REPORT ON ENVIRONMENTAL TESTING AT THE NEW BUFFALO INDUSTRIAL PARK SITE

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January 1986

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January 3, 1985
File: R5669

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

Attention: Mr. James R. Militello
Vice Chairman

Re: Environmental Testing at the New Buffalo Industrial Park Site

Gentlemen:

In accordance with our proposal, we are pleased to submit this final report of our findings for the above referenced work.

We appreciate the opportunity to work with you on this project and look forward to being of continued service.

Very truly yours,

GOLDBERG-ZOINO ASSOCIATES OF N.Y., P.C.

Raymond L. Kampff
Project Manager

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IGR:kf
Enclosures

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1.00 INTRODUCTION

This report presents the findings of recent environmental studies by Goldberg-Zoino Associates of New York, P.C. (GZA) at the proposed New Buffalo Industrial Park (NBIP) site. These environmental studies were done to supplement and expand previous studies done by GZA in 1983. GZA, acting as a subconsultant to Olson & Terzian, P.C., completed all work under the authorization of the Buffalo Urban Renewal Agency (BURA). BURA currently owns the majority of the site and plans infra-structure construction for subsequent light industrial and commercial development by future owners.

1.10 Background

The findings of GZA's 1983 studies are summarized in a report entitled "Geotechnical/Geohydrological Considerations for the New Buffalo Industrial Park". That report identified various isolated waste deposits within the heterogenous fills found at the site with an indication that ground water may have been adversely affected by these wastes. Subsequent to GZA's preliminary work the New York State Department of Environmental Conservation (DEC) listed the site as a priority code 2a in their October 1983 "Inactive Hazardous Waste Disposal Site Report". The 2a classification is a temporary ranking indicating that additional testing is required to make a determination of the site's hazard potential and assign a final ranking.

A primary purpose of GZA's studies was to supplement and expand upon earlier work so as to provide the DEC with data to update their classification for the NBIP site. Prior to field work GZA submitted to DEC, for approval, a work plan outlining sampling locations and test parameters. Additionally a DEC representative was on-site to observe GZA's field work and collect split samples for duplicate analysis.

1.20 Site History and Conditions

The NBIP site is located on an approximately 135 acre tract of land near the eastern boundary of the City of Buffalo, New York. The site is generally bounded by William Street to the north, South Ogden Street to the east, Dingens Street to the south and Bailey Avenue to the west. A project locus map is presented as Figure 1.

As indicated by GZA's preliminary studies much of the NBIP site was previously used as a railroad yard with switching and car maintenance facilities. Several small industries, such as a lumber yard in the northwest corner of the site, were located adjacent to the railroad lines. The central portion of the site (near the current ponded water) was apparently open lands throughout much of the site's history.

Landfilling has been common to most areas of the site, particularly the central portion. Heterogeneous fills including; soil fills, construction debris, rubbish, and suspected industrial wastes were determined during GZA's subsurface explorations. Based upon the review of historical aerial photographs much of this landfilling occurred between the 1920s and 1950s, when the site was dominated by the railroads.

Currently the site is unoccupied and it contains several vacant structures including:

1. the former A & R waste building and several smaller storage buildings near the Niagara Mohawk Power Corporation (NMPC) substation on Bailey Avenue;

2. the former Kintex Building on Dingens Street; and

3. a former railroad embankment bisecting the site from Dingens Street (near the current NFS property) to the northeastern corner of the site.

A 90 to 110 foot wide NMPC right-of-way (R.O.W.) running behind the NMPC substation to the northeastern corner of the site also bisects the NBIP site. The central section of the site (south of the NMPC R.O.W.) is dominated by an area of ponded water with associated drainage ways, the majority of which are within the NMPC R.O.W. Southwest of the ponded water the large stockpile of stone, present during GZA's earlier studies, has recently been removed and the area graded. North of the NMPC R.O.W. railroad tracks and ties, present during GZA's earlier studies, have also been removed and this area graded.

Currently the vacant NBIP site is open and unoccupied land. A chain link fence has recently been constructed behind the Super Duper plaza on South Ogden Street and at a former site entry point located approximately 700 feet north of the Bailey Avenue and Dingens Street intersection. The fence was constructed to restrict site access and preclude unauthorized dumping.

There is little evidence of current widespread dumping at the site as only isolated piles of recent rubbish and construction debris were observed behind Super Duper and some recent construction debris were found near the former stone pile. The majority of the wastes found during GZA's studies apparently resulted from former site usage.

1.30 Scope of Services

The intent of this study was to supplement and expand GZA's earlier work by collecting representative samples of waste types for analytical testing to ascertain their chemical nature.

Also samples of surface water/sediments and ground water were collected for analytical testing to evaluate the impact of wastes found at the NBIP site upon the environment.

The Scope of Services provided by GZA for these recent environmental studies included the following:

-in-situ testing of previously installed monitoring wells to determine which wells were functioning properly and suitable for sampling;

-collection of ground water samples from seven ground water monitoring wells for analytical testing by various analytical laboratories;

-subcontracting of a backhoe and operator to excavate 23 test pits, throughout the site, to locate suspected waste fills;

-monitoring of the test pit excavations, logging of subsurface conditions, and the collection of representative waste samples for subsequent analytical testing;

-sampling for analytical testing of surface water and sediments at several locations on the site;

-collection of various surfical wastes encountered on the site (spilled oils, apparent glues, etc.) for analytical testing;

-subcontracting of analytical laboratories to complete the required testing; and

-preparation and submittal of a report of the findings.

2.00 FIELD INVESTIGATIONS AND ANALYTICAL TESTING PROGRAM

The recent environmental testing program completed by GZA consisted of several phases directed at assessing the environmental impact of various suspected industrial wastes determined during previous studies. Samples were collected from various sources representative of the exposure routes for on-site wastes to off-site receptors. These routes include; direct physical contact with the waste or ingestion of either surface water or ground water affected by the waste. Since much of the waste was buried and the site is relatively isolated from nearby residential areas, the likelihood of air-borne migration of wastes was considered inconsequential and not examined during these studies. To satisfy the required analytical testing specifications, samples were collected from various sources including:

-surfical waste deposits including spilled oils and suspected industrial wastes;

-buried wastes recovered from test pits excavated into the heterogeneous fills of the site;

-surface water and sediments collected from on-site ponds and drainage ways; and

-ground water from wells sealed both in the on-site fills and in natural soil deposits of the "uppermost" water bearing zone.

The following sections describe the field investigation methodologies employed and the analytical testing program implemented for each of the materials sampled during this program. The results of the analytical testing completed during this study are presented in Appendix A.

2.10 Surfical Waste Deposits

Site reconnaissance indicated four prominent areas of surficial waste deposits. Their locations are included on the sampling location plan, Figure 2.

The area behind the NMPC sub-station, during GZA's studies in the Spring 1985, included a small pond of water with an apparent coating of oil. A semi-solid tar deposit is located near this ponded water and the tar may have been the source of oil. Three samples were collected from this area for analytical testing as outlined on the next page:

Sample Number	Sample Type	Analaytical Laboratory	Test Parameters
W-D	Oil/Water	Recra Environemental Laboratories	EPA Method 601 (volatile organics, including all halogenated compounds from method 602) EPA Method 625 (base neutral and acid phenolics) EPA Method 608 (pesticide and PCBs) Priority Pollutant Metals
W-E	Oil/Water	Recra Environmental Laboratories	EPA Method 601 (volatile organics, including all halogenated compounds from method 602)
W-F	Tar	The Aro Corporation	EPA Method 604 (phenols) EPA Method 610 (polynuclear aromatics)

Two samples of surfical wastes were collected from locations near the former Kintex Building on Dingens Street. These sample locations (W-A and W-B) are presented in Figure 2. The W-A sample was collected from oil soaked soil adjacent to reputed electrical capacitors stockpiled along the outer east wall of the building. It was originally plannned to sample the oil within the capacitors, but upon examination it was found they were empty. The oil soaked earth, because of its proximity, likely represents oil spilled from the "capacitors". Sample W-B was collected from a shallow pit (less than three feet deep) that contained water coated with approximately 1/2 inch of oil. The three samples tested (W-A, W-A duplicate sample, and W-B) were analyzed for Polychlorinated Bipheynals (PCBs) since the suspected source of this oil was capacitor oil that potentially could have contained PCBs as a cooling agent.

A surface waste deposit located behind the former A & R waste building near Bailey Avenue (W-C: see Figure 2) was also sampled and tested. This sample is a mixture of apparent purple dye and glue material similar to wastes discovered in many of the test pits in this area. An infra-red (IR) scan was done on this sample to identify discernable types and levels of contamination (identification tests for major contaminant groups to aid in establishing subsequent analytical testing). This sample was also tested for total phenolics, a contaminant of concern established during previous work at the site.

2.2Ø Test Pit Explorations

Twenty-three (23) test pits, designated herein by the prefix "TP III", were excavated in the locations shown on Figure 2. These test pits were made to examine subsurface conditions identified during previous studies (determined during test pit explorations designated by the "TP I" & "TP II" prefix, see Figure 3 for locations) and collect representative samples for analytical testing. The "TP III" test pits were made July 18 and 19, 1985 by Amherst Construction, Inc. using a Case Model 58Ø backhoe. The test pit explorations were continuously monitored by a GZA representative who prepared a stratigraphic log of the subsurface conditions encountered and maintained a photographic record of each test pit. Additionally, suspect waste materials encountered in the test pits were collected and placed in pre-cleaned glass jars or self sealing sample bags and stored in iced coolers for subsequent analytical testing.

An Analytical Instruments Development (AID) Incorporated Model 58Ø photoionization detector (PID) was used to scan the air space within the workers breathing zone, during test pit excavation, to determine the need for respiratory protection. Generally when working around the open test pit the GZA worker was outfitted in a disposable Sarenex suit, gloves, rubber boots, and carried an air-purifying respirator for use as needed.

Ground water samples were collected from six of the test pits. In-situ measurements of the pH (using a Corning model 1Ø3 portable pH meter) and specific conductance (using a Yellow Springs Instruments model SCT-33 meter) were made to detect any anamolous readings compared to those measured in samples collected from the monitoring wells. These in-situ measurements are summarized in Appendix A.

The analytical testing program for the test pit samples collected during this study are summarized in Table I on the following page.

2.3Ø Ground Water Sampling and Testing

The selection of monitoring wells for sampling was based on several factors. These included evaluating the existing wells to determine if they had been vandalized since installation. Monitoring wells that had not been vanadalized were tested via a rising head permeability test to determine if they were properly functioning. Monitoring wells that were determined to be properly functioning were then evaluated to determine which should be sampled such that:

-monitoring wells were selected based on the location of their well screen ("shallow" wells with their well screen sealed within miscellaneous fills and "deep" wells sealed in natural water bearing deposits) so that representative samples could be collected from various depths;

TABLE I: SUMMARY OF ANALYTICAL TESTING
TEST PIT SAMPLES

TEST PIT	SAMPLE DEPTH	SAMPLE DESCRIPTION	TEST PARAMETERS
*TP III-2 *TP III-8	6 ft. 3.5 ft.	Soil fill and intermixed purple sludge purple fiberous sludge	- EPA priority pollutants by GC - Total phenolics - EPA method 604 (phenolics) - Reactivity - EP Toxicity - metal fraction - pH
TP III-9	3 ft.	white chalky material	- IR scan - EPA method 609-612 (base/neutrals) - EPA method 604 (phenolics) - pH - EP Toxicity - metal fraction
TP III-10	6 ft.	gray, suspected industrial fill	- IR scan - pH
TP III-12	3 ft.	black, foundry sand, cinders and ash	- EPA method 604 (phenolics) - pH Reactivity
TP III-12	5.5 ft.	gray-green clayey silt with intermixed oil	- EPA method 604 (phenolics) - EPA method 609-612 (base/neutrals)
TP III-18	4 ft.	soil fill and timber fragments with intermixed oil	- IR scan - EPA method 604 (phenolics)
TP III-21	2 ft.	rust stained - white chalky fill	- Iron - pH - total phenolics

Notes: *TP III-2 and TP III-8 composite sample

All analytical testing by the ARO Corporation Buffalo Division

-monitoring wells that exhibited the "poorest" water quality during earlier testing were selected to examine a "worst case" situation;

-monitoring wells were selected such that they were located adjacent to suspected waste disposal areas; and

-monitoring wells were selected to examine ground water quality in down-gradient positions of the site relative to the regional ground water flow patterns.

Based upon these considerations seven (7) monitoring wells were sampled. These wells include "shallow" wells B-6, B-11, and B-12 and "deep" wells B-1, B-9, B-16 and B-18. the location of these monitoring wells are presented on Figure 2.

The monitoring wells were sampled by GZA and the sampling observed by a DEC representative on July 11 and 12, 1985. The ground water sampling procedure is outlined below:

-Sample bottles, with appropriate preservatives were obtained from the analytical laboratory.

-Prior to sample collection the ground water level was measured in each well.

-A separate, bottom loading, stainless steel bailer with a teflon check valve was dedicated to each well to initially purge the well of a minimum of three well volumes or until dry and then to sample the well. The purge water was retained in sealed 5-gallon pails for future disposal.

-The monitoring well was allowed to recover to 90 percent of its original ground water level before a sample was collected for analysis.

-The samples were then placed in iced storage chests and delivered to the analytical laboratory for testing following chain of custory procedures.

The following table presents the analytical testing program completed on the ground water samples.

