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PHASE II ENVIRONMENTAL INVESTIGATION
WATERFRONT REDEVELOPMENT PROJECT
NYR35 PARCELS 17A, 23 & 24
BUFFALO, NEW YORK

Prepared For:

Buffalo Urban Renewal Agency
920 City Hall
Buffalo, New York 14202-3376

Attention: Mr. Joseph V. Schollard

Prepared By:

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PHASE II ENVIRONMENTAL INVESTIGATION
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I. INTRODUCTION

A. -Background

Empire Soils Investigations, Inc. (Empire) was requested and authorized by Mr. Joseph V. Schollard, Commissioner of the City of Buffalo Urban Renewal Agency (BURA) to complete a Phase II Environmental Investigation for NYR35 Parcels 17A, 23 & 24 of the Waterfront Redevelopment Project in downtown Buffalo, New York. A site location map is presented as Drawing No. 1 in Appendix A.

Empire understands that BURA is planning to construct residential townhouse units on the subject property. Previous studies completed by Empire (report dated October 1989) and Buffalo Drilling Company, Inc. (report dated May 23, 1991) on the subject property indicated organic vapor readings and petroleum-type odors on subsurface soils and/or fill materials. Site history research indicated that a bus terminal had previously occupied a portion of the subject site, including the associated underground fuel tanks. Based on this information, the New York State Department of Environmental Conservation (NYSDEC) recommended a Phase II Environmental Investigation to better define the nature, extent and concentration of suspected contamination.

Empire's work was completed in accordance with a revised proposal to BURA dated November 14, 1991. It should be noted that tar-like contamination was observed in test pit excavations completed by Empire near the northwest portion of the site during the initial field work phase of the current project. Based on this observation, Empire recommended additional work at the subject site in a letter to BURA dated March 11, 1992 to further investigate the observed contamination. The additional work was also authorized by BURA. The results of the additional work, including additional test pit excavations and laboratory analytical testing, are included in this report.

B. Scope of Services

Empire completed the following scope of services to investigate the potential contamination discussed above:

- Planned and coordinated a subsurface investigation program and analytical testing program for the site;
- Completed a Modified Soil Gas Survey at the site;
- Completed twenty-nine (29) exploratory Test Pit excavations at the site;
- Advanced four (4) test borings and installed four (4) ground water monitoring wells at the site;
- Monitored all test pit excavations and drilling and monitoring well installation activities in the field and collected soil samples for laboratory chemical analysis;
- Scanned the excavated materials and recovered soil samples in the field with a photoionization detector (PID) for the presence of volatile organic compounds;
- Prepared test boring logs and monitoring well installation diagrams;
- Developed the four (4) monitoring wells and collected representative ground water samples from each well for laboratory chemical analysis;
- Measured relative ground water elevations in each of the four (4) monitoring wells;
- Subjected five (5) soil samples and four (4) ground water samples to laboratory chemical analysis; and
- Summarized the collected data in this report.

The information presented in this report is subject to the limitations presented in Appendix B.

II. PHYSICAL SETTING

A. General

The subject site is located south of Carolina Street, between Fourth and Seventh Streets in downtown Buffalo, New York. The Waterfront School is located adjacent to the southwest portion of the property, and the Shoreline Apartments are located northeast of the site.

B. Site Characteristics

Site topography is generally flat, with a gentle slope downward toward the southwest. Based on the proximity of the subject property to Lake Erie (approximately 1/4-mile to the southwest), it is expected that the ground water flow direction is to the west/southwest, toward the lake.

The subject property is currently vacant and grass-covered except for a few trees. A 48-inch diameter water line reportedly crosses the site in a northwest-southeast direction.

III. SUBSURFACE EXPLORATION

A. General

Empire's subsurface exploration tasks at the site included a modified soil gas survey, test pit excavations, test borings, monitoring well installation and development and ground water sampling. Each task is discussed later in this report.

The modified soil gas survey was completed in the general area of the site where petroleum-type vapors and relatively higher organic vapor measurements were detected in previous test pit excavations. Empire measured volatile organic vapors at twenty-five (25) soil gas probe locations.

Empire excavated fifteen (15) test pits on March 6, 1992 and fourteen (14) test pits on March 25, 1992, for a total of twenty-nine (29). The locations of the test pits excavated on March 6, 1992 were based on the results of Empire's modified soil gas survey. The locations of the test pits excavated on March 25, 1992 were selected to better define the lateral and vertical extent of apparent contamination observed in the test pits excavated on March 6, 1992.

Composite soil samples collected from two (2) of the test pits were subjected to laboratory chemical analysis.

Empire advanced four (4) test borings and installed four (4) ground water monitoring wells at the subject site on March 30 and 31, 1992. The test boring/monitoring well locations were selected based on the results of the test pit excavations. After installation, Empire developed the wells and collected ground water samples for laboratory chemical analysis. A composite soil sample from one of the test borings was also subjected to laboratory chemical analysis.

B. Modified Soil Gas Survey and Results

Empire completed a modified soil gas survey on March 4 and 5, 1992. A 50-feet x 50-feet grid was established across the soil gas survey area. One-half inch diameter PVC soil vent pipes were installed at each grid point. The pipes were installed to a depth of about two and one-half (2.5) to three and one-half (3.5) feet below ground

surface. Each of the pipes was capped and labeled. An initial soil vapor measurement was taken of the stagnant air in the pipe prior to purging. The pipe was then purged with a battery operated diaphram pump, to remove the stagnant air and several pipe volumes of air from within the pipe and to draw representative soil vapors into the pipe. The soil vapors were then collected into a sealed plastic bag and analyzed for volatile organic vapors using a photoionization detector (PID), manufactured by Hnu Systems, Inc. of Newton Highlands, Massachusetts. The PID used was a Hnu Model PI-101 with a 10.2 eV ultraviolet light source. The PID measurements were recorded in parts per million (ppm). The PID was calibrated prior to use each day in accordance with the manufacturers instructions. The soil gas measurement points are shown on Drawing No. 2 presented in Appendix A. The PID soil gas measurements are summarized in Table 1.

TABLE 1
SUMMARY OF SOIL GAS FIELD MEASUREMENTS
(From March 4 & 5, 1992)

DATE OF TEST	PROBE ID#	INITIAL PID (ppm)	PURGED PID (ppm)	COMMENTS
Mar 4	A1	BG	BG	
Mar 4	A3	BG	BG	
Mar 4	A5	BG	BG	
Mar 4	A7	--	--	No Probe (refusal)
Mar 4	B2	BG	BG	
Mar 4	B4	BG	BG	
Mar 4	B6	BG	BG	
Mar 4	C1	2.0	BG	Petroleum odor on probe tool (wet)
Mar 4	C3	BG	BG	
Mar 4	C5	BG	BG	

TABLE 1
SUMMARY OF SOIL GAS FIELD MEASUREMENTS
(From March 4 & 5, 1992)

DATE OF TEST	PROBE ID#	INITIAL PID (ppm)	PURGED PID (ppm)	COMMENTS
Mar 4	C7	BG	BG	
Mar 4	D2	BG	BG	
Mar 4	D4	BG	BG	
Mar 4	D6	BG	BG	
Mar 5	E1	BG	3.0	
Mar 5	E3	BG	0.4	
Mar 5	E5	BG	0.5	
Mar 5	E7	BG	BG	
Mar 5	F2	BG	BG	
Mar 5	F4	BG	BG	
Mar 5	F6	BG	BG	
Mar 5	B1	0.8	0.4	
Mar 5	D1	BG	0.5	
Mar 5	F1	20.0	30.0	Petroleum odor and sheen on probe tool (wet)
Mar 5	G1	BG	BG	
Mar 5	H1	BG	BG	
Mar 5	G2	--	--	No Probe (refusal)

BG = Background or ambient air PID measurements

C. Test Pit Excavations

Empire used a John Deere 410C backhoe to excavate the test pits on March 6, 1992. Test pit locations were determined in the field by Empire based on the results of the soil gas survey. An Empire environmental geologist observed and logged each test pit, collected soil samples and scanned the test pits for volatile organic compounds using a PID. The PID used to measure total organic vapors was an Hnu PI 101 with a 11.7 eV ultraviolet light source. The PID was calibrated before field use. Refer to the test pit logs presented in Appendix C for PID results.

In two (2) of the fifteen (15) test pits excavated on March 6, 1992 soils were encountered which had a diesel fuel-type odor and/or PID readings above background (test pits TP-15 and TP-21). Also in a few test pits excavated near the western site boundary (tests pits TP-10, TP-11, TP-12, TP-13 and TP-18), a black, tar-like substance was encountered with a very strong tar-like odor. Soil samples were collected from test pits TP-10, TP-11 and TP-12 and were analyzed for reactivity, corrosivity, ignitability. The samples were placed in the appropriate precleaned containers and shipped to Huntington Analytical Services, Inc. (HAS) in Middleport, New York for testing. The analytical test results will be discussed later in this report.

An additional day of test pit exploration was completed on March 25, 1992 to better define the areal and vertical extent of the contamination of the diesel fuel-type odor and the black, tar-like substance. A total of fourteen (14) additional test pits were excavated on March 25, 1992. Eight (8) of the test pits were located in the area of the black, tar-like substance (test pits TP-1 through TP-8). The remaining seven (7) test pits (test pits TP-24 through TP-29) were located in the area of the diesel fuel-type odor. Test pit logs are presented in Appendix C.

D. Test Borings

Empire advanced four (4) test borings (MW-1 through MW-4) and installed a ground water monitoring well at each test boring location. The test borings and monitoring well installations were completed on March 30 and March 31, 1992.

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. The test borings were located in the field by Empire based on the results of a soil gas survey and test pits which were completed by Empire at an earlier date. Test borings MW-1 and MW-2 were located in the area where black, tar-like contamination was encountered along the western site boundary in test pit excavations on March 6 and March 25, 1992. Test boring MW-3 was located near where diesel fuel-type contamination was also encountered in test pit excavations on March 6 and March 25, 1992. Test boring MW-4 was located upgradient from MW-1, MW-2 and MW-3 to establish background conditions at the subject site with regard to ground water quality. Test borings were generally advanced to refusal at depths of approximately 14 to 16 feet below ground surface to evaluate subsurface soil and ground water conditions. Refer to Drawing No. 2 in Appendix A for test boring locations.

Empire used a CME-55 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. Continuous soil samples were recovered by driving a 24-inch long by 2-inch 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 is recorded on the appropriate space on the boring log. Representative soil samples were collected and stored in 8-ounce glass jars for future reference.

All equipment was decontaminated with a steam cleaner prior to drilling at each

of the four (4) test boring/monitoring well locations. Split-spoon samplers were decontaminated using a detergent wash and clean water rinse between samples.

Empire completed air quality monitoring for volatile organic vapors with a photoionization detector (PID) during the drilling and soil sampling procedures. PID measurements were made at the top of the hollow-stem augers and on recovered split-spoon soil samples. The PID used to measure volatile organic vapors was an Hnu PI 101 with a 11.7 eV ultraviolet light source. The PID was calibrated before field use. Ambient background PID measurements were made upwind of each borehole location prior to drilling to establish site conditions. The range of these background readings during the monitoring period (March 30 & 31, 1992) were 0.0 to 0.6 parts per million (ppm). All PID measurements are recorded on the boring logs presented in Appendix D.

Soil sampling was done continuously from ground surface to boring completion. An Empire environmental geologist monitored the drilling and soil sampling procedures 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.

E. Soil Samples

A composite soil sample was collected from test pit TP-11 excavated on March 6, 1992 and analyzed for reactivity, corrosivity and ignitability (i.e. hazardous waste characterization). A composite soil sample was collected from test pit TP-3 excavated on March 25, 1992 and analyzed for reactivity, corrosivity and ignitability as well as for volatile and semi-volatile compounds. A sample of the black, tar-like substance ("product") was also collected from test pit TP-3 and analyzed for volatile and semi-volatile compounds.

A composite soil sample was collected from test boring MW-3 for chemical laboratory analysis. The soil sample was analyzed for reactivity, corrosivity, ignitability, USEPA Target Compound List (TCLP Procedures) and PCBs. The soil sample was composited from split-spoon samples S-3, S-4 and S-5.

All samples were placed in the appropriate precleaned containers and shipped to HAS in Middleport, New York for testing. The analytical test results are discussed later in this report.

F. Ground Water Monitoring Well Installations and Development

Ground water monitoring wells were installed in each of the four (4) boreholes upon completion of drilling. The wells consisted of 2-inch I.D. schedule 40 PVC well screen and riser pipe. The slot size on the well screen was 0.010-inch (No. 10 slot). The annular space around the well screen was backfilled with No. 1 Morie sand from the bottom of the borehole to approximately 0.5-foot above the top of the well screen. A minimum 1.0-foot thick bentonite pellet seal was constructed above the sand pack. A protective steel casing with a locking cap was installed over the top of the well pipe, cemented in place and secured with a padlock. Monitoring well completion reports are presented in Appendix D.

The well screens for wells MW-1, MW-3 and MW-4 were installed to monitor ground water contained in the miscellaneous fills and the uppermost zone of the underlying native soils. The well screen for monitoring well MW-2 was installed to monitor only the ground water contained in the native soils. Since well MW-2 was located near MW-1, the vertical difference in screen placement between the two (2) wells was done to give an indication of downward migration of contaminants, if any.

Ground water samples were collected from monitoring wells MW-1, MW-2, MW-3 and MW-4 on April 2, 1992. The monitoring wells were developed prior to sampling using a peristaltic pump. MW-1 and MW-2 were developed by being taken to dryness three (3) times, MW-3 and MW-4 were developed by removing ten (10) well volumes

and insuring stability of PH and Temperature. The wells were then allowed to recover to a sufficient volume before sampling.

G. Ground Water Sampling

Ground water samples were collected from each of the four (4) monitoring wells installed at the site. The ground water samples were analyzed for Total Petroleum Hydrocarbons (Test Method DOH 310-13), Target compound List (TCL) volatiles (USEPA Test Method 8020) and TCL semi-volatiles (USEPA Test Method 8270).

Ground water was sampled by carefully lowering a dedicated polyethylene bailer equipped with a bottom filling check valve into the well and allowing it to fill. The bailer was then slowly removed and the contents emptied into the appropriate precleaned containers. The samples were then placed in an ice cooler and delivered to HAS for testing. The analytical test results are discussed later in this report.

IV. SUBSURFACE CONDITIONS

Subsurface conditions at the subject site were evaluated on the basis of the twenty-nine (29) test pits excavated, the four (4) test borings advanced and the four (4) ground water monitoring wells installed by Empire. Test pit logs are presented in Appendix C and test boring logs and monitoring well installation diagrams are presented in Appendix D.

