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VCP - v
BCP - c

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915152

Huntingdon

Huntingdon

Empire Soils Investigations, Inc.

S-5167 South Park Avenue
Box 0913
Hamburg, New York 14075
(716) 649-8110
Fax:(716) 649-8051

PHASE II ENVIRONMENTAL EVALUATION
CONRAIL RAILROAD PROPERTY
BUFFALO AXLE AND LINKAGE FACILITY
BUFFALO, NEW YORK

PREPARED FOR:

AMERICAN AXLE AND MANUFACTURING, INC.
P.O. BOX 972
BUFFALO, NEW YORK

PREPARED BY:

HUNTINGDON/EMPIRE SOILS INVESTIGATION, INC.
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK

BE-94-150

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TABLE OF CONTENTS

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PHASE II ENVIRONMENTAL EVALUATION
CONRAIL RAILROAD PROPERTY
BUFFALO AXLE AND LINKAGE FACILITY
BUFFALO, NEW YORK

I. INTRODUCTION

A. General

The following report represents the results of Huntingdon/Empire Soils Investigations, Inc. (ESI) Phase II Environmental Evaluation on the Conrail Railroad property. The property is located east of the American Axle & Manufacturing (AAM) East Delevan Avenue Facility in the City of Buffalo, County of Erie, New York. Based on the site survey map provided, the Conrail property is approximately 2.69 acres and measures about 99 feet wide and 1182 feet long. It is understood that the Phase II Environmental Evaluation was requested by AAM for a possible purchase of the land parcel. It is also understood that the land parcel would be used as either additional parking or related access roadways to existing land owned by AAM. The Phase II Environmental Evaluation included the collection of subsurface data, groundwater monitoring well installations and soil/groundwater analytical testing. The Phase II Environmental Evaluations was requested by Mr. Charles E. Bernd, CPE, representing American Axle & Manufacturing and authorized in the form of a purchase order (TFM 94176). A project location plan is presented on Drawing No. 1 in Appendix A.

B. Purpose And Scope

ESI was engaged by American Axle & Manufacturing (AAM), to complete a limited Phase II Environmental Evaluation to better define the potential of environmental liability associated with the past land use (i.e. railroad tracks). AAM has also requested that the subsurface explorations determine the material used to construct the elevated berm below the Conrail track bed. To accomplish this purpose, ESI completed the following scope of services:

- Planned a limited subsurface exploration and analytical testing program based on discussions with Mr. Charles E. Bernd, CPE, of American Axle & Manufacturing (AAM);
- Coordinated test boring layout and underground utility checks;
- Monitored the drilling of five (5) test borings and the construction of one (1) ground water monitoring well at the subject property;
- Measured organic vapor concentrations during the limited subsurface exploration phase of the project;
- Prepared test boring logs and well installation diagrams;
- Engaged the services of Huntingdon Analytical Services, Inc., a New York State Department of Health (NYSDOH) certified analytical testing laboratory, to analyze composite soil samples and a ground water sample collected from the test borings and monitoring well installed at the site;
- Evaluated the data collected, and;
- Summarized the information collected in this report.

The opinions rendered in this report are based solely on the above limited scope of services. Limitations to this report are presented in Appendix B.

II. SUBSURFACE EXPLORATIONS

A. TEST BORINGS

1. General

ESI advanced five (5) test borings (ESI-1, ESI-2, ESI-3, ESI-4 and ESI-5) and installed a ground water monitoring well at test boring location ESI-3 in the Conrail railroad track berm (Refer to Drawing No. 2 in Appendix A, for test boring and monitoring well location). The test borings and monitoring well installations were completed on January 10 and 11, 1995.

The test borings were advanced to evaluate the general subsurface conditions at the site and the presence of potential contamination which may be present in the soil and ground water beneath the site and in the elevated railroad berm material. Test borings ESI-1 through ESI-5 were generally spaced approximately 260 feet apart on the elevated Conrail railroad berm. Generally the test borings were advanced through the berm materials and into the natural soils below. The test borings were advanced to a depth of approximately 20 to 22 feet below existing ground surface grade on the conrail railroad berm (Refer to Drawing No. 1 present in Appendix A, for test boring locations).

2. Test Boring Procedures

ESI used a track mounted CME 850 rotary drill rig to advance the test borings and install the monitoring wells. The test borings were advanced using 4-1/4 inch inside diameter (I.D.) hollow stem augers equipped with a center plug to prevent soil from entering the augers during drilling. Disturbed soil samples were recovered by driving a 24-inch long by 2-inc outside diameter (O.D.) split-spoon sampler into the soil below the bottom of the augers. A 140-pound hammer free falling 30-inches (ASTM D-1586) was used to advance the sampler. The number of blows required to drive the split spoon for the second and third six-inch intervals is the Standard Penetration Test (SPT) N-value and this value is recorded on the appropriate space on the test boring log. Representative soils samples are stored in 8-ounce glass jars with screw-on lids denoting hole, sample number, sample interval and blow count.

Soil sampling was done continuously from existing ground surface to the bottom of the test boring. ESI monitored the subsurface explorations and prepared boring logs based on visual observations of the recovered soil samples. The soil samples were generally described using ASTM D-2488 for identification of soils. Features such as relative density or consistency (obtained from the SPT), color, grain size, moisture, etc., were recorded on the boring logs. Boring logs are presented in Appendix C.

A composite soil sample was collected from test borings ESI-2, ESI-3 and ESI-4. The soil samples were collected from split-spoon samples S-3 through S-8 in each of the test borings. The soil samples were combined in a precleaned stainless steel bowl and thoroughly mixed in the field. The samples were then placed in the appropriate precleaned containers, cooled and shipped to HAS in Middleport, New York for analytical testing. Sampling details, analytical testing procedures and test results are discussed later in this report.

3. Groundwater Monitoring Well Installation and Groundwater Sampling Procedures

A groundwater monitoring well (ESI-3) was installed in one (1) of the five (5) test borings upon completion of drilling. The well consisted of 2-inch I.D. schedule 40 polyvinyl chloride (PVC) threaded riser pipe with a section of slotted (0.010-inch slot) schedule 40 PVC well screen placed at the bottom of the borehole. The annular space between the borehole wall and the well screen was backfilled with No. 1 morie sand to a minimum 1.0-feet above the top of the well screen. A minimum 1.0-foot thick bentonite pellet seal was constructed above the sand pack to prevent surface water from running into the well. A curb box was installed from ground surface to the top of the well. The annular space between the borehole wall and the curb box was filled with grout from the top of the bentonite seal to ground surface. A locking protective cap was installed on the top of the well riser pipe. A monitoring well completion report is presented in Appendix C.

Groundwater samples were collected from monitoring well ESI-3 on February 10, 1995. The monitoring well was developed prior to sampling using a dedicated disposable bailer. The monitoring well was developed by evacuating approximately five gallons of water (5 well volumes). The well water volumes were calculated by subtracting the groundwater depth from the total length of the monitoring well, which would give the height of the groundwater column in the monitoring well. The groundwater well column was then multiplied by 0.17, which is the gallon per linear foot in a two inch diameter monitoring well, this result is equal to one well volume of water. After evacuating five well volumes, the well was allowed to recover to a sufficient water volume before sampling. Also, during well development, pH and conductivity were recorded (refer to Well Development Parameters presented in Appendix D.

Groundwater was then sampled by carefully lowering a 3-foot long, disposable bailer equipped with a bottom filling check valve into the groundwater and allowing the bailer to fill. The bailer was then slowly removed and the contents emptied into the appropriate precleaned containers. The samples were then placed in an iced cooler and delivered to HAS for testing. The analytical testing parameters and results are discussed later in this report.

B. SUBSURFACE CONDITIONS

Interpretation of the subsurface conditions is based on the soils sampled at the test boring locations. Variations from the inferred soil characterization and ground water observations should be expected. The subsurface logs should be referred to for a specific description of the subsurface conditions at each boring location. The following description of the subsurface conditions is general in nature.

Test borings ESI-1 through ESI-5 encountered railroad ballast type material (gravel to stone size material) from ground surface to a depth of approximately one (1) foot. Railroad berm fill material (sand, gravel, cinders, slag, etc.) was encountered from beneath the railroad ballast material to a depth of approximately fourteen (14) to eighteen (18) feet. Beneath the railroad berm fill material are natural soils consisting of a medium to stiff, grey-brown and red-brown silty clay with little to trace amounts of gravel and sand, were encountered from the fill material to test boring completion. Bedrock was not encountered in the test borings drilled at the site.

III. FIELD TESTING AND RESULTS

In conjunction with the exploration program, field measurements were taken by ESI to evaluate the presence of organic vapor concentrations in the air near the test borings and on the soil samples recovered. Organic vapor monitoring was done during the test boring program and compared to ambient air background measurements to indicate the potentially hazardous substances below the ground surface. Organic vapor measurements were taken during test boring drilling, at the top of the hollow stem augers with the augers set at various depths during drilling, on soil samples as they were removed from the split-spoon sampler and in the jar headspace after the soils samples were placed in the sample jar.

Organic vapor measurements were taken using a photoionization detector (PID). The PID used to measure total organic vapors was an Hnu PI 101 with a 10.2 eV ultraviolet light source. The PID was calibrated daily before field use.

Ambient background organic vapor measurements were taken upwind of each borehole location prior to drilling to establish site conditions. The range of these "background" readings during the monitoring period (January 10 and 11, 1995) were 0.2 to 0.4 parts per million (ppm). No organic vapor measurements were detected above background at the top of the hollow stem augers with the augers set at various depths during drilling.

Organic vapor measurements on soil samples as they were removed from the split-spoon sampler and in the headspace after the soils samples were placed in the sample jars were detected at concentrations of 2 ppm to 5 ppm above ambient air background in all test boring samples. These measurements are determined to be background soil measurements. All PID measurements are recorded on the test boring logs (Refer to Appendix C for Test Boring Logs).

IV. LABORATORY TESTING AND RESULTS

A. Soil Analytical Testing and Results

Representative composite soil samples were collected from test borings ESI-2, ESI-3 and ESI-4. The soil samples were analyzed for United States Environmental Protection Agency (USEPA) Target Compound List (TCL) Volatile Organics (Test Method 8270), Semi-Volatiles Organics (Test Method 8270), Pesticides and Polychlorinated Biphenyl (PCB) (Test Method

8080), Metals (Series 6010/7000) and Total Cyanide. The results of the chemical analyses are presented in Appendix E and are summarized below.

The composite soil collected from the test boring split spoon samples S-3 (4 to 6') through S-8 (14' to 16') for test borings ESI-2, ESI-3 and ESI-4, were individually composited in a stainless steel mixing bowl. The representative composite soil samples were then placed in a 125 ml glass vial with teflon septum cap for TCL Volatiles and a 950ml amber glass jar for TCL Semi-volatiles, PCB's, Pesticides, Metals and Total Cyanide. The samples were then cooled and shipped to Huntingdon Analytical Services, Inc. (HAS) in Middleport, New York for analytical testing.

