewall		5'	11/7/2003
S-110703-AM-210	S-210	Sidewall		5'	11/7/2003
S-110703-AM-278	S-278	Floor		5'	11/7/2003
S-110703-AM-279	S-279	Floor		5'	11/7/2003
S-110703-AM-280	S-280	Floor	C-31	5'	11/7/2003
S-110703-AM-281	S-281	Floor		5'	11/7/2003
S-110703-AM-282	S-282	Floor		5'	11/7/2003
S-110703-AM-286	S-286	Floor		5'	11/7/2003
S-110703-AM-287	S-287	Floor		5'	11/7/2003
S-110703-AM-214	S-214	Sidewall		5'	11/7/2003
S-110703-AM-216	S-216	Sidewall		5'	11/7/2003
S-110703-AM-221	S-221	Floor		5'	11/7/2003
S-110703-AM-222	S-222	Floor	C-32	5'	11/7/2003
S-110703-AM-223	S-223	Floor		5'	11/7/2003
S-110703-AM-284	S-284	Sidewall		5'	11/7/2003
S-110703-AM-289	S-289	Sidewall		5'	11/7/2003

TABLE 3.1

VERIFICATION SAMPLE SUMMARY
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	*Sample Location*	*Sample Type*	*Composite Sample ID*	*Depth (ft bgs)*	*Sample Date*
S-110703-AM-126	S-126	Sidewall	C-33	7'	11/7/2003
S-110703-AM-269	S-269	Floor		7'	11/7/2003
S-110703-AM-267	S-267	Floor	C-34	7'	11/7/2003
S-110703-AM-268	S-268	Floor		7'	11/7/2003
S-110703-AM-270	S-270	Floor		7'	11/7/2003
S-110703-AM-230	S-230	Sidewall	C-36	8'	11/7/2003
S-110703-AM-232	S-232	Sidewall		8'	11/7/2003
S-110703-AM-234	S-234	Sidewall		8'	11/7/2003
S-110703-AM-242	S-242	Floor		8'	11/7/2003
S-110703-AM-250	S-250	Floor		8'	11/7/2003
S-110703-AM-252	S-252	Floor		8'	11/7/2003
S-110703-AM-254	S-254	Floor		8'	11/7/2003
S-110703-AM-245	S-245	Floor	C-37	12'	11/7/2003
S-110703-AM-246	S-246	Floor		12'	11/7/2003
S-110703-AM-247	S-247	Sidewall		12'	11/7/2003
S-110703-AM-255	S-255	Sidewall		12'	11/7/2003
S-110703-AM-257	S-257	Sidewall		12'	11/7/2003
S-110703-AM-259	S-259	Sidewall		12'	11/7/2003
S-110703-AM-241	S-241	Sidewall	C-39	12'	11/7/2003
S-110703-AM-243	S-243	Floor		12'	11/7/2003
S-110703-AM-244	S-244	Floor		12'	11/7/2003
S-110703-AM-249	S-249	Sidewall		12'	11/7/2003
S-110703-AM-251	S-251	Sidewall		12'	11/7/2003
S-110703-AM-253	S-253	Sidewall		12'	11/7/2003
S-110703-AM-229	S-229	Sidewall		12'	11/7/2003
S-110703-AM-231	S-231	Sidewall		12'	11/7/2003
S-110703-AM-233	S-233	Sidewall		12'	11/7/2003
S-110703-AM-291	S-291	Floor		12'	11/7/2003
S-110703-AM-292	S-292	Floor		12'	11/7/2003
S-121003-AM-295	S-295	Sidewall	C-41	4'	12/10/2003
S-121003-AM-296	S-296	Sidewall		4'	12/10/2003
S-121003-AM-297	S-297	Sidewall		4'	12/10/2003
S-121003-AM-300	S-300	Sidewall		4'	12/10/2003
S-121003-AM-298	S-298	Floor	C-42	7'	12/10/2003
S-121003-AM-299	S-299	Floor		7'	12/10/2003
S-121003-AM-301	S-301	Floor		7'	12/10/2003
S-121003-AM-302	S-302	Floor		7'	12/10/2003
S-121003-AM-303	S-303	Sidewall	C-43	7'	12/10/2003
S-121003-AM-304	S-304	Sidewall		7'	12/10/2003
S-121003-AM-305	S-305	Sidewall		7'	12/10/2003
S-121003-AM-306	S-306	Sidewall		7'	12/10/2003
S-121003-AM-307	S-307	Sidewall		7'	12/10/2003
S-121003-AM-308	S-308	Sidewall		7'	12/10/2003
S-121003-AM-309	S-309	Sidewall	C-44	11'	12/10/2003
S-121003-AM-310	S-310	Sidewall		11'	12/10/2003
S-121003-AM-311	S-311	Sidewall		11'	12/10/2003
S-121003-AM-312	S-312	Sidewall		11'	12/10/2003
S-121003-AM-313	S-313	Floor	C-45	14'	12/10/2003
S-121003-AM-314	S-314	Floor		14'	12/10/2003
S-121003-AM-315	S-315	Floor		14'	12/10/2003
S-121003-AM-316	S-316	Floor		14'	12/10/2003

TABLE 3.1

VERIFICATION SAMPLE SUMMARY
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	*Sample Location*	*Sample Type*	*Composite Sample ID*	*Depth (ft bgs)*	*Sample Date*
*Discrete Samples**					
S-110703-AM-133	S-133	Floor	--	5'	11/7/2003
S-110703-AM-134	S-134	Floor	--	5'	11/7/2003
S-110703-AM-140	S-140	Sidewall	--	5'	11/7/2003
S-110703-AM-155	S-155	Floor	--	5'	11/7/2003
S-110703-AM-157	S-157	Floor	--	5'	11/7/2003
S-110703-AM-240	S-240	Sidewall	--	8'	11/7/2003
S-110703-AM-248	S-248	Sidewall	--	8'	11/7/2003
S-110703-AM-256	S-256	Sidewall	--	8'	11/7/2003
S-110703-AM-258	S-258	Sidewall	--	8'	11/7/2003
S-110703-AM-260	S-260	Sidewall	--	8'	11/7/2003
S-110703-AM-239	S-239	Sidewall	--	12'	11/7/2003
S-110703-AM-290	S-290	Sidewall	--	12'	11/7/2003
S-110703-AM-293	S-293	Sidewall	--	12'	11/7/2003
S-110703-AM-294	S-294	Sidewall	--	12'	11/7/2003

Notes:
* Discrete samples were analyzed only if composite sample results were greater than 1 ppm
bgs - below ground surface

TABLE 3.2

VERIFICATION SAMPLING
ANALYTICAL RESULTS
13000 ECKLES ROAD
LIVONIA, MICHIGAN

Sample Location:		***C-004***	***C-005***	***C-006***	***C-007***	***C-018A***	***C-019A***	***C-020A***	***C-18***
Sample ID:		***S-12607-082103-AM-C04***	***S-12607-082103-AM-C05***	***S-12607-082103-AM-C06***	***S-12607-082103-AM-C07***	***S-12607-082103-AM-C018***	***S-12607-082103-AM-C019***	***S-12607-082103-AM-C020***	***S-110703-AM-C18***
Sample Date:		***21/08/2003***	***21/08/2003***	***21/08/2003***	***21/08/2003***	***21/08/2003***	***21/08/2003***	***21/08/2003***	***07/11/2003***
Sample Depth:		***7 ft BGS***	***7 ft BGS***	***7 ft BGS***	***7 ft BGS***	***2.5-3 ft BGS***	***2.5-3 ft BGS***	***2.5-3 ft BGS***	***1 ft BGS***
Polychlorinated Biphenyls									
Aroclor-1016 (PCB-1016)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.37)	ND (0.34)	ND (0.38)	ND (0.35)
Aroclor-1221 (PCB-1221)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.37)	ND (0.34)	ND (0.38)	ND (0.35)
Aroclor-1232 (PCB-1232)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.37)	ND (0.34)	ND (0.38)	ND (0.35)
Aroclor-1242 (PCB-1242)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.37)	ND (0.34)	ND (0.38)	ND (0.35)
Aroclor-1248 (PCB-1248)	mg/kg	0.54	ND (0.35)	0.13 J	0.062 J	ND (0.37)	ND (0.34)	ND (0.38)	ND (0.35)
Aroclor-1254 (PCB-1254)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	0.9	0.36	0.054 J	0.023 J
Aroclor-1260 (PCB-1260)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.37)	ND (0.34)	ND (0.38)	ND (0.35)

Notes
ND (0.35) - Parameter was not detected above the limit in parentheses
J - Estimated value
ft BGS - feet below ground surface

TABLE 3.2

VERIFICATION SAMPLING
ANALYTICAL RESULTS
13000 ECKLES ROAD
LIVONIA, MICHIGAN

Sample Location:		***C-19***	***C-20***	***C-21***	***C-22***	***C-24***	***C-25***	***C-26***	***C-27***	***C-28***
Sample ID:		***S-110703-AM-C19***	***S-110703-AM-C20***	***S-110703-AM-C21***	***S-110703-AM-C22***	***S-110703-AM-C24***	***S-110703-AM-C25***	***S-110703-AM-C26***	***S-110703-AM-C27***	***S-110703-AM-C28***
Sample Date:		***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***
Sample Depth:		***1 ft BGS***	***1 ft BGS***	***1 ft BGS***	***1 ft BGS***	***5 ft BGS***	***5 ft BGS***	***5 ft BGS***	***5 ft BGS***	***5 ft BGS***
Polychlorinated Biphenyls										
Aroclor-1016 (PCB-1016)	mg/kg	ND (0.36)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.34)	ND (0.35)
Aroclor-1221 (PCB-1221)	mg/kg	ND (0.36)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.34)	ND (0.35)
Aroclor-1232 (PCB-1232)	mg/kg	ND (0.36)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.34)	ND (0.35)
Aroclor-1242 (PCB-1242)	mg/kg	ND (0.36)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.34)	ND (0.35)
Aroclor-1248 (PCB-1248)	mg/kg	ND (0.36)	ND (0.35)	0.078 J	ND (0.35)	0.87	0.14 J	ND (0.35)	ND (0.34)	ND (0.35)
Aroclor-1254 (PCB-1254)	mg/kg	0.38	0.22 J	ND (0.35)	0.56	ND (0.35)	ND (0.35)	0.14 J	0.07 J	0.13 J
Aroclor-1260 (PCB-1260)	mg/kg	ND (0.36)	ND (0.35)	0.045 J	ND (0.35)	0.086 J	ND (0.35)	ND (0.35)	ND (0.34)	ND (0.35)

TABLE 3.2

VERIFICATION SAMPLING
ANALYTICAL RESULTS
13000 ECKLES ROAD
LIVONIA, MICHIGAN

Sample Location:		***C-29***	***C-30***	***C-31***	***C-32***	***C-33***	***C-34***	***C-36***	***C-39***	***C-41***
Sample ID:		***S-110703-AM-C29***	***S-110703-AM-C30***	***S-110703-AM-C31***	***S-110703-AM-C32***	***S-110703-AM-C33***	***S-110703-AM-C34***	***S-110703-AM-C36***	***S-110703-AM-C39***	***S-121003-AM-C41***
Sample Date:		***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***12/12/2003***
Sample Depth:		***5 ft BGS***	***5 ft BGS***	***7 ft BGS***	***7 ft BGS***	***7 ft BGS***	***7 ft BGS***	***8 ft BGS***	***12 ft BGS***	***4 ft BGS***
Polychlorinated Biphenyls										
Aroclor-1016 (PCB-1016)	mg/kg	ND (0.35)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.34)	ND (0.34)	ND (0.35)	ND (0.35)	ND (0.35)
Aroclor-1221 (PCB-1221)	mg/kg	ND (0.35)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.34)	ND (0.34)	ND (0.35)	ND (0.35)	ND (0.35)
Aroclor-1232 (PCB-1232)	mg/kg	ND (0.35)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.34)	ND (0.34)	ND (0.35)	ND (0.35)	ND (0.35)
Aroclor-1242 (PCB-1242)	mg/kg	ND (0.35)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.34)	ND (0.34)	ND (0.35)	ND (0.35)	ND (0.35)
Aroclor-1248 (PCB-1248)	mg/kg	0.33 J	0.36	0.21 J	0.93	0.022 J	ND (0.34)	0.32 J	0.081 J	0.1 J
Aroclor-1254 (PCB-1254)	mg/kg	ND (0.35)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.34)	ND (0.34)	ND (0.35)	ND (0.35)	ND (0.35)
Aroclor-1260 (PCB-1260)	mg/kg	ND (0.35)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.34)	ND (0.34)	ND (0.35)	ND (0.35)	0.022 J