Miscellaneous, man-placed fill materials were encountered in the various subsurface explorations from ground surface to depths of approximately four (4) to eleven (11) feet. Fill depth generally increased from east to west across the study area. The miscellaneous fill materials consisted mainly of sand, gravel, silt, clayey silt, boulders, concrete fragments and bricks. The fill materials also occasionally contained wood, metal fragments, ash seams, pipe fragments, slag, asphaltic concrete fragments and glass. Wooden beams, apparent remnants of concrete building foundations and apparent remnants of concrete or asphaltic concrete pavement were also encountered in the subsurface at the subject site.

Native soils encountered beneath the miscellaneous fills at the site consisted mainly of light brown sandy silt with traces of gravel. Based on previous subsurface work by Empire in the vicinity of the subject site, we expect that the underlying bedrock is limestone belonging to the Onondaga formation. We also expect that drilling refusal achieved at test boring locations MW-1, MW-2, and MW-4 was due to encountering bedrock. We note that no bedrock core samples were obtained as part of this project.

Depth to ground water at the site ranged between approximately one and one-half (1.5) and four (4) feet below ground surface in the test pit excavations. Some areas of the site appeared to contain "pockets" of ground water perched in relatively more permeable zones of the miscellaneous fills.

Water levels measured in the four (4) monitoring wells on April 2 and May 13, 1992 are presented in Table 2. The water levels measured on both days indicate a ground water flow direction to the west toward Lake Erie, as expected.

TABLE 2
WATER LEVEL DATA

Well No.	Date	Depth Below Measuring Point	Ground Water Elevation
MW-1	4-2-92 5-13-92	4.96 5.56	88.92 88.32
MW-2	4-2-92 5-13-92	3.24 3.71	88.84 88.37
MW-3	4-2-92 5-13-92	3.18 5.01	91.45 89.62
MW-4	4-2-92 5-13-92	3.98 5.52	91.64 90.10

Note: Ground water elevations were referenced to a bench mark established by Empire on top of the valve nut on a fire hydrant located at the western border of the site in front of Shoreline Apartment No. 26. Assumed bench mark elevation =100.00.

Empire observed evidence of contamination on materials excavated from many of the twenty-nine (29) test pits and soil samples recovered from three (3) of the four (4) test borings. The contamination evidence consisted of relatively high PID readings, odors or visual evidence such as soil discoloration or a petroleum-type sheen on soils or standing water. Based on these observations, it appears that there are two (2) primary areas of subsurface contamination at the site, as discussed in the following paragraphs.

The more significant area of contamination is in the vicinity of monitoring wells MW-1 and MW-2, near the northwestern portion of the property. In this area, a black, tar-like substance was encountered in the subsurface. PID measurements near the surface of the black material were typically about 100 to 300 ppm, and the material exhibited a strong, tar-like odor. Much of the soil in relatively close vertical proximity to the seam of black material was also black in color, exhibited relatively high PID readings and had a noticeable petroleum-type sheen on the surface. Ground water which collected in the test pits excavated in this area also had a noticeable surface sheen. It should be noted that the western extent of this subsurface contamination was not defined since test borings and/or test pit excavations were not completed on the adjacent property owned by the Waterfront School.

The second area of apparent subsurface contamination is in the vicinity of monitoring well MW-3, southeast of the area containing the tar-like substance. In this area, apparent contamination indicated by relatively higher PID readings exhibited an odor similar to diesel fuel or fuel oil. Based on field observations, the concentrations and lateral extent of the fuel-type contamination appeared to be significantly less than the black, tar-like contamination discussed above.

V. ANALYTICAL RESULTS

A. General

Empire collected a total of five (5) soil samples and four (4) ground water samples at the subject site and submitted the samples to the laboratory for chemical analysis. The analytical results are discussed in the following sections of this report.

B. Area of Tar-like Contamination

Empire collected four (4) composite soil samples from test pit excavations TP-3 and TP-11 and two (2) ground water samples from monitoring wells MW-1 and MW-2 in the area of the tar-like contamination. Two (2) of the soil samples were analyzed for corrosivity, reactivity and ignitability and a third soil sample was analyzed for volatile and semi-volatile compounds. The fourth soil sample was of the actual tar-like material (i.e. "product") and was analyzed for volatile and semi-volatile compounds. The two (2) ground water samples were analyzed for purgeable aromatic compounds, semi-volatile compounds and total petroleum hydrocarbons (method DOH 310.13). Analytical results for soil and ground water samples are presented in Appendix E.

Analysis of soil sample TP-3B indicated detectable concentrations of compounds typically associated with petroleum fuels and coal tar-based substances. These compounds included benzene, toluene, ethyl benzene and xylene (BTEX; volatile compounds), as well as anthracene, fluorene, naphthalene, phenanthrene and other similar compounds (semi-volatile compounds). Detected concentrations of BTEX compounds in sample TP-3B ranged between 970 and 11,000 micrograms per kilogram (ug/kg) or parts per billion (ppb). Concentrations of detected coal tar (semi-volatile) compounds ranged between 14,000 and 2,000,000 ppb (naphthalene concentration was 2,000,000 ppb). Some phenolic substances were also detected in sample TP-3B, but the concentration of each individual phenolic compound was not quantifiable.

Analysis of sample TP-3C (tar-like "product") indicated detectable concentrations of typical petroleum fuel compounds and coal tar compounds, as discussed above. Measured concentrations of these compounds in sample TP-3C were generally higher as

compared to measured concentrations of the same compounds in sample TP-3B. Concentrations of detected BTEX compounds in sample TP-3C ranged between 160,000 and 3,300,000 ppb (benzene concentration of 3,300,000 ppb). Concentrations of detected coal tar compounds in sample TP-3C ranged between 160,000 and 12,000,000 ppb (naphthalene concentration of 12,000,000 ppb). Detected concentrations of phenolic compounds in sample TP-3C ranged between 460,000 and 1,300,000 ppb (4-methyl phenol concentration of 1,300,000 ppb). Please refer to the laboratory analytical results presented in Appendix E for detected concentrations on a compound by compound basis.

Samples of the black, tar-like material ("product")from test pits TP-3 (sample TP-3A) and TP-11 (sample TP-C1) were analyzed for corrosivity, ignitability and reactivity (hazardous waste characterization). Results of the corrosivity and reactivity analyses for these two (2) samples indicated non-hazardous characteristics. Results of ignitability analysis indicated flash points of 123-degrees Fahrenheit for sample TP-3A and 111-degrees Fahrenheit for sample TP-C1, which were both below the hazardous flash point value of 160-degrees Fahrenheit, indicating a hazardous material.

For the ground water samples collected from monitoring wells MW-1 and MW-2, detectable concentrations of petroleum fuel compounds, coal tar compounds and phenolic compounds were measured. Concentrations of benzene, toluene and xylene detected in wells MW-1 and MW-2 ranged between 1,100 and 21,000 ppb (benzene concentration of 21,000 ppb in well MW-2). Concentrations of coal tar compounds detected in wells MW-1 and MW-2 ranged between 10 and 6,500 ppb (naphthalene concentration of 6,500 ppb in well MW-2). Concentrations of phenolic compounds detected in wells MW-1 and MW-2 ranged between 13,000 and 46,000 ppb (4-methyl phenol concentration of 46,000 ppb in well MW-2).

For the ground water sample collected from upgradient well MW-4, only ethyl benzene and total xylenes were detected at concentrations of 0.59 ppb and 1.4 ppb, respectively.

No concentrations of petroleum products in water (method DOH 310.13) were detected in ground water samples collected from wells MW-1, MW-2 or MW-4 above the method detection limits. However, the method detection limits were elevated for wells MW-1 and MW-2 due to the high levels of some semi-volatile compounds present in the water samples from these wells.

C. Area of Suspected Fuel Contamination

Empire collected one (1) composite soil sample from test boring MW-3 and one (1) ground water sample from monitoring well MW-3 for chemical laboratory analysis. The soil sample was analyzed for corrosivity, reactivity and ignitability (hazardous waste characterization) and the full Target Compound List (TCL) parameters using the Toxicity Characteristic Leachate Procedure (TCLP). The ground water sample was analyzed for purgeable aromatic compounds, semi-volatile compounds and total petroleum hydrocarbons (method DOH 310.13). Analytical results for the soil and ground water samples are presented in Appendix E.

Analysis of soil sample MW-3 indicated concentrations of barium at 0.54 milligrams per liter or parts per million (ppm), lead at 0.52 ppm and mercury at 0.0029 ppm. The measured concentrations of these three (3) metals were only slightly above the method detection limits. No concentrations of any other TCL parameters were detected above the method detection limits for soil sample MW-3.

Analysis of the ground water sample from monitoring well MW-3 indicated concentrations of benzene (86 ppb), acenapthene (17 ppb) and fluorene (12 ppb). No concentrations of other purgeable aromatic compounds, semi-volatile compounds or total petroleum hydrocarbons were detected above the method detection limits for the ground water sample from well MW-3.

VI. DISCUSSION

Additional site history research revealed that northern half of the subject property was occupied by a facility known as "Citizens Gas Works" in the early 1900's. In Empire's opinion, the tar-like substance, the large pipe fragments and wooden beams discovered in the subsurface at the site are probably remnants of this former gas manufacturing plant. The plant also occupied land to the west of the subject property, where a parking lot for the Waterfront School is presently located.

Laboratory chemical analysis of soil and ground water samples in the area of the black tar-like contamination indicated relatively high levels of BTEX and coal tar-type compounds. Based on the inferred ground water flow direction (i.e. generally east to west), it is likely that these contaminants are being transported off-site toward the adjacent Waterfront School parking lot and Lake Erie (approximately 1/4-mile to the southwest).

Site history research also indicated that a bus garage previously occupied a portion of the site. Leakage from underground fuel tanks associated with the former bus garage is the most probable source of the petroleum fuel-type contamination observed during Empire's subsurface work at the site. The lateral extent of the fuel-type contamination appears to be limited to the area around monitoring well MW-3.

Although petroleum fuel-type odors were noted in test pit excavations in the vicinity of well MW-3, laboratory analytical results for soil and ground water samples from this area did not generally indicate significant concentrations of fuel-type compounds. The concentrations of benzene, acenapthene and fluorene measured in the ground water sample from well MW-3 may indicate that the source of these contaminants is the black tar-like substance, rather than leakage from underground fuel storage tanks which previously existed at the site, since these compounds were detected at relatively high levels in sample TP-3C ("product" sample).

VII. CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations presented in the following paragraphs are subject to the limitations presented in Appendix B.

Based on the findings of the Phase II Environmental Investigation completed for the subject property, it is Empire's opinion that the present environmental condition of the site is unsuitable for residential development due to the potential health hazard during construction (workers) and long-term exposure (residents of proposed construction) to the relatively high concentrations of volatile and semi-volatile compounds detected in the soil and ground water near the northwestern portion of the property. The source of these contaminants is apparently a black tar-like substance in the shallow subsurface which probably resulted from a portion of the property being previously used as a gas manufacturing facility. It is likely that these contaminants are being transported off-site to the west via ground water flow in the subsurface.

Petroleum fuel-type odors were observed in test pit excavations in the vicinity of monitoring well MW-3. However, analysis of soil and ground water samples in this area did not indicate significant concentrations of compounds typically associated with petroleum fuels. The compounds that were detected in the ground water sample form well MW-3 are probably related to the black tar-like substance rather than previous leakage at the site.

The relatively minor concentrations of metals (barium, lead and mercury) detected in soil sample MW-3 do not represent a significant environmental liability, in Empire's opinion.

Empire expects that the NYSDEC will require remediation of the black tar-like material and the soils and ground water contaminated with this material. Options for soil remediation at the subject site include (1) excavation, hauling and off-site disposal at an appropriate disposal facility including backfilling with select material, (2) excavation, on-

site treatment with post-treatment replacement of remediated material on-site and (3) on-site bioremediation. Ground water remediation can be addressed with an on-site pump and treat system.

The lateral and vertical extent of soil and ground water contamination must be determined in order to prepare accurate remediation cost estimates. Empire therefore recommends additional subsurface explorations such as test pits, test borings and monitoring wells be completed on the adjacent Waterfront School property to define the northern and western limits of the soil and ground water contamination.

Detailed investigation into various remediation alternatives was beyond the scope of services for this Phase II Environmental Investigation. Relative costs for various remediation alternatives are dependent upon volume of material to be treated, existing contaminant concentrations and regulatory clean-up requirements. For soil remediation, excavation, hauling and off-site disposal is typically the most expensive option. Please note that Empire can provide consulting assistance with regard to remediation alternatives and can also provide project management services for remediation projects of this nature.

If you have any questions or if we can be of further assistance, please contact our office.

Respectfully Submitted,
EMPIRE SOILS INVESTIGATIONS, INC.

David R. Steiner

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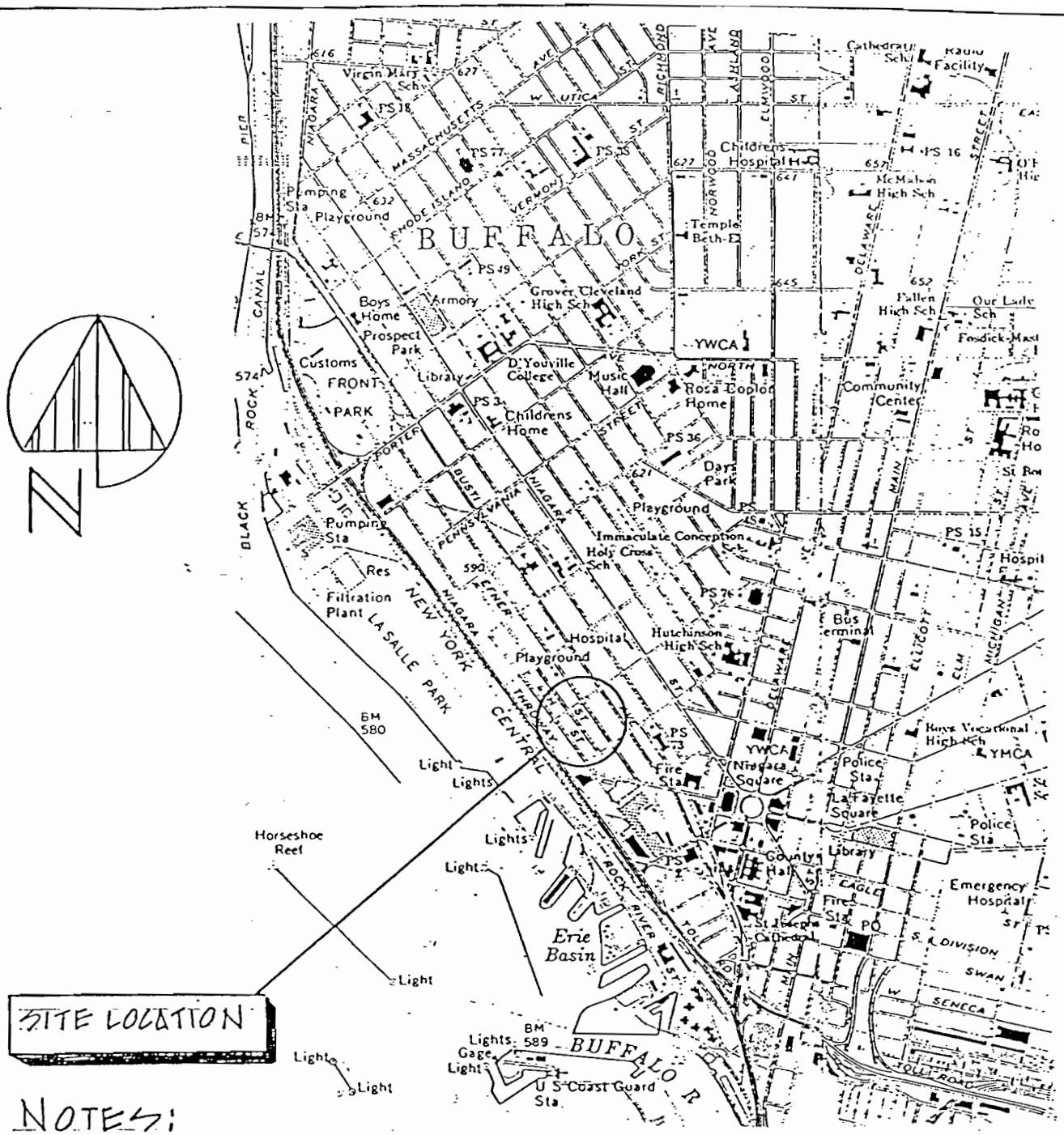
drs

EMPIRE
SOILS INVESTIGATIONS INC

APPENDIX A



NOTES:

- THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY.
- THIS MAP WAS ADAPTED FROM THE U.S. GEOLOGICAL SURVEY, BUFFALO N.W & N.E., NEW YORK DATED (1965).