The inorganic (metals) analytical test results for the soil samples collected from the test borings are presented in Table 1. Metals which were detected were compared to soil cleanup guidelines presented in a NYSDEC Memorandum entitled "Determination Of Soil Cleanup Objectives And Cleanup Levels" (January 24, 1994). Soil cleanup levels for heavy metals are the published ranges for metals typically found in soils in New York State and Eastern United States. This information was obtained from a New York State Department of Environmental Conservation (NYSDEC) document which summarizes the typical background concentrations of naturally occurring elements in New York State soils.

TABLE 1
INORGANIC ANALYTICAL TEST RESULTS FOR SOIL SAMPLES

Metal	Soil Sample Location and Concentration (mg/Kg)			NYSDEC Soil Cleanup Guidelines To Protect Groundwater (mg/Kg)
	ESI-2	ESI-3	ESI-4	
Aluminum	21,800	11,300	14,100	33,000
Antimony	50.2	38.5	30.6	ND
Arsenic	6.67	6.86	6.55	3 - 12 (5.0)
Barium	239	211	492	15 - 600 (100.0)
Beryllium	2.78	1.96	2.94	0 - 1.75

TABLE 1 INORGANIC ANALYTICAL TEST RESULTS FOR SOIL SAMPLES				
Metal	Soil Sample Location and Concentration (mg/Kg)			NYSDEC Soil Cleanup Guidelines To Protect Groundwater (mg/Kg)
	ESI-2	ESI-3	ESI-4	
Cadmium	4.36	3.58	2.48	0.01 - 1.0
Calcium	46,300	58,500	59,100	130 - 35,000
Chromium	14.4	7.79	7.06	1.5 - 40
Cobalt	13.5	8.85	6.08	2.5 - 60
Copper	28.5	36.5	19.4	1 - 50
Iron	26,010	20,000	7,790	2,000 - 550,000
Lead	27.9	69.8	41	200 - 500
Magnesium	10,900	5,610	7,950	100 - 5,000
Manganese	647	447	762	50 - 5,000
Mercury	< 0.12	< 0.12	< 0.12	0.001 - 0.2
Nickel	25.6	13.9	12.8	0.5 - 25
Potassium	1,730	369	996	8,500 - 43,000
Selenium	< 0.61	< 1.22	0.95	0.1 - 3.9
Silver	3.24	3.41	3.27	ND
Sodium	204	301	382	6,000 - 8,000
Thallium	< 2.45	< 2.45	< 2.41	ND
Vanadium	31.5	16.8	14.6	1 - 300
Zinc	63.3	26.3	16.5	9 - 50

1 -- mg/Kg = Parts Per Million (ppm)
ND -- No Data.

Six (6) metals were reported to be present in the soil samples collected were above the NYSDEC Soil Cleanup Guidelines To Protect Groundwater. Concentrations of beryllium, cadmium, calcium, magnesium, nickel and zinc were detected in the test boring samples in the Conrail Railroad property. Of these metals listed, cadmium and mercury are the inorganic compounds that pose the greatest environmental concern. These concentrations are above the guidance limit that may require remediation in accordance with current NYSDEC soil cleanup guidelines. Considering the planned use of the site (i.e. roadways and paved parking areas), it is ESI's opinion that remediation would be unlikely. Analytical test results are presented in Appendix E.

The analytical test results for volatile and semi-volatile compounds indicates that several of these organic compounds were detected in the fill material at the test boring locations. The volatile and semi-volatile analytical results for the fill material sampled in the test borings are presented in Table 2. The volatile and semi-volatile organic compounds were compared to soil cleanup guidelines presented in a NYSDEC Memorandum entitled "Determination Of Soil Cleanup Objectives And Cleanup Levels" (January 24, 1994).

TABLE 2
VOLATILE AND SEMI-VOLATILE ORGANIC COMPOUNDS DETECTED IN COMPOSITE SOIL SAMPLES (ug/Kg)

Volatile & Semi-volatile Organic Compounds	ESI-2	ESI-3	ESI-4	NYSDEC Soil Cleanup Guidelines To Protect Groundwater (ug/Kg)
Toluene	12	< 10	< 10	1,500
Xylene	15	20	< 10	1,200
Benzo (a) Anthracene	950	< 330	< 330	3,000
Benzo (b) Fluoranthene	1,100	< 330	< 330	1,100
Benzo (k) Fluoranthene	540	< 330	< 330	1,100
Benzo (a) Pyrene	1,100	< 330	< 330	11,000
Benzo (g,h,i) Perylene	810	< 330	< 330	800,000
Bis (2-Ethyhexyl) Phthalate	540	900	900	435,000

TABLE 2
VOLATILE AND SEMI-VOLATILE ORGANIC COMPOUNDS DETECTED IN COMPOSITE SOIL SAMPLES (ug/Kg)

Volatile & Semi-volatile Organic Compounds	ESI-2	ESI-3	ESI-4	NYSDEC Soil Cleanup Guidelines To Protect Groundwater (ug/Kg)
Chrysene	1,000	< 330	< 330	400
Fluoranthene	1,100	< 330	< 330	1,900,000
Indeno (1,2,3,cd) Pyrene	710	< 330	< 330	3,200
Phenanthrene	590	< 330	< 330	220,000
Pyrene	1,400	340	< 330	665,000

1 -- ug/Kg = Parts Per Billion (ppb)

Thirteen (13) volatile and semi-volatile compounds were detected in the samples collected from the fill material encountered in the test borings. Eleven (11) of the detected volatile and semi-volatile compounds were below NYSDEC soil cleanup guidelines to protect groundwater and would likely be considered insignificant. Two (2) chemical compounds, Benzo (b) Fluoranthene and Chrysene, were found in the fill material collected on the Conrail railroad property. The detected concentrations of these two (2) compounds are above the NYSDEC soil cleanup guidelines to protect groundwater. These compounds are derivatives of coal tars which are typically present in railroad embankment fill and on railroad property. These compounds were not significantly above the NYSDEC guidelines to protect groundwater.

The were no pesticides or PCB's detected in the composite soil samples collected.

According to Mr. Stan Radon of the NYSDEC, the action level/corrective action level of the USEPA is 2,000 ppm for cyanide. The total cyanide detected in the samples was well below the USEPA Action Levels.

B. Groundwater Analytical Testing and Results

Groundwater samples were collected from one (1) monitoring well, ESI-3, installed at the subject site. The groundwater samples collected were analyzed for the same parameters as the composite soil samples collected.

No volatile or semi-volatile organic compounds, pesticides, PCB's or cyanide were detected in the groundwater samples collected for analysis.

Detectable concentrations of aluminum, antimony, arsenic, barium, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, silver, sodium, vanadium and zinc were present in the ground water sample collected from the site as shown in Table 3. The levels reported were compared to the NYSDEC Class GA Groundwater Quality Standards. Of the metals detected, concentrations of aluminum, cadmium, iron, lead, manganese and sodium were present above the NYSDEC Groundwater Standards, however, based on the proposed site use (i.e. parking area/roadway) and that the area is supplied with municipal drinking water, it is unlikely remediation of the groundwater would be required for the elevated metal concentrations. In addition, the presence of iron, manganese and sodium may be naturally occurring and would be considered insignificant. Analytical test results for the ground water sample are presented in Appendix E.

TABLE 3
INORGANIC ANALYTICAL TEST
RESULTS FOR GROUND WATER SAMPLES

Metal	Ground Water Sample Location and Concentration (ug/l)	NYSDEC Class GA Ground Water Standard
	ESI-3	
Aluminum	4,060	100
Antimony	114	NS
Arsenic	9.9	25
Barium	120	1,000
Beryllium	< 5.0	11 to 1100

TABLE 3
INORGANIC ANALYTICAL TEST
RESULTS FOR GROUND WATER SAMPLES

Metal	Ground Water Sample Location and Concentration (ug/l)	NYSDEC Class GA Ground Water Standard
Calcium	285,000	NS
Cadmium	18	10
Chromium	10.6	50
Cobalt	< 10.0	NS
Copper	59.5	200
Iron	9,890	300 to 500
Lead	92.7	25
Magnesium	71,700	NS
Manganese	2,430	300
Mercury	< 0.2	2
Nickel	40.4	NS
Potassium	< 3,000	NS
Selenium	< 5.0	10
Silver	11.9	50
Sodium	20,800	20,000
Thallium	< 10	NS
Vanadium	39.1	NS
Zinc	68.8	300

1 -- ug/1 = Parts Per Billion (ppb)
2 -- NYSDEC Water Quality Regulations.
NS -- No Standard.

VI. SUMMARY AND CONCLUSIONS

A Phase II Environmental Evaluation was completed for American Axle & Manufacturing (AAM) on a parcel of Conrail property located east of the American Axle & Manufacturing East Delevan Facility in the City of Buffalo, County of Erie, New York. This evaluation was limited to subsurface exploration and analytical testing of soil and groundwater samples. The conclusions presented below are subject to the limitations contained in Appendix B. Based on the limited scope of services and information made available to ESI, the relevant findings are summarized below:

- The subject site is a former railroad embankment which occupies approximately 2.69 acres of land east of the American Axle & Manufacturing (AAM) East Delevan Facility located in the City of Buffalo, New York. The dimensions of the subject site is approximately ninety-nine (99) feet wide by one thousand, one hundred and eighty-two (1,182) feet long.

- Miscellaneous fill material (i.e. gravel, sand, cinders, etc.) was encountered in the elevated area of the former railroad embankment at a depth of approximately fourteen (14) to eighteen (18) feet.

- Concentrations of beryllium, cadmium, calcium, magnesium, nickel and zinc were detected in the test boring samples in the Conrail Railroad property. Of these metals listed, cadmium and mercury in the Conrail property fill materials are the inorganic compounds that pose the greatest environmental concern. These concentrations are above the limit that will require remediation in accordance with current NYSDEC soil cleanup guidelines. Considering the planned use of the site (i.e. roadways and paved parking areas), it is ESI's opinion that remediation is unlikely for cadmium and mercury under current NYSDEC soil cleanup guidelines.

- Thirteen (13) compounds from the volatile and semi-volatile fraction were detected in the samples analyzed of the fill material from the test borings. Eleven (11) of the detected volatile and semi-volatile compounds were below NYSDEC soil cleanup guidelines to protect groundwater and would likely be considered insignificant. Two (2) compounds, Benzo(b)Fluoranthene and Chrysene, were found in the fill material located on the Conrail railroad property to be present at concentrations above the NYSDEC soil cleanup guidelines to protect groundwater. These compounds are derivatives of coal tars which are typically present in railroad embankment and on railroad property. These compounds were not significantly above the NYSDEC guidelines to protect groundwater.