Sample Number: B-1, B-6, B-9, B-11, B-12, B-16, & B-18

Analytical Laboratory: The ARO Corporation
Test Parameters: EPA method 601, 602 (volatile organics)
EPA method 604 (phenolic compounds)
EPA method 608 (PCBs & pesticides)
EPA method 609-612 (base/neutral extractables)

Metals (unfiltered) - antimony, beryllium, & thallium

B-6 only - EPA priority pollutant metals (unfiltered)

B-18 only - EPA method 601 (total xylenes)

Analytical Laboratory: Erie County Laboratory
Metals (unfiltered): arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc

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Sample Number: B-12 only

Analytical Laboratory: Advanced Environmental Systems, Inc.
Test Parameters: EPA method 624 (EPA priority pollutant volatile organics)

EPA method 601 (methylene chloride)

EPA method 608 (EPA priority pollutant PCBs and pesticides)

2.40 Surface Water Sampling and Testing

Four samples were collected, during this study, from surface water bodies at the site. These samples included two grab surface water samples (SW-3 and SW-4) and two water/sediment samples (SD-3a and SD-4a) collected at the same location. Additionally the results of two surface water samples collected during earlier studies (SW-1 and SW-2), but not discussed in GZA's previous report, are presented in this report. The location of the surface water sampling points are shown on Figure 2.

All samples were collected using a stainless steel grab sampler. The sampler was cleaned by successive rinses with distilled water, analytical grade methanol, and distilled water between samples. The samples collected were placed in bottles provided by the analytical laboratory and stored in iced coolers until delivered for testing following chain of custody procedures.

The samples collected were analyzed for the following test parameters:

Sample Number	Analytical Laboratory	Test Parameters
SW-1 & SW-2	The ARO Corp.	arsenic, barium, cadmium, lead, mercury, selenium, silver, zinc, chromium (+6), BOD_5, COD, chlorides, pH, nitrates, phosphates, sulfates, total solids, total suspended solids (TSS)
SW-3, SD-3a, SW-4, & SD-4a	The ARO Corp.	BOD_5, oil & grease, TSS, total dissolved solids (TDS), total organic halogens (TOX)
SW-3, SD-3a, SW-4, & SD-4a	GZA	in-situ pH and specific conductance
SW-3 only	The Erie Co. Laboratory	arsenic, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, zinc

3.00 ANALYTICAL RESULTS

This section presents the results of the analytical testing completed during this study. It is divided into three sections based upon the type of material tested including:

- waste deposits found either at the ground surface or buried and encountered during test pit explorations;

- ground water samples collected from monitoring wells at the NBIP site and sealed at various horizons; and

- surface water samples from ponded areas and drainage ways on the NBIP site.

3.10 Waste Deposits

The six surfical wastes (W-A through W-F) were collected from three locations (Figure 2) and each location was tested for parameters indicative of the suspected waste. Samples W-A and W-B were collected adjacent to the former Kintex Building in the vicinity of suspected electrical capacitors. Both samples contained oil, and since the source of this oil was suspected to be from capacitors, PCBs were measured. However, no PCBs were measured in either sample above the laboratory detection limit.

Sample W-C, located behind the former A & R Waste Building, contained intermixed purple fibrous sludge and apparent glue, similar in nature to materials found within test pits in the area. W-C was initially examined using an Infra-Red (IR) scan to ascertain prominent contaminant types for establishment of subsequent analytical tests. The IR scan was, however, inconclusive as no discernable peaks could be identified. The sample did, however, have a total phenolics concentration of 15.35 milligrams per kilogram (mg/kg = parts per million).

Three samples (W-D through W-F) were collected from an area of apparent spilled oil and tar behind the NMPC substation (Figure 2) for analysis. Samples W-D and W-E were collected from an oil coated pool of standing water and W-F from an adjacent tar deposit which appeared to be a source of the oil. The primary contaminants identified in the W-D and W-E samples were fluorene (580 ppm), naphthalene (present in concentrations below the detection limit of 190 ppm), and Chromium (1.0 ppm). The W-F sample tested for the EPA priority pollutant polynuclear aromatic hydrocarbon (PNA) and phenolic compound fractions contained relatively low levels of compounds from each fraction. For example, the highest concentration of phenols determined was 0.025 ppm of pentachlorophenol and the highest PNA concentration was 0.039 ppm of Benzo (a) pyrene. Compared to W-D and W-E the concentrations of fluorene and naphthalene determined in W-F were significantly lower (fluorene = 0.009 ppm and naphthalene 0.009 ppm).

Various tests were done on suspected waste samples collected from the test pits discussed in section 2.20. Generally four different types of waste were examined as they were most common to the NBIP site. Typical examples of these wastes and the test pits in which they were found are presented below:

Waste Description	Test Pits
purple fibrous sludge	TP III-2, TP III-8
white chalky material	TP III-9, TP III-21
black suspected foundry sand, intermixed with cinders and ash	TP III-12 @ 3 ft.
petroleum soaked soils and fills	TP III-12 @ 5.5 ft., TP III-18

The purple sludge deposits appear to be located in the central section of the NBIP site in the vicinity of the former stone pile and to a lesser extent, behind the former A & R waste building. Initially a composite sample of TP III-2 and TP III-8 was tested for a full list of EPA priority pollutants by Gas Chromatographic methods for organics and atomic absorbtion for metals. The phenols fraction was tested twice to confirm the initial findings. The results of this testing for parameters measured above the laboratory detection limits are listed below:

	Initial Test	Duplicate Test
	- all results in ppm -	
2-Chlorophenol	0.06	0.003
2, 4-Dichlorophenol	0.10	0.005
2, 4-Dimethylphenol	0.22	LT 0.001
4, 6-Dinitro-O-Cresol	LT 0.02	0.003
2, 4-Dinitro-Phenol	LT 0.02	0.002
P-Chloro-M-Cresol	0.27	0.002
Pentachlorophenol	0.30	0.002
Phenol	0.11	0.004
2, 4, 6-Trichlorophenol	0.19	LT 0.001
Cadmium	0.70	NT
Chromium	3.40	NT
Copper	131.	NT
Lead	782.	NT
Mercury	0.006	NT
Nickel	4.12	NT
Selenium	0.06	NT
Silver	0.80	NT
Zinc	177.	NT

LT = less than
NT - not tested

The elevated metal concentrations found necessitated the running of an EP (Extraction Procedure) Toxicity test to determine if this material is capable of leaching metals in sufficient quantites to be considered a hazardous waste according to the requirements of the Resource Conservation and Recovery Act (RCRA). The metal concentrations determined via the EP Toxicity test were all below the maximum allowable concentration presented in RCRA.

The purple sludge does, however, have a low (acidic) pH measured on two occasions to be 2.69 and 4.88. This low pH makes it potentially corrosive to underground structures and care must be taken to prevent physical contact. The low pH of this material also required the analysis of its reactivity (the determination of the materials cyanide and sulfide content to access its potential for generating toxic gases, vapors, or fumes in a sufficient quantity to present a danger to human health or the environment). The cyanides concentration reported for the composite sample from TP III-2 and TP III-8 of 1747 mg/kg is elevated and represents a potential of generating hydrogen cyanide gas under certain conditions. It should be noted, however, that cyanides measured in the purple sludge deposits collected during GZA's 1983 studies were not elevated. It is thus possible that the elevated cyanides may be a localized occurrance and additional testing may be required to better define the extent of the problem.

The extract of white chalky material as found in TP III-9 contained a significant hydrocarbon content (455 mg/kg) as determined by the IR scan, and pH of 8.60. The hydrocarbon content indicated that the material was potentially contaminated with petroleum products and thus the phenol and base/neutral extractables constiuents were tested. The results indicated that all base/neutral extractables were below the laboratory detection limit with the exception of acenaphtylene (0.002 ppm). The phenol compounds measured above the laboratory detection limit included; 2-Chlorophenol (0.002 ppm), 2, 4-Dichlorophenol (0.004 ppm), P-Chloro-M-Cresol (0.008 ppm), Pentachlorophenol (0.010 ppm), and phenol (0.003 ppm).

An EP toxicity test (metal fraction), was also done on the TP III-9 sample. The metals measured were all below the maximum allowable concentrations established in RCRA.

The black suspected foundry sand intermixed with cinders and ash deposit as found in TP III-12 @ 3.3 feet had a pH of 8.65 and it contained relatively low concentrations of EPA priority pollutant phenol compounds with the largest concentrations determined for the parameters P-Chloro-M-Cresol (0.004 ppm) and pentachlorophenol (0.003 ppm). A cyanides concentration of 5.65 mg/kg and a sulfide concentration of 4.1 mg/kg were measured as part of the reactivity test done on this material.

The final type of waste deposit examined during this study was petroleum soaked soils and fills as encountered in TP III-12 @ 5.5 ft. and TP III-18. The parameters with concentrations

above the laboratory detection limits for these samples are summarized below:

	TP III-12 @ 5.5 ft.	TP III-18
	- all results in ppm -	
2, 4 Dichlorophenol	0.002	0.002
P-Chloro-M-Cresol	0.003	0.002
Pentachlorophenol	0.007	0.003
Phenol	0.002	0.002
4, 6-Dinitro-O-Cresol	LT 0.001	0.001

LT = less than

3.20 Ground Water

The primary contaminants identified in the ground water samples collected during this study are phenolic compounds and heavy metals. Generally the remaining parameters tested were below the laboratory detection limit. The only exception was a concentration of 0.043 ppm of methylene chloride measured in a split sample collected from monitoring well B-12. A second sample from monitoring well B-12 was collected on October 7, 1985 and tested for methylene chloride to confirm the earlier testing. This second sample did contain methylene chloride in concentrations above the laboratory detection limit (0.001 ppm).

It should be noted that the 1983 testing of ground water from monitoring well B-18 indicated an elevated total xylene concentration of 300 parts per billion (ppb). Ground water from B-18 analyzed during this study did not, however, contain total xylenes above the laboratory detection limit of 10 ppb. The 1983 total xylene measurement may have been attributable to PVC glue being inadvertently used by the drilling subcontractor during well installation and, thus, not a true constituent of the ground water.

The concentrations of phenolic compounds and metals measured above the laboratory detection limit, during analysis of monitoring wells at the NBIP site, are presented in Table II on the next page. Where applicable, the Class GA ground water quality standard as established in DEC regulations 6 NYCRR Part 703 pursuant to the New York State Environmental Conservation Law are also included for reference. It should be noted that the best usage of Class GA ground water is as a source of potable water.

3.30 Surface Water

Test data from the surface water and bottom sediment samples showed them to be relatively clean. All samples had a 5-day Biochemical Oxygen Demand (BOD) less than 15 ppm and no oil and grease nor Total Organic Halogens (TOX) were detected above the laboratory detection limit. Generally the EPA priority pollutant metals were not detected in elevated concentrations other than a slightly elevated lead concentration measured in

TABLE II: ANALYTICAL RESULTS OF GROUND WATER SAMPLES
COLLECTED JULY 1985

Test Parameter	Class GA Standard	B-1	B-6	B-9	B-11	B-12	B-16	B-18
Total Phenolics	0.001	0.020	0.031	0.016	0.024	0.026	0.008	0.019
2-Chlorophenol	---	0.004	0.003	0.003	0.002	0.001	LT0.001	LT0.001
2, 4-Dichlorophenol	---	0.003	0.002	0.001	0.001	LT0.001	0.001	0.002
4, 6-Dinitro-O-Cresol	---	0.002	0.002	0.001	0.001	0.002	0.001	0.002
2, 4-Dinitrophenol	---	0.001	0.003	0.001	LT0.001	LT0.001	0.001	0.002
P-Chloro-M-Cresol	---	0.002	0.004	0.004	0.002	0.004	0.002	0.003
Pentachlorophenol	0.021	0.003	0.005	0.005	0.002	0.003	0.002	0.002
Phenol	---	0.002	0.003	0.003	0.002	0.003	0.002	0.003
Arsenic	0.025	LT0.02	LT0.015	LT0.02	0.04	LT0.02	LT0.02	LT0.02
Cadmium	0.01	LT0.001	0.002	0.001	0.004	LT0.001	LT0.001	LT0.001
Chromium	0.05	LT0.010	0.04	LT0.010	0.090	0.040	0.02	LT0.001
Copper	1.0	0.06	0.258	LT0.02	0.09	0.02	0.03	LT0.02
Lead	0.025	0.07	0.474	0.015	0.52	0.73	0.08	0.029
Nickel	---	LT0.05	0.082	0.05	0.17	0.05	LT0.05	LT0.05
Zinc	5.0	0.03	0.516	0.06	0.37	0.65	0.08	0.03

Notes:
1. all concentrations reported in parts per million (ppm)
2. metal concentrations for B-6 are an average value (2 tests)
3. metal concentrations determined in an unfiltered sample
4. LT = less than

one sample (SW-2; lead = Ø.Ø39 ppm) collected in February, 1984. The lead level measured during this sampling program (July, 1985), for the one surface water sample tested for lead (SW-3), was below the laboratory detection limit.

4.00 CONCLUSIONS AND RECOMMENDATIONS

The NBIP site has been subjected to landfilling from various sources throughout its history. Heterogeneous fills identified during GZA's studies included; soils, rubbish, construction debris, and suspected industrial wastes. Surfical spills of apparent oil and other waste materials were also observed in isolated locations around the NBIP site.

Analytical tests have been done on selected samples of the suspected industrial wastes to assess their chemical nature and evaluate their environmental impact. Also samples from ground water monitoring wells and surface water have been collected and tested. These tests were done to evaluate the environmental impact of on-site materials on nearby ground water and surface water supplies.