QUADRANGLE LOCATION

EMPIRE SOILS INVESTIGATIONS INC

SITE LOCATION PLAN

PHASE II ENVIRONMENTAL INVESTIGATION
WATERFRONT REDEVELOPMENT PROJECT
BUFFALO URBAN RENEWAL AGENCY
BUFFALO, NEW YORK

DR.BY: DRS	SCALE: NTS	PROJ. NO. BTA-92-60
CK'D.BY: DBA	DATE: MAY 1992	DRWG.NO. 1

R/T FORM R-1

EMPIRE
SOILS INVESTIGATIONS INC

APPENDIX B

APPENDIX B
LIMITATIONS

1. Empire Soils Investigations, Inc. (ESI) work was completed in accordance with generally accepted practices of other consultants undertaking similar studies, and ESI observed that degree of care and skill generally exercised by other consulting 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 work.

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. ESI taped the boring locations from existing structures and measured the ground surface elevations at the borings and referenced them to a bench mark (100.00-feet) established on top of the valve nut on a fire hydrant located near the western border of the site in front of Shoreline Apartment No. 26.

4. The generalized soil and rock profile described in the text is 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 specific information, refer to the boring logs.

5. Water level readings have been made in the explorations at times and under conditions stated in the boring logs. These data have been reviewed and interpretations have been made in the text of this report. However, it must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors occurring from the time measurements were made.

6. Except as noted within the text of the report, no quantitative laboratory testing was performed as part of the site assessment. Where such analyses have been conducted by a laboratory, ESI has relied upon the data provided and has not conducted an independent evaluation of the reliability of these data.

7. This report has been prepared for the exclusive use of the Buffalo Urban Renewal Agency and its 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.

EMPIRE
SOILS INVESTIGATIONS INC.

APPENDIX C

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-1
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

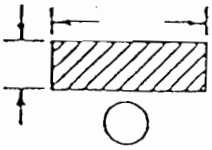
GROUND ELEV.: ____
TIME STARTED: 9:10
TIME COMPLETED: 9:25

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Black-brown FILL; contains sand, gravel, silt, brick, concrete, metal, boulders	E		BG
1'		M		5-7
2'	Fill heavily coated with sheen, petroleum-odor free standing water with oil and sheen at 2.6'	M		25-30
3'		M		25-30
4'	Concrete slab obstruction			
5'	Test Pit terminated at 3.9' due to water and obstruction.			
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

Sheen & brown scum on water in test pit, petroleum-odor

TEST PIT PLAN



NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION Phase II ESA
LOCATION BURA Site

TEST PIT NO. TP-2
FILE NO. BTA-92-060
DATE 3/25/92

ENGINEER D. Wartinger
WEATHER Sunny, Breezy

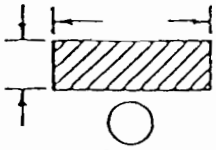
EXCAVATION EQUIPMENT
CONTRACTOR Empire Soils
OPERATOR M. Gaudy
MAKE _____ MODEL _____
CAPACITY _____ C.Y. REACH _____ FT.

GROUND ELEV. _____
TIME STARTED 9:28
TIME COMPLETED 9:45

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown-black FILL; contains sand, gravel, silt, boulders, wood, brick, concrete with rebar, metal pipe.	E		BG
1'		M		BG
2'				
3'	Fill being removed, wet with heavy sheen, petroleum-odor.	M		5-7
4'	Free standing water with sheen at 3.2'			5-7
5'				5-7
6'	Test Pit Terminated at 6.0' due to water.			
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Heavy sheen with petroleum odor on fill being removed from a depth of 2.8" to 6.0", sheen on water.

TEST PIT PLAN



VOLUME = _____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

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EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) _____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-3
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 9:50
TIME COMPLETED: 10:40

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown-black FILL; contains sand, gravel, brick, wood, concrete with rebar, metal pipe	E		BG
1'		D		150
2'	Black seam, tar-like material (coal tar odor), free standing water with heavy sheen at 1.5'	D		150
3'	Black viscious tar like material (running), heavy coal tar odor	D		70
4'		D		50
5'	Running water with heavy sheen	E		50
6'	Sandy-Silt, tr. gravel (moist-wet), appears to have seams of tar-like material			
7'	Wood piles appear to have been driven	E		50
	Test Pit Terminated at 7.0'.			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Running water between Fill and natural material with heavy sheen. Wood Driven piles from 1.5' to 7.0' plus.

TEST PIT PLAN

NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
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F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
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EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC.

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP 4
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

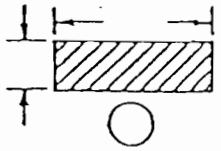
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 10:42
TIME COMPLETED: 10:55

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL: contains sand, gravel, silt, boulders, concrete, brick, wood, metal, etc.	E		BG
1'	Black seam, tar-like, heavy coal tar-odor	M		100
2'				
3'	Black, moist tar-like material, heavy coal tar odor	M		300
4'		M		200
5'	Running water with sheen	M		--
6'	Free Standing Water has sheen			--
7'	Test Pit Terminated at 6.0'.			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
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F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-5
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

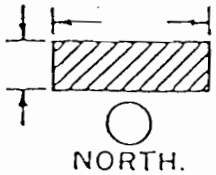
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 11:00
TIME COMPLETED: 11:20

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown-Black FILL; contains sand, gravel, boulder, concrete, brick, wood, glass	E		BG
1'		M		50
2'	Heavy coal tar-odor	M		100
3'	Free standing water with heavy sheen	M		100
4'	Flat, appears to be wood obstruction	M		100
5'	Test Pit Terminated at 4.6' due to obstruction.			
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Appears to be flat wooden obstruction at bottom of test pit.

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0-10%
LITTLE (LI.)	10-20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS
F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
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V - VERY
GR. - GRAY
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YEL. - YELLOW

EXCAVATION EFFORT
EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER
ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-6
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

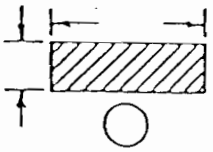
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: _____ MODEL: _____
CAPACITY: _____ C.Y. REACH: _____ FT.

GROUND ELEV.: _____
TIME STARTED: 11:25
TIME COMPLETED: 11:45

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL; contains sand, silt, brick, concrete, pipe (1/2") boulder, wood, etc.	E		BG
1'		M		50
2'	Becomes black, coal tar-odor	M		70
3'		M		70
4'	Running water with sheen	M		30
5'	Sandy-Silt (moist-wet), contains tar-like seams	E		--
6'	Free Standing Water with sheen	E		--
7'	Test Pit terminated at 7.0' due to water.			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = _____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
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F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS, INC.

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-7
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

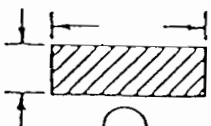
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 12:40
TIME COMPLETED: 1:05

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL; contains sand, silt, brick, concrete, boulders, metal, pipe	M		BG
1'				
2'	Becomes black, tar-like material, coal tar odor	M		50
3'	Greenish-black running liquid, heavy sheen	M		70
4'	Lt. brown sandy-silt, tr. gravel, contains black seams of tar-like material	M		30
5'		M		--
6'		M		--
7'	Test Pit terminated at 6.0'.	E		
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
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EXCAVATION EFFORT

EASY ——— E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ▽2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-8
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

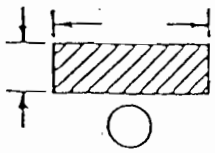
GROUND ELEV.: ____
TIME STARTED: 1:10
TIME COMPLETED: 1:35

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL consists of brick, sand, gravel, boulders, concrete, wire, glass, wood	E		BG
1'				
2'	Becomes black, tar-like material, heavy coal tar-odor	M		30
3'		M		70
4'	Water seeping in with sheen	M		30
5'	Sandy-Silt (moist, wet), tr. gravel, black seams of tar like material	M		--
6'		M		--
7'		M		--
8'	Test Pit Terminated at 8.0'.	E		
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

No Free Standing Water noted

TEST PIT PLAN



NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

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EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-9
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

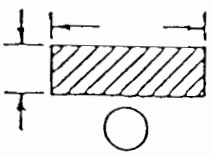
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 2:25 pm
TIME COMPLETED: 2:35 pm

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'				
1'	Brown FILL; contains sand, silt, large amount of brick, concrete fragments	M		BG
2'	Water at 2.6', slight sheen on water	M		BG
3'		M		BG
4'	Test Pit Terminated at 3.2'.			
5'				
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Slight sheen on water

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

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EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION Phase II ESA
LOCATION BURA Site

TEST PIT NO. TP-10
FILE NO. BTA-92-060
DATE 3/6/92

ENGINEER D.R. Steiner
WEATHER P. Cloudy, Breezy 30's

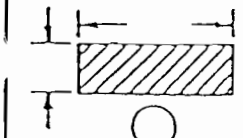
EXCAVATION EQUIPMENT
CONTRACTOR Empire Soils
OPERATOR M. Gaudy
MAKE ____ MODEL ____
CAPACITY ____ C.Y. REACH ____ FT.

GROUND ELEV. ____
TIME STARTED 11:00 am
TIME COMPLETED 11:20 am

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Dark brown FILL; contains sand, gravel, silt, bricks, metal pipe fragments, wood beams	E		BG
1'	Black seam with obvious sheen and tar-like odor 2.5-4.0', also tar-like ooze	M		BG
2'	Water trickling in at 4.5'	E		150-
3'		E		200
4'		E		BG
5'		E		BG
6'	Test Pit Terminated at 6.0'.			
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Visible sheen, strong tar-like odor PID = 150-200 ppm

TEST PIT PLAN



NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-11
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

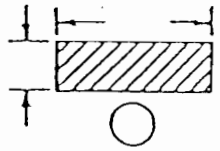
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 10:20
TIME COMPLETED: 10:50

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY.	BOULDER COUNT CLASS.	REMARK NO.
0'	Dark brown FILL; contains sand, gravel, bricks, concrete fragments, metal pipe fragments, wood, boulders	E			BG
1'		M			
2'	Large Metal Fragment Encountered pipe (approx. 3-4" dia.) at 2.5'. Black tar-like substance below pipe. Moved a few feet east and continued to excavate deeper. Pipe has N-S orientation. Encountered very large, steel pipe at 3.0' with E-W orientation. Large Pipe has diameter approx. 18". Black ooze seeping into test pit from about 4.0-4.5'. PID = 200+ppm on black ooze. Water seems to be mixed with black ooze. Opened pit on N & S sides of large pipe.				
3'					200+
4'					
5'					
6'					
7'					
8'	Test Pit Terminated at 8.0'.				
9'					
10'					
11'					
12'					
13'					
14'					

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY ——— E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ▽ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC.

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-12
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

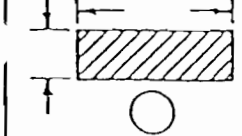
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 11:25 am
TIME COMPLETED: 11:45

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Dark brown FILL; contains sand, gravel, silt, boulders, concrete fragments, bricks	E		BG
1'				
2'	Contains black seam with obvious sheen and tar-like odor 2.5'-3.0', sandy consistency	M		BG
3'		M		5-10
4'	Test Pit Terminated at 3.5' due to water.			
5'	Water stabilized at 2.0'.			
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Contamination not as extensive (odor, vertical extent, PID) as TP-10 and TP-11
Sheen on water in test pit, tar-like odor.

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS) 12 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-13
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

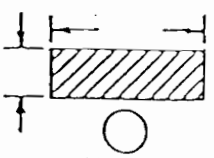
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 2:40 pm
TIME COMPLETED: 2:55 pm

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL; contains sand, gravel, silt, bricks, concrete fragments, wood	M		
1'		M		
2'	Water entering at 3.5'	M		3-5
3'	Material has petroleum-type sheen at 4.0' Tar-like odor, PID = 3-5 ppm	M		3-5
4'				
5'	Test Pit Terminated at 4.5'			
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Odor like Test Pit TP-11
Visible contamination (sheen and odor)

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION Phase II ESA
LOCATION BURA Site

TEST PIT NO. TP-14
FILE NO. BTA-92-060
DATE 3/6/92

ENGINEER D.R. Steiner
WEATHER P. Cloudy, Breezy 30's

EXCAVATION EQUIPMENT
CONTRACTOR Empire Soils
OPERATOR M. Gaudy
MAKE ____ MODEL ____
CAPACITY ____ C.Y. REACH ____ FT.

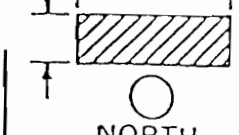
GROUND ELEV. ____
TIME STARTED 12:55 pm
TIME COMPLETED 1:10

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown-black FILL; contains sand, cinders, concrete fragments, large amount of brick	M		BG
1'	Water entering at 2.0', water stabilized at 1.7'.			
2'		M		BG
3'	Test Pit Terminated at 2.0' due to water.			
4'				
5'				
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

Very slight, spotty sheen on water in test pit.

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0-10%
LITTLE (LI.)	10-20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-15
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 1:10 pm
TIME COMPLETED: 1:20

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown and black FILL; contains sand, cinders, large amount of brick, also contains clayey silt. Material has very apparent petroleum sheen at approximately 3.0'	M		BG
1'				
2'	Water entering from 2 different levels, water stabilized at 2.0'. Water has obvious sheen	M		BG
3'		M		10-20
4'	Test Pit Terminated at 3.5'.			
5'				
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
Has diesel fuel-type odor

TEST PIT PLAN

NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC.