- Detectable concentrations of aluminum, antimony, arsenic, barium, cadmium, calcium, chromium, copper, iron, lead, magnesium, manganese, nickel, silver, sodium, vanadium and zinc were present in the ground water sample collected from the site as shown in Table 3. The levels reported were compared to the Class GA Groundwater Quality Standards established by the NYSDEC. Of the metals detected, concentrations of aluminum, cadmium, iron, lead, manganese and sodium were present above the NYSDEC standards, however, based on the proposed site use (i.e. parking area/roadway) and that the area is supplied with municipal drinking water, it is unlikely remediation of the groundwater would be required for these elevated metal concentrations. In addition, the presence of iron, manganese and sodium may be naturally occurring and would be considered insignificant.

In summary, due to the elevated concentrations of inorganic compounds (metals), volatile and semi-volatile compounds, the berm fill material should not be removed from the site unless the material is disposed of at a solid waste landfill as a non-hazardous waste. However, due to the proposed use of the site (i.e. parking area and roadway) the berm fill material may be used on-site as fill material beneath roadways, parking lots and/or beautification berms around the parking lots or on the AAM property. To use the material as fill on-site, it would have to be presented to the NYSDEC for approval. If the fill material is used on site ESI could provide services to AAM for design of proposed berms, roadway/parking lot subgrades and necessary approvals by the NYSDEC to use this material on-site. No further field explorations are recommended at this time.

We trust that this report presented herein satisfied your current requirements. Should you have any questions or comments, please do not hesitate to contact our office. We have appreciated the opportunity to work with you on this project.

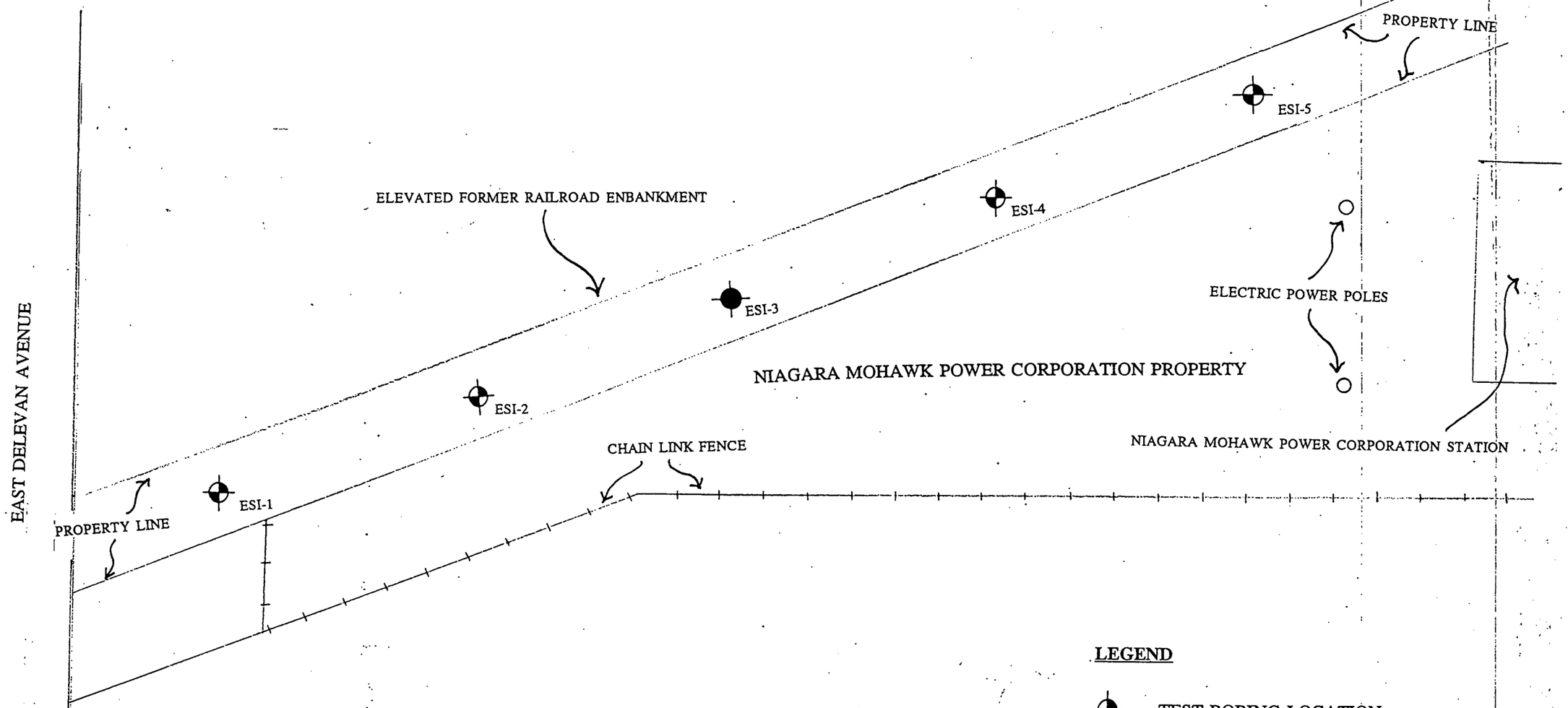
Respectfully submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

Donald C. Wartinger
Environmental Scientist

Donald B. Abrams
Senior Environmental Geologist

Huntingdon

APPENDIX A



LEGEND

- TEST BORING LOCATION
- TEST BORING/MONITORING WELL LOCATION

NOTES:

- THIS DRAWING ADAPTED FROM A DRAWING BY BISSELL, STONE ASSOCIATES DATED OCTOBER, 1994.
- THIS DRAWING IS FOR ILLUSTRATIVE AND INFORMATIONAL PURPOSES.
- ALL LOCATIONS ARE APPROXIMATE.

N

HUNTINGDON - EMPIRE SOILS INVESTIGATIONS, INC. *Consulting Engineers Environmental Scientists*		
SITE MAP		
PHASE II ENVIRONMENTAL EVALUATION CONRAIL RAILROAD PORPERTY BUFFALO AXLE & LINKAGE FACILITY BUFFALO, NEW YORK		
DRAWN BY: DW	SCALE: NTS	PROJECT: BE-94-150
CHECKED BY:	DATE: FEB 1995	DRAWING NO: 1

Huntingdon

APPENDIX B

APPENDIX B
LIMITATIONS

1. Empire Soils Investigations, Inc. (ESI's), completed this Phase I Environmental Site Assessment in accordance with generally accepted current practices of other consultants undertaking similar studies. ESI observed that degree of care and skill generally exercised by other consultants under similar circumstances and conditions. ESI's findings and conclusions must be considered not as scientific certainties but as probabilities based on our professional judgement concerning the significance of the limited data gathered during the course of the investigation. Specifically, ESI does not and cannot represent that the site contains no hazardous material, petroleum products, or other latent conditions beyond that observed by ESI during this Phase I Environmental Site Assessment.

2. The observations described in this report were made under conditions stated therein. The conclusions presented in the report were based solely upon the services described therein and not tasks and procedures beyond the scope of described services or the time and budgetary constraints imposed by the client.

3. In preparing this report, ESI has relied on certain information provided by other consultants, the State, County and Town officials and other parties referenced herein and on information contained in the files of state and local agencies made available to ESI at the time of the study.

4. Observations were made of the subject site and on adjacent sites as indicated within the report. Where access to portions of the site or the structures on adjacent sites were limited or unavailable, ESI renders no opinion as to the presence of hazardous materials or to the presence of indirect evidence relating to hazardous material in that portion of the site or adjacent structures.

5. Unless otherwise specified in the report, ESI did not perform testing or analyses to determine the presence or concentrations of hazardous chemical compounds, petroleum products or asbestos.

APPENDIX B
LIMITATIONS

6. The generalized subsurface profiles described on the test boring logs and the geologic profile sheets are intended to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized and have been developed by interpretations of widely spaced explorations and samples. Actual soil and rock transitions are probably more gradual. For specified information, refer to the test boring and test excavation logs.

7. Ground water level readings have been made in the explorations and monitoring wells at times and under conditions stated. It should be noted that fluctuations in the level of the ground water may occur due to variations in rainfall, temperature and other factors occurring from the time measurements were made.

8. It should be noted that the samples collected were from various depths and from widely spaced test excavations/test borings and that subsurface conditions should be expected to vary in both type and chemical composition.

9. This report has been prepared for the exclusive use of American Axle & Manufacturing and their designated agents for the specific application to the subject property in accordance with generally accepted engineering practice. No other warranty, expressed or implied, is made. The environmental concerns noted in this report, if any, are applicable to the current identified proposed usage of the property.

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APPENDIX C

DATE
STARTED: 1-10-95
FINISHED: 1-10-95

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

BE-94-150

BORING NO.: ESI-1
SURF. ELEV.: ±
SHEET 1 OF 1

PROJECT: American Axle & Manufacturing
CLIENT: American Axle & Manufacturing

LOCATION: East Delevan Avenue
Buffalo, New York

DEPTH-FT.	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	PID	SYMBOL	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	4	11	7	9	18	3.0		Black SAND and Gravel, tr. clay, tr. silt, tr. cinders (moist, Fill)	
		2	7	10	14	28	24	3.0		Becomes brown	
5		3	4	7	8	8	15	3.0			
		4	5	6	6	6	12	3.0			
		5	2	4	6	4	10	2.0			
10		6	3	5	3	3	8	2.0			
		7	1	2	2	2	4	2.0		Becomes moist to wet	
		8	1	2	3	3	5	1.0		Gray brown Silty CLAY, tr. gravel, tr. sand (moist, soft, CL)	
15		9	2	4	7	7	11	1.0		Becomes brown (medium)	
		10	4	7	10	11	17	1.0		(stiff)	
20										Boring completed at 20.0'	Driller notes no free standing water at boring completion
25											
30											

DRILLER: K. Fuller
DRILL RIG: CME-850
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: Cloudy, Cold 19F
CLASSIFIED BY: D. Wartinger

DATE
STARTED: 1-10-95
FINISHED: 1-10-95

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

BE-94-150

BORING NO.: ESI-2
SURF. ELEV.: ±
SHEET 1 OF 1

PROJECT: American Axle & Manufacturing
CLIENT: American Axle & Manufacturing

LOCATION: East Delevan Avenue
Buffalo, New York

DEPTH-FT.	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	PID	SYMBOL	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	4	6	7	7	13	3.0		Black SAND and Gravel, tr. clay,tr. silt, tr. cinders (moist, Fill)	
		2	4	4	5	5	9	3.0		tr. brick	Samples taken from S-3 through S-8 (1315)
5		3	2	2	3	3	5	2.0			
		4	1	2	7	28	9	3.0			
		5	100	/.5						No recovery	
10		6	7	7	11	13	18	5.0			Hnu no longer operational
		7	16	100	/.4			4.0		Sand	
		8	6	10	9	4	19	3.0			
15		9	3	6	8	8	14	2.0		Red brown Silty CLAY, tr. sand, tr. gravel (moist, med, CL)	
		10	4	5	7	10	12	2.0			
20										Boring completed at 20.0'	Driller notes no free standing water at boring completion
25											
30											