The available analytical data indicates that phenolic compounds and heavy metals are the primary contaminants identified at the site. The source of these contaminants is likely related to the past use of the site. For example many of the phenolic compounds (P-chloro-M-Cresol, 2, 4 Dichloropheral, Pentachlorophenol, and 2, 4 Dinitrophenal) are associated with the manufacture of wood preservatives and germicides. These compounds probably represent the remenants of treatment processes used to protect wooden railroad ties from rotting.

The petroleum products found during GZA's explorations likely represent spilled diesel fuels and hydraulic fluids that accumulated during past railroad activity. It is noted that the petroleum products tested during this study, were generally free of polynuclear aromatic hydrocarbons (PNAs) and volatile organic compounds which are often found in waste oils. This fact indicates that the oils were on-site for many years and in that time the PNAs and volatile organics were stripped away as the oils weathered. However, components less susceptible to weathering, such as phenolic compounds and heavy metals remained in the oils and were found during this study.

The purple fibrous sludge deposits, found near the former stone pile and A & R waste building, represent materials presumably dumped by previous owners. Based upon analytical data and physical observation these materials are probably shredded waste paper impregnated with dyes and intermixed with adhesives. Several of the phenolic compounds found in this material are common to dyes and adhesives including;

-2, 4, 6-Trichlorophenol used in many book binding glues;

-P-Chloro-M-Cresol used as a preservative in the manufacture of certain glues, paints, inks, and textiles, and;

-Phenol used in many general purpose glues and adhesives.

It is also known that dyes and paints contain metals, such as those found in the purple sludge (zinc, nickel, lead, copper, and chromium), for use as pigments. The elevated cyanide concentration may also indicate that this material contains dyes, as cyanides are common to many blue dyes. The typically low pH of the material is likely due to the intermixed glues and adhesives, components of which are often acidic. The purple sludge also contained compounds which are not typical of dyes and adhesives such as pentachlorophenol (a wood preservative). It is theorized that since the purple sludge is fibrous,it soaks up and holds these other compounds which presumably originated from a second source.

Another prominent waste material found during GZA's studies was the surfical tar deposit found behind the NMPC sub-station. This tar deposit apparently leached into adjacent standing water causing an oil coating. Analytical testing of samples from this area indicate the presence of a variety of PNAs and phenolic compounds not uncommon to asphalt products such as tar. This material does not, however, appear to be migrating significant distances from its present location as "downstream" surface waters did not have measureable levels of oil and grease nor were PNAs found in nearby downgradient monitoring wells.

Phenolic compounds and heavy metals have been measured in ground water samples collected from all seven monitoring wells. The source of these compounds is likely attributable to the leaching of on-site wastes, since similar compounds were found within waste and ground water samples. Typically the contaminant concentrations (phenolics and metals) are higher in the "shallow" wells (B-6, B-11 & B-12) than in the "deep" wells (B-1, B-9, B-16 & B-18). This is to be expected since the "shallow" wells are sealed within the heterogeneous fills of the site. However, the quantities of phenolics and metals found in the "deep" wells were not expected. These wells are sealed below low permeability silts and clays which typically prohibit ground water flow and thus should preclude contaminant movement. It is theorized, however, that the pond in the central section of the site may be responsible for the contaminants found in the "deep" wells. The pond was likely created when on-site materials were excavated, to construct the railroad embankment that bisects the NBIP site, and runoff and ground waters subsequently filled the excavation. The original depth of the excavation is unknown since it has been subjected to landfilling throughout its existance. It is believed, however, that the pond partially or fully penetrates the natural clays and silts at the site. Thus it is possible that contaminants from the heterogeneous fills initially discharged into the pond then ultimately travelled downward through the pond to the deeper wells. This concept is supported by the nature of contaminants found in the "deep" wells. Phenolics and metals are denser than water, and to varying degrees water soluble, thus providing a mechanism for their distribution in the ground water. The parameters measured in the surface water samples

indicate, however, that the pond is not now receiving large amounts of waste. Thus the phenolics and metals found in the ground water likely represent the previous disposal practices at the site.

As shown in Table II, in section 3.00, the concentration of various parameters exceed the class GA standard for potable ground water supplies. The total phenolics and lead concentrations, measured during this study, are the prominent contaminants found in the ground water. For example, the analytical results from "deep" wells B-16 and B-18, located in downgradient positions near the site's boundary are presented below:

Test Parameter	Class GA Standard (ppm)	B-16	B-18
Total Phenolics (ppm)	0.001	0.008	0.019
Total Lead (ppm)	0.025	0.08	0.029

As shown, ground water exiting the site does contain elevated concentrations of phenolics and lead. The impact of these contaminants on off-site ground water supplies does not appear to be an immediate problem since no off-site ground water supply wells are known to exist in the vicinity of the site. It also should be noted that the lead levels measured during this study were obtained from unfiltered samples. Thus the concentrations of lead measured may represent the amount of lead in sediments collected in the well and not dissolved constituents of the ground water. The dissolved fraction is generally considered a better representation of contaminant transport in ground water. Dissolved materials travel at the same rate as ground water and thus can migrate significant distances from the source, whereas sediments in the water are significantly less mobile and do not travel great distances from the source. Testing completed during GZA's earlier studies (GZA's 1983 report) included analysis of filtered ground water samples (indicative of dissolved constituents of the water) and unfiltered samples (including sediments). The results of this testing for lead in well B-12 (the monitoring well with the highest lead concentration measured during GZA's current study) are summarized below:

Sample Date	B-12 Lead Concentration (ppm)	Remarks
6/10/83	0.240	unfiltered sample
11/21/83	less than 0.001	filtered sample

Based upon these data and the documented low mobility of lead in ground water, it is unlikely that lead from the NBIP site is significantly impacting off-site ground water supplies.

Generally the NBIP site is free of clearly defined levels of hazardous wastes. For example oil wastes tested during this and earlier studies did not contain measurable levels of PCBs.

Concentrations of most EPA priority pollutant organic chemicals (base/neutral extractables, volatile organics, etc.) measured in waste and water samples were below the laboratory detection limits. Also, despite the elevated metals measured in several of the waste samples, none of the EP Toxicity tests done had concentrations above the maximum allowable limits established for this test. Thus based upon EP Toxicity these materials would not be classified as hazardous wastes. The wastes that were found at the NBIP site generally contained low or slightly elevated levels of contamination indicative of the past usage of the site (railroad facility, construction debris landfilling, etc.).

The environmental impact of wastes found at the NBIP site should not preclude its successful development. There will have to be, however, some precautions and remedial actions taken during development. An outline of items which will have to be addressed is presented below:

-The wood preservatives found in the waste deposits such as Pentachlorophenal indicate that treatment of railroad ties has occurred at the NBIP site. While the levels of wood preservatives measured during this study are relatively low it is possible that isolated pockets, where the ties were actually treated, may be encountered during excavation. If encountered, these wastes will have to be tested and if elevated concentrations are determined, contingency plans will be required for their off-site disposal.

-The cyanide concentration measured in one sample of the purple waste indicates it is potentially reactive, as it could generate hydrogen cyanide gas when exposed to strong acids. This could be a problem when working in confined areas or locations where the gas could collect. Thus additional testing is recommended to ascertain the extent and type of cyanide at the NBIP site. These tests should include the determination of the quantity of cyanide amenable to chlorination so as to ascertain the amount of cyanides available for reaction as hydrogen cyanide gas. Since this material has been found in localized pockets near the former stone pile and behind A & R waste it is recommended that, following additional testing, this material be excavated and properly disposed prior to construction.

-The ground water does contain several contaminants above Class GA standards for potable supplies. The water is, however, not used as a potable water source as there are no documented nearby ground water supply wells. It may be necessary, however, during construction to test ground water collected from site dewatering activity to determine its disposal requirements. Also it is recommended that

following the draining of the current ponded area, care should be taken during backfilling to create an impermeable barrier to preclude the continued discharge of on-site wastes into the "deep" ground water systems.

-The tar deposit and ponded water area behind the NMPC site is a localized occurrence that currently does not appear to be affecting ground water or site wide surface water supplies. This material should, however, be either physically isolated or removed from the site to prevent physical contact and the potential for future migration.

-The heterogenous fills found at the NBIP could potentially contain other waste materials not found during this study. These materials, if present, are thought to be localized as this study did not find contaminants atypical of the wastes known to be deposited at the site. It is thus recommended that during site development environmental quality be continuously monitored by experienced personnel to ascertain the need for implementation of health and safety measures to protect site workers and contingency plans for the handling of "suspect" waste encountered during construction. Furthermore, such plans should be developed, and submitted to appropriate regulatory agencies for approval, prior to any construction activity at the NBIP site as a precautionary measure.

ANALYTICAL TEST RESULTS
GROUND WATER SAMPLES
FROM MONITORING WELLS:

B-1
B-6
B-9
B-11
B-12
B-16
B-18

Summary of In-Situ Water Quality Tests Taken 7/11/85
Ground Water Samples

Monitoring Well	Sample Time	pH (standard units)	Specific Conductance (µmhos/cm)	Remarks
B-1	10:56	6.99	2000	-----
B-6	13:44	6.84	800	-----
B-9	15:30	7.23	600	-----
B-11	10:45	6.92	1750	-----
B-12	12:13	7.43	1050	Petroleum Odor
B-16	14:21	7.54	495	-----
B-18	14:53	7.52	430	-----

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TELEX 315078

Customer Goldberg-zoino Associates

R & W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

Pollutant	B-1 SAMPLE 1 Conc (ppm)	Mass (lbs)	B-11 SAMPLE 2 Conc (ppm)	Mass (lbs)	B-12 SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
Phenols	0.020		0.024		0.026			
Oil & Grease	-		-		-			
Acrolein	<0.001		<0.001		<0.001			
Acrylonitrile	"		"		"			
Benzene	"		"		"			
Bis (Chloromethyl) Ether	"		"		"			
Bromoform	"		"		"			
Carbon Tetrachloride	"		"		"			
Chlorobenzene	"		"		"			
Chlorodibromomethane	"		"		"			
Chloroethane	"		"		"			
2-Chloroethylvinyl Ether	"		"		"			
Chloroform	"		"		"			
Dichlorobromethane	"		"		"			
Dichlorodifluoromethane	"		"		"			
1,1-Dichloroethane	"		"		"			
1,2-Dichloroethane	"		"		"			
1,1-Dichloroethylene	"		"		"			
1,2-Dichloropropane	"		"		"			
1,2-Dichloropropylene	"		"		"			

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R) W.O. 21,625W-11562 Report Date 8/15/85

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Pollutant	B-1 SAMPLE 1 Conc (ppm)	Mass (lbs)	B-11 SAMPLE 2 Conc (ppm)	Mass (lbs)	B-12 SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
F thylbenzene	<0.001		<0.001		<0.001			
Methyl Bromide	"		"		"			
M ethyl Chloride	"		"		"			
Methylene C hloride	"		"		"			
1, 1, 2, 2-Tetra-chloroethane	"		"		"			
T etrachloroethylene	"		"		"			
T oluene	"		"		"			
1, 2-Trans-Dichloroethylene	"		"		"			
1 1, 1-Tri-c loroethane	"		"		"			
1, 1, 2-Tri-c loroethane	"		"		"			
Trichloro-ethylene	"		"		"			
T richloro-fluoromethane	"		"		"			
Vinyl C loride	"		"		"			
2 3, 7, -8-Tetrachloro-libenzo-p-dioxin	<0.001		<0.001		<0.001			
2 Chlorophenol	0.004		0.002		0.001			
2, 4-Dichloro-phenol	0.003		0.001		<0.001			
2 4-Dimethyl-phenol	<0.001		<0.001		<0.001			
4 6-Dinotro-O-C resol	0.002		0.001		0.002			
2, 4-Dinitro-p enol	0.001		<0.001		<0.001			

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Pollutant	B-1 SAMPLE 1 Conc (ppm)	Mass (lbs)	B-11 SAMPLE 2 Conc (ppm)	Mass (lbs)	B-12 SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
2-Nitrophenol	<0.001		<0.001		<0.001			
4-Nitrophenol	<0.001		<0.001		<0.001			
P-Chloro-M-resol	0.002		0.002		0.004			
Pentachloro-phenol	0.003		0.002		0.003			
Phenol	0.002		0.002		0.003			
2,4,6-Tri-chlorophenol	<0.001		<0.001		<0.001			
Acenaphthene	<0.001		<0.001		<0.001			
Acenaphtylene	"		"		"			
Anthracene	"		"		"			
Benzidine	"		"		"			
Benzo (a) Anthracene	"		"		"			
Benzo(a) Pyrene	"		"		"			

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Station New Buffalo Industrial Park

Pollutant	E-1 SAMPLE 1		E-11 SAMPLE 2		E-12 SAMPLE 3		AVERAGE	
	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
Benzo (a) Pyrene								
3,4-Benzo-fluoranthene	<0.001		<0.001		<0.001			
Benzo (ghi) Perylene	"		"		"			
Benzo (k) Fluoranthene	"		"		"			
Bis (2-Chloro-ethoxy) Methane	"		"		"			
Bis (2-Chloro-ethyl) Ether	"		"		"			
Bis (2-Chloro-isopropyl) Ether	"		"		"			
Bis (2-Ethyl-hexyt) Phthalate	"		"		"			
4 Bromo-phenyl Phenyl Ether	"		"		"			
Butyl Benzyl Phthalate	"		"		"			
2 Chloro-naphthalene	"		"		"			
4 Cholorophenyl Phenyl Ether	"		"		"			
Chrysene	"		"		"			
Dibenzo(a,h) Anthracene	"		"		"			
1,2-Dichloro-benzene	"		"		"			
1,3-Dichloro-benzene	"		"		"			
1,4-Dichloro-Benzene	"		"		"			
3,3'-Dichlorobenzidine	"		"		"			
Diethyl Phthalate	"		"		"			
Dimethyl Phthalate	"		"		"			