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-16
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

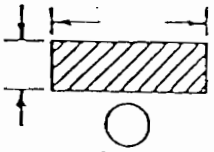
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 1:40 PM
TIME COMPLETED: 1:50 PM

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown and black FILL; contains sand, gravel, concrete fragments, bricks, boulders	M		BG
1'	Water at 1.7'	D		
2'				
3'	Test Pit Terminated at 2.8'.			
4'				
5'				
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC.

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO. TP-17
FILE NO. BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

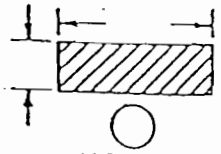
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 1:20 pm
TIME COMPLETED: 1:35

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown Soil FILL; contains clayey silt, sand, concrete fragments, large amount of bricks	E		BG
1'	Bricks and large concrete fragments (old foundations)	D		BG
2'	Test Pit Terminated at 2.0'.			
3'				
4'				
5'				
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
No visible contamination

TEST PIT PLAN



NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY ——— E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION Phase II ESA
LOCATION BURA Site

TEST PIT NO. TP-18
FILE NO. BTA-92-060
DATE 3/6/92

ENGINEER D.R. Steiner
WEATHER P. Cloudy, Breezy 30's

EXCAVATION EQUIPMENT
CONTRACTOR Empire Soils
OPERATOR M. Gaudy
MAKE _____ MODEL _____
CAPACITY _____ C.Y. REACH _____ FT.

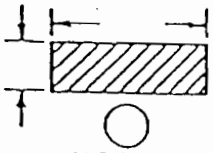
GROUND ELEV. _____
TIME STARTED 2:00 pm
TIME COMPLETED 2:20

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Dark brown FILL; contains sand, gravel, bricks,	E		BG
1'	boulders, cinders, clayey silt, wood	E		BG
2'	Black clayey silt seam and lense has PID=3-5 ppm	E		3-5
3'	Seam at 3.5', lense at 2.0'	E		3-5
4'	Top of Pipe at 3.0', Pipe diameter apprx. 16"			
5'	Water entering at 2.0'	E		BG
6'	Concrete "wall" E. of pipe, Top approx. 2.2' deep	E		BG
7'	Test Pit Terminated at 6.0'			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

Black material has tar odor, rest of soil/fill at BG.

TEST PIT PLAN



VOLUME = _____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ▽2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-19
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

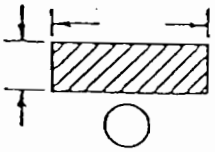
GROUND ELEV.: ____
TIME STARTED: 2:55 pm
TIME COMPLETED: 3:20

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Dark brown FILL; contains sand, clayey silt, bricks, concrete fragments	E		BG
1'		M		BG
2'	Light tan material with sandy silt consistency	E		BG
3'	Water entering at 3.0' Ash?	E		BG
4'		E		BG
5'	Dark grey clayey silt, little sand	E		BG
6'		E		BG
7'		E		BG
8'				
9'	Test Pit Terminated at 8.5'.			
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

No visible petroleum contamination observed

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY ——— E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-20
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

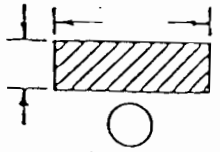
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 9:35 am
TIME COMPLETED: 9:50

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'–1'	Brown FILL; contains sand, gravel, clayey silt, bricks, metal pipe fragment	E		BG
1'–2'		D		BG
2'–3'	Asphaltic concrete pavement at 1.6' Black and gray fill, sandy silt consistency, wood,	E		BG
3'–4'	Water trickling into test pit at 3.6'	E		BG
4'–5'	Water level stabilized at approx. 2.5'	E		BG
5'–6'		E		BG
6'–7'	Test Pit Terminated at 6.0'.			
7'–8'				
8'–9'				
9'–10'				
10'–11'				
11'–12'				
12'–13'				
13'–14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-21
FILE NO.: BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

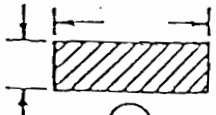
GROUND ELEV.: ____
TIME STARTED: 9:05 am
TIME COMPLETED: 9:20

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown, FILL; contains sand, gravel, clayey silt, boulders, bricks, pipe fragments (moist)	E		BG
1'				
2'	Asphaltic concrete pavement	M		BG
	Wood and soil fill	M		
3'				BG
4'	Gray, wet, sandy fill material, has petroleum odor, PID = 5+ ppm on stockpile. Sheen also seen on boulder. Water running in at 3.5'. Sheen on water in test pit.	E		5
5'		E		
	Test Pit terminated at 5.0'.			
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

No visible petroleum contamination or odor

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0-10%
LITTLE (LI.)	10-20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO. TP-22
FILE NO. BTA-92-060
DATE: 3/6/92

ENGINEER: D.R. Steiner
WEATHER: P. Cloudy, Breezy 30's

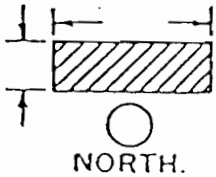
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 9:50
TIME COMPLETED: 10:15

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK NO.
0'	Brown FILL; contains sand, gravel, clayey silt, boulders, concrete fragments, slag	E		BG
1'		D		BG
2'	Asphaltic concrete pavement at 1.2'			BG
3'	2.7' - seam of hard, black materials with tar-like odor, has small gravel in it	M		BG-0.8
4'	Gray and black wet FILL with sandy silt consistency at 2-4'	M		
5'	3.5' Wood layer 4.0' Top of brick - cobblestone layer 4.4' Water entering under brick layer			
6'	Test Pit Terminated at 5.0'			
7'	Water stabilized at 3.4'			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm
No strong petroleum-odor or visible contamination. Other types of petroleum compounds (tar, cinders, etc.) may be present.

TEST PIT PLAN



NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY ——— E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION Phase II ESA
LOCATION BURA Site

TEST PIT NO. TP-23
FILE NO. BTA-92-060
DATE 3/6/92

ENGINEER D.R. Steiner
WEATHER P. Cloudy, Breezy 30's

EXCAVATION EQUIPMENT
CONTRACTOR Empire Soils
OPERATOR M. Gaudy
MAKE ____ MODEL ____
CAPACITY ____ C.Y. REACH ____ FT.

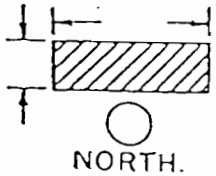
GROUND ELEV. ____
TIME STARTED 9:25
TIME COMPLETED 9:35

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS	REMARK NO.
0'	Brown FILL; contains sand, gravel, clayey silt, bricks, boulders, slag (mostly brown clayey silt)	E		BG
1'		E		BG
2'		E		BG
3'	Water trickling into test pit from north side at 3.7'	D		BG
4'	Test Pit Terminated Refusal at 4.0', seems to be concrete			
5'				
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

No visible evidence of petroleum contamination

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0-10%
LITTLE (LI.)	10-20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

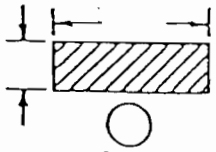
PROJECT		TEST PIT NO.	TP-24
DESCRIPTION	Phase II ESA	FILE NO.	BTA-92-060
LOCATION	BURA Site	DATE	3/25/92

	EXCAVATION EQUIPMENT		
ENGINEER D. Wartinger	CONTRACTOR Empire Soils	GROUND ELEV.	
	OPERATOR M. Gaudy	TIME STARTED	1:40
WEATHER Sunny, Breezy	MAKE ____ MODEL ____	TIME COMPLETED	2:00
	CAPACITY ____ C.Y. REACH ____ FT.		

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Black FILL, contains sand, silt, gravel, brick, wood, porous slag like material, concrete	E		BG
1'		M		BG
2'	Lt. brown sand seam	M		BG
3'		M		BG
4'	Running water, sheen on material being removed	M		BG
5'	6" clay tile pipe with running water Free standing water with sheen	M		BG
6'	Grey-brown sandy silt, tr. gravel (moist)	E		BG
7'	Test Pit terminated at 7.0'			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY ——— E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ▽ 12 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-25
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

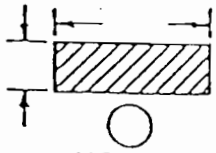
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 2:05
TIME COMPLETED: 2:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Black FILL; contains sand, gravel, boulder,			
1'	concrete, wood, brick, metal, asphalt	E		BG
2'		M		5-7
3'		M		5-7
4'	Seam of white material Running water with sheen, petroleum odor	M		--
5'	Silty sandy clay, tr. gravel, black seams	M		--
6'	Free standing water with sheen	M		--
7'		E		
8'	Test Pit Terminated at 7.0'.	E		
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 72 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION Phase II ESA
LOCATION BURA Site

TEST PIT NO. TP-26
FILE NO. BTA-92-060
DATE 3/25/92

ENGINEER D.Wartinger
WEATHER Sunny, Breezy

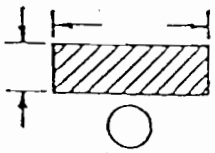
EXCAVATION EQUIPMENT
CONTRACTOR Empire Soils
OPERATOR M. Gaudy
MAKE ____ MODEL ____
CAPACITY ____ C.Y. REACH ____ FT.

GROUND ELEV. ____
TIME STARTED 2:35
TIME COMPLETED 2:45

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL; contains sand, gravel, brick, concrete, glass	E		BG
1'		M		5-7
2'	Becomes black, petrolum odor	M		5-7
3'		M		5-7
4'	Running water	M		--
5'	Free standing water with sheen	E		--
6'	Grey-brown Sandy-Silt, tr. gravel, black seams	E		--
7'	Test Pit Terminated at 7.0'.			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



NORTH.

VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) ____ G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-27
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy 30's

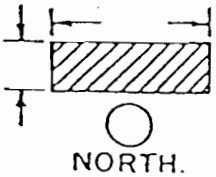
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 2:47
TIME COMPLETED: 2:55

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL; contains sand, brick, gravel, slag	D		BG
1'		D		BG
2'	Asphalt, Slag Contains white slag	M		BG
3'		M		BG
4'	Running water	M		BG
5'		M		BG
6'	Free standing water - no sheen noted Grey brown sandy silt, tr. gravel	E		BG
7'	Test Pit Terminated at 7.0'.			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY ——— E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO. TP-28
FILE NO. BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

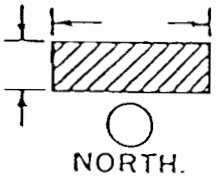
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV. ____
TIME STARTED: 3:00
TIME COMPLETED: 3:10

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Red-brown FILL; contains sand, silt, gravel, brick, concrete, glass	M		BG
1'		M		BG
2'	Becomes black	M		BG
3'		M		BG
4'	Running water - no sheen noted	E		BG
5'	Grey-brown Sandy-silt, tr. gravel	E		BG
6'	Test Pit Terminated at 6.0'.			
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20 - 35%
AND	35 - 50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

TEST PIT FIELD LOG

EMPIRE SOILS INVESTIGATIONS INC

PROJECT
DESCRIPTION: Phase II ESA
LOCATION: BURA Site

TEST PIT NO.: TP-29
FILE NO.: BTA-92-060
DATE: 3/25/92

ENGINEER: D. Wartinger
WEATHER: Sunny, Breezy

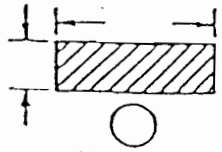
EXCAVATION EQUIPMENT
CONTRACTOR: Empire Soils
OPERATOR: M. Gaudy
MAKE: ____ MODEL: ____
CAPACITY: ____ C.Y. REACH: ____ FT.

GROUND ELEV.: ____
TIME STARTED: 3:10
TIME COMPLETED: 3:25

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK NO.
0'	Brown FILL; contains sand, brick, gravel, slag	D		BG
1'				
2'	Asphalt, Slag	D		BG
	Contains white slag	M		BG
3'		M		BG
4'	Running water	M		BG
5'	Free standing water - no sheen noted	M		BG
6'	Grey brown sandy silt, tr. gravel	E		BG
7'	Test Pit Terminated at 7.0'			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: PID = Photoionization Detector Readings (ppm)
Background (BG) PID = 0.2-0.6 ppm

TEST PIT PLAN



VOLUME = ____ C.Y.

LEGEND:

BOULDER COUNT

SIZE RANGE CLASSIFICATION	LETTER DESIGNATION
6"-18"	A
18"-36"	B
36" AND LARGER	C

PROPORTIONS USED

TRACE (TR.)	0 - 10%
LITTLE (LI.)	10 - 20%
SOME (SO.)	20-35%
AND	35-50%

ABBREVIATIONS

F - FINE
M - MEDIUM
C - COARSE
F/M - FINE TO MEDIUM
F/C - FINE TO COARSE
V - VERY
GR. - GRAY
BN. - BROWN
YEL. - YELLOW

EXCAVATION EFFORT

EASY — E
MODERATE — M
DIFFICULT — D

GROUNDWATER

ELAPSED TIME TO READING (HRS.) 2 G.W.L.

EMPIRE
SOILS INVESTIGATIONS INC.

APPENDIX D

GENERAL INFORMATION & KEY TO SUBSURFACE LOGS

The Subsurface Logs attached to this report present the observations and mechanical data collected by the driller at the site, supplemented by classification of the material removed from the borings as determined through visual identification by technicians in the laboratory. It is cautioned that the materials removed 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. The data presented on the Subsurface Logs together with the recovered samples will provide a basis for evaluating the character of the significance relative to each other. Often analyses of standard boring data indicate the need for additional testing or sampling procedures to more accurately evaluate the subsurface conditions. Any evaluation of the contents of this report and the recovered samples must be performed by Professionals. The information presented in the following defines some of the procedures and terms used on the Subsurface Logs to describe the conditions encountered.

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

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

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

4. Blows on Sampler - shows the results of the "Penetration Test", recording the number of blows required to drive a split spoon sampler into the soil. The number of blows required for each six inches of penetration is recorded. The first 6 inches of penetration is considered to be a seating drive. The number of blows required for the second and third 6 inches of penetration is termed the penetration resistance, N. The outside diameter of the sampler, the hammer weight and the length of drop are noted at the bottom of the Subsurface Log.

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

6. Symbol - Material symbol which indicates the type of soil that was encountered during classification of the recovered soil at the approximate depth. The symbol indicated represents an approximate boundary between soil types and the transition may be gradual.

7. All recovered soil samples are reviewed in the laboratory by an engineering technician, geologist, or geotechnical engineer, unless note otherwise. The visual descriptions are made on the basis of a combination of the driller's field descriptions and observations and the sample as received in the laboratory. The method of visual classification is based primarily on the United Soil Classification (ASTM D 2487-83) with regard to the particle size and plasticity. (See Table No. II) Additionally, the relative portion, by weight, of two or more soil types is 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 on Table No. IV. The description of the soil moisture is based upon the relative wetness of the soils as recovered and is described as dry, moist, wet and saturated. Water introduced in the boring either naturally or during drilling may have affected the moisture condition of the recovered sample. Special terms are used as required to describe materials in greater detail; several such terms are listed in Table V. When sampling gravelly oils with a standard two 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 samplers blows or through the "action" of the drill rig as reported by the driller.