TABLE 3.2

VERIFICATION SAMPLING
ANALYTICAL RESULTS
13000 ECKLES ROAD
LIVONIA, MICHIGAN

Sample Location:		***C-42***	***C-43***	***C-44***	***C-45***	***S-133***	***S-134***	***S-140***	***S-155***	***S-157***
Sample ID:		***S-121003-AM-C42***	***S-121003-AM-C43***	***S-121003-AM-C44***	***S-121003-AM-C45***	***S-110703-AM-133***	***S-110703-AM-134***	***S-110703-AM-140***	***S-110703-AM-155***	***S-110703-AM-157***
Sample Date:		***12/12/2003***	***12/12/2003***	***12/12/2003***	***12/12/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***
Sample Depth:		***7 ft BGS***	***7 ft BGS***	***11 ft BGS***	***14 ft BGS***	***5 ft BGS***	***5 ft BGS***	***5 ft BGS***	***5 ft BGS***	***5 ft BGS***
Polychlorinated Biphenyls										
Aroclor-1016 (PCB-1016)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.39)	ND (0.34)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.36)
Aroclor-1221 (PCB-1221)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.39)	ND (0.34)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.36)
Aroclor-1232 (PCB-1232)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.39)	ND (0.34)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.36)
Aroclor-1242 (PCB-1242)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.39)	ND (0.34)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.36)
Aroclor-1248 (PCB-1248)	mg/kg	0.33 J	0.023 J	0.012 J	ND (0.39)	ND (0.34)	0.11 J	0.0076 J	0.13 J	0.4
Aroclor-1254 (PCB-1254)	mg/kg	ND (0.35)	ND (0.35)	ND (0.35)	ND (0.39)	ND (0.34)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.36)
Aroclor-1260 (PCB-1260)	mg/kg	0.045 J	ND (0.35)	ND (0.35)	ND (0.39)	ND (0.34)	0.039 J	ND (0.34)	ND (0.34)	0.12 J

TABLE 3.2

VERIFICATION SAMPLING
ANALYTICAL RESULTS
13000 ECKLES ROAD
LIVONIA, MICHIGAN

Sample Location:		***S-239***	***S-240***	***S-248***	***S-256***	***S-258***	***S-260***	***S-290***	***S-293***	***S-294***
Sample ID:		***S-110703-AM-239***	***S-110703-AM-240***	***S-110703-AM-248***	***S-110703-AM-256***	***S-110703-AM-258***	***S-110703-AM-260***	***S-110703-AM-290***	***S-110703-AM-293***	***S-110703-AM-294***
Sample Date:		***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***	***07/11/2003***
Sample Depth:		***12 ft BGS***	***8 ft BGS***	***8 ft BGS***	***8 ft BGS***	***8 ft BGS***	***8 ft BGS***	***14 ft BGS***	***12 ft BGS***	***12 ft BGS***
Polychlorinated Biphenyls										
Aroclor-1016 (PCB-1016)	mg/kg	ND (0.36)	ND (0.36)	ND (0.36)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.39)	ND (0.39)
Aroclor-1221 (PCB-1221)	mg/kg	ND (0.36)	ND (0.36)	ND (0.36)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.39)	ND (0.39)
Aroclor-1232 (PCB-1232)	mg/kg	ND (0.36)	ND (0.36)	ND (0.36)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.39)	ND (0.39)
Aroclor-1242 (PCB-1242)	mg/kg	ND (0.36)	ND (0.36)	ND (0.36)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.39)	ND (0.39)
Aroclor-1248 (PCB-1248)	mg/kg	0.87	ND (0.36)	0.0044 J	ND (0.35)	0.056 J	0.0052 J	ND (0.37)	0.088 J	ND (0.39)
Aroclor-1254 (PCB-1254)	mg/kg	ND (0.36)	ND (0.36)	ND (0.36)	ND (0.35)	ND (0.36)	ND (0.36)	ND (0.37)	ND (0.39)	ND (0.39)
Aroclor-1260 (PCB-1260)	mg/kg	ND (0.36)	ND (0.36)	ND (0.36)	ND (0.35)	0.0069 J	ND (0.36)	ND (0.37)	ND (0.39)	ND (0.39)

APPENDICES

APPENDIX A

DATA VALIDATION MEMORANDUM

CONESTOGA-ROVERS
& ASSOCIATES

14496 Sheldon Road, Suite #200
Plymouth, Michigan 48170
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www.CRAworld.com

MEMORANDUM

TO: James Reid

REF. NO.: 12607 - 52

FROM: Paul Wiseman/tl/151/Det

DATE: February 16, 2004

RE: Data Quality Assessment and Validation – Expanded Deliverables
RFI Stage IV and AOI–31 PCB Clean-up
GM 13000 Eckles Road Site – Livonia, Michigan

The following details a quality assessment and validation of the analytical data resulting from the August through December 2003, collection of 135 soil, 10 groundwater, and eight (8) quality control samples from the GM 13000 Eckles Road Site in Livonia, Michigan. The sample summary detailing sample identification, sample location, quality control samples, and analytical parameters is presented in Table 1. Sample analysis was completed at Severn Trent Laboratories, Inc. in North Canton, Ohio (STL) in accordance with the methodologies presented in Table 2. The quality control criteria used to assess the data were established by the methods and the quality assurance project plan (QAPP).[1]

Sample Quantitation

The laboratory reported detected concentrations of volatile organic compounds (VOC), semi-volatile organic compounds (SVOC), and polychlorinated biphenyls (PCB) below the laboratory's report limit (RL) but above the laboratory's method detection limit (MDL). The laboratory flagged these sample concentrations with a "J". These concentrations should be qualified as estimated (J) values unless otherwise qualified in this memorandum.

The metal sample analysis resulted in a number of concentrations flagged by the laboratory with a "B". These concentrations are below the laboratory's RL but above the laboratory's MDL; therefore, these results should be qualified as estimated (J) values, unless otherwise qualified in this memorandum. The "B" flags may be disregarded.

Holding Time Period and Sample Analysis

The holding time periods are presented in Table 3. Samples that violated the holding time period are detailed in Table 4. The remaining samples, as indicated by the sample collection, extraction and analysis dates on the chain of custody forms and analytical reports provided by STL, were prepared and analyzed within the required holding time periods.

[1] Application of quality assurance criteria was consistent with "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review", EPA-540/R-99/008, October 1999 and "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Review", EPA-540/R-94/013, February 1994.

Gas Chromatography/Mass Spectrometer Mass Calibration (Instrument Performance Check) - Organics

To ensure adequate mass resolution, identification, and to some degree, sensitivity; the performance of each gas chromatography/mass spectrometry (GC/MS) instrument used for VOC and SVOC analyses was checked at the beginning of each 12-hour period using bromofluorobenzene (BFB) and decafluorotriphenylphosphine (DFTPP), respectively. The results of all instrument performance checks were within the acceptance criteria, indicating acceptable instrument performance.

Initial Calibration – Organics

Initial calibration data were used to demonstrate that each instrument was capable of generating acceptable quantitative data. Initial calibration criteria for organic analyses performed by GC/MS required that all compounds meet a minimum mean relative response factor (RRF) and a maximum percent relative standard deviation (RSD) or a minimum correlation coefficient when a calibration curve is used. Initial calibration criteria for organic analyses performed by gas chromatography (GC) require that all compounds meet a maximum percent RSD. The initial calibration data for organic analyses by GC/MS and GC were within the acceptance criteria indicating the instruments were capable of acceptable performance prior to analysis.

Initial Calibration – Inorganics

The initial calibration criteria for inorganic analysis requires an initial calibration verification standard be analyzed within a method-specific percent recovery of the true value; or a specific number of standards be analyzed with a correlation coefficient greater than or equal to 0.99. The initial calibration data for the inorganic analyses were within the acceptance criteria indicating the instruments were capable of acceptable performance prior to analysis.

Continuing Calibration – Organics

To ensure that each instrument was capable of producing acceptable quantitative data over the analysis period, routine checks upon the instrument calibrations were performed. Continuing calibration acceptance criteria for organic analyses by GC/MS require that compounds meet a minimum RRF. Organic analyses require a maximum percent difference (D) between the mean initial calibration RRF and the continuing calibration RRF for GC/MS analyses; or the initial calibration factor and the continuing calibration factor for GC analyses. A maximum percent drift between the known concentration and the calculated concentration based on the calibration curve is required when used. Table 5 presents the samples, which should be qualified due to violation of continuing calibration criteria. The remaining continuing calibration data was found to be within the acceptance criteria.

Continuing Calibration – Inorganics

Continuing calibration criteria for inorganic analyses are the same criteria as used for assessing the initial calibration data. The continuing calibration verification data were within the acceptance criteria.

Method Blank Samples - Organics

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of method blank samples. The samples presented in Table 6 should be qualified due to laboratory contamination. The laboratory flagged these concentrations with a "B", which may be disregarded. The remaining method blank samples were reported to be free from detectable levels of target analytes, indicating no additional laboratory-attributable contamination occurred.

Laboratory Blank Samples - Inorganics

Contamination of samples contributed by laboratory conditions or procedures was monitored by concurrent preparation and analysis of initial calibration blanks (ICB), continuing calibration blanks (CCB) and method blank samples. Several ICB and CCBs were reported with detectable concentrations of target analytes. The samples presented in Table 7 should be qualified due to ICB and CCB contamination above the laboratory report limits. The remaining ICB and CCBs were reported to be free from detectable levels of target analytes, indicating no additional laboratory-attributable contamination occurred.

Method blanks were reported with detectable concentrations of target analytes. The samples presented in Table 6 should be qualified due to laboratory contamination in method blank samples. The laboratory flagged the metals samples affected by method blank contamination results with a "J" flag, which may be disregarded. The remaining method blanks were reported to be free from detectable levels of target analytes, indicating no additional laboratory-attributable contamination occurred.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Percent Recoveries - Organics

To assess the long term accuracy and precision of the analytical methods on various matrices MS/MSD percent recoveries and the relative percent difference (RPD) of the concentrations were determined. The samples selected for MS/MSD analysis are identified in Table 1. The samples that should be qualified due to violation of MS/MSD percent recovery criteria are outlined in Table 8. The MS/MSD percent recoveries and associate RPDs acceptance criteria were met for the remaining analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Percent Recoveries - Inorganics

The MS/MSD percent recoveries and RPD of the concentrations were monitored to determine the effects of sample matrix on the laboratory's digestion and measurement methods. The samples selected for MS/MSD analysis are identified in Table 1. The samples that should be qualified due to violation of MS/MSD percent recovery criteria are outlined in Table 9. The remaining MS/MSD percent recoveries and associated RPDs were within the acceptance criteria.

Laboratory Control Sample / Laboratory Control Sample Duplicate (LCS/LCSD) Analysis

The LCS/LCSD analyses serve as a monitor of the overall performance in all steps of the sample analysis. The LCS percent recoveries were within the laboratory control limits, indicating that an acceptable level of overall performance was achieved.