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Customer Goldberg-Zoino Associates

ER W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

Pollutant	B-1 SAMPLE 1 Conc (ppm)	SAMPLE 1 Mass (lbs)	B-11 SAMPLE 2 Conc (ppm)	SAMPLE 2 Mass (lbs)	B-12 SAMPLE 3 Conc (ppm)	SAMPLE 3 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
DI-N-Butyl Phthalate	<0.001		<0.001		<0.001			
2,4-Dinitro-toluene	"		"		"			
2,6-Dinitro-toluene	"		"		"			
Di-N-Octyl Phthalate	"		"		"			
1,2-Diphenylhydrazine (as Azobenzene)	"		"		"			
Flouranthene	"		"		"			
Fluorene	"		"		"			
Hexa-chlorobenzene	"		"		"			
Hexa-chlorobutadiene	"		"		"			
Hexachloro-cyclopentadiene	"		"		"			
Hexachloro-ethane	"		"		"			
Indeno (1,2,3-cd) Pyrene	"		"		"			
Isophorone	"		"		"			
Naphthalene	"		"		"			
Nitrobenzene	"		"		"			
N-Nitro-sodimethylamine	"		"		"			
N-Nitrosodi-N-Propylamine	"		"		"			
N-Nitro-sodiphenylamine	"		"		"			
Phenanthrene	"		"		"			
Pyrene	"		"		"			

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Pollutant	B-1 SAMPLE 1 Conc (ppm)	B-1 SAMPLE 1 Mass (lbs)	B-11 SAMPLE 2 Conc (ppm)	B-11 SAMPLE 2 Mass (lbs)	B-12 SAMPLE 3 Conc (ppm)	B-12 SAMPLE 3 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
1,2,4-Trichlorobenzene	<0.001		<0.001		<0.001			
Aldrin	<0.0001		<0.0001		<0.0001			
α-BHC	"		"		"			
β-BHC	"		"		"			
γ-BHC	"		"		"			
δ-BHC	"		"		"			
Chlordane	"		"		"			
4,4'-DDT	"		"		"			
4,4'-DDE	"		"		"			
4,4'-DDD	"		"		"			
Dieldrin	"		"		"			
α-Endosulfan	"		"		"			
β-Endosulfan	"		"		"			
Endosulfan Sulfate	"		"		"			
Endrin	"		"		"			
Endrin Aldehyde	"		"		"			
Heptachlor	"		"		"			
Heptachlor Epoxide	"		"		"			
PCB-1242	"		"		"			
PCB-1254	"		"		"			

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Pollutant	B-1 SAMPLE 1 Conc (ppm)	B-1 SAMPLE 1 Mass (lbs)	B-11 SAMPLE 2 Conc (ppm)	B-11 SAMPLE 2 Mass (lbs)	B-12 SAMPLE 3 Conc (ppm)	B-12 SAMPLE 3 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
PCB-1221	<0.0001		<0.0001		<0.0001			
PCB-1232	"		"		"			
PCB-1248	"		"		"			
PCB-1260	"		"		"			
PCB-1016	"		"		"			
Toxaphene	"		"		"			
Antimony	<0.010		<0.010		<0.010			
Beryllium	"		"		"			
Thallium	"		"		"			

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F) W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

Pollutant	B-9 SAMPLE 7 Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
Phenols	0.016							
Oil & Grease	-							
Acrolein	<0.001							
Acrylonitrile	"							
Benzene	"							
Bis (Chloromethyl) Ether	"							
Bromoform	"							
Carbon Tetrachloride	"							
Chlorobenzene	"							
Chlorodibromomethane	"							
Chloroethane	"							
Chloroethylvinyl Ether	"							
Chloroform	"							
Dichlorobromethane	"							
Dichlorofluoromethane	"							
1,1-Dichloroethane	"							
1,2-Dichloroethane	"							
1,1-Dichloroethylene	"							
1,2-Dichloropropane	"							
1,2-Dichloropropylene	"							

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Pollutant	B-9 SAMPLE 7 Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
Ethylbenzene	<0.001							
Methyl Bromide	"							
ethyl Chloride	"							
Methylene Chloride	"							
1, 2, 2-Tetra-chloroethane	"							
etrachloroethylene	"							
oluene	"							
2-Trans-Dichloroethylene	"							
1, 1-Tri-loroethane	"							
1,1,2-Tri-loroethane	"							
richloro-ethylene	"							
ichloro-oromethane	"							
Vinyl loride	"							
2 3,7,-8-Tetrachloro-benzo-p-dioxin	<0.001							
2 Chlorophenol	0.003							
2,4-Dichloro-phenol	0.001							
2 4-Dimethyl-phenol	<0.001							
4.6-Dinotro-O-esol	0.001							
2,4-Dinitro-phenol	0.001							

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Pollutant	E-9 SAMPLE 7 Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
2- Nitrophenol	<0.001							
4-Nitrophenol	"							
P Chloro-M-Cresol	0.004							
Pentachloro-phenol	0.005							
Phenol	0.003							
2, , 6-Tri-chlorophenol	<0.001							
Acenaphthene	<0.001							
Acenaphtylene	"							
Anthracene	"							
Benzidine	"							
Benzo (a) Anthracene	"							
Benzo(a) pyrene	"							

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Customer Goldberg-Zoino Associates P.O. No.

ARO W.O. 21,625W-11562 Report Date 8/15/85

Station New Buffalo Industrial Park

Pollutant	B-9 SAMPLE 7		SAMPLE		SAMPLE		AVERAGE	
	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
Benzo (a) Pyrene								
3 4-Benzo-fluoranthene	<0.001							
Benzo (ghi) Perylene	"							
Benzo (k) Fluoranthene	"							
Bis (2-Chloro-ethoxy) Methane	"							
Bis (2-Chloro-ethyl) Ether	"							
Bis (2-Chloro-isopropyl) Ether	"							
Bis (2-Ethyl-hexyt) Phthalate	"							
4-Bromo-phenyl Phenyl Ether	"							
Butyl Benzyl Phthalate	"							
2 Chloro-naphthalene	"							
4 Cholorophenyl Phenyl Ether	"							
Chrysene	"							
Dibenzo(a,h) Anthracene	"							
1 2-Dichloro-benzene	"							
1, 3-Dichloro-benzene	"							
1, 4-Dichloro-Benzene	"							
3 3'-Dichlorobenzidine	"							
Diethyl Phthalate	"							
Dimethyl Phthalate	"							

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P.O. No.

W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

B-9

Pollutant	SAMPLE 7 Conc (ppm)	SAMPLE 7 Mass (lbs)	SAMPLE Conc (ppm)	SAMPLE Mass (lbs)	SAMPLE Conc (ppm)	SAMPLE Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
N-Butyl Phthalate	<0.001							
2,4-Dinitro-toluene	"							
2,6-Dinitro-toluene	"							
Di-N-Octyl Phthalate	"							
1,2-Diphenylhydrazine (as Azobenzene)	"							
Flouranthene	"							
Fluorene	"							
Hexa-chlorobenzene	"							
Hexa-chlorobutadiene	"							
Hexachloro-cyclopentadiene	"							
Hexachloro-ethane	"							
Indeno (1,2,3-cd) Pyrene	"							
Isophorone	"							
Naphthalene	"							
Nitrobenzene	"							
N-Nitro-sodimethylamine	"							
N-Nitrosodi-N-Propylamine	"							
N-Nitro-sodiphenylamine	"							
Phenanthrene	"							
Pyrene								

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

Customer Goldberg-Zoino Associates P.O. No.

F) W.O. 21,625W-11562 Report Date 8/15/85

Station New Buffalo Industrial Park

Pollutant	E-9 SAMPLE 7 Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	SAMPLE Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
1,2,4-Trichlorobenzene	<0.001							
Aldrin	<0.0001							
α-BHC	"							
β-BHC	"							
γ-BHC	"							
δ-BHC	"							
Chlordane	"							
4,4'-DDT	"							
4,4'-DDE	"							
4,4'-DDD	"							
Dieldrin	"							
α-Endosulfan	"							
β-Endosulfan	"							
Endosulfan Sulfate	"							
Endrin	"							
Endrin Aldehyde	"							
Heptachlor	"							
Heptachlor Epoxide	"							
PCB-1242	"							
PCB-1254	"							

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TELEX 315078

ARO P.O. No.

Customer Goldberg-Zoino Associates

ARO W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

Pollutant	B-9 SAMPLE 7 Conc (ppm)	B-9 SAMPLE 7 Mass (lbs)	SAMPLE Conc (ppm)	SAMPLE Mass (lbs)	SAMPLE Conc (ppm)	SAMPLE Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
PCB-1221	<0.0001							
PCB-1232	"							
PCB-1248	"							
PCB-1260	"							
PCB-1016	"							
Toxaphene	"							
Antimony	<0.010							
Beryllium	<0.010							
Thallium	<0.010							

COPY

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
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TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

Customer Goldberg-Zoino Associates

ARO W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

Pollutant	B-6 SAMPLE 4 Conc (ppm)	B-6 SAMPLE 4 Mass (lbs)	B-16 SAMPLE 5 Conc (ppm)	B-16 SAMPLE 5 Mass (lbs)	B-18 SAMPLE 6 Conc (ppm)	B-18 SAMPLE 6 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
Phenols	0.031		0.008		0.019			
Oil & Grease	-		-		-			
Acrolein	<0.001		<0.001		<0.001			
Acrylonitrile	"		"		"			
Benzene	"		"		"			
Bis (Chloromethyl) Ether	"		"		"			
Bromoform	"		"		"			
Carbon Tetrachloride	"		"		"			
Chlorobenzene	"		"		"			
Chlorodi-bromomethane	"		"		"			
Chloroethane	"		"		"			
Chloroethylvinyl Ether	"		"		"			
Chloroform	"		"		"			
Dichlorobromethane	"		"		"			
Dichloro-difluoromethane	"		"		"			
1,1-Dichloro-ethane	"		"		"			
1,2-Dichloro-ethane	"		"		"			
1,1-Dichloro-ethylene	"		"		"			
1,2-Dichloro-propane	"		"		"			
1,2-Dichloro-propylene	"		"		"			

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
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TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

Customer Goldberg-Zoino Associates P.O. No.

E.P.A. W.O. 21,625W-11562 Report Date 8/15/85

Station New Buffalo Industrial Park

Pollutant	B-6 SAMPLE 4 Conc (ppm)	B-6 SAMPLE 4 Mass (lbs)	B-16 SAMPLE 3 Conc (ppm)	B-16 SAMPLE 3 Mass (lbs)	B-18 SAMPLE 6 Conc (ppm)	B-18 SAMPLE 6 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
Ethylbenzene	<0.001		<0.001		<0.001			
Methyl Bromide	"		"		"			
Methyl Chloride	"		"		"			
Methylene Chloride	"		"		"			
1, 1, 2, 2-Tetra-chloroethane	"		"		"			
Tetrachloroethylene	"		"		"			
Toluene	"		"		"			
1, 2-Trans-Dichloroethylene	"		"		"			
1, 1, 1-Tri-chloroethane	"		"		"			
1, 1, 2-Tri-chloroethane	"		"		"			
Trichloro-ethylene	"		"		"			
Trichloro-fluoromethane	"		"		"			
Vinyl Chloride	"		"		"			
2, 3, 7, -8-Tetrachloro-dibenzo-p-dioxin	<0.001		<0.001		<0.001			
2-Chlorophenol	0.003		<0.001		<0.001			
2, 4-Dichloro-phenol	0.002		0.001		0.002			
2, 4-Dimethyl-phenol	<0.001		<0.001		<0.001			
4, 6-Dinotro-O-Cresol	0.002		0.001		0.002			
2, 4-Dinitro-phenol	0.003		0.001		0.002			

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227
TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ARO P.O. No.

Customer Goldberg-Zoino Associates

R W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

Pollutant	B-6 SAMPLE 4 Conc (ppm)	B-6 SAMPLE 4 Mass (lbs)	B-16 SAMPLE 5 Conc (ppm)	B-16 SAMPLE 5 Mass (lbs)	B-18 SAMPLE 6 Conc (ppm)	B-18 SAMPLE 6 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
2-Nitrophenol	<0.001		<0.001		<0.001			
4-Nitrophenol	<0.001		<0.001		<0.001			
P-Chloro-M-Cresol	0.004		0.002		0.003			
Pentachlorophenol	0.005		0.002		0.002			
Phenol	0.003		0.002		0.003			
2,4,6-Trichlorophenol	<0.001		<0.001		<0.001			
Acenaphthene	<0.001		<0.001		<0.001			
Acenaphtylene	"		"		"			
Anthracene	"		"		"			
Benzidine	"		"		"			
Benzo (a) Anthracene	"		"		"			
Benzo(a) Pyrene	"		"		"			

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

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Customer Goldberg-Zoino Associates P.O. No.