8. The description of the rock shown 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. Solid stratification lines are based on the driller's field observations.

10. Miscellaneous observations and procedures noted by the driller are shown in this column, including water level observations. It is important to realize 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. One or more 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 observations wells.

11. The length of 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 pieces of NX core exceeding 4 inches in length divided by the core run. The size core barrel used is also noted.

DATE
STARTED: 5-7-91
FINISHED: 5-7-91

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

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

PROJECT: SAMPLE SUBSURFACE LOG
LOCATION:
PROJECT NO:
CLIENT:

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	6	10	1		FILL	
		2						1		WELL GRADED GRAVELS, GW	
										POORLY GRADED GRAVELS, GP	
5										SILTY GRAVELS, GM	Water encountered at 4.8 feet.
										CLAYEY GRAVELS, GC	
10										WELL GRADED SANDS, SW	
										POORLY GRADED SANDS, SP	
15										SILTY SAND, SM	
										CLAYEY SAND, SC	
										INORG. SILT AND VERY F. SAND, CLAYEY SILT WITH LOW PLASTICITY, ML	
20										INORG CLAYS, GRAVELLY CLAY, SANDY CLAY, SILTY CLAY, LEAN CLAY, CL	
										ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY, OL	
25										INORGANIC SILTS, MH	
										INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS, CH	
										ORGANIC CLAYS OF MED TO HIGH PLASTICITY, OH	
30										PEAT, Pt	
										SHALE	RUN: 32.0'-40.0' REC: 88% RQD: 66%
35										SANDSTONE	
										SILTSTONE	
40										LIMESTONE	

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

DRILLER:
DRILL RIG: CME - 45
METHOD OF INVESTIGATION: ASTM D-1586 Using Hollow Stem Augers
WEATHER: Sunny, 70 F
CLASSIFIED BY: By Geologist

DATE
STARTED: 3-30-92
FINISHED: 3-30-92

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG
BTA-92-060

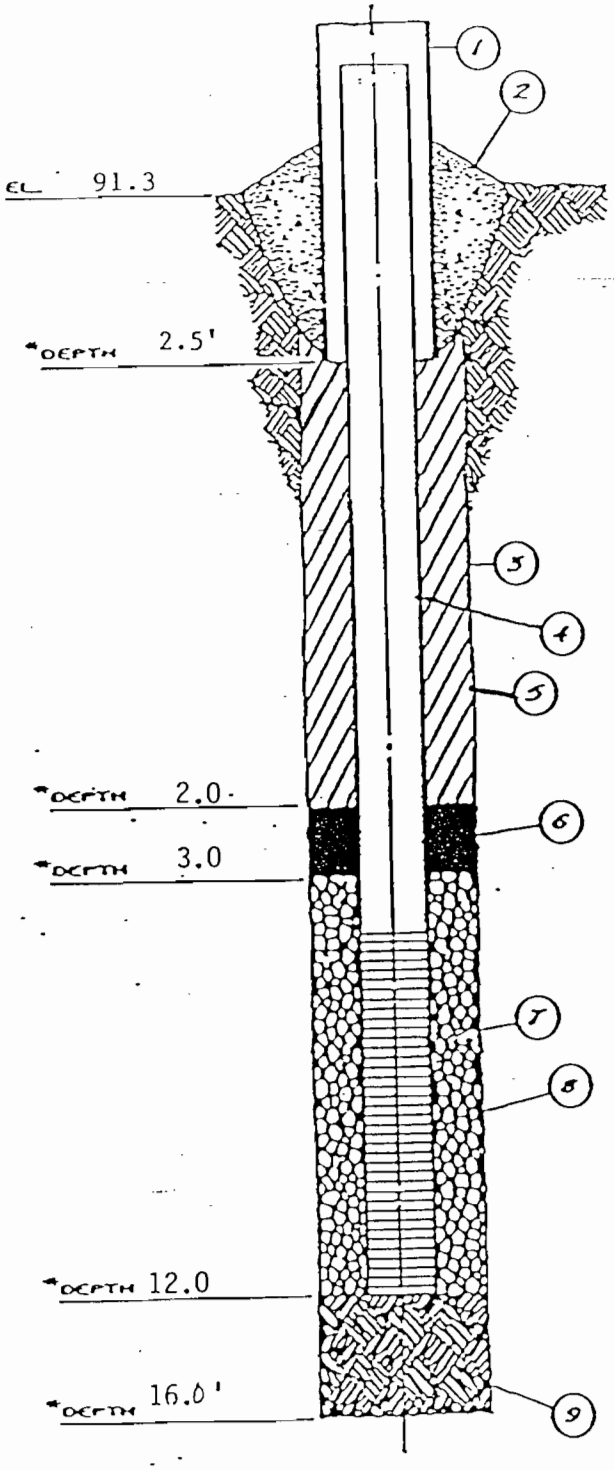
BORING NO.: MW-1
SURF. ELEV.: 91.3 ±
SHEET 1 OF 1

PROJECT: BURA-Phase II Environmental
LOCATION: Waterfront Redev. Project
CLIENT: BURA
Buffalo, NY

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	20	6	26	BG		TOPSOIL Black FILL, contains, tr. gravel, tr. sand, tr. silt, tr. slag, tr. concrete (moist, FILL) Contains Coal-tar odor	PID = Photoionization Detector readings (ppm) Background (BG) PID = 0.2-0.6ppm
		2	4	5	4	5	9	30			
		3	5	4	3	4	7	20		Contains viscous Tar-like material	
5		4	5	8	6	9	14	10		Gray-brown Sandy SILT, tr. gravel, tr. wood, black seams (moist, FILL)	
		5	4	13	7	9	20	20		Contains occasional Tar seams and orange seams	
10		6	6	14	14	14	28	3-5		Light brown Sandy SILT (wet, firm, ML)	
		7	12	13	16	16	29	0.4		Contains slight sheen	
		AUGER									
15		8	50/	.0			REF			Boring Complete with Sample Spoon refusal at 16.0'	Installed 2" PVC Monitoring Well
20											
25											

DRILLER: D. Beitz
DRILL RIG: CME-55
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: LT. SNOW, COLD
CLASSIFIED BY: D. Wartinger

MONITOR WELL COMPLETION REPORT



*Depth in feet below grade.

WELL Nº MW-1 JOB Nº BTA-92-060

PROJECT BURA-PHASE II
Buffalo, NY

1. PROTECTIVE CASING I.D. 4 INCHES.

2. SURFACE SEAL TYPE Portland Cement

3. BOREHOLE DIAMETER 8 INCHES.

4. RISER PIPE:
   a. Type Schedule 40 PVC
   b. I.D. 2 INCHES
   c. Length 5 FEET
   d. Joint Type Flush Threaded

5. BACKFILL:
   a. Type Portland Cement
   b. Installation Surface

6. Type of SEAL Bentonite Pellets

7. SCREEN
   a. Type Schedule 40 PVC
   b. I.D. 2 INCHES
   c. Slot Size 0.010 INCHES
   d. Length 8 FEET

8. SCREEN FILTER TYPE No. 1 Morie Sand

9. BACKFILL TYPE No. 1 Morie Sand

EMPIRE SOILS INVESTIGATIONS INC

DATE
STARTED: 3-31-92
FINISHED: 3-31-92

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

BTA-92-060

BORING NO.: MW-2
SURF. ELEV.: 91.2 ±
SHEET 1 OF 1

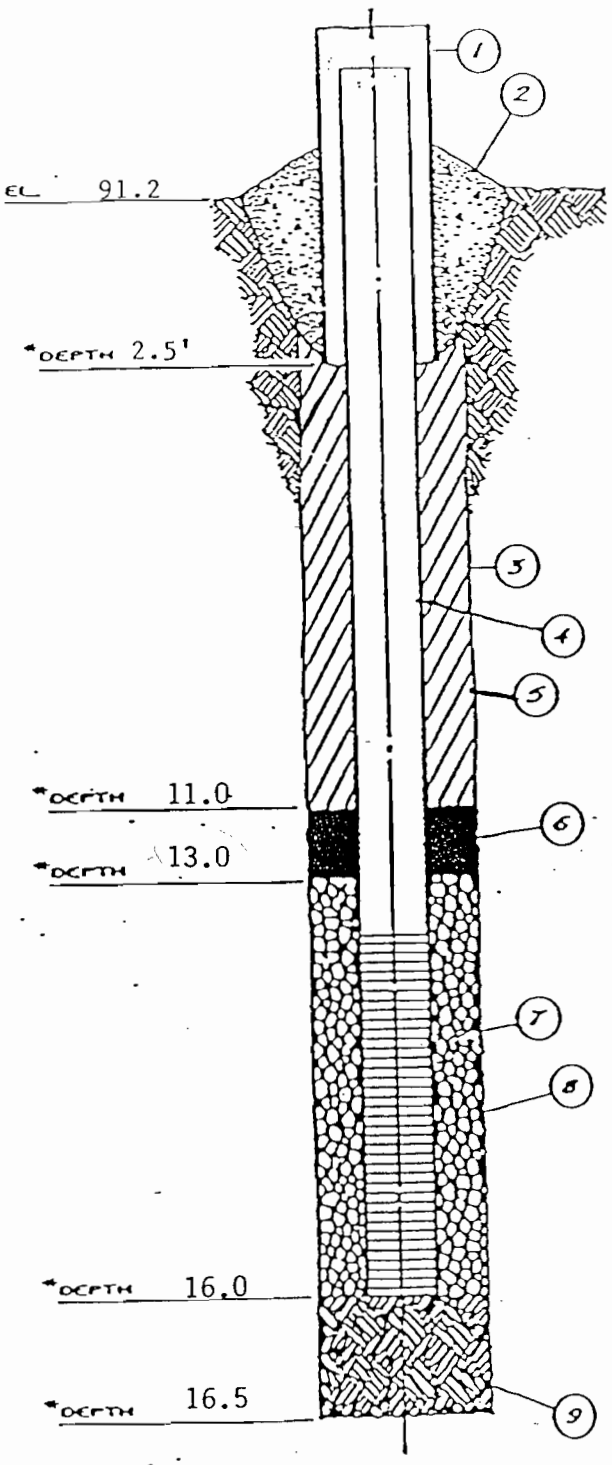
PROJECT: BURA-Phase II Environmental
CLIENT: BURA

LOCATION: Waterfront Redev. Project
Buffalo, NY

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	WR	1	1	1	2	6		Brown Silty CLAY, tr. gravel, tr. sand, tr. brick (moist, FILL)	PID = Photoionization Detector readings (ppm)
		2	2	1	1	1	2	25		Contains a sheen (wet)	Background (BG PID = 0.2-0.6ppm
		3	3	2	3	9	5	20		Becomes black, contains Tar-like material with Coal Tar odor	
5		4	11	3	4	3	7	15		Contains little wood	
		5	6	6	2	37	8	8		Contains Brick seam, visous black Tar	
10		6	26	11	13	19	24	8		Contains wood (6")	
			AUGER							Light brown Sandy SILT, tr. gravel, occasional black Tar inclusions (moist, ML)	Driller notes heavy sheen on water coming from Borehole
15		7	20	45	43	50/.05	98	1			
										Boring Complete with Sample Spoon refusal at 16.5'	Installed 2" PVC Monitoring Well
20											
25											

DRILLER: D. Beitz
DRILL RIG: CME-55
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: COLD, SUNNY
CLASSIFIED BY: D. Wartinger

MONITOR WELL COMPLETION REPORT



*Depth in feet below grade.

WELL Nº MW-2 JOB Nº BTA-92-060

PROJECT BURA-PHASE II
Buffalo, NY

1. PROTECTIVE CASING I.D. 4 INCHES.

2. SURFACE SEAL TYPE Portland Cement

3. BOREHOLE DIAMETER 8" INCHES.

4. RISER PIPE:
   a. Type Schedule 40 PVC
   b. I.D. 2 INCHES
   c. Length 14.2' FEET
   d. Joint Type Flush Threaded

5. BACKFILL:
   a. Type Portland Cement
   b. Installation Surface

6. Type of SEAL Bentonite Pellet

7. SCREEN
   a. Type Schedule 40 PVC
   b. I.D. 2 INCHES
   c. Slot Size 0.010 INCHES
   d. Length 2.5 FEET

8. SCREEN FILTER TYPE No. 1 Morie Sand

9. BACKFILL TYPE No. 1 Morie Sand

EMPIRE SOILS INVESTIGATIONS INC

DATE
STARTED: 3-31-92
FINISHED: 3-31-92

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG

BTA-92-060

BORING NO.: MW-3
SURF. ELEV.: 92.2 ±
SHEET 1 OF 1

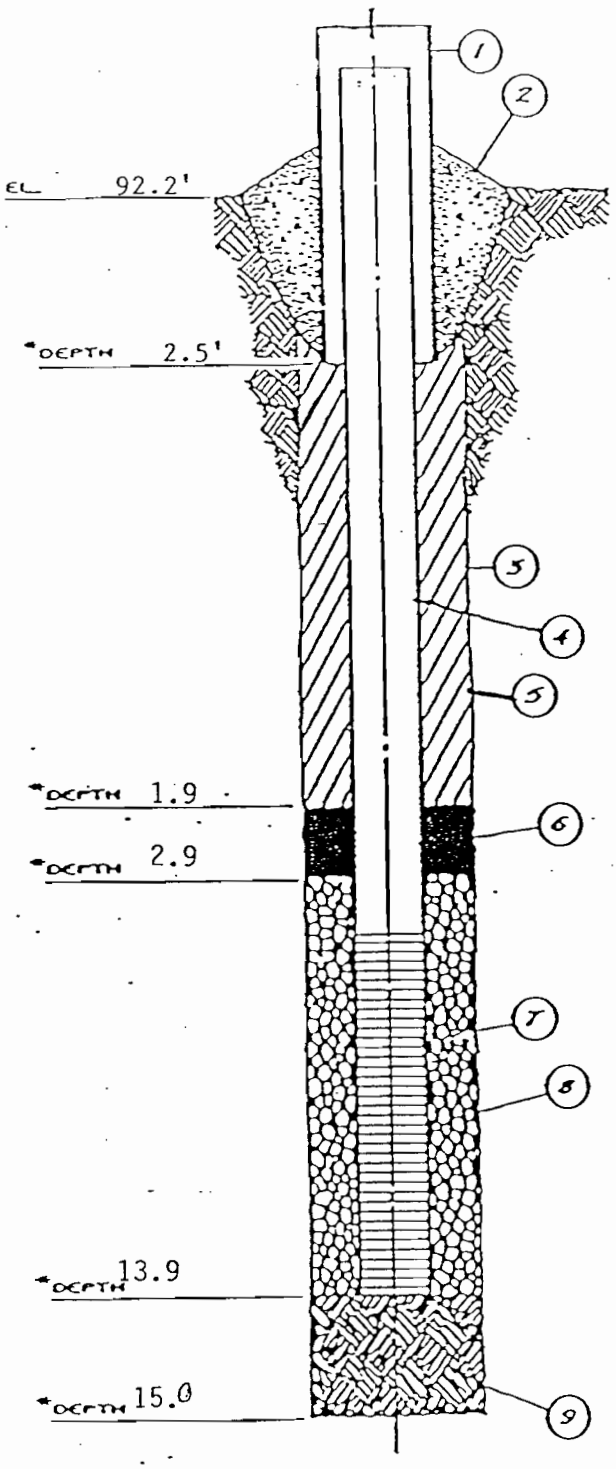
PROJECT: BURA-Phase II Environmental
CLIENT: BURA