Laboratory precision was verified by the RPD of the LCS/LCSD when a MS/MSD was not analyzed. The RPDs were within the laboratory control limits, indicating that an acceptable level of overall laboratory precision was achieved.

Surrogate Compound Percent Recoveries (Surrogate Recoveries) - Organics

Individual sample performance for organic analyses was monitored by assessing the results of surrogate compound percent recoveries. The sample analyses that violated surrogate acceptance criteria are identified and qualified in Table 10. The PCB and SVOC surrogate recoveries could not be measured in several samples due to dilutions required to successfully analyze the samples. No qualification was required. The surrogate recovery acceptance criteria was met for the remaining samples.

Internal Standard Summaries - Organics

Overall instrument stability and performance for VOC and SVOC analyses was monitored using internal standard peak area and retention time (RT) data. The internal standard peak areas of the samples are required to fall within the method-specific percent recovery of their respective continuing calibration internal standard areas, in the continuing calibration standard. The RT for each internal standard in the samples is also required to be within method-specific time intervals of their respective internal standard RT in the continuing calibration standard.

Internal Standard Percent Recoveries – Inorganics

Individual sample performance for the inorganic analyses by Inductively Coupled Argon Plasma/Mass Spectrometry (ICP/MS) was monitored by assessing the results of internal standard percent recoveries. The internal standard data were within the acceptance criteria.

Inductively Coupled Plasma (ICP) Interference Check Sample Analysis – Inorganics

To verify that proper inter-element and background correction factors had been established by the laboratory for metals analyses, the inductively coupled plasma interference check sample data was monitored. The data were within the acceptance criteria.

Serial Dilution – Inorganics

The percent difference (D) between serial dilutions of a sample for various matrices were monitored to determine physical or chemical interference. The samples that should be qualified due to violation of percent D acceptance criteria are summarized in Table 11. The laboratory flagged these concentrations with a "E" flag, which may be disregarded. The remaining percent D acceptance criteria were met.

Target Compound Identification

To minimize erroneous compound identification during organic analyses, qualitative criteria including compound retention time and mass spectra (if applicable) were evaluated according to identification criteria established by the methods. The organic compounds reported adhered to the specified identification criteria.

Compound Quantitation

The reported quantitation results and detection limits were checked to ensure results reported were accurate. No discrepancies were found between the raw data and the sample results reported by the laboratory.

Field Quality Assurance/Quality Control

The field quality assurance/quality control consisted of six (6) field duplicate sample sets and two (2) trip blank samples.

Overall precision for the sampling event and laboratory procedures was monitored using the results of the field duplicate sample sets. Table 12 summarizes the results of the detected analytes in the field duplicate sample sets. The high RPD value for SVOC analysis could be attributed to the variability of soil samples and the natural heterogeneity of soil. The RPD between the investigative sample and the duplicate sample collected is greater than 100 percent, which represents a significant difference. Although the data does not require qualification, the data should be used with caution. The remainder of the data indicates that an adequate level of precision was achieved for the sampling event.

To monitor potential cross-contamination of VOC during aqueous sample transportation and storage, a trip blank was submitted to the laboratory for VOC analysis with each shipping cooler containing multiple samples. The samples that should be qualified due to trip blank contamination are summarized in Table 13. No additional target analytes were reported as detected in the trip blank samples.

System Performance

System performance between various quality control checks was evaluated to monitor for changes that may have caused the degradation of data quality. No technical problems or chromatographic anomalies were observed which require qualification of the data.

Overall Assessment

The data were found to exhibit acceptable levels of accuracy and precision, based on the provided information, and may be used with the qualifications noted, with the exception of the following:

- TCL SVOC data was rejected in a number of samples due to surrogate violations.

TABLE 1

SAMPLE SUMMARY
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	Location	Start Depth (ft bgs)	End Depth (ft bgs)	Matrix	QC Samples	Parameters: TCL VOC	TCL SVOC	PCB	Select TAL Inorganics	Lead, D	Lead, T
CRA SDG #: 114		STL Lot No.: A3H220385									
S-12607-082103-AM-C001	C-001	9'	10'	Soil				X			
S-12607-082103-AM-C002	C-002	9'	10'	Soil				X			
S-12607-082103-AM-C003	C-003	9'	10'	Soil				X			
S-12607-082103-AM-C004	C-004	7'	7'	Soil				X			
S-12607-082103-AM-C005	C-005	7'	7'	Soil				X			
S-12607-082103-AM-C006	C-006	7'	7'	Soil				X			
S-12607-082103-AM-C007	C-007	7'	7'	Soil				X			
S-12607-082103-AM-C008	C-008	2.5'	3'	Soil				X			
S-12607-082103-AM-C009	C-009	2.5'	3'	Soil				X			
S-12607-082103-AM-C010	C-010	2.5'	3'	Soil				X			
S-12607-082103-AM-C011	C-011	2.5'	3'	Soil				X			
S-12607-082103-AM-C012	C-012	2.5'	3'	Soil				X			
S-12607-082103-AM-C013	C-013	2.5'	3'	Soil				X			
S-12607-082103-AM-C014	C-014	2.5'	3'	Soil				X			
S-12607-082103-AM-C015	C-015	2.5'	3'	Soil				X			
S-12607-082103-AM-C016	C-016	2.5'	3'	Soil				X			
S-12607-082103-AM-C018	C-018A	2.5'	3'	Soil				X			
S-12607-082103-AM-C019	C-019A	2.5'	3'	Soil				X			
S-12607-082103-AM-C020	C-020A	2.5'	3'	Soil				X			
S-12607-082103-AM-C021	C-021A	2.5'	3'	Soil				X			
S-12607-082103-AM-C022	C-022A	2.5'	3'	Soil				X			
S-12607-082103-AM-C023	C-023A	2.5'	3'	Soil				X			
CRA SDG #: 115		STL Lot No.: A3H250152									
S-12607-082103-AM-004	S-004	1.5'	2'	Soil			X[1]				
S-12607-082103-AM-005	S-005	1.5'	2'	Soil			X[1]				
S-12607-082103-AM-006	S-006	1.5'	2'	Soil			X[1]				
S-12607-082103-AM-007	S-007	1.5'	2'	Soil			X[1]				
S-12607-082103-AM-008	S-008	1.5'	2'	Soil			X[1]				
S-12607-082103-AM-009	S-009	1.5'	2'	Soil			X[1]				
S-12607-082103-AM-010				Soil		X[2]					
S-12607-082103-AM-011				Soil		X[2]					

TABLE 1

SAMPLE SUMMARY
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	Location	Start Depth (ft bgs)	End Depth (ft bgs)	Matrix	QC Samples	Parameters: TCL VOC	TCL SVOC	PCB	Select TAL Inorganics	Lead, D	Lead, T
CRA SDG #: 115		STL Lot No.: A3H250152									
S-12607-082103-AM-012				Soil		X[2]					
S-12607-082103-AM-013				Soil		X[2]					
S-12607-082103-AM-014				Soil		X[2]					
S-12607-082103-AM-015				Soil		X[2]					
S-12607-082103-AM-016				Soil		X[2]					
CRA SDG #: 119		STL Lot No.: A3K040114									
S-12607-110303-AM-010	S-010			Soil			X[1]				
CRA SDG #: 120		STL Lot No.: A3K080140									
S-110703-AM-C18	C-18	--	--	Soil				X			
S-110703-AM-C19	C-19	--	--	Soil				X			
S-110703-AM-C20	C-20	--	--	Soil				X			
S-110703-AM-C21	C-21	--	--	Soil				X			
S-110703-AM-C22	C-22	--	--	Soil				X			
S-110703-AM-C23	C-23	--	--	Soil				X			
S-110703-AM-C24	C-24	--	--	Soil				X			
S-110703-AM-C25	C-25	--	--	Soil				X			
S-110703-AM-C26	C-26	--	--	Soil				X			
S-110703-AM-C27	C-27	--	--	Soil				X			
S-110703-AM-C28	C-28	--	--	Soil				X			
S-110703-AM-C29	C-29	--	--	Soil				X			
S-110703-AM-C30	C-30	--	--	Soil				X			
S-110703-AM-C31	C-31	--	--	Soil				X			
S-110703-AM-C32	C-32	--	--	Soil				X			
S-110703-AM-C33	C-33	--	--	Soil				X			
S-110703-AM-C34	C-34	--	--	Soil				X			
S-110703-AM-C35	C-35	--	--	Soil				X			
S-110703-AM-C36	C-36	--	--	Soil				X			
S-110703-AM-C37	C-37	--	--	Soil				X			
S-110703-AM-C38	C-38	--	--	Soil				X			
S-110703-AM-C39	C-39	--	--	Soil				X			
S-110703-AM-C40	C-40	--	--	Soil				X			

TABLE 1

SAMPLE SUMMARY
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	Location	Start Depth (ft bgs)	End Depth (ft bgs)	Matrix	QC Samples	Parameters: TCL VOC	TCL SVOC	PCB	Select TAL Inorganics	Lead, D	Lead, T
CRA SDG #: 121		STL Lot No.: A3K080189									
S-110703-AM-011	S-010						X[1]				
CRA SDG #: 122		STL Lot No.: A3K180190									
S-111703-MM-1331	MW-A1-16D	0	2	Soil		X	X	X			
S-111703-MM-1332	MW-A1-16S	5	7	Soil		X					
S-111703-MM-1333	MW-A2-4S	0	2	Soil		X					
S-111703-MM-1334	MW-A2-4S	0	2	Soil	Duplicate (-1333)	X					
S-111703-MM-1335	MW-A2-4S	4	6	Soil		X					
CRA SDG #: 123		STL Lot No.: A3K190104									
S-111803-MM-1345	MW-19-8D	0	2	Soil		X					
CRA SDG #: 124		STL Lot No.: A3K190279									
S-110703-AM-133	S-133	5'	5'	Soil				X[3]			
S-110703-AM-134	S-134	5'	5'	Soil				X[3]			
S-110703-AM-140	S-140	5'	5'	Soil				X[3]			
S-110703-AM-141	S-141	5'	5'	Soil				X[3]			
S-110703-AM-155	S-155	5'	5'	Soil				X[3]			
S-110703-AM-157	S-157	5'	5'	Soil				X[3]			
S-110703-AM-162	S-162	5'	5'	Soil				X[3]			
S-110703-AM-235	S-235	12'	12'	Soil				X[3]			
S-110703-AM-236	S-236	8'	8'	Soil				X[3]			
S-110703-AM-290	S-290	14'	14'	Soil				X[3]			
S-110703-AM-238	S-238	8'	8'	Soil				X[3]			
S-110703-AM-239	S-239	12'	12'	Soil				X[3]			
S-110703-AM-240	S-240	8'	8'	Soil				X[3]			
S-110703-AM-248	S-248	8'	8'	Soil				X[3]			
S-110703-AM-256	S-256	8'	8'	Soil				X[3]			
S-110703-AM-258	S-258	8'	8'	Soil				X[3]			
S-110703-AM-260	S-260	8'	8'	Soil				X[3]			
S-110703-AM-293	S-293	12'	12'	Soil				X[3]			
S-110703-AM-294	S-294	12'	12'	Soil				X[3]			