ARO W.O. 21,625W-11562 Report Date 8/15/85

Station New Buffalo Industrial Park

Pollutant	E-6 SAMPLE 4		E-16 SAMPLE 5		E-18 SAMPLE 6		AVERAGE	
	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
Benzo (a) Pyrene								
3,4-Benzo-fluoranthene	<0.001		<0.001		<0.001			
Benzo (ghi) Perylene	"		"		"			
Benzo (k) Fluoranthene	"		"		"			
Bis (2-Chloro-ethoxy) Methane	"		"		"			
Bis (2-Chloro-ethyl) Ether	"		"		"			
Bis (2-Chloro-isopropyl) Ether	"		"		"			
Bis (2-Ethyl-hexyt) Phthalate	"		"		"			
4-Bromo-phenyl Phenyl Ether	"		"		"			
Butyl Benzyl Phthalate	"		"		"			
2-Chloro-naphthalene	"		"		"			
4-Chlorophenyl Phenyl Ether	"		"		"			
Chrysene	"		"		"			
Dibenzo(a,h) Anthracene	"		"		"			
1,2-Dichloro-benzene	"		"		"			
1,3-Dichloro-benzene	"		"		"			
1,4-Dichloro-Benzene	"		"		"			
3,3'-Dichlorobenzidine	"		"		"			
Diethyl Phthalate	"		"		"			
Dimethyl Phthalate	"		"		"			

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

ARO

P. O. No.

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

Customer Goldberg-Zoino Associates

R.O. W.O. 21,625W-11562 Report Date 8/15/85

Location New Buffalo Industrial Park

Pollutant	B-6 SAMPLE 4 Conc (ppm)	B-6 SAMPLE 4 Mass (lbs)	B-16 SAMPLE 5 Conc (ppm)	B-16 SAMPLE 5 Mass (lbs)	B-18 SAMPLE 6 Conc (ppm)	B-18 SAMPLE 6 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
DI-N-Butyl Phthalate	<0.001		<0.001		<0.001			
2,4-Dinitro-toluene	"		"		"			
2,6-Dinitro-toluene	"		"		"			
Di-N-Octyl Phthalate	"		"		"			
1,2-Diphenylhydrazine (as Azobenzene)	"		"		"			
Flouranthene	"		"		"			
Fluorene	"		"		"			
Hexa-chlorobenzene	"		"		"			
Hexa-chlorobutadiene	"		"		"			
Hexachloro-cyclopentadiene	"		"		"			
Hexachloro-ethane	"		"		"			
Indeno (1,2,3-cd) Pyrene	"		"		"			
Isophorone	"		"		"			
Naphthalene	"		"		"			
Nitrobenzene	"		"		"			
N-Nitro-sodimethylamine	"		"		"			
N-Nitrosodi-N-Propylamine	"		"		"			
N-Nitro-sodiphenylamine	"		"		"			
Phenanthrene	"		"		"			
Pyrene	"		"		"			

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
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TELEPHONE 683-0440
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TELEX 315078

Customer Goldberg-Zoino Associates P.O. No.

O W.O. 21,625W-11562 Report Date 8/15/85

Station New Buffalo Industrial Park

Pollutant	B-6 SAMPLE 4		B-16 SAMPLE 5		B-18 SAMPLE 6		AVERAGE	
	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
1,2,4-Trichlorobenzene	<0.001		<0.001		<0.001			
Aldrin	<0.0001		<0.0001		<0.0001			
α-BHC	"		"		"			
β-BHC	"		"		"			
γ-BHC	"		"		"			
δ-BHC	"		"		"			
Chlordane	"		"		"			
4,4'-DDT	"		"		"			
4,4'-DDE	"		"		"			
4,4'-DDD	"		"		"			
Dieldrin	"		"		"			
α-Endosulfan	"		"		"			
β-Endosulfan	"		"		"			
Endosulfan Sulfate	"		"		"			
Endrin	"		"		"			
Endrin Aldehyde	"		"		"			
Heptachlor	"		"		"			
Heptachlor Epoxide	"		"		"			
PCB-1242	"		"		"			
PCB-1254	"		"		"			

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227
TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ARO P.O. No.

ustomer Goldberg-Zoino Associates

RC W.O. 21,625W-11562 Report Date 8/15/85

cation New Buffalo Industrial Park

Pollutant	B-6 SAMPLE 4 Conc (ppm)	B-6 SAMPLE 4 Mass (lbs)	B-16 SAMPLE 5 Conc (ppm)	B-16 SAMPLE 5 Mass (lbs)	B-18 SAMPLE 6 Conc (ppm)	B-18 SAMPLE 6 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
PCB-1221	<0.0001		<0.0001		<0.0001			
PCB-1232	"		"		"			
PCB-1248	"		"		"			
PCB-1260	"		"		"			
PCB-1016	"		"		"			
Toxaphene	"		"		"			
Antimony	<0.010		<0.010		<0.010			
Arsenic	0.015							
Beryllium	<0.010		<0.010		<0.010			
Cadmium	0.002							
Chromium	<0.010							
Copper	0.216							
Lead	0.037							
Mercury	<0.0002							
Nickel	0.035							
Selenium	<0.005							
Silver	<0.010							
Thallium	<0.010		<0.010		<0.010			
Zinc	0.612							

PLACE: Buffalo

COUNTY: Erie

SOURCE: New Buffalo Industrial Park

SENT BY: Gary Klawinski

COLLECTED: 7/11/85

RECEIVED: 7/12/85

EXAMINED: 8/29/85

LAB & SAMPLE NOS.		ARSENIC	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	ZINC
85-314	B-1	<0.02	<0.001	<0.010	0.06	0.07	0.0004	<0.05	<0.001	<0.010	0.03
85-315	B-11	0.04	0.004	0.090	0.09	0.52	<0.0004	0.17	<0.001	<0.010	0.37
85-316	B-12	<0.02	<0.001	0.040	0.02	0.73	<0.0004	0.05	<0.001	<0.010	0.65
85-317	B-6	<0.02	0.002	0.070	0.30	0.91	<0.0004	0.13	<0.001	<0.010	0.42
85-318	B-16	<0.02	<0.001	0.02	0.03	0.08	<0.0004	<0.05	<0.001	<0.010	0.08
85-319	B-18	<0.02	<0.001	<0.010	<0.02	0.029	<0.0004	<0.05	<0.001	<0.010	0.03
85-320	B-9	<0.02	0.001	<0.010	<0.02	0.015	<0.0004	0.05	<0.001	<0.010	0.06
85-321	SW-3	<0.02	<0.001	<0.010	<0.02	<0.010	<0.0004	<0.05	<0.001	<0.010	0.03

All results in mg/l

Gerhard Paluca

Gerhard Paluca, Sr. Sanitary Chemist

Matthew C. Lanighan, Ph.D., Asst. Director
ERIE COUNTY LABORATORY
Public Health Division

ANALYSIS OF ONE (1) GROUNDWATER SAMPLE (B-12) FOR PRIORITY POLLUTANT VOLATILES

Report Prepared For

GOLDBERG-ZOINO & ASSOCIATES

By

ADVANCED ENVIRONMENTAL SYSTEMS, INC.

W. Joseph McDougall

W. Joseph McDougall, Ph.D.
Technical Evaluation

September 3, 1985 ←
AES Report AXK

ANALYTICAL METHODOLOGIES

The method numbers for each procedure are listed in the second column of the tabulated results. The source for each method is listed as a reference number in the third column. The complete Analytical Methodologies Reference List is provided in Appendix A.

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: VOLATILE ORGANICS
UNITS OF MEASURE: MICROGRAMS/LITER, OR PPB
CLIENT: GOLDBERG-ZOINO A.E.S. JOB CODE 01AXK

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION
				1798
				WATER
				7/12/85
				B-12
CHLOROMETHANE	624	1	10	BDL *
VINYL CHLORIDE	"	"	10	BDL
CHLOROETHANE	"	"	10	BDL
BROMOMETHANE	"	"	10	BDL
2-CHLOROETHYL VINYL ETHER	"	"	10	BDL
ETHYLBENZENE	"	"	10	BDL
METHYLENE CHLORIDE	"	"	10	43
CHLOROBENZENE	"	"	10	BDL
1,1-DICHLOROETHYLENE	"	"	10	BDL
1,1-DICHLOROETHANE	"	"	10	BDL
trans-1,2-DICHLOROETHYLENE	"	"	10	BDL
CHLOROFORM	"	"	10	BDL
1,2-DICHLOROETHANE	"	"	10	BDL
1,1,1-TRICHLOROETHANE	"	"	10	BDL
CARBON TETRACHLORIDE	"	"	10	BDL
BROMODICHLOROMETHANE	"	"	10	BDL
1,2-DICHLOROPROPANE	"	"	10	BDL
trans-1,3-DICHLOROPROPENE	"	"	10	BDL
TRICHLOROETHYLENE	"	"	10	BDL
BENZENE	"	"	10	BDL
cis-1,3-DICHLOROPROPENE	"	"	10	BDL
1,1,2-TRICHLOROETHANE	"	"	10	BDL
DIBROMOCHLOROMETHANE	"	"	10	BDL
BROMOFORM	"	"	10	BDL

*Below determinable limits.

Susan C. Scrocchi

SUSAN C. SCROCCHI
G. C. SUPERVISOR

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: VOLATILE ORGANICS
UNITS OF MEASURE: MICROGRAMS/LITER, OR PPB
CLIENT: GOLDBERG ZIONO A.E.S. JOB CODE 02AXK

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION
				1798
				WATER
				7/12/85
				8-12
1,1,2,2-TETRACHLORETHYLENE	624	1	10	BDL*
1,1,2,2-TETRACHLOROETHANE	"	"	10	BDL
TOLUENE	"	"	10	BDL

COPY

*Below determinable limits.

Susan C. Scrocchi
SUSAN C. SCROCCHI
G. C. SUPERVISOR

ANALYSIS OF ONE (1) GROUNDWATER SAMPLE FOR METHYLENE CHLORIDE (B-12)

Report Prepared For

GOLDBERG-ZOINO & ASSOCIATES

By

ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Leonard Borzynski
Technical Evaluation

October 14, 1985
AES Report AXK

ANALYTICAL METHODOLOGIES

The method numbers for each procedure are listed in the second column of the tabulated results. The source for each method is listed as a reference number in the third column. The source(s) for the Analytical Methodologies are:

1 - EPA 600/D-80-021, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations", Federal Register 44(233), December 3, 1979.

2 - EPA 600/D-80-022, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations, Correction", Federal Register 44(244), December 18, 1979.

3 - EPA 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", (1983)

4 - EPA 600/4-79-057, "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", (1982)

5 - EPA-SW-846, "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods", second edition (1982)

6 - "Standard Methods for the Examination of Water and Wastewater", 15th Edition, (1980)

7 - New York State Institute of Toxicology Analytical Handbook, October 1982

8 - NIOSH Manual of Analytical Methods, second edition 1977

9 - "The Analysis of Polychlorinated Biphenyls in Transformer Fluid and Waste Oil", EPA Environmental Monitoring and Support Laboratory, draft, June 24, 1980.

10 - "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial" (New York State D.E.C., Division of Solid and Hazardous Waste), Jan. 1985.

11 - EPA 600/4-81-055, "Interim Methods for the Sampling and Analysis of Priority Pollutants in Sediments and Fish Tissue", Revised Jan. 7, 1983.

12 - "Determination of Formaldehyde in the Atmosphere", Environmental Health Center, Div. of Laboratories and Research, N.Y.S. Dept. of Health APC-29.

13 - "Chemical Soil Tests", Cornell University Agricultural Experiment Station, N.Y.S. College of Agricultural, Ithaca, N.Y. Bulletin 960, Revised Oct. 1965.

14 - "Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter", American Society for Testing and Materials, Philadelphia, Pa., Designation: D 240-64 (Reapproved 1973).

AD ...CED ...VIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: VOLATILE ORGANICS
UNITS OF MEASURE: MICROGRAMS/LITER, OR PPB
CLIENT: GOLDBERG-ZOINO A.E.S. JOB CODE 01AXK

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION 2940 B-12 10/07/85	2941 FIELD BLANK 10/07/85
METHYLENE CHLORIDE	601	1	1.00	BDL *	18.5

COPY

*Below determinable limits.

Susan C. Scrocchi

SUSAN C. SCROCCHI
G. C. SUPERVISOR

ANALYSIS OF ONE (1) GROUNDWATER SAMPLE FOR PCB'S AND PESTICIDES (B-12)

PRELIMINARY REPORT

Report Prepared For

GOLDBERG-ZOINO & ASSOCIATES

By

ADVANCED ENVIRONMENTAL SYSTEMS, INC.

Leonard Borzynski
Technical Evaluation

October 2, 1985
AES Report AXK

ANALYTICAL METHODOLOGIES

The method numbers for each procedure are listed in the second column of the tabulated results. The source for each method is listed as a reference number in the third column. The source(s) for the Analytical Methodologies are:

1 - EPA 600/D-80-021, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations", Federal Register 44(233), December 3, 1979.

2 - EPA 600/D-80-022, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations, Correction", Federal Register 44(244), December 18, 1979.

3 - EPA 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", (1983)

4 - EPA 600/4-79-057, "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", (1982)

5 - EPA-SW-846, "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods", second edition (1982)

6 - "Standard Methods for the Examination of Water and Wastewater", 15th Edition, (1980)

7 - New York State Institute of Toxicology Analytical Handbook, October 1982

8 - NIOSH Manual of Analytical Methods, second edition 1977

9 - "The Analysis of Polychlorinated Biphenyls in Transformer Fluid and Waste Oil", EPA Environmental Monitoring and Support Laboratory, draft, June 24, 1980.

10 - "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial" (New York State D.E.C., Division of Solid and Hazardous Waste), Jan. 1985.

11 - EPA 600/4-81-055, "Interim Methods for the Sampling and Analysis of Priority Pollutants in Sediments and Fish Tissue", Revised Jan. 7, 1983.