LOCATION: Waterfront Redev. Project
Buffalo, NY

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	3	40	22	11	62	.6		Brown Silty CLAY, tr. gravel, tr brick, tr. sand (moist, FILL)	PID = Photionization Detector readings (ppm)
		2	3	1	2	1	3	1		Becomes black, contains tr. cinders. tr. slag, tr. wood	Background (BG) PID = 0.2-0.6ppm
		3	3	2	2	2	4	70		Contains seam White Sand (wet)	Driller notes free standing water inside Augers at approx. 6.0'
5		4	2	2	2	3	4	80		Contains black Tar-like material, Petroleum odor	
		5	3	6	5	8	11	2-5		Contains seam, of Green Sandy Silt	
10		6	3	6	7	7	13	1		Light brown Sandy SILT, tr. gravel, occasional black inclusions (moist, firm , ML)	
		AUGER									
		BG	13	22	15	21	37	7			
15										Boring Complete at 15.0'	Composite Soil Sample collected from Sample #S-3, S-4, and S-5 for Laboratory Chemical Analysis
											Installed 2" PVC Monitoring Well
20											
25											

DRILLER: D. Beitz
DRILL RIG: CME-55
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLOW STEM AUGERS
WEATHER: COLD, SUNNY
CLASSIFIED BY: D. Wartinger

MONITOR WELL COMPLETION REPORT



*Depth in feet below grade.

WELL Nº MW-3 JOB Nº BTA-92-060

PROJECT BURA-PHASE II

Buffalo, NY

1. PROTECTIVE CASING I.D. 4 INCHES.

2. SURFACE SEAL TYPE Portland Cement

3. BOREHOLE DIAMETER 8 INCHES.

4. RISER PIPE:
   - a. Type Schedule 40 PVC
   - b. I.D. 2 INCHES
   - c. Length 5.8 FEET
   - d. Joint Type Flush Threaded

5. BACKFILL:
   - a. Type Portland Cement
   - b. Installation Surface

6. Type of SEAL Bentonite Pellet

7. SCREEN
   - a. Type Schedule 40 PVC
   - b. I.D. 2 INCHES
   - c. Slot Size 0.010 INCHES
   - d. Length 10 FEET

8. SCREEN FILTER TYPE No.1 Morie Sand

9. BACKFILL TYPE No.1 Morie Sand

EMPIRE SOILS INVESTIGATIONS INC.

DATE
STARTED: 3-31-92
FINISHED: 3-31-92

EMPIRE
SOILS INVESTIGATIONS INC.

SUBSURFACE LOG
BTA-92-060

BORING NO.: MW-4
SURF. ELEV.: 93.5 ±
SHEET 1 OF 1

PROJECT: BURA-Phase II Environmental
CLIENT: BURA

LOCATION: Waterfront Redev. Project
Buffalo, NY

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	2	6	2	8	8	BG		Brown Silty CLAY, tr. brick, tr. slag, tr. sand, tr. gravel (moist, FILL)	PID = Photoionization Detector readings (ppm)
		2	7	6	8	6	14	BG		Contains tr. wood	Background (BG) PID = 0.2-0.6ppm
5		3	8	9	7	9	16	BG		Becomes gray-black	
		4	7	5	6	5	11	BG			
		5	6	7	7	16	14	BG		Light Brown Sandy SILT, tr. roots (moist, firm, ML)	
10		AUGER								(wet)	
		6	10	26	10	100/0.2	36	BG			
15										Boring Complete with Sample Spoon refusal at 14.8'	Installed 2" PVC Monitoring Well
20											
25											

DRILLER: D. Beitz
DRILL RIG: CME-55
METHOD OF INVESTIGATION: ASTM D-1586 USING HOLLOW STEM AUGERS
WEATHER: COLD, SUNNY
CLASSIFIED BY: D. Wartinger

EMPIRE
SOILS INVESTIGATIONS INC.

APPENDIX E

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER 92-462

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 S. PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-040-BURA

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105

MARCH 30, 1992

HAS

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER 92-462

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.

- NEW YORK STATE DEPARTMENT OF HEALTH, ANALYTICAL TOXICOLOGY LABORATORY HANDBOOK, AUGUST 1982.

Richard J. Ronan

RICHARD J. RONAN, PH.D. MARCH 30, 1992
LABORATORY DIRECTOR, ENVIRONMENTAL

REPORT CODE LEGEND:

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

HAS

HUNTINGTON ANALYTICAL SERVICES, INC.
ENVIRONMENTAL

Inorganic Wet Chemical Analyses

Sample Identification: TP-C1

HAS Sample #92-462-001

Date Sampled: 3/6/92

Analyte	EPA Method	Date Prepared	Date Analyzed	Method Detection Limit	Result	Units	QC in %
							<1***
pH	SW-846 9045	3/20/92	3/20/92	0.10	7.69	S. U.	95**
				Initial Temp.			
Flash Point	SW-846 1010	----	3/20/92	58	111	oF	101*
Reactivity	SW-846 Section 7.3						
Total Releasable Sulfide	9030	3/27/92	3/27/92	50	<50	mg/kg as H2S	96*
Total Releasable Cyanide	9010	3/27/92	3/27/92	50	<50	mg/kg as HCN	106*

* A known standard of the analyte of interest was analyzed along with this sample with the percent recovery indicated above.

** This indicates that a 95% confidence limit was achieved with an EPA Quality Control Check analyzed with this sample.

*** This sample was analyzed in duplicate with the RPD indicated above.

HUNTINGDON ANALYTICAL SERVICES - CHAIN-OF-CUSTODY RECORD AND ANALYTICAL REQUEST FORM — Page 1 of 1

Client Name: ESI-HAMBURG — Client Contact: DAVE STEINER — HAS Quote #:

Address: — Phone: 649-8110 — P.O. #:

Project No.: BTA-92-40 — Project/Site Name: BURA

Samplers (Signature): David R. Steiner — HAS Ref. #: 2162

Sample I.D.	Date	Time	Comp.	Grab	Sample Location	HAS Seq. #	MATRIX	# of Containers	Container Size & Type: 1-QT GLASS	Analysis Requested / Remarks
TP-C1	3-6	10:00	X	X		001	S	1	1	CORROSIVITY, REACTIVITY, IGNITABILITY
TP-C1(N)	3-6	10:30	X	X		002	S	1	1	VOLATILES & SEMI-VOLATILE
TP-C1(S)	3-6	11:45	X	X		003	S	1	1	VOLATILES & SEMI-VOLATILES

*DO NOT INCLUDE TAR @ BOTTOM OF JAR FOR TP-C1(N.

WE ARE INTERESTED IN CONTAMINAN CONCENTRATIONS IN THE SOIL.

Relinquished by:	Date/ Time:	Received by:	Relinquished by:	Date/ Time:	Received By:
David R. Steiner					
Relinquished by:	Date/ Time:	Received by:	Relinquished by:	Date/ Time:	Received By:
Relinquished by:	Date/ Time:	Received for Lab by:	Date/ Time:	Remarks:	

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER 92-501

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 S. PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-040, BURA

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105

APRIL 10, 1992

HAS

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER 92-501

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.

- NEW YORK STATE DEPARTMENT OF HEALTH, ANALYTICAL TOXICOLOGY LABORATORY HANDBOOK, AUGUST 1982.

Richard J. Ronan Jr me 4-10-92

RICHARD J. RONAN, PH.D. APRIL 10, 1992
LABORATORY DIRECTOR, ENVIRONMENTAL

REPORT CODE LEGEND:

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

HAS

HUNTINGDON ANALYTICAL SERVICES, INC.
ENVIRONMENTAL

Inorganic Wet Chemical Analyses

Sample Identification: TP-3A

HAS Sample #92-501-001

Date Sampled: 3/25/92

Analyte	EPA Method	Date Prepared	Date Analyzed	Method Detection Limit	Result	Units	QC in %
Corrosivity as pH	SW-846 9045	3/31/92	3/31/92	0.10	6.88	S. U.	95**
Flash Point	SW-846 1010	----	3/31/92	Initial Temp. 63	123	oF	3***
Reactivity	SW-846 Section 7.3						
Total Releasable Sulfide	9030	3/27/92	3/27/92	50	<50	mg/kg as H2S	96*
Total Releasable Cyanide	9010	3/27/92	3/27/92	50	<50	mg/kg as HCN	106*

* A known standard of the analyte of interest was analyzed along with this sample with the percent recovery indicated above.

** This indicates that a 95% confidence limit was achieved with an EPA Quality Control Check analyzed with this sample.

*** This sample was analyzed in duplicate with the RPD indicated above.

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8240
VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	TP-3B	TP-3C	METHOD BLANK	
HAS SAMPLE #92-501	002	003	---	
COMPOUND	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
CHLOROMETHANE	<1,300	<130,000	<1,300	<1,300
BROMOMETHANE	<1,300	<130,000	<1,300	<1,300
VINYL CHLORIDE	<1,300	<130,000	<1,300	<1,300
CHLOROETHANE	<1,300	<130,000	<1,300	<1,300
METHYLENE CHLORIDE	<630	<63,000	<630	<630
ACETONE	<1,300	<130,000	<1,300	<1,300
TRICHLOROFLUOROMETHANE	<1,300	<130,000	<1,300	<1,300
CARBON DISULFIDE	<630	<63,000	<630	<630
1,1-DICHLOROETHENE	<630	<63,000	<630	<630
1,1-DICHLOROETHANE	<630	<63,000	<630	<630
1,2-DICHLOROETHENE (TOTAL)	<630	<63,000	<630	<630
CHLOROFORM	<630	<63,000	<630	<630
1,2-DICHLOROETHANE	<630	<63,000	<630	<630
2-BUTANONE	<1,300	<130,000	<1,300	<1,300
1,1,1-TRICHLOROETHANE	<630	<63,000	<630	<630
CARBON TETRACHLORIDE	<630	<63,000	<630	<630
VINYL ACETATE	<1,300	<130,000	<1,300	<1,300
BROMODICHLOROMETHANE	<630	<63,000	<630	<630
1,2-DICHLOROPROPANE	<630	<63,000	<630	<630
cis-1,3-DICHLOROPROPENE	<630	<63,000	<630	<630
TRICHLOROETHENE	<630	<63,000	<630	<630
DIBROMOCHLOROMETHANE	<630	<63,000	<630	<630
1,1,2-TRICHLOROETHANE	<630	<63,000	<630	<630
BENZENE	1,400	3,300,000	<630	<630
trans-1,3-DICHLOROPROPENE	<630	<63,000	<630	<630
2-CHLOROETHYLVINYL ETHER	<2,500	<250,000	<2,500	<2,500
BROMOFORM	<630	<63,000	<630	<630
4-METHYL-2-PENTANONE	<1,300	<130,000	<1,300	<1,300
2-HEXANONE	<1,300	<130,000	<1,300	<1,300
TETRACHLOROETHENE	<630	<63,000	<630	<630
1,1,2,2-TETRACHLOROETHANE	<630	<63,000	<630	<630
TOLUENE	970	3,000,000	<630	<630
CHLOROBENZENE	<630	<63,000	<630	<630
ETHYL BENZENE	2,300	160,000	<630	<630
STYRENE	<630	550,000	<630	<630
XYLENE (TOTAL)	11,000	2,700,000	<630	<630
1,3-DICHLOROBENZENE	<1,300	<130,000	<1,300	<1,300
1,2-DICHLOROBENZENE	<1,300	<130,000	<1,300	<1,300
1,4-DICHLOROBENZENE	<1,300	<130,000	<1,300	<1,300
DATE SAMPLED:	3-25-92	3-25-92	---	
DATE RECEIVED:	3-27-92	3-27-92	---	
DATE ANALYZED:	4-8-92	4-8-92	4-8-92	

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	TP-3B	TP-3C	METHOD BLANK	
HAS SAMPLE #92-501-	002	003	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
ACENAPHTHENE	740,000	350,000	<330	<330
ACENAPHTHYLENE	29,000	2,900,000	<330	<330
ANTHRACENE	470,000	3,000,000	<330	<330
BENZO(a)ANTHRACENE	250,000	2,200,000	<330	<330
BENZO(b)FLUORANTHENE	140,000	1,200,000	<330	<330
BENZO(k)FLUORANTHENE	170,000	1,300,000	<330	<330
BENZO(a)PYRENE	190,000	1,700,000	<330	<330
BENZO(g,h,i)PERYLENE	57,000	680,000	<330	<330
BENZYL ALCOHOL	<17,000	<33,000	<330	<330
BIS(2-CHLOROETHOXY)METHANE	<17,000	<33,000	<330	<330
BIS(2-CHLOROETHYL)ETHER	<17,000	<33,000	<330	<330
BIS(2-CHLOROISOPROPYL)ETHER	<17,000	<33,000	<330	<330
BIS(2-ETHYLHEXYL)PHTHALATE	<17,000	<33,000	<330	<330
BUTYLBENZYL PHTHALATE	<17,000	<33,000	<330	<330
4-BROMOPHENYL-PHENYL ETHER	<17,000	<33,000	<330	<330
4-CHLOROANILINE	<17,000	<33,000	<330	<330
2-CHLORONAPHTHALENE	<17,000	<33,000	<330	<330
4-CHLOROPHENYL-PHENYL ETHER	<17,000	<33,000	<330	<330
CHRYSENE	190,000	2,100,000	<330	<330
DIBENZ(a,h)ANTHRACENE	14,000	160,000	<330	<330
DIBENZOFURAN	590,000	2,400,000	<330	<330
DI-N-BUTYLPHTHALATE	<17,000	<33,000	<330	<330
1,2-DICHLOROBENZENE	<17,000	<33,000	<330	<330
1,3-DICHLOROBENZENE	<17,000	<33,000	<330	<330
1,4-DICHLOROBENZENE	<17,000	<33,000	<330	<330
3,3-DICHLOROBENZIDINE	<33,000	<66,000	<660	<660
DIETHYL PHTHALATE	<17,000	<33,000	<330	<330
DIMETHYL PHTHALATE	<17,000	<33,000	<330	<330
2,4-DINITROTOLUENE	<17,000	<33,000	<330	<330
2,6-DINITROTOLUENE	<17,000	<33,000	<330	<330
DI-N-OCTYL PHTHALATE	<17,000	<33,000	<330	<330
FLUORANTHENE	1,100,000	5,700,000	<330	<330
FLUORENE	680,000	2,600,000	<330	<330
HEXACHLOROBENZENE	<17,000	<33,000	<330	<330
HEXACHLOROBUTADIENE	<17,000	<33,000	<330	<330
HEXACHLOROCYCLOPENTADIENE	<17,000	<33,000	<330	<330
HEXACHLOROETHANE	<17,000	<33,000	<330	<330
INDENO(1,2,3-cd)PYRENE	52,000	700,000	<330	<330