TABLE 1

SAMPLE SUMMARY
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	Location	Start Depth (ft bgs)	End Depth (ft bgs)	Matrix	QC Samples	Parameters: TCL VOC	TCL SVOC	PCB	Select TAL Inorganics	Lead, D	Lead, T
CRA SDG #: 125		STL Lot No.: A3K200102									
S-111903-MM-1346	MW-33-9S	0	2	Soil	MS/MSD	X					
S-111903-MM-1347	MW-33-9S	4	5.8	Soil		X					
S-111903-MM-1348	MW-BG-9S	0	2	Soil		X	X	X	X		
S-111903-MM-1349	MW-BG-9S	3	5	Soil		X	X	X	X		
GW-111903-JD-1350	HA-15	--	--	Water	MS/MSD					X	X
GW-111903-JD-1351	HA-15	--	--	Water						X	X
CRA SDG #: 126		STL Lot No.: A3K210119									
GW-112003-JD-1352	MW-19-8D	--	--	Water	MS/MSD	X					
GW-112003-JD-1353	MW-19-8S	--	--	Water		X					
GW-112003-JD-1354	MW-19-8S	--	--	Water	Duplicate (-1353)	X					
GW-112003-JD-1355	MW-A2-4S	--	--	Water		X					
GW-112003-JD-1391	MW-A1-15S	--	--	Water		X					
TB-112003-JD-1392	--	--	--	Water		X					
CRA SDG #: 127		STL Lot No.: A3K210112									
S-112003-MM-1356	SB-37-69	0	2	Soil				X			
S-112003-MM-1357	SB-37-69	0	2	Soil	Duplicate (-1356)			X			
S-112003-MM-1358	SB-37-69	3	5	Soil				X			
S-112003-MM-1359	SB-37-69	6	8	Soil				X			
S-112003-MM-1360	SB-37-14A	9	11	Soil				X			
S-112003-MM-1361	SB-37-13A	9	11	Soil				X			
S-112003-MM-1362	SB-37-11A	9	11	Soil	MS/MSD			X			
S-112003-MM-1363	SB-37-73	0	2	Soil				X			
S-112003-MM-1364	SB-37-73	3	5	Soil				X			
S-112003-MM-1365	SB-37-73	6	8	Soil				X			
S-112003-MM-1366	SB-37-72	0	2	Soil				X			
S-112003-MM-1367	SB-37-72	3	5	Soil				X			
S-112003-MM-1368	SB-37-72	6	8	Soil				X			
S-112003-MM-1369	SB-37-72	6	8	Soil				X			
S-112003-MM-1370	SB-37-71	0	2	Soil				X			
S-112003-MM-1371	SB-37-71	3	5	Soil				X			
S-112003-MM-1372	SB-37-71	6	8	Soil				X			

TABLE 1

SAMPLE SUMMARY
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	Location	Start Depth (ft bgs)	End Depth (ft bgs)	Matrix	QC Samples	Parameters: TCL VOC	TCL SVOC	PCB	Select TAL Inorganics	Lead, D	Lead, T
CRA SDG #: 127		STL Lot No.: A3K210112									
S-112003-MM-1373	SB-37-70	0	2	Soil				X			
S-112003-MM-1374	SB-37-70	3	5	Soil				X			
S-112003-MM-1375	SB-37-70	6	8	Soil				X			
S-112003-MM-1376	SB-27-9	0	2	Soil			X				
S-112003-MM-1377	SB-27-9	0	2	Soil	Duplicate (-1376)		X				
S-112003-MM-1379	SB-27-10	0	2	Soil			X				
S-112003-MM-1381	SB-27-12	0	2	Soil	MS/MSD		X				
S-112003-MM-1383	SB-27-11	0	2	Soil			X				
S-112003-MM-1385	SB-27-13	0	2	Soil			X				
S-112003-MM-1387	SB-27-14	0	2	Soil			X				
S-112003-MM-1389	SB-27-8	0	2	Soil			X				
CRA SDG #: 128		STL Lot No.: A3K220102									
GW-112103-JD-1393	MW-33-9S	--	--	Water		X	X	X	X		
GW-112103-JD-1394	MW-19-4D	--	--	Water		X					
GW-112103-JD-1395	MW-A1-16D	--	--	Water		X					
GW-112103-JD-1396	MW-BG-9S	--	--	Water		X					
TB-112103-JD-1397	Trip Blank	--	--	Water		X					
CRA SDG #: 129		STL Lot No.: A3K250131									
S-112103-MM-1398	SB-21-8	0	2	Soil		X	X	X	X		
S-112403-MM-1399	SB-21-8	6	8	Soil		X	X	X	X		
S-112403-MM-1400	SB-A1-175	0	2	Soil		X	X	X	X		
S-112403-MM-1401	SB-A1-175	4	6	Soil		X	X	X	X		
S-112403-MM-1403	MW-A1-16S	0	2	Soil			X	X	X		
CRA SDG #: 130		STL Lot No.: A3K250162									
FP-112403-BF-1402	MW-A1-16S	--	--			X	X	X	X		
CRA SDG #: 133		STL Lot No.: A3L090107									
S-111703-MM-1336	SB-27-23	0	2	Soil			X[3]				
S-111703-MM-1337	SB-27-23	4	6	Soil			X[3]				
S-111703-MM-1338	SB-27-16	0	2	Soil			X[3]				
S-111703-MM-1339	SB-27-16	0	2	Soil	Duplicate (-1338)		X[3]				
S-111703-MM-1440	SB-27-16	4	6	Soil	MS/MSD		X[3]				

TABLE 1

SAMPLE SUMMARY
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	Location	Start Depth (ft bgs)	End Depth (ft bgs)	Matrix	QC Samples	Parameters: TCL VOC	TCL SVOC	PCB	Select TAL Inorganics	Lead, D	Lead, T
CRA SDG #: 133		STL Lot No.: A3L090107									
S-112003-MM-1378	SB-27-9	4	6	Soil			X^3				
S-112003-MM-1390	SB-27-8	4	6	Soil			X^3				
S-112103-MM-1998	SB-27-15	0	2	Soil	MS/MSD		X^3				
S-112103-MM-1999	SB-27-15	4	6	Soil			X^3				
S-112103-MM-2000	SB-27-22	0	2	Soil			X^3				
S-112103-MM-2001	SB-27-22	4	6	Soil			X^3				
S-112103-MM-2002	SB-27-22	4	6	Soil	Duplicate (-2001)		X^3				
CRA SDG #: 134		STL Lot No.: A3L130119									
S-121003-AM-C41	C-41	--	--	Soil				X			
S-121003-AM-C42	C-42	--	--	Soil				X			
S-121003-AM-C43	C-43	--	--	Soil				X			
S-121003-AM-C44	C-44	--	--	Soil				X			
S-121003-AM-C45	C-45	--	--	Soil				X			

Notes:

TCL - Target Compound List
VOC - Volatile Organic Compounds
SVOC - Semi-volatile Organic Compounds
TAL - Target Analyte List
PCB - Polychlorinated Biphenyls
QC - Quality Control
MS/MSD - Matrix Spkike/Matrix Spike Duplicates
X - Samples analyzed for designated parameters
X^1 - Samples analyzed for Benzo(a)pyrene
X^2 - Samples analyzed for Trichloroethene
X^3 - Samples originally submitted "on-hold"

TABLE 2

SUMMARY OF ANALYTICAL METHODS
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Parameter	*Method*
TCL VOC, Trichloroethene	SW-846 8260B [1]
TCL SVOC, Benzo(a)pyrene	SW-846 8270C
PCB	SW-846 8082
Select TAL Metals	
Aluminum	SW-846 6010B
Antimony	SW-846 6020
Arsenic	SW-846 6010B
Barium	SW-846 6010B
Beryllium	SW-846 6010B
Cadmium	SW-846 6020
Chromium	SW-846 6010B
Cobalt	SW-846 6010B
Copper	SW-846 6020
Iron	SW-846 6010B
Lead	SW-846 6020
Manganese	SW-846 6010B
Mercury	SW-846 7470A
Nickel	SW-846 6010B
Selenium	SW-846 6020
Silver	SW-846 6020
Thallium	SW-846 6020
Vanadium	SW-846 6010B
Zinc	SW-846 6020

[1] SW-846 - "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods", SW-846, 3rd Edition, and Promulgated updates, November 1986

TABLE 3

HOLDING TIME PERIODS
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Matrix*	*Holding Time Period*
TCL VOC	Water	- 14 days from sample collection to completion of analysis
	Soil	- 48 hours from sample collection to preservation - 14 days from sample preservation to completion of analysis
TCL SVOC, PCB	Water	- 7 days from sample collection to extraction - 40 days from extraction to completion of analysis
	Soil	- 14 days from sample collection to extraction - 40 days from extraction to completion of analysis
TAL Metals, Lead T&D (except Mercury)	Water/Soil	- 180 days from sample collection to completion of analysis
Mercury	Water/Soil	- 28 days from sample collection to completion of analysis
Cyanide	Water/Soil	- 14 days from sample collection to completion of analysis

TABLE 4

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
HOLDING TIME PERIOD VIOLATIONS
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualifiers* [1]
TCL SVOC	All Compounds	GW-112103-JD-1395	J/UJ
		S-111703-MM-1336	
		S-111703-MM-1337	
		S-111703-MM-1338	
		S-111703-MM-1339	
		S-111703-MM-1440	
		S-112003-MM-1378	
		S-112003-MM-1390	
		S-112103-MM-1998	
		S-112103-MM-1999	
		S-112103-MM-2000	
		S-112103-MM-2001	
		S-112103-MM-2002	

[1] The sample parameter results should be qualified as:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (for detected parameters).

UJ – The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample (non-detected parameters).

TABLE 5

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
VIOLATION OF ORGANIC CONTINUING CALIBRATION ACCEPTANCE CRITERIA
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualifiers* [1]
PCB	Aroclor-1221	S-111703-MM-1332	UJ
	Aroclor-1232		UJ
	Aroclor-1248		UJ
	Aroclor-1016		UJ
	Aroclor-1242		UJ
TCL SVOC	4,6-Dinitro-2-methylphenol	S-111703-MM-1337	UJ
		GW-120303-SP-1404	
		S-112103-MM-1999	
		S-111703-MM-1339	
		S-111703-MM-1336	
		S-112103-MM-2002	
		S-112003-MM-1390	
		S-111703-MM-1440	
		S-111703-MM-1338	
		S-112103-MM-2001	
		S-112103-MM-1998	
		S-112103-MM-2000	
		S-112003-MM-1378	
TCL SVOC	4-Nitrophenol	GW-120303-SP-1404	UJ
		S-111703-MM-1338	
		S-111703-MM-1332	
		S-111703-MM-1440	
		S-111703-MM-1337	
		S-112103-MM-1998	
		S-112103-MM-2002	
		S-112103-MM-2000	
		S-111703-MM-1336	
		S-112103-MM-1999	
		S-111703-MM-1339	
		S-112103-MM-2001	
		S-112003-MM-1378	
		S-112003-MM-1390	
TCL VOC	2-Hexanone	TB-112003-JD-1392	UJ
		GW-112003-JD-1352	
		GW-112003-JD-1355	
		GW-112003-JD-1391	

TABLE 5

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
VIOLATION OF ORGANIC CONTINUING CALIBRATION ACCEPTANCE CRITERIA
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualifiers* [1]
TCL VOC	2-Butanone	GW-112003-JD-1354 GW-112103-JD-1393 GW-112003-JD-1355 GW-112003-JD-1391 S-111703-MM-1333 S-111703-MM-1334 TB-112103-JD-1397 S-111803-MM-1345 S-111703-MM-1331 GW-112003-JD-1352 GW-112003-JD-1353 S-111703-MM-1335 TB-112003-JD-1392 GW-112103-JD-1395 GW-112103-JD-1396	J/UJ
TCL VOC	Acetone	TB-112003-JD-1392 GW-112003-JD-1353 S-111703-MM-1331 GW-112103-JD-1395 S-111703-MM-1334 S-111803-MM-1345 GW-112103-JD-1393 S-111703-MM-1333 S-111703-MM-1335 GW-112003-JD-1391 TB-112103-JD-1397 GW-112003-JD-1355 S-111703-MM-1332 GW-112003-JD-1354 GW-112103-JD-1396 GW-112003-JD-1352	J/UJ
TCL VOC	Bromomethane	TB-112003-JD-1392 GW-120303-SP-1404 TB-120303-SP-1405 GW-112003-JD-1355 GW-112003-JD-1352 GW-112003-JD-1391	UJ
TCL VOC	Carbon tetrachloride	S-111703-MM-1332	UJ

TABLE 5

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
VIOLATION OF ORGANIC CONTINUING CALIBRATION ACCEPTANCE CRITERIA
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualifiers*[1]
TCL VOC	Chloroethane	TB-120303-SP-1405 GW-120303-SP-1404	J/UJ
TCL VOC	Dichlorodifluoromethane	TB-120303-SP-1405 GW-120303-SP-1404	UJ
TCL VOC	Methyl Tert Butyl Ether	S-112403-MM-1398 S-111703-MM-1334 S-111803-MM-1345 S-112403-MM-1400 TB-112103-JD-1397 GW-112103-JD-1393 GW-112103-JD-1396 S-111703-MM-1333 S-111703-MM-1335 S-111703-MM-1331 S-112403-MM-1399 FP-112403-BF-1402 S-111703-MM-1332 GW-112103-JD-1395 GW-112103-JD-1394 S-112403-MM-1401	UJ
TCL VOC	Trichlorofluoromethane	TB-120303-SP-1405 GW-120303-SP-1404 FP-112403-BF-1402	UJ

[1] The parameter results should be qualified for the listed samples as:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (for detected parameters).