12 - "Determination of Formaldehyde in the Atmosphere", Environmental Health Center, Div. of Laboratories and Research, N.Y.S. Dept. of Health APC-29.

13 - "Chemical Soil Tests", Cornell University Agricultural Experiment Station, N.Y.S. College of Agricultural, Ithaca, N.Y. Bulletin 960, Revised Oct. 1965.

14 - "Heat of Combustion of Liquid Hydrocarbon Fuels by Bomb Calorimeter", American Society for Testing and Materials, Philadelphia, Pa., Designation: D 240-64 (Reapproved 1973).

ADVANCED ENVIRONMENTAL SYSTEMS, INC.
LABORATORY REPORT

TYPE OF ANALYSIS: PCBs AND PESTICIDES
UNITS OF MEASURE: MICROGRAMS/LITER, OR PPB
CLIENT: GOLDBERG-ZOINO A.E.S. JOB CODE 01AXK

ANALYSIS	METHOD	REF	DETERMINABLE LIMITS	SAMPLE IDENTIFICATION
				2339
				GRND WATER
				8/23/85
				B-12
ALDRIN	608	1	1.0	BDL*
alpha-BHC	"	"	1.0	BDL
beta-BHC	"	"	1.0	BDL
gamma-BHC	"	"	1.0	BDL
delta-BHC	"	"	1.0	BDL
CHLORDANE	"	"	10.0	BDL
4,4´-DDT	"	"	1.0	BDL
4,4´-DDE	"	"	1.0	BDL
4,4´-DDD	"	"	1.0	BDL
DIELDRIN	"	"	1.0	BDL
alpha-ENDOSULFAN	"	"	1.0	BDL
beta-ENDOSUFAN	"	"	1.0	BDL
ENDOSULFAN SULFATE	"	"	1.0	BDL
ENDRIN	"	"	1.0	BDL
ENDRIN ALDEHYDE	"	"	1.0	BDL
HEPTACHLOR	"	"	1.0	BDL
HEPTACHLOR EPOXIDE	"	"	1.0	BDL
PCB-1242	"	"	1.0	BDL
PCB-1254	"	"	1.0	BDL
PCB-1221	"	"	1.0	BDL
PCB-1232	"	"	1.0	BDL
PCB-1248	"	"	1.0	BDL
PCB-1260	"	"	1.0	BDL
PCB-1016	"	"	1.0	BDL
TOXAPHENE	"	"	10.0	BDL

COPY

*Below determinable limits.

Susan C. Scrocchi

SUSAN C. SCROCCHI
G. C. SUPERVISOR

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

Attn: Ray Kampf

CUSTOMER: Goldberg-Zoino Associates, Suite 1000, Rand Bldg., 14 Lafayette Sq., Buffalo, NY 14203

DATE COLLECTED: ? RECEIVED: 10/14/85 COMPLETED: 10/21/85

P.O. NO. File 5669.20 ARO W.O. 21,765W-12138

TEST	Total Xylene (ppb)
Monitoring Well B-18	<10.
Duplicate	<10.

RECEIVED
OCT 28 1985
Goldberg-Zoino Assoc. of New York, P.C.

Bernard J. Grucza

Bernard J. Grucza, Ph.D.
Director, Environmental Laborator

APPENDIX A

ANALYTICAL METHODOLOGIES REFERENCE LIST

ANALYTICAL METHODOLOGIES REFERENCE LIST

Routine Analyses are Performed in Accordance with Protocols Found in the Following Numbered Sources. These Numbers Correspond to those Listed in the Laboratory Report Under the Reference ("REF") Column.

1 - EPA 600/D-80-021, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations", Federal Register 44(233), December 3, 1979.

2 - EPA 600/D-80-022, "Guidelines Establishing Test Procedures for the Analysis of Pollutants; Proposed Regulations, Correction", Federal Register 44(244), December 18, 1979.

3 - EPA 600/4-79-020, "Methods for Chemical Analysis of Water and Wastes", (1983)

4 - EPA 600/4-79-057, "Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater", (1982)

5 - EPA-SW-846, "Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods", second edition (1982)

6 - "Standard Methods for the Examination of Water and Wastewater", 15th Edition, (1980)

7 - New York State Institute of Toxicology Analytical Handbook, October 1982

8 - NIOSH Manual of Analytical Methods, second edition 1977

9 - "The Analysis of Polychlorinated Biphenyls in Transformer Fluid and Waste Oil", EPA Environmental Monitoring and Support Laboratory, draft, June 24, 1980

10 - "Approved Analytical Procedures for Determining the Content of Constituents Banned from Landburial" (New York State D. E. C., Division of Solid and Hazardous Waste), Jan. 1985.

11 - EPA 600/4-81-055, "Interim Methods for the Sampling and Analysis of Priority Pollutants in Sediments and Fish Tissue", Revised Jan. 7, 1983

ANALYTICAL TEST RESULTS
SURFACE WATER/SEDIMENT SAMPLES

SW-1
SW-2
SW-3
SD-3a
SW-4
SD-4a

Summary of In-Situ Water Quality Tests Taken 7/12/85
Surface Water/Sediment Samples

Sample Location	Sample Time	pH (Standard Units)	Specific Conductance (µmhos/cm)	Remarks
SW-3	13:00	8.01	850	Surface Water
SD-3a	13:20	8.10	810	Water and Black Sediments
SW-4	14:00	7.56	670	Surface Water
SD-4a	14:20	7.70	650	Water and Black Sediment

THE ARO CORPORATION
BUFFALO DIVISION
3695 BROADWAY, BUFFALO, N.Y. 14227
TELEPHONE 716-683-0440
TELEX 9-1250

ARO RECEIVED
MAR - 7 1984
Goldberg-Zoino Assoc. of New York, P.C.

ANALYTICAL RESULTS

CUSTOMER: GOLDBERG-ZOINO ASSOCIATES OF N.Y., P.C. Attn: Ray Laport

DATE COLLECTED: 2/14/84 RECEIVED: 2/14/84 COMPLETED: 2/29/84

P.O. NO. File R5615 ARO W.O. 21,037W-8415/16

Buffalo Industrial Park Samples

TEST	SW-1	SW-2			
Arsenic	0.004	0.009			
Barium	0.179	0.239			
Cadmium	---	0.001			
Lead	0.003	0.039			
Mercury	---	0.0004			
Selenium	0.002	0.003			
Silver	---	<0.001			
Zinc	0.045	0.142			
Chromium (+6)	<0.01	<0.01			
BOD_5	---	10.			
COD	---	21.			
Chlorides	34.	36.			
pH	7.38	7.12			
Nitrates (as N)	3.37	3.59			

ALL RESULTS IN PPM (MG/L)

COPY

Bernard J. Grucza

Bernard J. Grucza, Ph.D.
Director, Environmental Laboratory

THE ARO CORPORATION
BUFFALO DIVISION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 716-683-0440
TELEX 9-1250

ANALYTICAL RESULTS

CUSTOMER: GOLDBERG -ZOINO ASSOCIATES OF N.Y., P.C. Attn: Ray Laport

DATE COLLECTED: 2/14/84 RECEIVED: 2/14/84 COMPLETED: 2/29 /84

P.O. NO. File R 5615 ARO W.O. 21,037W-8415/16

Buffalo Industrial Park Samples

TEST	SW-1	SW-2			
Phosphates (as P)	---	<0.01			
Sulfates	194.	328.			
Total Solids	---	846.			
Total Suspended Solids	---	0.80			

ALL RESULTS IN PPM (MG L)

Bernard J. Grucza, Ph.D.
Director, Environmental Laboratory

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

ATTN: TOM HEINS

CUSTOMER: Goldberg-Zoino Associates of NY, Suite 1000, Rand Bldg., 14 Lafayette S
Buffalo, NY 14203

DATE COLLECTED: 7/12/85 RECEIVED: 7/12/85 COMPLETED: 8/14/85

P.O. NO. _____ ARO W.O. 21,612W-11561

New Buffalo Industrial Park (4 Samples)

TEST	SW-3	SD-3Q	SW-4	SD-4Q	
BOD_5, mg/L	3.0	7.	13.	9.	
Oil & Grease, mg/L	<0.1	<0.1	<0.1	<0.1	
Total Suspended Solids, mg/L	18.	1160.	24.	1184.	
Total Dissolved Solids, mg/L	592.	580.	436.	428.	
Total Organic Halogen, ppm	<0.010	<0.010	<0.010	<0.010	

Bernard J. Grucza

Bernard J. Grucza, Ph.D.
Director, Environmental Laboratory

PLACE: Buffalo

COUNTY: Erie

SOURCE: New Buffalo Industrial Park

SENT BY: Gary Klawinski

COLLECTED: 7/11/85

RECEIVED: 7/12/85

EXAMINED: 8/29/85

LAB & SAMPLE NOS.		ARSENIC	CADMIUM	CHROMIUM	COPPER	LEAD	MERCURY	NICKEL	SELENIUM	SILVER	ZINC
85-314	B-1	<0.02	<0.001	<0.010	0.06	0.07	0.0004	<0.05	<0.001	<0.010	0.03
85-315	B-11	0.04	0.004	0.090	0.09	0.52	<0.0004	0.17	<0.001	<0.010	0.37
85-316	B-12	<0.02	<0.001	0.040	0.02	0.73	<0.0004	0.05	<0.001	<0.010	0.65
85-317	B-6	<0.02	0.002	0.070	0.30	0.91	<0.0004	0.13	<0.001	<0.010	0.42
85-318	B-16	<0.02	<0.001	0.02	0.03	0.08	<0.0004	<0.05	<0.001	<0.010	0.08
85-319	B-18	<0.02	<0.001	<0.010	<0.02	0.029	<0.0004	<0.05	<0.001	<0.010	0.03
85-320	B-9	<0.02	0.001	<0.010	<0.02	0.015	<0.0004	0.05	<0.001	<0.010	0.06
85-321	SW-3	<0.02	<0.001	<0.010	<0.02	<0.010	<0.0004	<0.05	<0.001	<0.010	0.03

All results in mg/l

Gerhard Paluca

Gerhard Paluca, Sr. Sanitary Chemist

Matthew C. Lanighan, Ph.D., Asst. Director
ERIE COUNTY LABORATORY
Public Health Division

ANALYTICAL TEST RESULTS
SURFACE WASTE DEPOSITS

WA → W-F

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

ATTN: RAY KAMPF

CUSTOMER: GOLDBERG-ZOINO ASSOC., SUITE 1000, RAND BLDG., 14 LAFAYETTE SQUARE
BUFFALO, NY 14203

DATE COLLECTED: 4/24/85 RECEIVED: 4/24/85 COMPLETED: 4/26/85

P.O. NO. _____ ARO W.O. 21,517W-11,133-134

TEST	PCB's mg/kg (ppm)		
1A - Surface Oil & Water Mix	<1.	W-A	
Duplicate	<1.	W-A Duplicate	
1B - Soil Sample	<1.	W-B	

RECEIVED
MAY - 6 1985
Goldberg-Zoino Assoc.
of New York, P.C.

COPY

Bernard J. Grucza

Bernard J. Grucza, Ph.D.
Director, Environmental Laboratories

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

CUSTOMER: Goldberg-Zoino Associates, Suite 1000, Rand Bldg., 14 Lafayette Sq. Buffalo, NY 14203

DATE COLLECTED: ? RECEIVED: 7/26/85 COMPLETED: 9/13/85

P.O. NO. _____ ARO W.O. 21,666W-11848

TEST	Buffalo Ind. Park W-C
Phenols-Total, mg/kg	15.35
IR Scan	No discernable peaks to identify gross contamination.

Bernard J. Gruza

Bernard J. Gruza, Ph.D.
Director, Environmental Laboratory

RECRA ENVIRONMENTAL LABORATORIES
Division of Recra Research, Inc.

ANALYTICAL RESULTS (W-O + W-E)

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C.
PRIORITY POLLUTANT ANALYSES

Prepared For:

Goldberg-Zoino Associates
of N.Y.P.C.
Suite 100
Rand Bldg.
Buffalo, NY 14203

Prepared By:

Recra Environmental Laboratories
4248 Ridge Lea Road
Amherst, NY 14226

Report Date: May 16, 1985

ANALYTICAL RESULTS

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C.
PRIORITY POLLUTANT ANALYSES

Report Date: 5/16/85

INTRODUCTION:

On April 1, 1985 samples were received at Recra Environmental Laboratories. A request was made by Goldberg-Zoino Associates to have the samples analyzed for selected fractions of the Environmental Protection Agency decreed priority pollutants.

This report will address the results of those analyses.

METHODS:

Priority pollutant analyses were conducted according to Environmental Protection Agency (EPA) methodologies.

Organic priority pollutants were analyzed by Gas Chromatography/Mass Spectrometry (GC/MS). Pesticide priority pollutants were analyzed by Gas Chromatography.

RESULTS AND DISCUSSION:

Analyses were performed according to to U.S. Environmental Protection Agency methodologies where applicable.

Analyses for specific Pesticides/PCB's are based upon the matching of retention times between samples and standards on a single gas chromatographic column.

Values reported as "less than" (<) indicate the working detection limit for the particular sample and/or parameter.

RESULTS AND DISCUSSION: (cont'd.)

The values reported as "less than or equal to" (≤) indicate the compound may be present at trace levels relative to the detection limit but not subject to accurate quantification.

Compounds reported as ND are "not detected". Compounds reported as BDL are confirmed as being present in the sample at a level "below detection limit", and are not subject to reliable quantitation.