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	TP-3B	TP-3C	METHOD BLANK	
HAS SAMPLE #92-501-	002	003	---	
BASE/NEUTRAL COMPOUNDS	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
ISOPHORONE	<17,000	<33,000	<330	<330
2-METHYL NAPHTHALENE	660,000	3,800,000	<330	<330
NAPHTHALENE	2,000,000	12,000,000	<330	<330
2-NITROANILINE	<80,000	<160,000	<1,600	<1,600
3-NITROANILINE	<80,000	<160,000	<1,600	<1,600
4-NITROANILINE	<80,000	<160,000	<1,600	<1,600
NITROBENZENE	<17,000	<33,000	<330	<330
N-NITROSODIPHENYLAMINE	<33,000	<33,000	<330	<330
N-NITROS-DI-N-PROPYLAMINE	<17,000	<33,000	<330	<330
PHENANTHRENE	1,500,000	6,400,000	<330	<330
PYRENE	750,000	3,600,000	<330	<330
1,2,4-TRICHLOROBENZENE	<17,000	<33,000	<330	<330
ACID COMPOUNDS	RESULT ug/Kg	RESULT ug/Kg	RESULT ug/Kg	MDL ug/Kg
BENZOIC ACID	<80,000	<160,000	<1,600	<1,600
4-CHLORO-3-METHYLPHENOL	<17,000	<33,000	<330	<330
2-CHLOROPHENOL	<17,000	<33,000	<330	<330
2,4-DICHLOROPHENOL	<17,000	<33,000	<330	<330
2,4-DIMETHYL PHENOL	<17,000	820,000	<330	<330
2,4-DINITROPHENOL	<80,000	<160,000	<1,600	<1,600
4,6-DINITRO-2-METHYLPHENOL	<80,000	<160,000	<1,600	<1,600
2-METHYL PHENOL	<17,000	460,000	<330	<330
4-METHYL PHENOL	<17,000	1,300,000	<330	<330
2-NITROPHENOL	<17,000	<33,000	<330	<330
4-NITROPHENOL	<80,000	<160,000	<1,600	<1,600
PENTACHLOROPHENOL	<80,000	<160,000	<1,600	<1,600
PHENOL	<17,000	470,000	<330	<330
2,4,5-TRICHLOROPHENOL	<80,000	<160,000	<1,600	<1,600
2,4,6-TRICHLOROPHENOL	<17,000	<33,000	<330	<330
DATE SAMPLED:	3-25-92	3-25-92	-----	
DATE RECEIVED:	3-27-92	3-27-92	-----	
DATE EXTRACTED:	3-30-92	3-30-92	3-30-92	
DATE ANALYZED:	3-31-92	3-31-92	3-30-92	

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER 92-535

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 S. PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-060, BURA-PHASE II

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105

APRIL 29, 1992

HAS

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER 92-535

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.

- NEW YORK STATE DEPARTMENT OF HEALTH, ANALYTICAL TOXICOLOGY LABORATORY HANDBOOK, AUGUST 1982.

Richard J. Ronan

RICHARD J. RONAN, PH.D. APRIL 29, 1992
LABORATORY DIRECTOR, ENVIRONMENTAL

REPORT CODE LEGEND:

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

HAS

HUNTINGDON ANALYTICAL SERVICES, INC.
ENVIRONMENTAL

Inorganic Wet Chemical Analyses

Sample Identification: MW-5

HAS Sample #92-535-001

Date Sampled: 3/31/92

Analyte	EPA Method	Date Prepared	Date Analyzed	Method Detection Limit	Result	Units	QC in %
pH	SW-846 9045	4/6/92	4/6/92	0.10	7.30	S. U.	<1*** 95**
Flash Point	SW-846 1010	4/6/92	4/6/92	Initial Temp. 65	>160	oF	101*
Total Cyanide	SW-846 9010	4/8/92	4/8/92	1.0	2.3	mg/kg	16*** 96*
Reactivity	SW-846 Section 7.3						
Total Releasable Sulfide	9030	4/14/92	4/14/92	50	<50	mg/kg as H2S	94*
Total Releasable Cyanide	9010	4/14/92	4/14/92	50	<50	mg/kg as HCN	104*

* A known standard of the analyte of interest was analyzed along with this sample with the percent recovery indicated above.

** This indicates that a 95% confidence limit was achieved with an EPA Quality Control Check analyzed with this sample.

*** This sample was analyzed in duplicate with the RPD indicated above.

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: BTA-92-060 BURA--PHASE II MW-3
HAS Sample #92-0535-001
Date Sampled: 3/31/92

ANALYTE	EPA METHOD	EPA LIMITS	DATE ANALYZED	DETECTION LIMIT	RESULT mg/l	QC %REC	RPD
ARSENIC	6010	5.0 mg/l	4/14/92	0.50	<DL	*95	
BARIUM	6010	100 mg/l	4/14/92	0.10	0.54	*95	
CADMIUM	6010	1.0 mg/l	4/14/92	0.050	<DL	*95	
CHROMIUM	6010	5.0 mg/l	4/14/92	0.10	<DL	*95	
LEAD	6010	5.0 mg/l	4/14/92	0.40	0.52	*95	
MERCURY	7470	0.2 mg/l	4/28/92	0.0002	0.0029	*95	1.0
SELENIUM	6010	1.0 mg/l	4/14/92	0.60	<DL	*95	
SILVER	6010	5.0 mg/l	4/14/92	0.10	<DL	*95	

*THIS INDICATES A 95% CONFIDENCE LIMIT ACHIEVED WITH AN EPA QUALITY CONTROL SOLUTION ANALYZED ALONG WITH YOUR SAMPLE.

HUNTINGDON ANALYTICAL SERVICES

METALS ANALYSIS-TCLP DATA SHEET

Sample ID: TCLP B# 1
HAS Sample #92-0535-B#1
Date Sampled: NA

ANALYTE	EPA METHOD	EPA LIMITS	DATE ANALYZED	DETECTION LIMIT	RESULT mg/l	QC
ARSENIC	6010	5.0 mg/l	4/14/92	0.50	<DL	*95
BARIUM	6010	100 mg/l	4/14/92	0.10	<DL	*95
CADMIUM	6010	1.0 mg/l	4/14/92	0.050	<DL	*95
CHROMIUM	6010	5.0 mg/l	4/14/92	0.10	<DL	*95
LEAD	6010	5.0 mg/l	4/14/92	0.40	<DL	*95
MERCURY	7470	0.2 mg/l	4/28/92	0.0002	<DL	*95
SELENIUM	6010	1.0 mg/l	4/14/92	0.60	<DL	*95
SILVER	6010	5.0 mg/l	4/14/92	0.10	<DL	*95

*THIS INDICATES A 95% CONFIDENCE LIMIT ACHIEVED WITH AN EPA QUALITY CONTROL SOLUTION ANALYZED ALONG WITH YOUR SAMPLE.

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 608
TARGET COMPOUND LIST
TCLP EXTRACT

SAMPLE IDENTIFICATION :	METHOD BLANK	MW-3
HAS SAMPLE #92-535-	---	001
DATE ANALYZED:	4-13-92	4-13-92
COMPOUND	RESULT ug/L	RESULT ug/L
ALDRIN	<0.25	<0.25
A-BHC	<0.25	<0.25
B-BHC	<0.25	<0.25
D-BHC	<0.25	<0.25
G-BHC	<0.25	<0.25
CHLORDANE	<2.5	<2.5
4,4-DDD	<0.50	<0.50
4,4-DDE	<0.50	<0.50
4,4-DDT	<0.50	<0.50
DIELDRIN	<0.50	<0.50
ENDOSULFAN I	<0.25	<0.25
ENDOSULFAN II	<0.50	<0.50
ENDOSULFAN SULFATE	<0.50	<0.50
ENDRIN	<0.50	<0.50
ENDRIN ALDEHYDE	<0.50	<0.50
HEPTACHLOR	<0.25	<0.25
HEPTACHLOR EPOXIDE	<0.25	<0.25
TOXAPHENE	<5.0	<5.0
METHOXYCHLOR	<2.5	<2.5
ENDRIN KETONE	<0.50	<0.50
PCB-1016	<2.5	<2.5
PCB-1221	<2.5	<2.5
PCB-1232	<2.5	<2.5
PCB-1242	<2.5	<2.5
PCB-1248	<2.5	<2.5
PCB-1254	<5.0	<5.0
PCB-1260	<5.0	<5.0

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

EPA METHOD 624
TCLP VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	MW-3	METHOD BLANK	
HAS SAMPLE #92-535-	Ø01	---	
COMPOUND	RESULT ug/l	RESULT ug/l	MDL ug/l
CHLOROMETHANE	<5Ø	<5Ø	<5Ø
BROMOMETHANE	<5Ø	<5Ø	<5Ø
VINYL CHLORIDE	<5Ø	<5Ø	<5Ø
CHLOROETHANE	<5Ø	<5Ø	<5Ø
METHYLENE CHLORIDE	29 *	31 *	<25
ACETONE	73 *	56Ø *	<5Ø
TRICHLOROFLUOROMETHANE	<5Ø	<5Ø	<5Ø
CARBON DISULFIDE	<25	<25	<25
1,1-DICHLOROETHENE	<25	<25	<25
1,1-DICHLOROETHANE	<25	<25	<25
1,2-DICHLOROETHENE (TOTAL)	<25	<25	<25
CHLOROFORM	<25	<25	<25
1,2-DICHLOROETHANE	<25	<25	<25
2-BUTANONE	<5Ø	<5Ø	<5Ø
1,1,1-TRICHLOROETHANE	<25	<25	<25
CARBON TETRACHLORIDE	<25	<25	<25
VINYL ACETATE	<5Ø	<5Ø	<5Ø
BROMODICHLOROMETHANE	<25	<25	<25
1,2-DICHLOROPROPANE	<25	<25	<25
cis-1,3-DICHLOROPROPENE	<25	<25	<25
TRICHLOROETHENE	<25	<25	<25
DIBROMOCHLOROMETHANE	<25	<25	<25
1,1,2-TRICHLOROETHANE	<25	<25	<25
BENZENE	<25	<25	<25
trans-1,3-DICHLOROPROPENE	<25	<25	<25
2-CHLOROETHYLVINYL ETHER	<1ØØ	<1ØØ	<1ØØ
BROMOFORM	<25	<25	<25
4-METHYL-2-PENTANONE	<5Ø	<5Ø	<5Ø
2-HEXANONE	<5Ø	<5Ø	<5Ø
TETRACHLOROETHENE	<25	<25	<25
1,1,2,2-TETRACHLOROETHANE	<25	<25	<25
TOLUENE	<25	<25	<25
CHLOROBENZENE	<25	<25	<25
ETHYL BENZENE	<25	<25	<25
STYRENE	<25	<25	<25
XYLENE (TOTAL)	<25	<25	<25
1,3-DICHLOROBENZENE	<5Ø	<5Ø	<5Ø
1,2-DICHLOROBENZENE	<5Ø	<5Ø	<5Ø
1,4-DICHLOROBENZENE	<5Ø	<5Ø	<5Ø
DATE SAMPLED:	3-31-92	---	
DATE RECEIVED:	4-1-92	---	
TCLP DATE:	4-7-92	4-7-92	
DATE ANALYZED:	4-9-92	4-9-92	

* LABORATORY BACKGROUND

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

TCLP EXTRACTION/METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	MW-3	METHOD BLANK	
HAS SAMPLE #92-535-	001	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	MDL ug/L
ACENAPHTHENE	<50	<50	<50
ACENAPHTHYLENE	<50	<50	<50
ANTHRACENE	<50	<50	<50
BENZO(a)ANTHRACENE	<50	<50	<50
BENZO(b)FLUORANTHENE	<50	<50	<50
BENZO(k)FLUORANTHENE	<50	<50	<50
BENZO(a)PYRENE	<50	<50	<50
BENZO(g,h,i)PERYLENE	<50	<50	<50
BENZYL ALCOHOL	<50	<50	<50
BIS(2-CHLOROETHOXY)METHANE	<50	<50	<50
BIS(2-CHLOROETHYL)ETHER	<50	<50	<50
BIS(2-CHLOROISOPROPYL)ETHER	<50	<50	<50
BIS(2-ETHYLHEXYL)PHTHALATE	<50	<50	<50
BUTYLBENZYL PHTHALATE	<50	<50	<50
4-BROMOPHENYL-PHENYL ETHER	<50	<50	<50
4-CHLOROANILINE	<50	<50	<50
2-CHLORONAPHTHALENE	<50	<50	<50
4-CHLOROPHENYL-PHENYL ETHER	<50	<50	<50
CHRYSENE	<50	<50	<50
DIBENZ(a,h)ANTHRACENE	<50	<50	<50
DIBENZOFURAN	<50	<50	<50
DI-N-BUTYLPHTHALATE	<50	<50	<50
1,2-DICHLOROBENZENE	<50	<50	<50
1,3-DICHLOROBENZENE	<50	<50	<50
1,4-DICHLOROBENZENE	<50	<50	<50
3,3-DICHLOROBENZIDINE	<100	<100	<100
DIETHYL PHTHALATE	<50	<50	<50
DIMETHYL PHTHALATE	<50	<50	<50
2,4-DINITROTOLUENE	<50	<50	<50
2,6-DINITROTOLUENE	<50	<50	<50
DI-N-OCTYL PHTHALATE	<50	<50	<50
FLUORANTHENE	<50	<50	<50
FLUORENE	<50	<50	<50
HEXACHLOROBENZENE	<50	<50	<50
HEXACHLOROBUTADIENE	<50	<50	<50
HEXACHLOROCYCLOPENTADIENE	<50	<50	<50
HEXACHLOROETHANE	<50	<50	<50
INDENO(1,2,3-cd)PYRENE	<50	<50	<50