UJ - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analytes in the sample (for non-detected parameters).

TABLE 6

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
METHOD BLANK CONTAMINATION
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Sample Result*[1]
TAL Metals (mg/L)	Antimony	GW-112103-JD-1395	ND (0.0020) U
TAL Metals (mg/L)	Copper	GW-112103-JD-1395	ND (0.0020) U
TAL Metals (mg/kg)	Manganese	FP-112403-BF-1402	ND (1.5) U
TAL Metals (mg/kg)	Silver	S-111903-MM-1349	ND (0.78) U
		S-111903-MM-1348	ND (0.61) U
TAL Metals (mg/L)	Zinc	GW-120303-SP-1404	ND (0.010) U
		GW-112103-JD-1395	ND (0.010) U
TCL VOC (µg/kg)	Acetone	S-112403-MM-1398	ND (850) UJ
		S-111903-MM-1346	ND (1000) U
		S-111903-MM-1349	ND (1600) U
		S-111903-MM-1348	ND (960) U
		S-111903-MM-1347	ND (990) U
TCL VOC (µg/L)	Chloromethane (Methyl	TB-120303-SP-1405	ND (1.0) U
		GW-120303-SP-1404	ND (1.0) U
TCL VOC (µg/L)	Methylene chloride	GW-112003-JD-1353	ND (140) U
TCL VOC (µg/kg)	Methylene chloride	FP-112403-BF-1402	ND (1400) U
		S-111903-MM-1348	ND (320) U
		S-111903-MM-1349	ND (540) U
		S-111903-MM-1347	ND (330) U
		S-111903-MM-1346	ND (340) U
TCL VOC (µg/kg)	Toluene	S-111903-MM-1348	ND (130) U

[1] The analyte should be qualified for the listed samples as:

ND ( ) U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

TABLE 7

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
LABORATORY BLANK CONTAMINATION
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualified Sample Result*[1]
TAL Metals (mg/L)	Beryllium	S-112403-MM-1401	ND (0.22) U

[1] The analyte should be qualified for the listed samples as:

ND ( ) U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

TABLE 8

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO VIOLATION OF
ORGANIC MATRIX SPIKE/MATRIX SPIKE DUPLICATE ACCEPTANCE CRITERIA
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualifiers* [1]
TCL SVOC	2-Methylnaphthalene	S-112003-MM-1381	J
	Acenaphthylene		
	Anthracene		
	Dibenzofuran		
	Benzo(g,h,i)perylene		
	Indeno(1,2,3-cd)pyrene		
	Benzo(k)fluoranthene		
	bis(2-Ethylhexyl)phthalate		
	Chrysene		
	Benzo(a)pyrene		
	Dibenz(a,h)anthracene		
	Naphthalene		
	Carbazole		
	Biphenyl		
	Fluorene		
	Acenaphthene		
	Pyrene		
	Benzo(b)fluoranthene		
	Fluoranthene		
	Phenanthrene		
	Benzo(a)anthracene		

[1] The parameter results should be qualified for the listed samples as:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (for detected parameters).

TABLE 9

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO VIOLATION OF
INORGANIC MATRIX SPIKE/MATRIX SPIKE DUPLICATE ACCEPTANCE CRITERIA
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualifiers* [1]
TAL Metals	Manganese	S-111703-MM-1332	J
	Antimony		UJ
	Chromium Total		J
	Nickel		J
	Copper		J

[1] The parameter results should be qualified for the listed samples as:

J - The associated value is an estimated quantity (for detected parameters).

UJ - The material was analyzed for, but was not detected.
The sample associated value is an estimate and may be inaccurate or imprecise (for non-detected parameters).

TABLE 10

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
VIOLATION OF SURROGATE PERCENT RECOVERY CRITERIA
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameter*	*Associated Samples*	*Qualifiers* [1]
PCB	All Compounds	GW-112103-JD-1395	UJ
TCL SVOC	All Compounds	GW-112103-JD-1395	R
TCL SVOC	All Compounds	S-111903-MM-1348	UJ
TCL VOC	All compounds	S-112403-MM-1398	J/UJ
TCL VOC	All compounds	S-112403-MM-1399 S-112403-MM-1400 S-112403-MM-1401	UJ

[1] The sample parameter results should be qualified as:

J - The analyte was positively identified; the associated numerical value is the approximate concentration of the analyte in the sample (for detected parameters).

UJ – The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample (non-detected parameters).

R - The sample results are rejected due to serious deficiencies in the ability to analyze the sample and meet quality control criteria. The presence or absence of the analyte cannot be verified.

TABLE 11

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO VIOLATION OF
INORGANIC SERIAL DILUTION ACCEPTANCE CRITERIA
GM 13000 EKCLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualifiers*[1]
TAL Metals	Copper	S-111703-MM-1332	J
TAL Metals	Zinc	S-112403-MM-1403	J

[1] The parameter results should be qualified for the listed samples as:

J - The associated value is an estimated quantity (for detected parameters).

TABLE 12

SUMMARY OF DETECTED ANALYTES IN FIELD DUPLICATE SAMPLE SETS
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Investigative Sample*	*Duplicate Sample*	*RPD* [1]
		GW-112003-JD-1353	GW-112003-JD-1354	
TCL VOC (µg/L)				
	cis-1,2-Dichloroethene	170	160	6.1
	trans-1,2-Dichloroethene	43	44	2.3
	Trichloroethene	830	760	8.8
	Vinyl chloride	58	54	7.1
		S-111703-MM-1338	S-111703-MM-1339	
TCL SVOC (µg/Kg)				
	2-Methylnaphthalene	16000 J[2]	30000 J	61
	Acenaphthene	16000 J	28000 J	55
	Anthracene	53000 J	90000 J	52
	Benzo(a)anthracene	100000 J	160000 J	46
	Benzo(a)pyrene	120000 J	190000 J	45
	Benzo(b)fluoranthene	140000 J	230000 J	49
	Benzo(g,h,i)perylene	44000 J	74000 J	51
	Benzo(k)fluoranthene	75000 J	130000 J	54
	bis(2-Ethylhexyl)phthalate	5400 J	37000 J	150
	Carbazole	32000 J	54000 J	51
	Chrysene	120000 J	180000 J	40
	Dibenz(a,h)anthracene	20000 J	36000 J	57
	Dibenzofuran	7500 J	13000 J	54
	Fluoranthene	340000 J	500000 J	38
	Fluorene	33000 J	61000 J	60
	Indeno(1,2,3-cd)pyrene	47000 J	76000 J	47
	Naphthalene	19000 J	36000 J	62
	Phenanthrene	170000 J	270000 J	45
	Pyrene	240000 J	350000 J	37
		S-112003-MM-1376	S-112003-MM-1377	
TCL SVOC (µg/Kg)				
	2-Methylnaphthalene	2200 J	1700 J	26
	Acenaphthene	6500 J	3800 J	52
	Anthracene	12000 J	6000 J	67
	Benzo(a)anthracene	28000	14000	67
	Benzo(a)pyrene	31000	16000	64
	Benzo(b)fluoranthene	38000	18000	71
	Benzo(g,h,i)perylene	18000	9500	62
	Benzo(k)fluoranthene	17000	8400	68
	bis(2-Ethylhexyl)phthalate	4600 J	1600 J	97
	Carbazole	6200 J	3000 J	70
	Chrysene	30000	15000	67

TABLE 12

SUMMARY OF DETECTED ANALYTES IN FIELD DUPLICATE SAMPLE SETS
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Investigative Sample*	*Duplicate Sample*	*RPD* [1]
		S-112003-MM-1376	S-112003-MM-1377	
TCL SVOC (µg/Kg)				
	Dibenz(a,h)anthracene	5100 J	2600 J	65
	Dibenzofuran	3500 J	2100 J	50
	Fluoranthene	73000	37000	65
	Fluorene	5600 J	2900 J	64
	Indeno(1,2,3-cd)pyrene	16000	8400	62
	Naphthalene	1500 J	690 J	74
	Phenanthrene	39000	19000	69
	Pyrene	46000	23000	67
		S-112103-MM-2001	S-112103-MM-2002	
TCL SVOC (µg/Kg)				
	Fluoranthene	92 J	81 J	13
	Phenanthrene	75J	ND (360) UJ[3]	NC[4]

[1] RPD - Relative Percent Difference
[2] J - The associated numerical value is an estimated quantity.
[3] ND( ) - Not detected at the quantitation limit stated in parentheses.
[4] NC - Not calculable.

TABLE 13

SUMMARY OF QUALIFIED SAMPLE DATA DUE TO
TRIP BLANK
GM 13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Analysis	*Parameters*	*Associated Samples*	*Qualified Sample Results* [1]
TCL VOC (µg/L)	Acetone	GW-112103-JD-1396	ND (25) UJ
		GW-120303-SP-1404	ND (25) U

[1] The analyte should be qualifed for the listed samples as:

ND ( ) U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit in parenthesis.