DRILLER: K. Fuller
DRILL RIG: CME-850
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: Cloudy, Cold 19F
CLASSIFIED BY: D. Wartinger

DATE
STARTED: 1-10-95
FINISHED: 1-10-95

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

BE-94-150

BORING NO.: ESI-3
SURF. ELEV.: ±
SHEET 1 OF 1

PROJECT: American Axle & Manufacturing
CLIENT: American Axle & Manufacturing

LOCATION: East Delevan Avenue
Buffalo, New York

DEPTH-FT.	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	PID	SYMBOL	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	4	6	5	8	11	2.0		Black SAND and Gravel, tr. clay, tr. silt, tr. cinders (moist, Fill)	
		2	6	4	4	4	8	3.0		Sand	Samples taken from S-3 through S-8 (1445)
5		3	3	4	3	5	7	3.0			
		4	4	3	4	4	7	3.0			
		5	3	4	5	4	9	2.0			
10		6	2	2	3	4	5	4.0			
		7	6	8	8	10	16	3.0			
		8	3	4	8	9	12	30			
15		9	3	4	4	4	8	30		No recovery	
		10	2	4	6	8	10	3.0		Red brown Silty CLAY, tr. sand, tr. gravel (moist, medium, CL)	
20		11	4	6	6	7	12	3.0			
										Boring completed at 22.0'	Driller notes no free standing water at boring completion
25											
30											

DRILLER: K. Fuller
DRILL RIG: CME-850
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: Cloudy, Cold 19F
CLASSIFIED BY: D. Wartinger

DATE
STARTED: 1-10-95
FINISHED: 1-10-95

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG
BE-94-150

BORING NO.: ESI-4
SURF. ELEV.: ±
SHEET 1 OF 1

PROJECT: American Axle & Manufacturing
CLIENT: American Axle & Manufacturing

LOCATION: East Delevan Avenue
Buffalo, New York

DEPTH-FT.	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	PID	SYMBOL	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	4	6	9	11	15	2.0		Black SAND and Gravel, tr. silt, tr. clay, tr. cinders (moist, Fill)	
		2	6	6	10	13	16	2.0			Samples taken from S-3 through S-8 (1555)
5		3	6	5	5	4	10	2.0			
		4	4	3	3	7	6	2.0			
		5	5	11	28	58	39	4.0			
10		6	9	100	/.4			5.0		obstruction	
15		7	9	9	2	7	11	3.0			
		8	7	8	18	25	26	30			
		9	6	4	4	5	8	30		Gray Silty CLAY, tr. sand, tr. gravel (moist, medium, CL)	
20		10	10	12	18	18	30	20		Becomes red brown (hard)	
										Boring completed at 22.0'	Driller notes no free standing water at boring completion
25											
30											

DRILLER: K. Fuller
DRILL RIG: CME-850
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: Cloudy, Cold 19F
CLASSIFIED BY: D. Wartinger

DATE
STARTED: 1-11-95
FINISHED: 1-11-95

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

BE-94-150

BORING NO.: ESI-5
SURF. ELEV.: ±
SHEET 1 OF 1

PROJECT: American Axle & Manufacturing
CLIENT: American Axle & Manufacturing

LOCATION: East Delevan Avenue
Buffalo, New York

DEPTH-FT.	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER 0/6	6/12	12/18	18/24	N	PID	SYMBOL	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	8	6	7	8	13	2.0		Black SAND and Gravel, tr. silt, tr. clay, tr. cinders (moist, Fill)	
		2	6	6	6	7	12	2.0			
5		3	4	4	4	4	8	BG			
		4	4	5	5	10	10	BG		White sand layer	
		5	2	4	5	7	9	20			
10		6	3	4	9	10	13	10			
		7	14	10	10	12	20	2.0		Blue sand layer	
15		8	10	14	6	10	20	20			
		9	4	6	8	10	14	20			
		10	3	2	2	3	4	2.0		Gray Silty CLAY, tr. sand, tr. gravel (moist, soft, CL)	
20		11	4	6	10	12	16	10		Becomes red brown (stiff)	
										Boring completed at 22.0'	Driller notes no free standing water at boring completion
25											
30											

DRILLER: K. Fuller
DRILL RIG: CME-850
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: Cloudy, Cold 19F
CLASSIFIED BY: D. Wartinger

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs present the observations and mechanical data collected by the driller at the site, supplemented by laboratory visual identification of the materials recovered from the borings. The materials from the borings represent only a fraction of the total volume of the deposits at the site and may not necessarily be representative of the subsurface conditions between adjacent borings or between the sampled intervals. Analyses of standard boring data often indicate the need for additional testing or sampling procedures to better evaluate the subsurface conditions. Any evaluation of the Subsurface Logs and the recovered samples must be performed by Professionals. The information presented herein defines some of the procedures and terms used on the Subsurface Logs.

1. The figures in the Depth column define the scale of the Subsurface Log.

2. The sample column graphically shows the depth range from which a sample was recovered. See Table I for a description of the symbols used to represent various types of samples.

3. The Sample No. is used for identification on sample containers and/or Laboratory Test Reports.

4. Blows on Sampler indicate the number of blows required to drive a split spoon sampler into the soil for each six inches of penetration during the "Standard Penetration Test". The first 6 inches of penetration is considered as a seating drive. The total number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N.

5. PID - Organic vapor measurements taken with a Photoionization Detector (PID) and recorded in parts per million (ppm).

6. Symbol indicates the soil type noted at the approximate depth.

7. The recovered soil samples are reviewed in the laboratory by an engineering technician, geologist, or geotechnical engineer, unless noted otherwise. The visual descriptions are made on the basis of a combination of the driller's field descriptions and observations and the samples as received in the laboratory. The method of visual classification is based primarily on the Unified Soil Classification (ASTM D 2487) with regard to the particle size and plasticity (See Table II). Additionally, the relative portion, by weight, of two or more soil types is based on Burmister, ASTM Special Technical Publication 479, June 1970 (See Table III). The description of the relative soil density or consistency is based upon the penetration records as defined in Table IV. The description of the soil moisture is based upon relative wetness of the soils as recovered. Water introduced in the boring either naturally or during the drilling may have affected the moisture condition of the recovered samples. Special terms are used as required to describe materials in detail; several such terms are listed in Table V. When sampling gravelly soils with a standard 2-inch diameter split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter. The presence of boulders and large gravel is sometimes, but not necessarily, detected by an evaluation of the casing and sampler blows or through the "action" of the drill rig as reported by the driller.

8. The description of the rock is based on the recovered rock core and the driller's observations. The terms frequently used in the description are included in Table VI.

9. The stratification lines represent the approximate boundary between soil types and the transition may be gradual.

10. Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. The reliability of the water level observations depends upon the soil type (water does not readily stabilize in a hole through fine grained soils), and that drill water used to advance the boring may have influenced the observations. The ground water level typically will fluctuate seasonally. Perched or trapped water levels may exist in the ground seasonally. All the available readings should be evaluated. If definite conclusions cannot be made, it is often prudent to examine the conditions more thoroughly through test pit excavations or water observation wells.

11. Core run is defined as the length of penetration of the core barrel. Core recovery is the length of core recovered divided by the core run. The RQD (Rock Quality Designation) is the total length of core pieces exceeding 4 inches in size divided by the core run. The size of the core barrel used is noted.

TABLE I

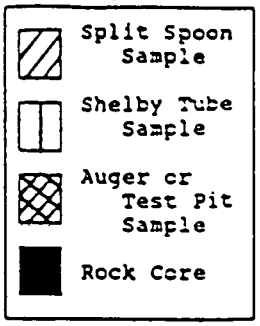


TABLE II

Identification of soil types is made on basis of an estimate of particle sizes, and in the case of fine grained soils also on basis of plasticity.

Soil Type	Soil Particle Size	
Boulder	> 12"	Coarse Grained (Granular)
Cobble	3" - 12"	
Gravel-		
Coarse	3" - 3/4"	
Fine	3/4" - #4	
Sand-		
Coarse	#4 - #10	
Medium	#10 - #40	
Fine	#40 - #200	
Silt: Non-Plastic (Granular) < #200 Clay: Plastic (Cohesive) < #200		Fine Grained

TABLE III

The following terms are used in classifying soils consisting of mixtures of two or more soil types. The estimate is based on weight of total sample.

Term	Percent of Total Sample
"and"	35% - 50%
"some"	20% - 35%
"little"	10% - 20%
"trace"	less than 10%

(When sampling gravelly soils with a standard split spoon, the true percentage of gravel is often not recovered due to the relatively small sampler diameter.)

TABLE IV

The relative compactness or consistency is described in accord with the following terms.

Granular Soils		Cohesive Soils	
Term	Blows per foot, N	Term	Blows per foot, N
Loose	< 11	Very Soft	< 3
Firm	11 - 30	Soft	3 - 5
Compact	31 - 50	Medium	6 - 15
Very Compact	> 50	Stiff	16 - 25
		Hard	> 25

(Large particles in the soils will often significantly influence the blows per foot recorded during the Penetration Test.)

TABLE V

Varved -	Horizontal uniform layers or seams of soil(s).
Layer -	Soil deposit more than 6" thick.
Seam -	Soil deposit less than 6" thick.
Parting-	Soil deposit less than 1/8" thick.
Laminated-	Irregular, horizontal and angled seams and partings of soils(s).

TABLE VI

Rock Classification Terms	Meaning
Hardness: Soft Medium Hard Hard Very Hard	Scratched by fingernail. Scratched easily by penknife. Scratched with difficulty by penknife. Cannot be scratched by penknife.
Weathering: Very Weathered Weathered Sound	Judged from the relative amounts of disintegration, iron staining, core recovery, clay seams, etc.
Bedding: Laminated Thin Bedded Bedded Thick Bedded Massive	Natural Breaks in Rock Layers (< 1") (1" - 4") (4" - 12") (12" - 36") (> - 36")
(Fracturing refers to natural breaks in rock orientated at some angle to rock layers.)	