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

TCLP EXTRACTION/METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	MW-3	METHOD BLANK	
HAS SAMPLE #92-535-	001	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	MDL ug/L
ISOPHORONE	<50	<50	<50
2-METHYL NAPHTHALENE	<50	<50	<50
NAPHTHALENE	<50	<50	<50
2-NITROANILINE	<250	<250	<250
3-NITROANILINE	<250	<250	<250
4-NITROANILINE	<250	<250	<250
NITROBENZENE	<50	<50	<50
N-NITROSODIPHENYLAMINE	<50	<50	<50
N-NITROS-DI-N-PROPYLAMINE	<50	<50	<50
PHENANTHRENE	<50	<50	<50
PYRENE	<50	<50	<50
1,2,4-TRICHLOROBENZENE	<50	<50	<50
ACID COMPOUNDS	RESULT ug/l	RESULT ug/l	MDL ug/l
BENZOIC ACID	<250	<250	<250
4-CHLORO-3-METHYLPHENOL	<50	<50	<50
2-CHLOROPHENOL	<50	<50	<50
2,4-DICHLOROPHENOL	<50	<50	<50
2,4-DIMETHYL PHENOL	<50	<50	<50
2,4-DINITROPHENOL	<250	<250	<250
4,6-DINITRO-2-METHYLPHENOL	<250	<250	<250
2-METHYL PHENOL	<50	<50	<50
4-METHYL PHENOL	<50	<50	<50
2-NITROPHENOL	<50	<50	<50
4-NITROPHENOL	<250	<250	<250
PENTACHLOROPHENOL	<250	<250	<250
PHENOL	<50	<50	<50
2,4,5-TRICHLOROPHENOL	<250	<250	<250
2,4,6-TRICHLOROPHENOL	<50	<50	<50
DATE SAMPLED:	3-31-92	-----	
DATE RECEIVED:	4-1-92	-----	
TCLP DATE:	4-7-92	4-7-92	
DATE EXTRACTED:	4-9-92	4-9-92	
DATE ANALYZED:	4-9-92	4-9-92	

ENVIRONMENTAL ANALYTICAL SERVICES · CHAIN-OF-CUSTODY RECORD & ANALYTICAL REQUEST FORM

Client Name: Empire Soils | Client Contact: DAVE STEINER | NAS Quote #:

Address: (HAMBURG) | Phone: (716) 641-8110 | P.O. #:

Project No.:	Project/Site Name:	Matrix	# of Containers	Container Size & Type	Analysis Requested/ Remarks
BTH-92-060	BURN - PHASE II				
Samplers (Signature): Don W	NAS Ref. #90-12 535				

Sample I.D.	Date	Time	Comp.	Grab	Sample Location	NAS Seq. #	Matrix	# of Containers	950 ml Glass	125 ml Glass	Analysis Requested/ Remarks
MW-3	3/31/92	12:15	X		MW-3	001	S	3	1	2	950 mL - Reactivity, Corrosivity, Ignitability, TCL PCB's (method 8080), Full TCL except volatiles (TCLP Procedure); 125 mL - Full TCL Volatiles (TCLP Procedure); XX Analyze only one 125 ml sample

Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
Don W	3-31-92 1500	ESI Cooler	ESI Cooler	4/1/92 810	Joyce D. Strand
Joyce D. Strand	4/1/92				

4/1/92 3:30

ENVIRONMENTAL ANALYTICAL REPORT

REPORT NUMBER 92-558

PREPARED FOR:

EMPIRE SOILS INVESTIGATIONS, INC.
S-5167 S. PARK AVENUE
HAMBURG, NEW YORK 14075

RE: BTA-92-060, BURA - PHASE II

PREPARED BY:

HUNTINGDON ANALYTICAL SERVICES
DIVISION OF EMPIRE SOILS INVESTIGATIONS, INC.
P.O. BOX 250
MIDDLEPORT, NEW YORK 14105

APRIL 21, 1992

HAS

HUNTINGDON ANALYTICAL SERVICES
ELAP #10833
ENVIRONMENTAL REPORT

REPORT NUMBER 92-558

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.

- NEW YORK STATE DEPARTMENT OF HEALTH, ANALYTICAL TOXICOLOGY LABORATORY HANDBOOK, AUGUST 1982.

Douglas L. Hulland 4/21/92 for RR

RICHARD J. RONAN, PH.D. APRIL 21, 1992
LABORATORY DIRECTOR, ENVIRONMENTAL

REPORT CODE LEGEND:

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

HAS

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD DOH 310-13
PETROLEUM PRODUCTS IN WATER

SAMPLE IDENTIFICATION :	METHOD BLANK	MW-1	MW-2	MW-3	MW-4
HAS SAMPLE #92-558-	---	001	002	003	004
DATE ANALYZED:	4-10-92	4-10-92	4-10-92	4-10-92	4-10-92
COMPOUND	RESULT ug/L	RESULT * ug/L	RESULT * ug/L	RESULT * ug/L	RESULT ug/L
GASOLINE ----------	ND	ND	ND	ND	ND
KEROSENE ----------	<100	<5000	<5000	<500	<100
FUEL OILS ----------	<100	<5000	<5000	<1000	<100
LUBE OIL ----------	ND	ND	ND	ND	ND

ND = NONE DETECTED

* ELEVATED DETECTION LIMITS NECESSITATED BY HIGH LEVELS OF PAH'S.
SEE 8270 ANALYSIS.

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 602
PURGEABLE AROMATICS

SAMPLE IDENTIFICATION :	METHOD BLANK	MW-1	MW-2	MW-3	MW-4
HAS SAMPLE #92-558-	-----	001	002	003	004
COMPOUND	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l
BENZENE ----------	<0.50	16,000	21,000	86	<0.50
TOLUENE ----------	<0.50	3,700	5,800	<5.0	<0.50
ETHYL BENZENE ----------	<0.50	<500	<500	<5.0	0.59
TOTAL XYLENES ----------	<1.0	1,100	1,100	<10	1.4
CHLOROBENZENE ----------	<0.50	<500	<500	<5.0	<0.50
1,4-DICHLOROBENZENE ---	<0.50	<500	<500	<5.0	<0.50
1,3-DICHLOROBENZENE ---	<0.50	<500	<500	<5.0	<0.50
1,2-DICHLOROBENZENE ---	<1.0	<1,000	<1,000	<10	<1.0
DATE SAMPLED:	-----	4-2-92	4-2-92	4-2-92	4-2-92
DATE RECEIVED:	-----	4-6-92	4-6-92	4-6-92	4-6-92
DATE EXTRACTED:	4-11-92	4-11-92	4-11-92	4-11-92	4-10-92
DATE ANALYZED:	4-11-92	4-11-92	4-11-92	4-11-92	4-10-92

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	MW-1	MW-2	MW-3	MW-4	METHOD BLANK	
HAS SAMPLE #92-558-	001	002	003	004	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
ACENAPHTHENE	73	41	17	<10	<10	<10
ACENAPHTHYLENE	120	250	<10	<10	<10	<10
ANTHRACENE	10	25	<10	<10	<10	<10
BENZO(a)ANTHRACENE	<10	<10	<10	<10	<10	<10
BENZO(b)FLUORANTHENE	<10	<10	<10	<10	<10	<10
BENZO(k)FLUORANTHENE	<10	<10	<10	<10	<10	<10
BENZO(a)PYRENE	<10	<10	<10	<10	<10	<10
BENZO(g,h,i)PERYLENE	<10	<10	<10	<10	<10	<10
BENZYL ALCOHOL	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROETHOXY)METHANE	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROETHYL)ETHER	<10	<10	<10	<10	<10	<10
BIS(2-CHLOROISOPROPYL)ETHER	<10	<10	<10	<10	<10	<10
BIS(2-ETHYLHEXYL)PHTHALATE	<10	<10	<10	<10	<10	<10
BUTYLBENZYL PHTHALATE	<10	<10	<10	<10	<10	<10
4-BROMOPHENYL-PHENYL ETHER	<10	<10	<10	<10	<10	<10
4-CHLOROANILINE	<10	<10	<10	<10	<10	<10
2-CHLORONAPHTHALENE	<10	<10	<10	<10	<10	<10
4-CHLOROPHENYL-PHENYL ETHER	<10	<10	<10	<10	<10	<10
CHRYSENE	<10	<10	<10	<10	<10	<10
DIBENZ(a,h)ANTHRACENE	<10	<10	<10	<10	<10	<10
DIBENZOFURAN	47	82	<10	<10	<10	<10
DI-N-BUTYLPHTHALATE	<10	<10	<10	<10	<10	<10
1,2-DICHLOROBENZENE	<10	<10	<10	<10	<10	<10
1,3-DICHLOROBENZENE	<10	<10	<10	<10	<10	<10
1,4-DICHLOROBENZENE	<10	<10	<10	<10	<10	<10
3,3-DICHLOROBENZIDINE	<20	<20	<20	<20	<20	<20
DIETHYL PHTHALATE	12	<10	<10	<10	<10	<10
DIMETHYL PHTHALATE	<10	<10	<10	<10	<10	<10
2,4-DINITROTOLUENE	<10	<10	<10	<10	<10	<10
2,6-DINITROTOLUENE	<10	<10	<10	<10	<10	<10
DI-N-OCTYL PHTHALATE	<10	<10	<10	<10	<10	<10
FLUORANTHENE	<10	15	<10	<10	<10	<10
FLUORENE	40	72	12	<10	<10	<10
HEXACHLOROBENZENE	<10	<10	<10	<10	<10	<10
HEXACHLOROBUTADIENE	<10	<10	<10	<10	<10	<10
HEXACHLOROCYCLOPENTADIENE	<10	<10	<10	<10	<10	<10
HEXACHLOROETHANE	<10	<10	<10	<10	<10	<10
INDENO(1,2,3-cd)PYRENE	<10	<10	<10	<10	<10	<10

HUNTINGDON ANALYTICAL SERVICES
ENVIRONMENTAL

METHOD 8270
SEMI-VOLATILE ORGANICS

SAMPLE IDENTIFICATION :	MW-1	MW-2	MW-3	MW-4	METHOD BLANK	
HAS SAMPLE #92-558-	001	002	003	004	----	
BASE/NEUTRAL COMPOUNDS	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	RESULT ug/L	MDL ug/L
ISOPHORONE	<10	<10	<10	<10	<10	<10
2-METHYL NAPHTHALENE	530	640	<10	<10	<10	<10
NAPHTHALENE	5,200	6,500	<10	<10	<10	<10
2-NITROANILINE	<50	<50	<50	<50	<50	<50
3-NITROANILINE	<50	<50	<50	<50	<50	<50
4-NITROANILINE	<50	<50	<50	<50	<50	<50
NITROBENZENE	<10	<10	<10	<10	<10	<10
N-NITROSODIPHENYLAMINE	<10	<10	<10	<10	<10	<10
N-NITROS-DI-N-PROPYLAMINE	<10	<10	<10	<10	<10	<10
PHENANTHRENE	39	81	<10	<10	<10	<10
PYRENE	<10	<10	<10	<10	<10	<10
1,2,4-TRICHLOROBENZENE	<10	<10	<10	<10	<10	<10
ACID COMPOUNDS	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l	RESULT ug/l	MDL ug/l
BENZOIC ACID	<50	<50	<50	<50	<50	<50
4-CHLORO-3-METHYLPHENOL	<10	<10	<10	<10	<10	<10
2-CHLOROPHENOL	<10	<10	<10	<10	<10	<10
2,4-DICHLOROPHENOL	<10	<10	<10	<10	<10	<10
2,4-DIMETHYL PHENOL	13,000	21,000	<10	<10	<10	<10
2,4-DINITROPHENOL	<50	<50	<50	<50	<50	<50
4,6-DINITRO-2-METHYLPHENOL	<50	<50	<50	<50	<50	<50
2-METHYL PHENOL	13,000	20,000	<10	<10	<10	<10
4-METHYL PHENOL	28,000	46,000	<10	<10	<10	<10
2-NITROPHENOL	<10	<10	<10	<10	<10	<10
4-NITROPHENOL	<50	<50	<50	<50	<50	<50
PENTACHLOROPHENOL	<50	<50	<50	<50	<50	<50
PHENOL	17,000	27,000	<10	<10	<10	<10
2,4,5-TRICHLOROPHENOL	<50	<50	<50	<50	<50	<50
2,4,6-TRICHLOROPHENOL	<10	<10	<10	<10	<10	<10
DATE SAMPLED:	4-2-92	4-2-92	4-2-92	4-2-92	-----	
DATE RECEIVED:	4-6-92	4-6-92	4-6-92	4-6-92	-----	
DATE EXTRACTED:	4-8-92	4-8-92	4-8-92	4-8-92	4-8-92	
DATE ANALYZED:	4-9-92	4-9-92	4-9-92	4-9-92	4-8-92	

[illegible] ANALYTICAL SERVICES - CHAIN-OF-CUSTODY RECORD and ANALYTICAL REQUEST FORM

Client Name: Empire Soils | Client Contact: DAVE STEINER | KAS Quote #:

Address: HAMBURG | Phone: 644-8110 | P.O. #:

Project No.: BTA-92-060 | Project/Site Name: BURA - PHASE II

Samplers (Signature): Dan Wall | KAS Ref. #: 5408

Sample I.D.	Date	Time	Comp.	Grab	Sample Location	KAS #	Matrix	# of Containers	Container Size & Type: 1/2 gal Glass	40 mL Glass			Analysis Requested / Remarks
MW-1	9/2/92	3:40		X	MW-1	001	W	4	2	2			TPH method DOH 310-13; TCL semi-volatiles EPA 8270; Purgeable Aromatics EPA 8020
MW-2		4:00		X	MW-2	002	W	4	2	2			" " "
MW-3		3:55		X	MW-3	003	W	4	2	2			" " "
MW-4		3:15		X	MW-4	004	W	4	2	2			" " "

Relinquished by:	Date/Time	Received by:	Relinquished by:	Date/Time	Received by:
Dan Wall	9-2-92 500	ESI Cooler	ESI Cooler	9/4/92 700	Carol Howenstein
Carol Howenstein	9/7/92 8a.m.				

9/7/92 RJS

DEPARTMENT OF

INSPECTIONS and COMMUNITY REVITALIZATION

OFFICE OF THE COMMISSIONER

RE: WATERFRONT REDEVELOPMENT PROJECT PARCELS 17A, 23 and 24

Date March 15, 1993

Referred to: *SEE BELOW

- ☐ FOR YOUR ATTENTION
- ☒ FOR YOUR INFORMATION
- ☐ FOR YOUR FILES
- ☐ PLEASE ANSWER DIRECT STATING THAT YOU ARE ANSWERING FOR THIS OFFICE
- ☐ PLEASE SEND COPY OF REPLY TO THIS OFFICE
- ☐ PLEASE ADVISE ME
- ☐ PLEASE PREPARE REPLY FOR MY SIGNATURE
- ☐ PLEASE INVESTIGATE AND REPORT TO ME
- ☐ PLEASE INVESTIGATE AND REPORT TO COMPLAINANT
- ☐ FOR CENTRAL FILING

REMARKS:

JOSEPH V. SCHOLLARD, COMMISSIONER

JVS:bm
Enc.
*Hon. James Pitts
Commissioner Sam Iraci
Kenneth Anderhalt