ND ( ) UJ - Not detected at the quantitation limit stated in parenthesis. Quantitation limits estimated

APPENDIX B

EXCAVATED VERIFICATION SAMPLE LOCATIONS AND ANALYTICAL DATA

TABLE B.1

SUMMARY OF EXCAVATED SOIL SAMPLES
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample ID	Location	Sample Depth (ft bgs)	Includes Discrete Sample Locations
S-12607-082103-AM-C002	C-002	9-10	110, 111, 112, 116, 117
S-12607-082103-AM-C003	C-003	9-10	108, 109, 115, 118
S-12607-082103-AM-C005	C-005	6.5-7	87, 88, 89, 90, 91, 92
S-12607-082103-AM-C008	C-008	2.5 - 3	1, 2, 3, 4, 5, 6
S-12607-082103-AM-C009	C-009	2.5 - 3	7, 8, 9, 10, 11
S-12607-082103-AM-C010	C-010	2.5 - 3	12, 13, 14, 15
S-12607-082103-AM-C011	C-011	2.5 - 3	16, 17, 18, 19, 20
S-12607-082103-AM-C012	C-012	2.5 - 3	21, 22, 23
S-12607-082103-AM-C013	C-013	2.5 - 3	24, 25, 26, 27, 28
S-12607-082103-AM-C014	C-014	2.5 - 3	29, 30, 31, 32, 33
S-12607-082103-AM-C015	C-015	2.5 - 3	34, 35, 36, 37, 38
S-12607-082103-AM-C016	C-016	2.5 - 3	39, 40, 41, 42, 43, 44
S-12607-082103-AM-C021	C-021	2.5 - 3	61, 62, 63, 64, 65
S-12607-082103-AM-C022	C-022	2.5 - 3	68, 69, 70, 76, 77
S-12607-082103-AM-C023	C-023	2.5 - 3	71, 72, 73, 74, 75
S-110703-AM-C23	C-23	5 - 5	133*, 134, 140*, 141, 155, 157*, 162
S-110703-AM-C35	C-35	8 - 8	236, 238, 240*, 248*, 256*, 258*
S-110703-AM-C38	C-38	12 - 12	235, 239*, 290*, 293*, 294*
S-110703-AM-155	S-155	5 - 5	< 1 ppm, but removed during other soil excavation
S-110703-AM-162	S-162	5 - 5	Discrete Sample
S-110703-AM-235	S-235	12 - 12	Discrete Sample
S-110703-AM-236	S-236	8 - 8	Discrete Sample
S-110703-AM-238	S-238	8 - 8	Discrete Sample

Notes

* Samples were not excavated

TABLE B.2

SUMMARY OF EXCAVATED SOIL SAMPLES
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample Location	*C-002*	*C-003*	*C-005*	*C-008*	*C-009*	*C-010*
Sample ID	*S-12607-082103-AM-C02*	*S-12607-082103-AM-C03*	*S-12607-082103-AM-C05*	*S-12607-082103-AM-C08*	*S-12607-082103-AM-C09*	*S-12607-082103-AM-C10*
Sample Date	*8/21/2003*	*8/21/2003*	*8/21/2003*	*8/21/2003*	*8/21/2003*	*8/21/2003*
Sample Depth	*9-10 ft BGS*	*9-10 ft BGS*	*7 ft BGS*	*2.5-3 ft BGS*	*2.5-3 ft BGS*	*2.5-3 ft BGS*
Duplicate						
Polychlorinated Biphenyls (mg/kg)						
Aroclor-1016 (PCB-1016)	ND (0.75)	ND (0.35)	ND (0.35)	ND (0.34)	ND (7)	ND (3.9)
Aroclor-1221 (PCB-1221)	ND (0.75)	ND (0.35)	ND (0.35)	ND (0.34)	ND (7)	ND (3.9)
Aroclor-1232 (PCB-1232)	ND (0.75)	ND (0.35)	ND (0.35)	ND (0.34)	ND (7)	ND (3.9)
Aroclor-1242 (PCB-1242)	ND (0.75)	ND (0.35)	ND (0.35)	ND (0.34)	ND (7)	ND (3.9)
Aroclor-1248 (PCB-1248)	7.9	0.028 J	ND (0.35)	0.3 J	70	32
Aroclor-1254 (PCB-1254)	ND (0.75)	ND (0.35)	ND (0.35)	ND (0.34)	ND (7)	ND (3.9)
Aroclor-1260 (PCB-1260)	ND (0.75)	ND (0.35)	ND (0.35)	ND (0.34)	ND (7)	ND (3.9)

Note: Some samples with PCB concentrations below 1 ppm were excavated since the sample locations were at an elevation above a sample with total PCBs >1 ppm (i.e. the sample had to be excavated to be able to remove the sample below it)

TABLE B.2

SUMMARY OF EXCAVATED SOIL SAMPLES
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample Location	*C-011*	*C-012*	*C-013*	*C-014*	*C-015*	*C-016*
Sample ID	*S-12607-082103-AM-C11*	*S-12607-082103-AM-C12*	*S-12607-082103-AM-C13*	*S-12607-082103-AM-C14*	*S-12607-082103-AM-C15*	*S-12607-082103-AM-C16*
Sample Date	*8/21/2003*	*8/21/2003*	*8/21/2003*	*8/21/2003*	*8/21/2003*	*8/21/2003*
Sample Depth	*2.5-3 ft BGS*	*2.5-3 ft BGS*	*2.5-3 ft BGS*	*2.5-3 ft BGS*	*2.5-3 ft BGS*	*2.5-3 ft BGS*
Duplicate						
Polychlorinated Biphenyls (mg/k						
Aroclor-1016 (PCB-1016)	ND (0.4)	ND (0.35)	ND (0.71)	ND (1.8)	ND (0.7)	ND (1.7)
Aroclor-1221 (PCB-1221)	ND (0.4)	ND (0.35)	ND (0.71)	ND (1.8)	ND (0.7)	ND (1.7)
Aroclor-1232 (PCB-1232)	ND (0.4)	ND (0.35)	ND (0.71)	ND (1.8)	ND (0.7)	ND (1.7)
Aroclor-1242 (PCB-1242)	ND (0.4)	ND (0.35)	ND (0.71)	ND (1.8)	ND (0.7)	ND (1.7)
Aroclor-1248 (PCB-1248)	ND (0.4)	ND (0.35)	10	17	6.9	17
Aroclor-1254 (PCB-1254)	1.1	2.8	ND (0.71)	ND (1.8)	ND (0.7)	ND (1.7)
Aroclor-1260 (PCB-1260)	ND (0.4)	ND (0.35)	ND (0.71)	ND (1.8)	ND (0.7)	ND (1.7)

Note: Some samples with PCB c
(i.e. the sample had to be excav

TABLE B.2

SUMMARY OF EXCAVATED SOIL SAMPLES
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample Location	*C-021*	*C-022*	*C-023*	*C-23*	*C-35*	*C-36*	*C-36*
Sample ID	*S-12607-082103-AM-C21*	*S-12607-082103-AM-C22*	*S-12607-082103-AM-C23*	*S-110703-AM-C23*	*S-110703-AM-C35*	*S-110703-AM-C36*	*S-110703-AM-C36*
Sample Date	*8/21/2003*	*8/21/2003*	*8/21/2003*	*11/7/2003*	*11/7/2003*	*11/7/2003*	*11/7/2003*
Sample Depth	*2.5-3 ft BGS*	*2.5-3 ft BGS*	*2.5-3 ft BGS*	*5 ft BGS*	*8 ft BGS*	*8 ft BGS*	*1*
Duplicate							
Polychlorinated Biphenyls (mg/k							
Aroclor-1016 (PCB-1016)	ND (0.69)	ND (0.35)	ND (0.37)	ND (0.35)	ND (0.36)	ND (0.35)	ND (0.34)
Aroclor-1221 (PCB-1221)	ND (0.69)	ND (0.35)	ND (0.37)	ND (0.35)	ND (0.36)	ND (0.35)	ND (0.34)
Aroclor-1232 (PCB-1232)	ND (0.69)	ND (0.35)	ND (0.37)	ND (0.35)	ND (0.36)	ND (0.35)	ND (0.34)
Aroclor-1242 (PCB-1242)	ND (0.69)	ND (0.35)	ND (0.37)	ND (0.35)	ND (0.36)	ND (0.35)	ND (0.34)
Aroclor-1248 (PCB-1248)	12	ND (0.35)	ND (0.37)	1.2	3	0.32 J	0.081 J
Aroclor-1254 (PCB-1254)	ND (0.69)	0.16 J	0.23 J	ND (0.35)	ND (0.36)	ND (0.35)	ND (0.34)
Aroclor-1260 (PCB-1260)	ND (0.69)	ND (0.35)	ND (0.37)	0.22 J	ND (0.36)	ND (0.35)	ND (0.34)

Note: Some samples with PCB c
(i.e. the sample had to be excav

TABLE B.2

SUMMARY OF EXCAVATED SOIL SAMPLES
13000 ECKLES ROAD SITE
LIVONIA, MICHIGAN

Sample Location	*C-38*	*S-141*	*S-155*	*S-162*	*S-235*	*S-236*	*S-238*
Sample ID	*S-110703-AM-C38*	*S-110703-AM-141*	*S-110703-AM-155*	*S-110703-AM-162*	*S-110703-AM-235*	*S-110703-AM-236*	*S-110703-AM-238*
Sample Date	*11/7/2003*	*11/7/2003*	*11/7/2003*	*11/7/2003*	*11/7/2003*	*11/7/2003*	*11/7/2003*
Sample Depth	*12 ft BGS*	*5 ft BGS*	*5 ft BGS*	*5 ft BGS*	*12 ft BGS*	*8 ft BGS*	*8 ft BGS*
Duplicate							
Polychlorinated Biphenyls (mg/k							
Aroclor-1016 (PCB-1016)	ND (0.38)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.37)	ND (0.36)	ND (0.36)
Aroclor-1221 (PCB-1221)	ND (0.38)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.37)	ND (0.36)	ND (0.36)
Aroclor-1232 (PCB-1232)	ND (0.38)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.37)	ND (0.36)	ND (0.36)
Aroclor-1242 (PCB-1242)	ND (0.38)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.37)	ND (0.36)	ND (0.36)
Aroclor-1248 (PCB-1248)	1.1	2.9	0.13 J	2.4	1.7	5.3	5
Aroclor-1254 (PCB-1254)	ND (0.38)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.37)	ND (0.36)	ND (0.36)
Aroclor-1260 (PCB-1260)	ND (0.38)	ND (0.35)	ND (0.34)	ND (0.34)	ND (0.37)	ND (0.36)	ND (0.36)

Note: Some samples with PCB c
(i.e. the sample had to be excav

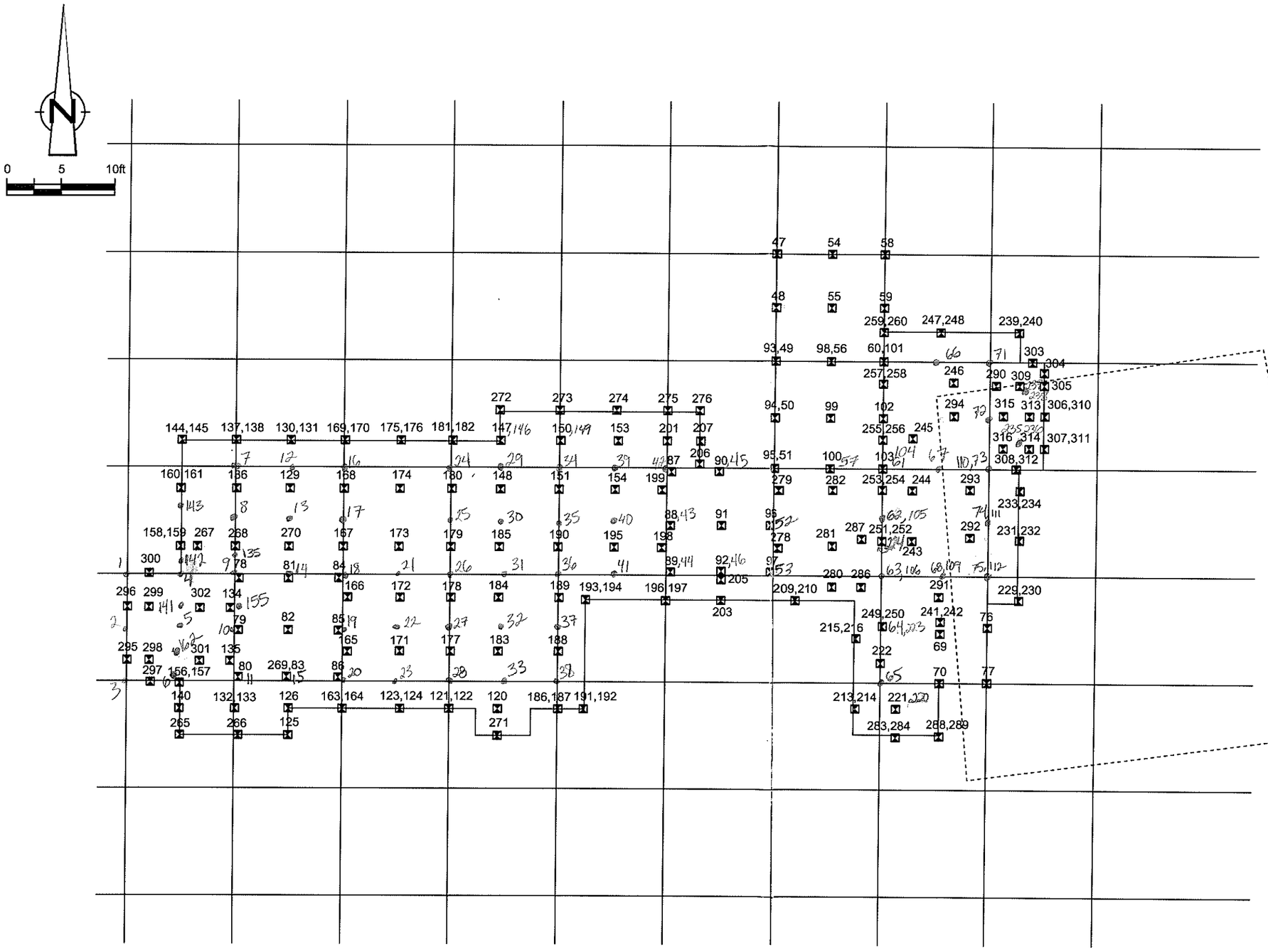

figure B.1

VERIFICATION SAMPLE LOCATIONS
13000 ECKLES ROAD SITE
Livonia, Michigan

12607-228(036)GN-DE001 JAN 11/2005

APPENDIX C

WASTE MANIFESTS AND WOODLAND MEADOWS DETAIL REPORTS

1863

WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12116 MCL.