DATE
STARTED: 5-20-93
FINISHED: 5-20-93

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

BORING NO.: B-1
SURF. ELEV.: 100.0 ±
SHEET 1 OF 1

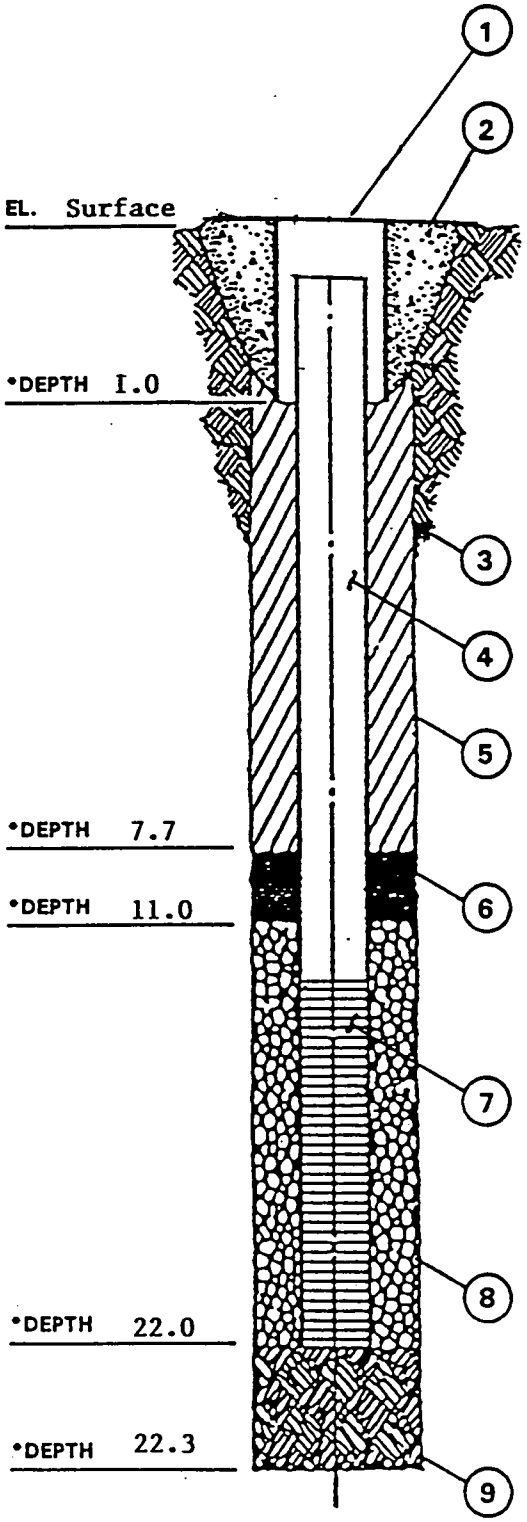
PROJECT: SAMPLE SUBSURFACE LOG
CLIENT:
LOCATION:

DEPTH-FT.	SAMPLES	SAMPLE NO	BLOWS ON SAMPLER (0/6, 6/12, 12/18, 18/24, N)	P.I.D.	SYMBOL	SOIL OR ROCK CLASSIFICATION	NOTES
0		1	2, 4, 6, 8, 10	100		FILL	
		2		300		WELL GRADED GRAVEL, GW	
						POORLY GRADED GRAVEL, GP	
5						SILTY GRAVEL, GM	
						CLAYEY GRAVEL, GC	
10						WELL GRADED SAND, SW	Free standing water encountered at 9.5' upon Boring Completion
						POORLY GRADED SAND, SP	
15						SILTY SAND, SM	
						CLAYEY SAND, SC	
						INORGANIC SILT, SANDY SILT, CLAYEY SILT OF LOW PLASTICITY, ML	
20						INORG. CLAY, GRAVELLY CLAY, SANDY CLAY, SILTY CLAY, LEAN CLAY, CL	
						INORGANIC SILT OF HIGH PLASTICITY, MH	
25						INORGANIC CLAY OF HIGH PLASTICITY, FAT CLAY, CH	
						ORGANIC SILT AND CLAY OF LOW PLASTICITY, OL	
						ORGANIC CLAY AND SILT OF MEDIUM TO HIGH PLASTICITY, OH	
30						PEAT, PT	
						SHALE	Rock Core RUN: 32.0-40.0' REC: 88% RQD: 66%
35						SANDSTONE	
						SILTSTONE	
						LIMESTONE	
40							

① ② ③ ④ ⑤ ⑥ ⑦ ⑧ ⑨ ⑩ ⑪

DRILLER:
DRILL RIG:
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: SUNNY, 70 F
CLASSIFIED BY: Geologist

MONITORING WELL COMPLETION REPORT



*DEPTH IN FEET BELOW GRADE

WELL NO. ESI-3

PROJECT NO. BE-94-150

DATE INSTALLED 1-11-95

PROJECT American Axle & Manufacturing
East Delevan Ave., Buffalo, NY

1. PROTECTIVE CASING I.D. (INCHES) 9
2. SURFACE SEAL TYPE Sakrete
3. BOREHOLE DIAMETER (INCHES) 8
4. RISER PIPE
   - TYPE Schedule 40 PVC
   - I.D. (INCHES) 2
   - LENGTH (FEET) 11.9
   - JOINT TYPE Flush Threaded
5. BACKFILL
   - TYPE Portland Cement
   - INSTALLATION Surface
6. TYPE OF SEAL Bentonite Chips
7. SCREEN
   - TYPE Schedule 40 PVC
   - I.D. (INCHES) 2
   - SLOT SIZE (INCHES) 0.020
   - LENGTH 10.0'
8. SCREEN FILTER TYPE #1 Morie Sand
9. BACKFILL TYPE #1 Morie Sand

Huntingdon
Consulting Engineers Environmental Scientists

Huntingdon

APPENDIX D

EMPIRE
SOILS INVESTIGATIONS INC.
S-5167 S. Park Avenue, Hamburg, NY 14075

WELL DEVELOPMENT PARAMETERS

PROJECTS: American Axle and Manufacturing

LOCATION: East Delevan Avenue, Buffalo, New York

WELL NO. ESI-3 DATE: 2-10-95

WATER LEVEL PRIOR TO DEVELOPMENT: 14.80 (elevation in feet)

WATER LEVEL AFTER DEVELOPMENT: 20.05 (elevation in feet)

DEVELOPMENT STARTED: 1310

DEVELOPMENT COMPLETED: 1310

TOTAL VOLUME OF WATER PRODUCED: 5.0 gallons

SCREENED INTERVAL: --------- (elevation in feet)

PID PPM: ---------

DATE	pH (STANDARD UNITS)	CONDUCTIVITY (uMHOS/cm)	TEMP. (°F)	VOLUME EVACUATED (GALLONS)	COMMENTS
2-10-95	7.26	1.285		3.0	very turbid
"	7.23	1.272		4.0	"
"	7.21	1.265		5.0	Sample 1400

Well Calculations

Bottom Of Well 20.75
Water Level 14.80
Water Column 5.95
x .17
One Well Vol 1.0

Five Well Volumns = 5.0

Huntingdon

APPENDIX E

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 95-0060

PREPARED FOR:

HUNTINGDON ENGINEERING & ENVIRONMENTAL
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: AMERICAN AXLE & MANUFACT (BE-94-150)

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

JANUARY 19, 1995

Huntingdon

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER: 95-0060

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984 (FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.

- U.S. ENVIRONMENTAL PROTECTION AGENCY, "TEST METHODS OF EVALUATING SOLID WASTE - PHYSICAL/CHEMICAL METHODS", OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, SW-846, 2ND EDITION AND 3RD EDITION.

THIS REPORT CONTAINS ANALYTICAL DATA BASED ON OUR EXAMINATION OF THE SAMPLE(S) PRESENTED TO US. THIS REPORT CONTAINS (EXCEPT WHERE EXPLICITLY STATED) A COMPLETE ACCOUNT OF THE ANALYSES REQUESTED TO BE PERFORMED ON THE SAMPLE(S). INFORMATION WHICH WAS NOT REQUESTED TO BE REPORTED IS NOT INCLUDED.

PHILLIP A. KUYKENDALL JANUARY 19, 1995
ENVIRONMENTAL LABORATORY MANAGER.

REPORT CODE LEGEND:
<DL = LESS THAN DETECTION LIMIT
ND = NOT DETECTED
NA = NOT APPLICABLE
INP = INFORMATION NOT PROVIDED
MB = METHOD BLANK

Huntingdon

HUNTINGDON ANALYTICAL SERVICES

WET CHEMISTRY

SAMPLE IDENTIFICATION :			ESI-2	ESI-3	ESI-4	METHOD BLANK
HAS SAMPLE #950060			01	02	03	--
ANALYTE	EPA METHOD	DATE ANALYZED	RESULT mg/kg	RESULT mg/kg	RESULT mg/kg	RESULT mg/L
TOTAL CYANIDE----------	9010	01/16/95	15.5	12.5	11.2	<0.01
DATE SAMPLED:			01/10/95	01/10/95	01/10/95	----

HUNTINGDON ANALYTICAL SERVICES

METALS

SAMPLE IDENTIFICATION :			ESI-2	ESI-3	ESI-4	METHOD BLANK
HAS SAMPLE #950060			01	02	03	--
ANALYTE	EPA METHOD	DATE ANALYZED	RESULT mg/kg	RESULT mg/kg	RESULT mg/kg	RESULT mg/kg
ALUMINUM	6010	01/18/95	21,800	11,300	14,100	8.93
ANTIMONY	6010	01/17/95	50.2	38.5	30.6	<5.0
ARSENIC	7060	01/18/95	6.66	6.86	6.55	<1.0
BARIUM	6010	01/17/95	239	211	492	<1.0
BERYLLIUM	6010	01/17/95	2.78	1.96	2.94	<0.5
CADMIUM	6010	01/17/95	4.36	3.58	2.48	<0.5
CALCIUM	6010	01/17/95	46,300	58,500	59,100	12.8
CHROMIUM	6010	01/17/95	14.4	7.79	7.06	<1.0
COBALT	6010	01/17/95	13.5	8.85	6.08	<1.0
COPPER	6010	01/17/95	28.5	36.5	19.4	<1.0
IRON	6010	01/18/95	26,010	20,000	7,790	51.2
LEAD	6010&7421	01/17-18/95	27.9	69.8	41.0	<4.0
MERCURY	7471	01/18/95	<0.12	<0.12	<0.12	<0.1
MAGNESIUM	6010	01/17-18/95	10,900	5,610	7,950	<4.0
MANGANESE	6010	01/17/95	647	447	762	2.77
NICKEL	6010	01/17/95	25.6	13.9	12.8	<4.0
POTASSIUM	6010	01/17/95	1730	369	996	<300
SELENIUM	7740	01/17-18/95	<0.61	<1.22	0.95	<1.0
SILVER	6010	01/17/95	3.24	3.41	3.27	<1.0
SODIUM	6010	01/17/95	204	301	382	12.1
THALLIUM	7841	01/17/95	<2.45	<2.45	<2.41	<2.0
VANADIUM	6010	01/17/95	31.5	16.8	14.6	<1.0
ZINC	6010	01/17/95	63.3	26.3	16.5	<2.0
DATE SAMPLED:			01/10/95	01/10/95	01/10/95	----

SOIL SAMPLES CALCULATED ON A DRY WEIGHT BASIS.