Respectfully Submitted,

RECRA ENVIRONMENTAL LABORATORIES

John J. Jugovich

John J. Jugovich
Organic Coordinator

JJJ/dmf

ANALYTICAL RESULTS

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C.
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 5/16/85

ACID/PHENOLICS

COMPOUND	DETECTION LIMIT (µg/g)	SAMPLE IDENTIFICATION W-D #1
2-chlorophenol	380	ND
2,4-dichlorophenol	310	ND
2,4-dimethylphenol	310	ND
4,6-dinitro-o-cresol	2,800	ND
2,4-dinitrophenol	4,900	ND
2-nitrophenol	420	ND
4-nitrophenol	280	ND
p-chloro-m-cresol	350	ND
pentachlorophenol	420	ND
phenol	170	ND
2,4,6-trichlorophenol	310	ND

ADDITIONAL SAMPLE INFORMATION

Sample Date	4/1/85
Extraction Date	5/6/85
Analysis Date	5/6/85
Internal Standard (IS) - Level	2,300 µg/g
deuterated phenanthrene - Recovery	69%

FOR RECRA ENVIRONMENTAL LABORATORIES John J. Duquesne

DATE 5/16/85

I.D. # 85-322

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C.
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 5/16/85

BASE/NEUTRALS

COMPOUND	DETECTION LIMIT (ug/ml)	SAMPLE IDENTIFICATION W-D #1
acenaphthene	220	ND
acenaphthylene	410	ND
anthracene	220	ND
benzidine	5,100	ND
benzo(a)anthracene	910	ND
benzo(a)pyrene	290	ND
benzo(b)fluoranthene	560	ND
benzo(g,h,i)perylene	480	ND
benzo(k)fluoranthene	290	ND
bis(2-chloroethoxy)methane	620	ND
bis(2-chloroethyl)ether	660	ND
bis(2-chloroisopropyl)ether	660	ND
bis(2-ethylhexyl)phthalate	290	ND
4-bromophenylphenylether	220	ND
butylbenzylphthalate	290	ND
2-chloronaphthalene	220	ND
4-chlorophenylphenylether	490	ND
chrysene	290	ND
dibenzo(a,h)anthracene	290	ND
1,2-dichlorobenzene	220	ND
1,3-dichlorobenzene	220	ND
1,4-dichlorobenzene	510	ND
3,3'-dichlorobenzidine	1,900	ND
diethylphthalate	2,600	ND
dimethylphthalate	190	ND
di-n-butylphthalate	290	ND
2,6-dinitrotoluene	220	ND
2,4-dinitrotoluene	660	ND
di-n-octylphthalate	290	ND
1,2-diphenylhydrazine	2,900	ND
fluoranthene	260	ND
fluorene	220	580 ug/g

(Continued)

I.D. #85-322

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C.
GAS CHROMATOGRAPHY/MASS SPECTROMETRY
PRIORITY POLLUTANT ANALYSES

Report Date: 5/16/85

BASE/NEUTRALS

COMPOUND	DETECTION LIMIT (µg/g)	SAMPLE IDENTIFICATION W-D #1
hexachlorobenzene	220	ND
hexachlorobutadiene	100	ND
hexachlorocyclopentadiene	2,900	ND
hexachloroethane	190	ND
indeno(1,2,3-cd)pyrene	430	ND
isophorone	260	ND
naphthalene	190	BDL
nitrobenzene	220	ND
N-nitrosodimethylamine	2,900	ND
N-nitrosodi-n-propylamine	2,900	ND
N-nitrosodiphenylamine	220	ND
phenanthrene	630	ND
pyrene	220	ND
1,2,4-trichlorobenzene	220	ND

ADDITIONAL SAMPLE INFORMATION	
Sample Date	4/1/85
Extraction Date	5/6/85
Analysis Date	5/6/85
Internal Standard - Level	2,300 µg/g
deuterated phenanthrene - Recovery	69%

FOR RECRA ENVIRONMENTAL LABORATORIES John D. Degnan

DATE 5/16/85

I.D. #85-322

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C.
GAS CHROMATOGRAPHY

COPY

Report Date: 5/16/85

VOLATILES

COMPOUND	UNITS OF MEASURE	SAMPLE IDENTIFICATION W-D #1	W-E #2
bromodichloromethane	µg/g	<10	<10
bromoform	µg/g	<10	<10
bromomethane	µg/g	<20	<20
carbon tetrachloride	µg/g	<10	<10
chlorobenzene	µg/g	<20	<20
chloroethane	µg/g	<10	<10
2-chloroethylvinyl ether	µg/g	<10	<10
chloroform	µg/g	<5	<5
chloromethane	µg/g	<20	<20
dibromochloromethane cis-1,3-dichloropropene 1,1,2-trichloroethane	µg/g	<10	<10
1,2-dichlorobenzene	µg/g	<40	<40
1,3-dichlorobenzene	µg/g	<40	<40
1,4-dichlorobenzene	µg/g	<40	<40
1,1-dichloroethane	µg/g	<10	<10
1,2-dichloroethane	µg/g	<5	<5
1,1-dichloroethene	µg/g	<20	<20
trans-1,2-dichloroethene	µg/g	<10	<10
1,2-dichloropropane	µg/g	<5	<5
trans-1,3-dichloropropene	µg/g	<5	<5
methylene chloride	µg/g	<5	<5
1,1,2,2-tetrachloroethane tetrachloroethene	µg/g	<5	<5
1,1,1-trichloroethane	µg/g	<10	<10
trichloroethene	µg/g	<10	<10
vinyl chloride	µg/g	<10	<10

ADDITIONAL SAMPLE INFORMATION

Sample Date	4/1/85	4/1/85
Analysis Date	4/4/85	4/4/85

FOR RECRA ENVIRONMENTAL LABORATORIES [illegible]

DATE 5/[illegible]/85

I.D. #85-322

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C
GAS CHROMATOGRAPHY
PRIORITY POLLUTANT ANALYSES

COPY

Report Date: 5/16/85

PESTICIDES/PCB'S

COMPOUND	UNITS OF MEASURE	SAMPLE IDENTIFICATION W-D #1
aldrin	µg/g	<5
alpha-BHC	µg/g	<4
beta-BHC	µg/g	<4
delta-BHC	µg/g	<5
gamma-BHC	µg/g	≤4.9
chlordane	µg/g	<30
4,4'-DDD	µg/g	<3
4,4'-DDE	µg/g	<5
4,4'-DDT	µg/g	<3
dieldrin	µg/g	<2
alpha-endosulfan	µg/g	<5
beta-endosulfan	µg/g	<3
endosulfan sulfate	µg/g	<3
endrin	µg/g	<7
endrin aldehyde	µg/g	<3
heptachlor	µg/g	<5
heptachlor epoxide	µg/g	<5
PCB-1016	µg/g	<2
PCB-1221	µg/g	<4
PCB-1232	µg/g	<4
PCB-1242	µg/g	<2
PCB-1248	µg/g	<2
PCB-1254	µg/g	<2
PCB-1260	µg/g	<2
toxaphene	µg/g	<70

ADDITIONAL SAMPLE INFORMATION

Sample Date	4/1/85
Extraction Date	4/22/85
Analysis Date	4/22/85

FOR RECRA ENVIRONMENTAL LABORATORIES John J Augenti

DATE 5/16/85

I.D. #85-322

RECRA ENVIRONMENTAL LABORATORIES

ANALYTICAL RESULTS

GOLDBERG-ZOINO ASSOCIATES OF N.Y.P.C.
PRIORITY POLLUTANT ANALYSES

Report Date: 5/16/85

METALS

COMPOUND	UNITS OF MEASURE	DATE OF ANALYSIS	SAMPLE IDENTIFICATION W-D #1
Total antimony	µg/g	4/26/85	<5
Total arsenic	µg/g	4/6/85	<5
Total beryllium	µg/g	4/8/85	<0.8
Total cadmium	µg/g	4/8/85	<0.6
Total chromium	µg/g	4/9/85	1.0
Total copper	µg/g	4/8/85	2.0
Total lead	ug/g	4/19/85	<5
Total mercury	µg/g	4/27/85	<0.07
Total nickel	µg/g	4/19/85	<3
Total selenium	µg/g	4/6/85	<7
Total silver	µg/g	4/8/85	<0.6
Total thallium	µg/g	4/26/85	<6
Total zinc	µg/g	4/8/85	<10

ADDITIONAL SAMPLE INFORMATION

Sample Date	4/1/85

COPY

FOR RECRA ENVIRONMENTAL LABORATORIES D. V. Zoino

DATE 5/16/85

I.D. #85-322

RECRA ENVIRONMENTAL LABORATORIES

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

ATTN: RAY LAPORT

CUSTOMER: Goldberg-Zoino Associates, Suite 1000, Rand Bldg., 14 Lafayette Sq. Buffalo, NY 14203

DATE COLLECTED: ? RECEIVED: 7/26/85 COMPLETED: 9/13/85

P.O. NO. _____ ARO W.O. 21,666W-11848

*All results in ppm

TEST	Buffalo Ind. Park W-F		Buffalo Ind. Park	W-F	
Acenaphthene	0.012		Phenanthrene	0.020	
Acenaphthylene	0.017		Pyrene	0.031	
Anthracene	0.005				
Benzo(a)anthracene	<0.001				
Benzo(a)pyrene	0.039				
Benzo(b) Fluoranthene	0.021				
Benzo(ghi) perylene	0.027				
Benzo(k) fluoranthene	0.01				
Chrysene	0.029				
Dibenzo(a,h) Anthracene	<0.001				
Fluoranthene	0.013				
Fluorene	0.009				
Indeno(1,2,3-cd) pyrene	<0.001				
Naphthalene	0.009				

Bernard J. Gruca, Ph.D.
Director, Environmental Laboratory

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

ATTN: RAY LAPORT

CUSTOMER: Goldberg-Zoino Associates, Suite 1000, Rand Bldg., 14 Lafayette Sq. Buffalo, NY 14203

LAB COLLECTED: 7/18-19/85 RECEIVED: 7/23/85 COMPLETED: 9/13/85

P.O. NO. _____ ARO W.O. 21,666W-11848

*All results in ppm

TEST	Buffalo Ind. Park TPIII-12	Buffalo Ind. Park Composite TPIII - 2 + 8	Buffalo Ind. Park TPIII-1/2 @ 3'	Buffalo Ind Park W-F
2-Chlorophenol	<0.001	0.003	<0.001	0.003
2, -Dichlorophenol	0.002	0.005	<0.001	0.002
2, -Dimethylphenol	<0.001	<0.001	0.002	<0.001
4,6-Dinitro-O-Cresol	0.001	0.003	0.002	<0.001
2,4-Dinitro-phenol	<0.001	0.002	<0.001	0.005
2-Nitrophenol	<0.001	<0.001	<0.001	<0.001
4-Nitrophenol	<0.001	<0.001	<0.001	<0.001
P-Chloro-M-Cresol	0.002	0.002	0.004	0.017
Pentachlorophenol	0.003	0.002	0.003	0.025
Phenol	0.002	0.004	0.002	0.007
2,4,6-Trichlorophenol	<0.001	<0.001	<0.001	<0.001
Cyanides, mg/kg	X	X	5.65	X
Sulfide, mg/kg	X	X	4.1	X

COPY

RECEIVED
SEP 16 1985
Goldberg-Zoino Assoc. of New York, P.C.

Bernard J. Gruccio, Ph.D.
Director, Environmental Laboratory

ANALYTICAL TEST RESULTS

TEST PIT SAMPLES

Summary of In-Situ Water Quality Measurements
Samples Collected from Test Pits Excavated 7/18 & 7/19/85

Test Pit No.	Sample Depth	pH (standard units)	Specific Conductance (µmhos/cm)	Remarks
TP-III-1	~6 ft.	7.48	1000	-----
TP-III-7	~7.5 ft.	7.48	600	-----
TP-III-9	~7.0 ft.	7.33	490	-----
TP-III-11	~4.0 ft.	7.84	750	Oil Floating in Water
TP-III-12	~5.0 ft.	8.11	280	Oil Floating in Water
TP-III-18	~7.0 ft.	7.61	1300	-----

SUMMARY OF pH MEASUREMENTS
TEST PIT SAMPLES

		pH (Standard Units)
TP III-2 TP III-8	Composite Samples	2.69
TP III-9		8.60
TP III-10		7.80
TP III-12 @ 3 ft.		8.65
TP III-21		7.42

Note: pH measurements by the ARO Corporation Buffalo Division

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

ANALYTICAL RESULTS

CUSTOMER: Goldberg-Zoino Associates

DATE COLLECTED: 7/18-19/85 RECEIVED: 7/23/85 COMPLETED: 8/19/85

P.O. NO. File 5669 ARO W.O. 21,634W-11673

TEST	TP-III-18	TP-III-10	TP-III-9	TP-III-21	
IR Scan (Extract)	112. mg/kg hydrocarbon	160. mg/kg hydrocarbon	455. mg/kg hydrocarbon	X	
Other Functional Groups	None	None	None	X	
% Iron	X	X	X	2.91	
Phenolics Total	X	X	X	0.68 mg/kg	

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ANALYTICAL RESULTS

ATTN: RAY LAPORT

CUSTOMER: Goldberg-Zoino Associates, Suite 1000, Rand Bldg., 14 Lafayette Sq. Buffalo, NY 14203