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MIDOO5351002 | Manifest Document No.

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: Cliff Lewis
MC: 483-520-190
General Motors
2000 Centerpoint Pkwy
Pontiac MI 48341

4. Generator's Phone (248) 753-5798

A. State Manifest Document Number: MI 8705214

B. State Generator's ID: 12000 ECK 10
Livonia MI 48151

5. Transporter 1 Company Name: PROS Services

6. US EPA ID Number: MIDOOOOOOOOO

C. State Transporter's ID: 1863

D. Transporter's Phone: 800-962-7211

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
ED Wayne Disposal Inc
49350 N I-94 Service Dr
Belleville MI 48111

10. US EPA ID Number: MID048090633

G. State Facility's ID

H. Facility's Phone: 800-592-5489

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Polychlorinated Biphenyls, Solid, 9, UN2315, II	X	1	DM	12727	P	PCB
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
11(a) 081203 PAF - PCB Soil Unique Container ID: 2663
Storage start date: 11/3/03

K. Handling Codes: a. b. c. d.

15. Special Handling Instructions and Additional Information
Emergency Contact: 800-592-5489

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

On Behalf of G.M.

Printed/Typed Name: Cliff Lewis | Signature: Cliff Lewis | Date: Month 11 Day 10 Year 03

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JOE TREXLER | Signature | Date: Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space
GW is Cruise Proc

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Bryan Schultz | Signature | Date: Month 11 Day 12 Year 03

GENERATOR

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

DEQ WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.
Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12115 MCL.

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: MID005356621
Manifest Document No.: 887
2. Page 1 of 2
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: General Motors, 1996 Tech Drive, Bldg A, Troy MI 48083
A. State Manifest Document Number: MI 8705206
B. State Generator's ID
4. Generator's Phone: (248) 680-5451 ATTN Cliff Lewis
5. Transporter 1 Company Name: WILLS TRUCKING
6. US EPA ID Number: OHD0649[illegible]409
7. Transporter 2 Company Name
8. US EPA ID Number
9. Designated Facility Name and Site Address: EQ Wayne Disposal Inc, Site #2 Landfill, 49350 N I94 Service Dr, Belleville, MI 48111
10. US EPA ID Number: [illegible]090633

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. RQ, Polychlorinated biphenyls, solid, 9, UN2315, [illegible]	1	DT	[illegible] 18,770 25854	K
b.				
c.				
d.				

J. Additional Descriptions for Materials Listed Above: [illegible]
K. Handling Codes: [illegible]

15. Special Handling Instructions and Additional Information: emergency contact: 313 657-7103

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.
If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

On Behalf of General Motors
Printed/Typed Name: Clifford Lewis | Signature: Clifford Lewis | Date: [illegible]

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: THOMAS A NOWAK | Signature: Thomas A. Nowak | Date: [illegible]

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date

19. Discrepancy Indication Space: amend Bases Kelly Morrissey @ WM 8Photo 8/6/03

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Anna Marie Fallon | Signature: Anna Marie Fallon | Date: 08 2003

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

210 Wills
Bob Stubble

DEQ WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12118 MCL.

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST

Form Approved. OMB No. 2050-0039

1. Generator's US EPA ID No. MIDD0535de21 — Manifest Document No. 002 — 2. Page 1 of 2 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: General Motors, 1996 Tech Drive, Bldg A, Troy MI 48083

4. Generator's Phone (248) 680-5451 ATTN: Cliff Lewis

A. State Manifest Document Number: MI 8705204

5. Transporter 1 Company Name: Wills Trans Kirtland — 6. US EPA ID Number: CHD064713407 — B. State Generator's ID

7. Transporter 2 Company Name — 8. US EPA ID Number — C. State Transporter's ID OH 664 — D. Transporter's Phone 1-800-321-2153 — E. State Transporter's ID — F. Transporter's Phone

9. Designated Facility Name and Site Address: E.R. Wayne Disposal, 49350 N. I-94 Service Dr, Belleville MI 48111 — 10. US EPA ID Number: MID048090633 — G. State Facility's ID — H. Facility's Phone (800) 592-5489

	11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID NUMBER). HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	RQ, Polychlorinated Biphenyls, Solid, 9, UN2315, II	1	DT	20,000	P	PCB1
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above: PCB out of service: 8/20/03 Site address: 13000 Eckles Rd Livonia MI. 48151

K. Handling Codes: a. b. c. d.

Approval # DB1203PAF

15. Special Handling Instructions and Additional Information

Emergency Contact: 313 657-7103

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: On Behalf Of General Motors Clifford Lewis — Signature: Clifford Lewis — Date: Month 08 Day 11 Year 03

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Bob Stubble — Signature — Date: Month 08 Day 11 Year 03

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name — Signature — Date: Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Anna Maine Fallon — Signature: Anna Maine Fallon — Date: Month 08 Day 11 Year 03

EPA Form 8700-22 (Rev. 9-88)

TSDF COPY

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

GENERATOR

TRANSPORTER

FACILITY

WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12116 MCL.

Form Approved. OMB No. 2050-0039

Please print or type.

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MIDD05356021 | Manifest Document No.
2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
ATTN: Cliff Lewis
MC 483-520-190
General Motors
2000 Centerpoint Pkwy
Pontiac MI 48341

A. State Manifest Document Number: MI 8705213
B. State Generator's ID: 3000 ECKLES Livonia MI 48151
C. State Transporter's ID
D. Transporter's Phone

4. Generator's Phone (248) 753-5798

5. Transporter 1 Company Name
6. US EPA ID Number

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
EQ Wayne Disposal Inc
49350 N I-94 Service Dr
Belleville MI 48111

10. US EPA ID Number
MID048090633

G. State Facility's ID
H. Facility's Phone: 800-592-5489

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HM X EQ, Polychlorinated Biphenyls, Solid, 9, UN2315, II	1	CM	1	K	PCB1
b.			14,309	K	
c.					
d.					

J. Additional Descriptions for Materials Listed Above
11a) 081203 PAF-PCB Soil unique container id: RB 267406
storage start date: 11-6-03

K. Handling Codes: a, b, c, d

15. Special Handling Instructions and Additional Information
Emergency Contact: 1 800-535-5053

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Cliff Lewis | Signature: On Behalf of GM Cliff Lewis | Date: Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date: Month Day Year 11/11/03

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name | Signature | Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name | Signature | Date: Month Day Year 12/11/03

GENERATOR

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12116 MCL.

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MIDDD535161021 — Manifest Document No.
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: ATTN Cliff Lewis MC 483 500-140 (General Motors 2000 Centerpoint Pkwy Pontiac MI 48341)
4. Generator's Phone (248) 753-5798

A. State Manifest Document Number: MI 8705211
B. State Generator's ID: 13000 ECK 10 (Livonia MI 48151)

5. Transporter 1 Company Name: PRO SERVICES
6. US EPA ID Number: MID985642580
C. State Transporter's ID: 1863
D. Transporter's Phone: 810 982 7771

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address: ER Wayne Disposal Inc Site #2 landfill, 49350 N I-94 Service Dr, Belleville MI 48111
10. US EPA ID Number: MID048090633
G. State Facility's ID
H. Facility's Phone: 800-592-5489

11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. RQ, Polychlorinated Biphenyls, Solid, 9, UN2315, II	X	1	CM	1187	P	PCB1
b.						
c.						
d.						

J. Additional Descriptions for Materials Listed Above
11a) D012 D018 PCB Soil - Unique container #: [illegible] storage start date: 11/13
Emergency Contact: 1800 [illegible] 5053

K. Handling Codes: a. b. c. d.

15. Special Handling Instructions and Additional Information

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Cliff Lewis — Signature: On Behalf of GM Cliff Lewis — Date: Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JOE TRAVLER — Signature — Date: Month Day Year 12 13 13

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space: OIL TO drain 1 bung 12/16/13

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Duane Price — Signature — Date: Month Day Year 12/16/13

ALL SPILLS MUST BE REPORTED TO THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE CENTER AT 1-800-424-8802 24 HOURS PER DAY.

1980 4

DEQ

WASTE MANAGEMENT DIVISION
MICHIGAN DEPARTMENT OF
ENVIRONMENTAL QUALITY

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Part 111 and Part 121 of Act 451, 1994, as amended.

Failure to file may subject you to criminal and/or civil penalties under Sections 324.11151 or 324.12116 MCL.

Please print or type.

Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MID005356621 — Manifest Document No. — 2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address: ATTN Cliff Lewis rmc 483-520-1490 — General Motors 2000 Centerpoint Pkwy Pontiac MI 48341

4. Generator's Phone (248) 753-5781

5. Transporter 1 Company Name: [illegible]

6. US EPA ID Number: [illegible]

7. Transporter 2 Company Name:

8. US EPA ID Number:

9. Designated Facility Name and Site Address: Clean Care Disposal 49350 N I-94 Service Dr Belleville MI 48111

10. US EPA ID Number: MIND048090633

A. State Manifest Document Number: MI 8705212

B. State Generator's ID: 3000 ECK 10 Livonia MI 48151

C. State Transporter's ID:

D. Transporter's Phone:

E. State Transporter's ID:

F. Transporter's Phone:

G. State Facility's ID:

H. Facility's Phone: 800-542-5489

	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER).	HM	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a.	RQ Polychlorinated Biphenyls, Solid 9, UN2315 II	X	1	CM	—	K	PCB
b.					14 or 15		
c.							
d.							