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8080
ORGANOCHLORINE PESTICIDES
POLYCHLORINATED BIPHENYLS

SAMPLE IDENTIFICATION :	ESI-2	ESI-3	ESI-4	METHOD BLANK
HAS SAMPLE #950060	01	02	03	--

COMPOUND	RESULT mg/Kg	RESULT mg/Kg	RESULT mg/Kg	RESULT mg/Kg	DL mg/Kg
ALDRIN	<0.002	<0.002	<0.002	<0.002	0.002
A-BHC	<0.002	<0.002	<0.002	<0.002	0.002
B-BHC	<0.002	<0.002	<0.002	<0.002	0.002
D-BHC	<0.002	<0.002	<0.002	<0.002	0.002
G-BHC	<0.002	<0.002	<0.002	<0.002	0.002
CHLORDANE	<0.03	<0.03	<0.03	<0.03	0.03
4,4-DDD	<0.002	<0.002	<0.002	<0.002	0.002
4,4-DDE	<0.002	<0.002	<0.002	<0.002	0.002
4,4-DDT	<0.002	<0.002	<0.002	<0.002	0.002
DIELDRIN	<0.002	<0.002	<0.002	<0.002	0.002
ENDOSULFAN I	<0.002	<0.002	<0.002	<0.002	0.002
ENDOSULFAN II	<0.002	<0.002	<0.002	<0.002	0.002
ENDOSULFAN SULFATE	<0.002	<0.002	<0.002	<0.002	0.002
ENDRIN	<0.002	<0.002	<0.002	<0.002	0.002
ENDRIN ALDEHYDE	<0.002	<0.002	<0.002	<0.002	0.002
ENDRIN KETONE	<0.002	<0.002	<0.002	<0.002	0.002
HEPTACHLOR	<0.002	<0.002	<0.002	<0.002	0.002
HEPTACHLOR EPOXIDE	<0.002	<0.002	<0.002	<0.002	0.002
METHOXYCHLOR	<0.002	<0.002	<0.002	<0.002	0.002
TOXAPHENE	<0.03	<0.03	<0.03	<0.03	0.03
PCB-1016	<0.05	<0.05	<0.05	<0.05	0.05
PCB-1221	<0.05	<0.05	<0.05	<0.05	0.05
PCB-1232	<0.05	<0.05	<0.05	<0.05	0.05
PCB-1242	<0.05	<0.05	<0.05	<0.05	0.05
PCB-1248	<0.05	<0.05	<0.05	<0.05	0.05
PCB-1254	<0.05	<0.05	<0.05	<0.05	0.05
PCB-1260	<0.05	<0.05	<0.05	<0.05	0.05
DATE EXTRACTED:	1/13/95	1/13/95	1/13/95	1/13/95	
DATE ANALYZED:	1/13/95	1/14/95	1/14/95	1/14/95	

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	ESI-2	ESI-3	ESI-4	METHOD BLANK	
HAS SAMPLE #950060	01	02	03	--	
COMPOUND	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	DL ug/Kg
CHLOROMETHANE	<10	<10	<10	<10	10
BROMOMETHANE	<10	<10	<10	<10	10
VINYL CHLORIDE	<10	<10	<10	<10	10
CHLOROETHANE	<10	<10	<10	<10	10
METHYLENE CHLORIDE	<10	<10	<10	<10	10
ACETONE	25	33	20	11	10
TRICHLOROFLUOROMETHANE	<10	<10	<10	<10	10
CARBON DISULFIDE	<10	<10	<10	<10	10
1,1-DICHLOROETHENE	<10	<10	<10	<10	10
1,1-DICHLOROETHANE	<10	<10	<10	<10	10
1,2-DICHLOROETHENE (TOTAL)	<10	<10	<10	<10	10
CHLOROFORM	<10	<10	<10	<10	10
1,2-DICHLOROETHANE	<10	<10	<10	<10	10
2-BUTANONE	<10	<10	<10	<10	10
1,1,1-TRICHLOROETHANE	<10	<10	<10	<10	10
CARBON TETRACHLORIDE	<10	<10	<10	<10	10
VINYL ACETATE	<10	<10	<10	<10	10
BROMODICHLOROMETHANE	<10	<10	<10	<10	10
1,2-DICHLOROPROPANE	<10	<10	<10	<10	10
cis-1,3-DICHLOROPROPENE	<10	<10	<10	<10	10
TRICHLOROETHENE	<10	<10	<10	<10	10
DIBROMOCHLOROMETHANE	<10	<10	<10	<10	10
1,1,2-TRICHLOROETHANE	<10	<10	<10	<10	10
BENZENE	<10	<10	<10	<10	10
trans-1,3-DICHLOROPROPENE	<10	<10	<10	<10	10
2-CHLOROETHYLVINYL ETHER	<10	<10	<10	<10	10
BROMOFORM	<10	<10	<10	<10	10
4-METHYL-2-PENTANONE	<10	<10	<10	<10	10
2-HEXANONE	<10	<10	<10	<10	10
TETRACHLOROETHENE	<10	<10	<10	<10	10
1,1,2,2-TETRACHLOROETHANE	<10	<10	<10	<10	10
TOLUENE	12	<10	<10	<10	10
CHLOROBENZENE	<10	<10	<10	<10	10
ETHYL BENZENE	<10	<10	<10	<10	10
STYRENE	<10	<10	<10	<10	10
XYLENE (TOTAL)	15	20	<10	<10	10
1,3-DICHLOROBENZENE	<10	<10	<10	<10	10
1,2-DICHLOROBENZENE	<10	<10	<10	<10	10
1,4-DICHLOROBENZENE	<10	<10	<10	<10	10
DATE ANALYZED:	1-17-95	1-17-95	1-17-95	1-17-95	

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	ESI-2	ESI-3	ESI-4	METHOD BLANK	
HAS SAMPLE #950060	01	02	03	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
ACENAPHTHENE	<330	<330	<330	<330	330
ACENAPHTHYLENE	<330	<330	<330	<330	330
ANTHRACENE	<330	<330	<330	<330	330
BENZO(a)ANTHRACENE	950	<330	<330	<330	330
BENZO(b)FLUORANTHENE	1,100	<330	<330	<330	330
BENZO(k)FLUORANTHENE	540	<330	<330	<330	330
BENZO(a)PYRENE	1,000	<330	<330	<330	330
BENZO(g,h,i)PERYLENE	810	<330	<330	<330	330
BENZYL ALCOHOL	<330	<330	<330	<330	330
BIS(2-CHLOROETHOXY)METHANE	<330	<330	<330	<330	330
BIS(2-CHLOROETHYL)ETHER	<330	<330	<330	<330	330
BIS(2-CHLOROISOPROPYL)ETHER	<330	<330	<330	<330	330
BIS(2-ETHYLHEXYL)PHTHALATE	540	900	900	<330	330
BUTYLBENZYL PHTHALATE	<330	<330	<330	<330	330
4-BROMOPHENYL-PHENYL ETHER	<330	<330	<330	<330	330
4-CHLOROANILINE	<330	<330	<330	<330	330
2-CHLORONAPHTHALENE	<330	<330	<330	<330	330
4-CHLOROPHENYL-PHENYL ETHER	<330	<330	<330	<330	330
CHRYSENE	1,000	<330	<330	<330	330
DIBENZ(a,h)ANTHRACENE	<330	<330	<330	<330	330
DIBENZOFURAN	<330	<330	<330	<330	330
DI-N-BUTYLPHTHALATE	<330	<330	<330	<330	330
1,2-DICHLOROBENZENE	<330	<330	<330	<330	330
1,3-DICHLOROBENZENE	<330	<330	<330	<330	330
1,4-DICHLOROBENZENE	<330	<330	<330	<330	330
3,3-DICHLOROBENZIDINE	<660	<660	<660	<660	660
DIETHYL PHTHALATE	<330	<330	<330	<330	330
DIMETHYL PHTHALATE	<330	<330	<330	<330	330
2,4-DINITROTOLUENE	<330	<330	<330	<330	330
2,6-DINITROTOLUENE	<330	<330	<330	<330	330
DI-N-OCTYL PHTHALATE	<330	<330	<330	<330	330
FLUORANTHENE	1,100	<330	<330	<330	330
FLUORENE	<330	<330	<330	<330	330
HEXACHLOROBENZENE	<330	<330	<330	<330	330
HEXACHLOROBUTADIENE	<330	<330	<330	<330	330
HEXACHLOROCYCLOPENTADIENE	<330	<330	<330	<330	330
HEXACHLOROETHANE	<330	<330	<330	<330	330
INDENO(1,2,3-cd)PYRENE	710	<330	<330	<330	330

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	ESI-2	ESI-3	ESI-4	METHOD BLANK	
HAS SAMPLE #950060	01	02	03	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
ISOPHORONE	<330	<330	<330	<330	330
2-METHYL NAPHTHALENE	<330	<330	<330	<330	330
NAPHTHALENE	<330	<330	<330	<330	330
2-NITROANILINE	<1,600	<1,600	<1,600	<1,600	1,600
3-NITROANILINE	<1,600	<1,600	<1,600	<1,600	1,600
4-NITROANILINE	<1,600	<1,600	<1,600	<1,600	1,600
NITROBENZENE	<330	<330	<330	<330	330
N-NITROSODIPHENYLAMINE	<330	<330	<330	<330	330
N-NITROS-DI-N-PROPYLAMINE	<330	<330	<330	<330	330
PHENANTHRENE	590	<330	<330	<330	330
PYRENE	1,400	340	<330	<330	330
1,2,4-TRICHLOROBENZENE	<330	<330	<330	<330	330
CARBAZOLE	<330	<330	<330	<330	330
ACID COMPOUNDS	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
BENZOIC ACID	<1,600	<1,600	<1,600	<1,600	1,600
4-CHLORO-3-METHYLPHENOL	<330	<330	<330	<330	330
2-CHLOROPHENOL	<330	<330	<330	<330	330
2,4-DICHLOROPHENOL	<330	<330	<330	<330	330
2,4-DIMETHYL PHENOL	<330	<330	<330	<330	330
2,4-DINITROPHENOL	<1,600	<1,600	<1,600	<1,600	1,600
4,6-DINITRO-2-METHYLPHENOL	<1,600	<1,600	<1,600	<1,600	1,600
2-METHYL PHENOL	<330	<330	<330	<330	330
4-METHYL PHENOL	<330	<330	<330	<330	330
2-NITROPHENOL	<330	<330	<330	<330	330
4-NITROPHENOL	<1,600	<1,600	<1,600	<1,600	1,600
PENTACHLOROPHENOL	<1,600	<1,600	<1,600	<1,600	1,600
PHENOL	<330	<330	<330	<330	330
2,4,5-TRICHLOROPHENOL	<1,600	<1,600	<1,600	<1,600	1,600
2,4,6-TRICHLOROPHENOL	<330	<330	<330	<330	330
DATE EXTRACTED:	1-16-95	1-16-95	1-16-95	1-16-95	
DATE ANALYZED:	1-16-95	1-16-95	1-16-95	1-16-95	

Huntingdon

140 Telegraph Road
Middleport, NY 14105
Phone (716) 735-3400
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CHAIN OF CUSTODY RECORD AND ANALYTICAL REQUEST FORM

Page ___ of ___

Client Name: Empire Soils Investigations
Address: (Hamburg)
Contact: Don Wartinger
Phone: 649-8110

Project No.: BE-94-150
Project Site/Name: American Axle + Manufact
Sampler's Signature: Don Wtg

Ref.#9 5-00160
P.O.#
Quote#

Sample I.D.	Date	Time	Comp or Grab	Sample Location	HAS Seq.#	Matrix	No. of Cont.	Container Size & Type						Analysis Requested/Remarks
									125 mL VOA	500 mL Amber Glass				125 ml / 500 ml
ESI-2	1/10/95	1315	C	ESI-2	01	Soil	4	2	2	2				TCL VOLS, semi VOLS, PCB, pesticides, metals, total cyanide / TCLP VOLS, semi VOLS, metals
ESI-3	1/10/95	1445	C	ESI-3	02		4		2	2				
ESI-4	1/10/95	1555	C	ESI-4	03		4		2	2				
ESI-7	1/11/95	1345	C	ESI-7	04		4		2	2				
					N									
														* TCL - RUSH 5 DAY TURNAROUND (FAX RESULTS to ESI)
														** TCLP - HOLD FOR AUTHORIZATION TO ANALYZE

Relinquished by:	Date/Time:	Received by:	Relinquished by:	Date/Time:	Received by:
Don Wtg	1/12/95 1000	ESI Cooler	ESI Cooler	1/12/95 1345	Joann A. Rhoades
Edward A. Rhoades	1/12/95 16:30				
Relinquished by:	Date/Time:	Received for Lab by:	Date/Time:	Remarks:	
			1/12/95 16:30	4°C	

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER: 95-0196

PREPARED FOR:

HUNTINGDON ENGINEERING & ENVIRONMENTAL
S-5167 SOUTH PARK AVENUE
HAMBURG, NEW YORK 14075

RE: AMERICAN AXLE (BE-94-150)

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105
TELEPHONE: 716/735-3400; FAX: 716/735-3653

FEBRUARY 24, 1995

Huntingdon

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER: 95-0196

STATEMENT OF WORK PERFORMED

I HEREBY DECLARE THAT THE WORK WAS PERFORMED UNDER MY SUPERVISION ACCORDING TO THE PROCEDURES OUTLINED BY THE FOLLOWING REFERENCES AND THAT THIS REPORT PROVIDES A CORRECT AND FAITHFUL RECORD OF THE RESULTS OBTAINED.

- 40 CFR PART 136, "GUIDELINES ESTABLISHING TEST PROCEDURES FOR THE ANALYSIS OF POLLUTANTS UNDER THE CLEAN WATER ACT", OCTOBER 26, 1984 (FEDERAL REGISTER) U. S. ENVIRONMENTAL PROTECTION AGENCY.

- U.S. ENVIRONMENTAL PROTECTION AGENCY, "TEST METHODS OF EVALUATING SOLID WASTE - PHYSICAL/CHEMICAL METHODS", OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE, SW-846, 2ND EDITION AND 3RD EDITION.

THIS REPORT CONTAINS ANALYTICAL DATA BASED ON OUR EXAMINATION OF THE SAMPLE(S) PRESENTED TO US. THIS REPORT CONTAINS (EXCEPT WHERE EXPLICITLY STATED) A COMPLETE ACCOUNT OF THE ANALYSES REQUESTED TO BE PERFORMED ON THE SAMPLE(S). INFORMATION WHICH WAS NOT REQUESTED TO BE REPORTED IS NOT INCLUDED.

PHILLIP A. KUYKENDALL FEBRUARY 24, 1995
ENVIRONMENTAL LABORATORY MANAGER

REPORT CODE LEGEND:

<DL	= LESS THAN DETECTION LIMIT
ND	= NOT DETECTED
NA	= NOT APPLICABLE
INP	= INFORMATION NOT PROVIDED
MB	= METHOD BLANK

Huntingdon

HUNTINGDON ANALYTICAL SERVICES

WET CHEMISTRY

SAMPLE IDENTIFICATION :			ESI-3	METHOD BLANK
HAS SAMPLE #950196			02	--
ANALYTE	EPA METHOD	DATE ANALYZED	RESULT mg/L	RESULT mg/L
TOTAL CYANIDE----------	335.2	02/13/95	<0.01	<0.01
DATE SAMPLED:			02/10/95	----

HUNTINGDON ANALYTICAL SERVICES

METALS

SAMPLE IDENTIFICATION :			ESI-3	METHOD BLANK
HAS SAMPLE #950196			02	--
ANALYTE	EPA METHOD	DATE ANALYZED	RESULT ug/L	RESULT ug/L
ALUMINUM	6010	02/15&23/95	4,060	<70.0
ANTIMONY	6010	02/15/95	114	<50.0
ARSENIC	7060	02/14/95	9.90	<10.0
BARIUM	6010	02/15/95	120	<10.0
BERYLLIUM	6010	02/15/95	<5.0	<5.0
CADMIUM	6010	02/15/95	18.0	<5.0
CALCIUM	6010	02/15/95	285,000	<50.0
CHROMIUM	6010	02/15/95	10.6	<10.0
COBALT	6010	02/15/95	<10.0	<10.0
COPPER	6010	02/15/95	59.5	<10.0
IRON	6010	02/15&23/95	9,890	<20.0
LEAD	7421	02/14/95	92.7	<3.00
MERCURY	7471	02/14/95	<0.20	<0.20
MAGNESIUM	6010	02/15&23/95	71,700	<40.0
MANGANESE	6010	02/15/95	2,430	<10.0
NICKEL	6010	02/15/95	40.4	<40.0
POTASSIUM	6010	02/15/95	<3000	<3000
SELENIUM	7740	02/15/95	<5.0	<5.0
SILVER	6010	02/15/95	11.9	<10.0
SODIUM	6010	02/15&23/95	20,800	<60.0
THALLIUM	7841	02/18/95	<10.0	<10.0
VANADIUM	6010	02/15/95	39.1	<20.0
ZINC	6010	02/15/95	68.8	<20.0
DATE SAMPLED:			02/10/95	----

HUNTINGDON ANALYTICAL SERVICES

METHOD 8080
ORGANOCHLORINE PESTICIDES
POLYCHLORINATED BIPHENYLS

SAMPLE IDENTIFICATION :	ESI-3	METHOD BLANK
HAS SAMPLE #950196	02	--

ANALYTE	RESULT ug/L	RESULT ug/L	DL ug/L
ALDRIN	<0.05	<0.05	0.05
A-BHC	<0.05	<0.05	0.05
B-BHC	<0.05	<0.05	0.05
D-BHC	<0.05	<0.05	0.05
G-BHC	<0.05	<0.05	0.05
CHLORDANE	<1.0	<1.0	1.0
4,4-DDD	<0.05	<0.05	0.05
4,4-DDE	<0.05	<0.05	0.05
4,4-DDT	<0.05	<0.05	0.05
DIELDRIN	<0.05	<0.05	0.05
ENDOSULFAN I	<0.05	<0.05	0.05
ENDOSULFAN II	<0.05	<0.05	0.05
ENDOSULFAN SULFATE	<0.05	<0.05	0.05
ENDRIN	<0.05	<0.05	0.05
ENDRIN ALDEHYDE	<0.05	<0.05	0.05
HEPTACHLOR	<0.05	<0.05	0.05
HEPTACHLOR EPOXIDE	<0.05	<0.05	0.05
METHOXYCHLOR	<0.05	<0.05	0.05
TOXAPHENE	<1.0	<1.0	1.0
PCB-1016	<1.0	<1.0	1.0
PCB-1221	<1.0	<1.0	1.0
PCB-1232	<1.0	<1.0	1.0
PCB-1242	<1.0	<1.0	1.0
PCB-1248	<1.0	<1.0	1.0
PCB-1254	<1.0	<1.0	1.0
PCB-1260	<1.0	<1.0	1.0
DATE EXTRACTED:	2/13/95	2/13/95	
DATE ANALYZED:	2/22/95	2/22/95	

HUNTINGDON ANALYTICAL SERVICES

EPA METHOD 8240
VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	ESI-3	METHOD BLANK
HAS SAMPLE #950196	02	--

COMPOUND	RESULT ug/L	RESULT ug/L	DL ug/L
CHLOROMETHANE	<10	<10	10
BROMOMETHANE	<10	<10	10
VINYL CHLORIDE	<10	<10	10
CHLOROETHANE	<10	<10	10
METHYLENE CHLORIDE	<10	<10	10
ACETONE	<10	<10	10
TRICHLOROFLUOROMETHANE	<10	<10	10
CARBON DISULFIDE	<10	<10	10
1,1-DICHLOROETHENE	<10	<10	10
1,1-DICHLOROETHANE	<10	<10	10
1,2-DICHLOROETHENE (TOTAL)	<10	<10	10
CHLOROFORM	<10	<10	10
1,2-DICHLOROETHANE	<10	<10	10
2-BUTANONE	<10	<10	10
1,1,1-TRICHLOROETHANE	<10	<10	10
CARBON TETRACHLORIDE	<10	<10	10
VINYL ACETATE	<10	<10	10
BROMODICHLOROMETHANE	<10	<10	10
1,2-DICHLOROPROPANE	<10	<10	10
cis-1,3-DICHLOROPROPENE	<10	<10	10
TRICHLOROETHENE	<10	<10	10
DIBROMOCHLOROMETHANE	<10	<10	10
1,1,2-TRICHLOROETHANE	<10	<10	10
BENZENE	<10	<10	10
trans-1,3-DICHLOROPROPENE	<10	<10	10
2-CHLOROETHYLVINYL ETHER	<10	<10	10
BROMOFORM	<10	<10	10
4-METHYL-2-PENTANONE	<10	<10	10
2-HEXANONE	<10	<10	10
TETRACHLOROETHENE	<10	<10	10
1,1,2,2-TETRACHLOROETHANE	<10	<10	10
TOLUENE	<10	<10	10
CHLOROBENZENE	<10	<10	10
ETHYL BENZENE	<10	<10	10
STYRENE	<10	<10	10
XYLENE (TOTAL)	<10	<10	10
1,3-DICHLOROBENZENE	<10	<10	10
1,2-DICHLOROBENZENE	<10	<10	10
1,4-DICHLOROBENZENE	<10	<10	10
DATE ANALYZED:	2-15-95	2-15-95	