J. Additional Descriptions for Materials Listed Above: 11a) 081203PAF-PCB Soil Unique container id: [illegible] Storage start date: 2/11/03

K. Handling Codes: a. b. c. d.

15. Special Handling Instructions and Additional Information: Emergency Contact 11/3/03 (248) 535-[illegible]

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations. If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Cliff Lewis — Signature: On Behalf of GM Cliff Lewis — Date: Month Day Year

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: [illegible] — Signature: [illegible] — Date: Month Day Year

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: — Signature: — Date: Month Day Year

FACILITY

19. Discrepancy Indication Space: 2/11/03 — ALL IS CHANGE FOR [illegible]

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: BRYAN SCHULTZ — Signature: [signature] — Date: Month Day Year 12/18/03

GENERATOR

CENTER AT 1-800-424-8802 24 HOURS PER DAY. IN THE MICHIGAN POLLUTION EMERGENCY ALERTING SYSTEM, IN MICHIGAN AT 1-800-292-4706 OR OUT OF STATE AT 517-373-7660 AND THE NATIONAL RESPONSE

EPA Form 8700-22 (Rev. 9/88) — GENERATOR 2nd COPY — EQP 5110 Rev. 5/00

WOODLAND MEADOWS
PROFILE DETAIL REPORT

Report Print Date 8/26/03

Transactions from 08/21/2003 through 08/31/2003
Inbound and Outbound Tickets
3rd Party and Interco Customers
Recycle and Disposal Waste

Date	Ticket	Truck	Manifest	Grid	Yards	Units	Tons
152070 / GENERAL MOTORS CORP							
8/21/03	570392	JAC91	62925	NA	40.00	0.00	47.05
8/21/03	570417	JAC88	52911	NA	40.00	0.00	47.36
8/21/03	570457	JAC210	52905	NA	40.00	0.00	48.31
8/21/03	570491	JAC66	52904	NA	40.00	0.00	53.74
8/21/03	570540	JAC91	52906	NA	40.00	0.00	53.54
8/21/03	570593	JAC88	52903	NA	40.00	0.00	48.98
8/21/03	570698	JAC91	52901	NA	40.00	0.00	60.20
Totals for	**152070 / GENERAL MOTORS CORP**				**280.00**	**0.00**	**359.18**
			7 Ticket(s)				
			7 Transaction(s)				
REPORT GRAND TOTALS					**280.00**	**0.00**	**359.18**
			7 Total Ticket(s)				
			7 Total Transaction(s)				

WOODLAND MEADOWS
PROFILE DETAIL REPORT

Transactions from 09/01/2003 through 12/31/2003
Inbound and Outbound Tickets
3rd Party and Interco Customers
Recycle and Disposal Waste

Date	Ticket	Truck	Manifest	Grid	Yards	Units	Tons
152070 / GENERAL MOTORS CORP							
12/10/2003	620109	ALL129/25	52912	NA	25.00	0.00	11.95
12/10/2003	620165	INL404/25	52910	NA	25.00	0.00	11.78
12/10/2003	620177	ALL130/50	52913	NA	50.00	0.00	25.89
12/10/2003	620240	ALL129/25	52922	NA	25.00	0.00	14.12
12/10/2003	620280	INL404/25	52920	NA	25.00	0.00	13.40
12/10/2003	620315	ALL129/25	52923	NA	25.00	0.00	12.17
12/10/2003	620369	BUD90/25	52915	NA	25.00	0.00	15.61
12/10/2003	620385	ALL130/50	52921	NA	50.00	0.00	24.10
12/11/2003	620696	ALL129/25	59924	NA	25.00	0.00	15.25
12/11/2003	620706	ALL130/25	52909	NA	25.00	0.00	15.29
12/11/2003	620739	BUD90/25	52917	NA	25.00	0.00	10.30
12/11/2003	620753	INL404/25	52924	NA	25.00	0.00	14.50
12/11/2003	620764	PRO186/25	59926	NA	25.00	0.00	13.91
12/11/2003	620769	PRO768/25	59925	NA	25.00	0.00	12.25
12/11/2003	620781	ALL130/25	59932	NA	25.00	0.00	11.29
12/11/2003	620783	ALL129/25	59923	NA	25.00	0.00	16.53
12/11/2003	620879	ALL130/25	59931	NA	25.00	0.00	12.68
12/11/2003	620895	ALL129/25	59927	NA	25.00	0.00	11.42
12/11/2003	620908	PRO768/25	59928	NA	25.00	0.00	13.85
12/11/2003	620911	PRO186/25	59930	NA	25.00	0.00	12.39
12/11/2003	620934	INL404/25	59929	NA	25.00	0.00	12.98
Totals for	**152070 / GENERAL MOTORS CORP**				**600.00**	**0.00**	**317.30**
	22 Ticket(s)						
	22 Transaction(s)						
REPORT GRAND TOTALS					**600.00**	**0.00**	**317.30**
	22 Total Ticket(s)						
	22 Total Transaction(s)						

APPENDIX D

SOIL COMPACTION LOCATIONS AND RESULTS

DAILY TIME TICKET

CRA ENGINEERING INC.
GEOTECHNICAL GROUP

14496 Sheldon Road, Suite 200, Plymouth, Michigan 48170
Telephone: 734.453.5123 Facsimile: 734.453.5201
www.CRAworld.com

Project Name: Eckles Road	Date:
Project No.: 12607	☒ Compaction ☐ Footing Check
Arrive Site: 8:00am Depart Site: 5:00pm	☐ Reinforcing Steel ☐ Concrete
Mileage: 10 Travel Time: .50	☐ Roofing ☐ Structural Steel
Prep Time: 0.50	☐ Other (Specify):
Total Chargeable Time: 10.0hrs.	

Observed the contractor place and compact engineered fill material in the former PCB excavations throughout the site. The fill material consisted of MDOT Class II sand. The fill was placed in 1.5' to 2' loose lifts and compacted with a vibratory smooth drum roller. All tests met the minimum of 95% of the maximum dry density as determined by a modified proctor test. See In-Place Density Report for results and Location diagram for individual test locations.

CRA Engineering, Inc. Representative: Dan Kribs

CRA Engineering, Inc. Project Manager: _____

CRA ENGINEERING INC.
GEOTECHNICAL GROUP

IN-PLACE DENSITY TEST

14496 Sheldon Road Suite200
Plymouth, Michigan 48170
(734) 453-5123 (734) 453-5201
www.CRAworld.com

PROJECT NO.: 12607-18 DATE: 6/30/2004

PROJECT: Eckles Rd. MOISTURE STANDARD: 627

CLIENT: General Motors DENSITY STANDARD: 2648

GAUGE NO.: 30197

			LAB			FIELD					
TEST NO.	TEST LOCATION	ELEVATION OR LIFT NO.	SAMPLE ID	MAXIMUM DRY UNIT WEIGHT (PCF)	OPTIMUM WATER CONTENT %	IN-PLACE WET UNIT WEIGHT (PCF)	IN-PLACE WATER CONTENT %	IN-PLACE DRY UNIT WEIGHT (PCF)	COMPACTION %	REQUIRED COMPACTION %	NOTES
1	See location diagram # 1 for test locations	-4'	S-1	119.6	10.4	121.2	4.3	116.2	97.2%	95%	
2	See location diagram # 1 for test locations	-2'	S-1	119.6	10.4	119.1	4.3	114.2	95.5%	95%	
3	See location diagram # 1 for test locations	-7'	S-1	119.6	10.4	118.7	4.5	113.6	95.0%	95%	
4	See location diagram # 1 for test locations	-6'	S-1	119.6	10.4	118.7	4.6	114.0	95.3%	95%	
5	See location diagram # 1 for test locations	-1'	S-1	119.6	10.4	118.5	4.0	113.9	95.2%	95%	
6	See location diagram # 1 for test locations	-3'	S-1	119.6	10.4	121.0	5.1	115.1	96.2%	95%	
7	See location diagram # 1 for test locations	-4'	S-1	119.6	10.4	120.5	5.9	113.8	95.2%	95%	
8	See location diagram # 1 for test locations	-1'	S-1	119.6	10.4	120.4	4.1	115.7	96.7%	95%	
9	See location diagram # 1 for test locations	-3'	S-1	119.6	10.4	121.3	5.9	114.5	95.7%	95%	
10	See location diagram # 1 for test locations	-1'	S-1	119.6	10.4	119.8	4.8	114.3	95.6%	95%	

NOTES:

Tests were taken on engineered backfill of remediation site.

Test elevations are estimated and taken in reference to existing grade at time of backfill operations.

PREPARED BY: Dan Kribs CHECKED BY:

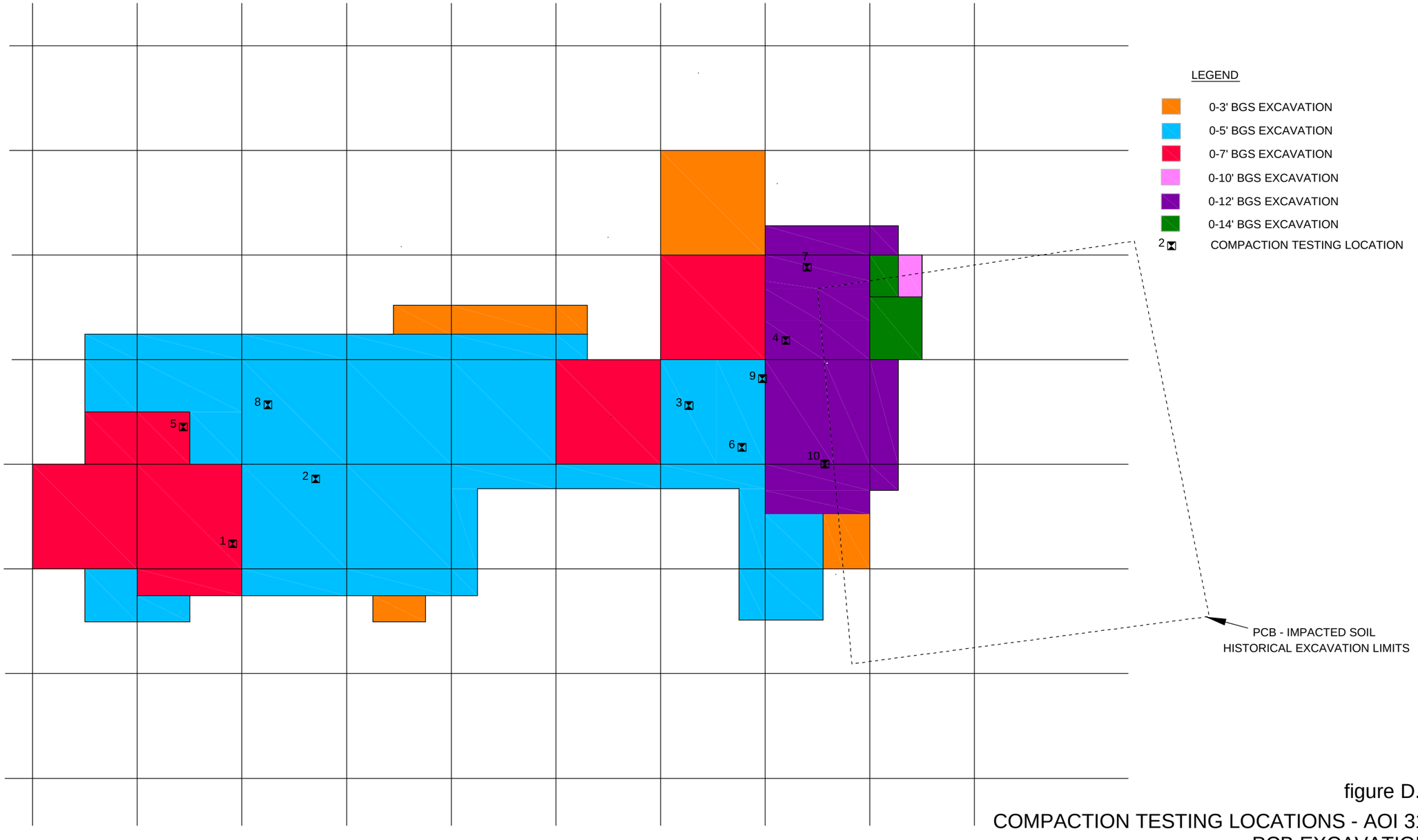

figure D.1

COMPACTION TESTING LOCATIONS - AOI 31
PCB EXCAVATION
13000 ECKLES ROAD SITE
Livonia, Michigan

12607-228(036)GN-DE004 APR 22/2005