HUNTINGDON ANALYTICAL SERVICES

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	ESI-3	METHOD BLANK	
HAS SAMPLE #950196	02	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	MDL ug/L
ACENAPHTHENE	<10	<10	10
ACENAPHTHYLENE	<10	<10	10
ANTHRACENE	<10	<10	10
BENZO(a)ANTHRACENE	<10	<10	10
BENZO(b)FLUORANTHENE	<10	<10	10
BENZO(k)FLUORANTHENE	<10	<10	10
BENZO(a)PYRENE	<10	<10	10
BENZO(g,h,i)PERYLENE	<10	<10	10
BENZYL ALCOHOL	<10	<10	10
BIS(2-CHLOROETHOXY)METHANE	<10	<10	10
BIS(2-CHLOROETHYL)ETHER	<10	<10	10
BIS(2-CHLOROISOPROPYL)ETHER	<10	<10	10
BIS(2-ETHYLHEXYL)PHTHALATE	<10	<10	10
BUTYLBENZYL PHTHALATE	<10	<10	10
4-BROMOPHENYL-PHENYL ETHER	<10	<10	10
4-CHLOROANILINE	<10	<10	10
2-CHLORONAPHTHALENE	<10	<10	10
4-CHLOROPHENYL-PHENYL ETHER	<10	<10	10
CHRYSENE	<10	<10	10
DIBENZ(a,h)ANTHRACENE	<10	<10	10
DIBENZOFURAN	<10	<10	10
DI-N-BUTYLPHTHALATE	<10	<10	10
1,2-DICHLOROBENZENE	<10	<10	10
1,3-DICHLOROBENZENE	<10	<10	10
1,4-DICHLOROBENZENE	<10	<10	10
3,3-DICHLOROBENZIDINE	<20	<20	20
DIETHYL PHTHALATE	<10	<10	10
DIMETHYL PHTHALATE	<10	<10	10
2,4-DINITROTOLUENE	<10	<10	10
2,6-DINITROTOLUENE	<10	<10	10
DI-N-OCTYL PHTHALATE	<10	<10	10
FLUORANTHENE	<10	<10	10
FLUORENE	<10	<10	10
HEXACHLOROBENZENE	<10	<10	10
HEXACHLOROBUTADIENE	<10	<10	10
HEXACHLOROCYCLOPENTADIENE	<10	<10	10
HEXACHLOROETHANE	<10	<10	10
INDENO(1,2,3-cd)PYRENE	<10	<10	10

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	ESI-3	METHOD BLANK	
HAS SAMPLE #950196	02	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	MDL ug/L
ISOPHORONE	<10	<10	10
2-METHYL NAPHTHALENE	<10	<10	10
NAPHTHALENE	<10	<10	10
2-NITROANILINE	<50	<50	50
3-NITROANILINE	<50	<50	50
4-NITROANILINE	<50	<50	50
NITROBENZENE	<10	<10	10
N-NITROSODIPHENYLAMINE	<10	<10	10
N-NITROS-DI-N-PROPYLAMINE	<10	<10	10
PHENANTHRENE	<10	<10	10
PYRENE	<10	<10	10
1,2,4-TRICHLOROBENZENE	<10	<10	10
CARBAZOLE	<10	<10	10
ACID COMPOUNDS	RESULT ug/L	RESULT ug/L	MDL ug/L
BENZOIC ACID	<50	<50	50
4-CHLORO-3-METHYLPHENOL	<10	<10	10
2-CHLOROPHENOL	<10	<10	10
2,4-DICHLOROPHENOL	<10	<10	10
2,4-DIMETHYL PHENOL	<10	<10	10
2,4-DINITROPHENOL	<50	<50	50
4,6-DINITRO-2-METHYLPHENOL	<50	<50	50
2-METHYL PHENOL	<10	<10	10
4-METHYL PHENOL	<10	<10	10
2-NITROPHENOL	<10	<10	10
4-NITROPHENOL	<50	<50	50
PENTACHLOROPHENOL	<50	<50	50
PHENOL	<10	<10	10
2,4,5-TRICHLOROPHENOL	<50	<50	50
2,4,6-TRICHLOROPHENOL	<10	<10	10
DATE EXTRACTED:	2-15-95	2-15-95	
DATE ANALYZED:	2-15-95	2-15-95	

Huntingdon

140 Telegraph Road
Middleport, NY 14105
Phone (716) 735-3400
Fax (716) 735-3653

CHAIN OF CUSTODY RECORD AND ANALYTICAL REQUEST FORM

Page ___ of ___

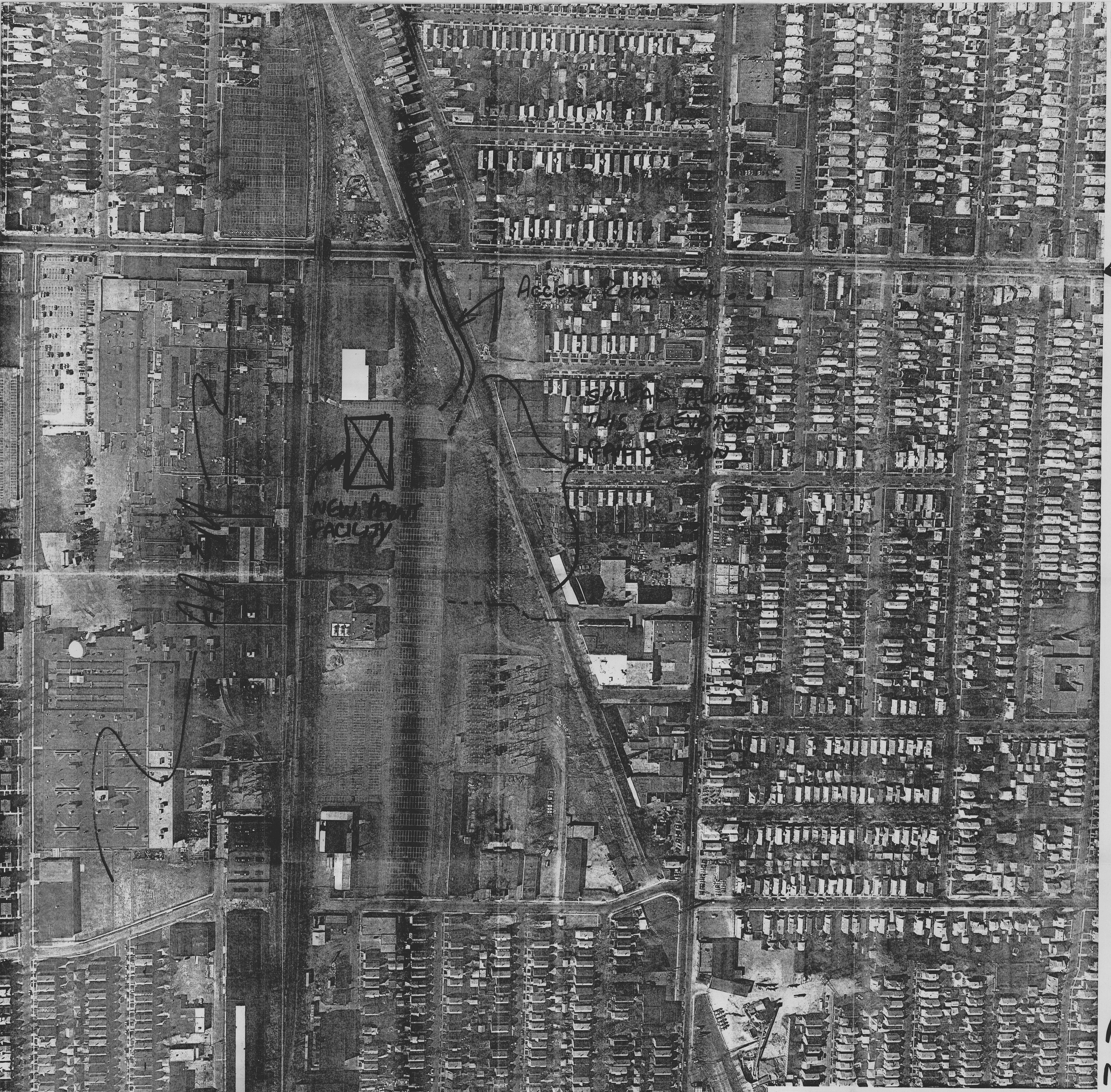
Client Name: Empire Soils
Address: (Hamburg)
Contact: Don Wartinger
Phone: 649-8110

Project No.: BE-94-150
Project Site/Name: American Axle
Sampler's Signature: Don Wt

Ref.#9 5-01960
P.O.#
Quote#

Sample I.D.	Date	Time	Comp or Grab	Sample Location	HAS Seq.#	Matrix	No. of Cont.	Container Size & Type					Analysis Requested/Remarks
									40ml VOA	1/2 gal Glass	250ml Glass	500ml Plastic	
ESI-7	2/10/95	1230	G	ESI-7	01	W	6		2	1	1	2	TCL VOLS, SEMI VOLS, PESTICIDES + PCB's (8240) (8270) (8080)
ESI-3	2/10/95	1400	G	ESI-3	02	W	5		2	1		X	METALS, TOTAL CYANIDE (6010, 7000) (335.2/9010)
									2				* ESI-3 Limited volume
									2				For Semi VOLS, Pesticides + PCB
									1				** PLEASE FAX
													RESULTS

Relinquished by:	Date/Time:	Received by:	Relinquished by:	Date/Time:	Received by:
Don Wt	2/10/95 1600	ESI - Cooler	ESI Cooler	2/10/95 1605	Karen Kromer
Karen Kromer	Date/Time: 2/10/95 18:45	Received by:	Relinquished by:	Date/Time:	Received by:
Relinquished by:	Date/Time:	Received for Lab by:	Date/Time: 2/10/95 18:45	Remarks:	90



DEPARTMENT OF PUBLIC WORKS ENGINEERING BUILDING CITY OF BUFFALO	AERIAL MAPS CITY OF BUFFALO, NEW YORK DATE: APRIL 22, 1989 APPROX. SCALE: 1 INCH = 100 FEET	THE CITY SURVEY DIVISION THE DIVISION OF ENGINEERING DEPARTMENT OF PUBLIC WORKS CITY OF BUFFALO, NEW YORK DAVID P. COMERFORD COMMISSIONER OF PUBLIC WORKS LAWRENCE N. GRASSO, P.E. CITY ENGINEER	FLIGHTLINE NO. 2 PHOTO NO. 20