DATE COLLECTED: 7/18-19/85 RECEIVED: 7/23/85 COMPLETED: 9/13/85

P.O. NO. _____ ARO W.O. 21,666W-11848

*All results in ppm

TEST	Buffalo Ind. Park TPIII-18	Buffalo Ind. Park Composite TPIII-2+8	Buffalo Ind. Park TPIII-12 @3'	Buffalo Ind Park W-F
2-Chlorophenol	<0.001	0.003	<0.001	0.003
2,4-Dichlorophenol	0.002	0.005	<0.001	0.002
2,4-Dimethylphenol	<0.001	<0.001	0.002	<0.001
4,6-Dinitro-O-Cresol	0.001	0.003	0.002	<0.001
2,4-Dinitro-phenol	<0.001	0.002	<0.001	0.005
2-Nitrophenol	<0.001	<0.001	<0.001	<0.001
-Nitrophenol	<0.001	<0.001	<0.001	<0.001
-Chloro-M-Cresol	0.002	0.002	0.004	0.017
Pentachlorophenol	0.003	0.002	0.003	0.025
henol	0.002	0.004	0.002	0.007
,4,6-Trichlorophenol	<0.001	<0.001	<0.001	<0.001
Cyanides, mg/kg	X	X	5.65	X
Sulfide, mg/kg	X	X	4.1	X

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Customer Goldberg-Zoino Associates File 5669

ARO W.O. 21,634W-11673 Report Date 8/19/85

Station

Pollutant	COMPOSITE TP-III-2 + 8 Conc (ppm)	Mass (lbs)	SAMPLE 2 Conc (ppm)	Mass (lbs)	SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
Phenols	1.35							
Oil & Grease	-							
Acrolein	<0.02							
Acrylonitrile	"							
Benzene	"							
Bis (Chloromethyl) Ether	"							
Bromoform	"							
Carbon Tetrachloride	"							
Chlorobenzene	"							
Chlorodi-bromomethane	"							
Chloroethane	"							
Chloroethylvinyl Ether	"							
Chloroform	"							
Dichlorobromethane	"							
Dichloro-difluoromethane	"							
1,1-Dichloro-ethane	"							
1,2-Dichloro-ethane	"							
1,1-Dichloro-ethylene	"							
1,2-Dichloro-propane	"							
1,2-Dichloro-propylene	"							

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ARO

Customer Goldberg-Zoino Associates P.O. No. File 5669

ARO W.O. 21,634W-11673 Report Date 8/19/85

Location

Pollutant	COMPOSITE TP-III-2+8 Conc (ppm)	Mass (lbs)	SAMPLE 2 Conc (ppm)	Mass (lbs)	SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
Ethylbenzene	<0.02							
Methyl Bromide	"							
Methyl Chloride	"							
Methylene Chloride	"							
1, 1, 2, 2-Tetrachloroethane	"							
Tetrachloroethylene	"							
Toluene	"							
1, 2-Trans-Dichloroethylene	"							
1, 1, 1-Trichloroethane	"							
1, 1, 2-Trichloroethane	"							
Trichloroethylene	"							
Trichlorofluoromethane	"							
Vinyl Chloride	"							
Cyanide	"							
2, 3, 7, -8-Tetrachlorodibenzo-p-dioxin	<0.001							
2-Chlorophenol	0.06							
2, 4-Dichlorophenol	0.10							
2, 4-Dimethylphenol	0.22							
4, 6-Dinotro-O-Cresol	<0.02							
2, 4-Dinitrophenol	<0.02							

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RO W.O. 21,634W-11673 Report Date 8/19/85

ation

Pollutant	COMPOSITE TP-III-2+8 Conc (ppm)	Mass (lbs)	SAMPLE 2 Conc (ppm)	Mass (lbs)	SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
2-Nitrophenol	<0.02							
4-Nitrophenol	<0.02							
P-Chloro-M-Cresol	0.27							
Pentachloro-phenol	0.30							
Phenol	0.11							
2, 4, 6-Tri-chlorophenol	0.19							
Acenaphthene	<0.02							
Acenaphtylene	"							
Anthracene	"							
Benzidine	"							
Benzo (a) Anthracene	"							
Benzo(a) Pyrene	"							

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ation

Pollutant	COMPOSITE TP-III-2+8		SAMPLE 2		SAMPLE 3		AVERAGE	
Benzo (a) Pyrene	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
3,4-Benzo-luoranthene	<0.02							
Benzo (ghi) erylene	"							
Benzo (k) Fluoranthene	"							
Bis (2-Chloro-thoxy) Methane	"							
Bis (2-Chloro-thyl) Ether	"							
Bis (2-Chloro-isopropyl) Ether	"							
Bis (2-Ethyl-exyt) Phthalate	"							
4-Bromo-henyl Phenyl Ether	"							
Butyl Benzyl Phthalate	"							
-Chloro-naphthalene	"							
4-Cholorophenyl henyl Ether	"							
Chrysene	"							
Dibenzo(a,h) Anthracene	"							
1,2-Dichloro-enzene	"							
1,3-Dichloro-enzene	"							
1,4-Dichloro-Benzene	"							
3,3'-Dichlorobenzidine	"							
Diethyl Phthalate	"							
Dimethyl Phthalate	"							

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Station

Pollutant	COMPOSITE TP-III-2+8 Conc (ppm)	Mass (lbs)	SAMPLE 2 Conc (ppm)	Mass (lbs)	SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
DI-N-Butyl Phthalate	<0.02							
2,4-Dinitro-toluene	"							
2,6-Dinitro-toluene	"							
Di-N-Octyl Phthalate	"							
1,2-Diphenylhydrazine (as Azobenzene)	"							
Flouranthene	"							
Fluorene	"							
Hexa-chlorobenzene	"							
Hexa-chlorobutadiene	"							
Hexachloro-cyclopentadiene	"							
Hexachloro-ethane	"							
Indeno (1,2,3-cd) Pyrene	"							
Isophorone	"							
Naphthalene	"							
Nitrobenzene	"							
N-Nitro-sodimethylamine	"							
N-Nitrosodi-N-Propylamine	"							
N-Nitro-sodiphenylamine	"							
Phenanthrene	"							
Pyrene	"							

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Customer Goldberg-Zoino Associates P.O. No. File R5669

ARO W.O. 21,634W-11673 Report Date 8/19/85

Station

Pollutant	COMPOSITE TP-III-2+8 Conc (ppm)	Mass (lbs)	SAMPLE 2 Conc (ppm)	Mass (lbs)	SAMPLE 3 Conc (ppm)	Mass (lbs)	AVERAGE Conc (ppm)	Mass (lbs)
1,2,4-Trichlorobenzene	<0.02							
Aldrin	"							
α-BHC	"							
β-BHC	"							
γ-BHC	"							
δ-BHC	"							
Chlordane	"							
4,4'-DDT	"							
4,4'-DDE	"							
4,4'-DDD	"							
Dieldrin	"							
α-Endosulfan	"							
β-Endosulfan	"							
-Endosulfan Sulfate	"							
Endrin	"							
Endrin Aldehyde	"							
Heptachlor	"							
Heptachlor Epoxide	"							
PCB-1242	"							
PCB-1254	"							

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ARO P.O. No.

Customer Goldberg-Zoino Associates

File R5669

ARO W.O. 21,634W-11673

Report Date 8/19/85

Station

Pollutant	Composite TP-III-2+8 Conc (ppm)	Composite TP-III-2+8 Mass (lbs)	SAMPLE 2 Conc (ppm)	SAMPLE 2 Mass (lbs)	SAMPLE 3 Conc (ppm)	SAMPLE 3 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
PCB-1221	<0.02							
PCB-1232	"							
PCB-1248	"							
PCB-1260	"							
PCB-1016	"							
Toxaphene	"							
Antimony	<0.20							
Arsenic	<0.20							
Beryllium	<0.10							
Cadmium	0.70							
Chromium	3.40							
Copper	131.							
Lead	782.							
Mercury	0.006							
Nickel	4.12							
Selenium	0.06							
Silver	0.80							
Thallium	<0.20							
Zinc	177.							

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ENVIRONMENTAL LABORATORY

ANALYTICAL RESULTS

ATTN: RAY LAPORT

Customer Goldberg-Zoino Associates, Suite 1000, Rand Bldg., 14 Lafayette Sq. Buffalo, NY 14203

ARO Laboratory Number 21,666W-11848 Customer P.O. #

Date: Collected 7/18-19/85 Received 8/85 Reported 9/13/85

Sampling Point Description Buffalo Industrial Park Composite TPIII-2 + TPIII-8

EPTOX-METALS

Alkalinity	220. $mgCaCO_3/L$	(Al) Aluminum	
Anionic Detergents (MBAS)		(As) Arsenic	0.032 ppm
Biochemical Oxygen Demand (BOD_5)		(Ba) Barium	0.197 ppm
		(Cd) Cadmium	0.006 ppm
Chemical Oxygen Demand (COD)		(Cr) Chromium	0.010 ppm
		(Cu) Copper	
Chlorides		(Fe) Iron	
Conductivity		(Pb) Lead	0.027 ppm
Cyanides	1747. mg/kg	(Mg) Magnesium	
Fluorides		(Mn) Manganese	
Hardness	280. $mgCaCO_3/L$	(Hg) Mercury	0.0007 ppm
Nitrogen, Ammonia		(K) Potassium	
Nitrogen, Total Kjeldahl		(Se) Selenium	0.011 ppm
Nitrogen, Nitrates		(Ag) Silver	<0.010 ppm
Nitrogen, Nitrites		(Na) Sodium	
Oil & Grease		(Zn) Zinc	
Phenols		Reactivity (S=,CN-)	
pH	4.88	Sulfide	3.2 mg/L
Phosphates (asp)			
Sulfates			
Total Dissolved Solids	420. mg/L		
Total Suspended Solids			
Turbidity			

COPY

Trihalomethanes (THM's)

Endrin	Chloroform
Lindane	Bromodichloromethane
Methoxychlor	Dibromochloromethane
Toxaphene	Bromoform
2,4-D	
2,4,5-TP (Silvex)	Total THM'S

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Bernard J. Grucza, Director
Environmental Laboratory

Form G-05 '81

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

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ENVIRONMENTAL LABORATORY

ANALYTICAL RESULTS

ATTN: RAY LAPORT

Customer Goldberg-Zoino Associates, Suite 1000, Rand Bldg., 14 Lafayette Sq. Buffalo, NY 14203

ARO Laboratory Number 21,666W-11848 Customer P.O. #

Date: Collected 7/18-19/85 Received 7/23/85 Reported 9/13/85

Sampling Point/Description Buffalo Ind. Park TP III-9

Alkalinity	
Anionic Detergents (MBAS)	
Biochemical Oxygen Demand (BOD_5)	
Chemical Oxygen Demand (COD)	
Chlorides	
Conductivity	
Cyanides	
Fluorides	
Hardness	
Nitrogen, Ammonia	
Nitrogen, Total Kjeldahl	
Nitrogen, Nitrates	
Nitrogen, Nitrites	
O & Grease	
Phenols	
pH	
Phosphates (asp)	
Sulfates	
Total Dissolved Solids	
Total Suspended Solids	
Turbidity	
Endrin	
Lindane	
Methoxychlor	
Toxaphene	
2,4-D	
2,4,5-TP (Silvex)	

EPTOX METALS

(Al)	Aluminum	
(As)	Arsenic	0.044
(Ba)	Barium	0.230
(Cd)	Cadmium	0.008
(Cr)	Chromium	0.012
(Cu)	Copper	
(Fe)	Iron	
(Pb)	Lead	0.014
(Mg)	Magnesium	
(Mn)	Manganese	
(Hg)	Mercury	0.0004
(K)	Potassium	
(Se)	Selenium	0.017
(Ag)	Silver	<0.010
(Na)	Sodium	
(Zn)	Zinc	

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Trihalomethanes (THM's)

Chloroform	
Bromodichloromethane	
Dibromochloromethane	
Bromoform	
Total THM'S	

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CUSTOMER Goldberg-Zoino Associates P. O. _____

ARO W.O. 21,666W-11848 REPORT DATE 9/13/85

STATION Buffalo Industrial Park

N.D. = Not Determined	TP III-9		TP III-12 @ 5.5'		SAMPLE 3		AVERAGE	
Pollutant	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
Phenols	N.D.		N.D.					
Oil & Grease	"		"					
Acrolein	"		"					
Acrylonitrile	"		"					
Benzene	"		"					
Bis (Chloromethyl) Ether	"		"					
Bromoform	"		"					
Carbon Tetrachloride	"		"					
Chlorobenzene	"		"					
Chlorodi-bromomethane	"		"					
Chloroethane	"		"					
Chloroethylvinyl Ether	"		"					
Chloroform	"		"					
Dichloro-bromomethane	"		"					
Dichloro-difluoromethane	"		"					
1,1-Dichloro-ethane	"		"					
1,2-Dichloro-ethane	"		"					
1,1-Dichloro-ethylene	"		"					
1,2-Dichloro-propane	"		"					
1,2-Dichloro-propylene	"		"					
Ethylbenzene	"		"					
Methyl Bromide	"		"					

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ARO W.O. 21,666W-11848 REPORT DATE 9/13/85

STATION Buffalo Industrial Park

	TPIII-9		TPIII-12 @ 5.5'		SAMPLE 3		AVERAGE	
Pollutant	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
ethyl Chloride	N.D.		N.D.					
ethylene Chloride	"		"					
,1, 2,2-Tetra-hloroethane	"		"					
Tetrachloro-ethylene	"		"					
oluene	"		"					
1,2-Trans-ichloroethylene	"		"					
,1,1-Tri-chloroethane	"		"					
,1,2-Tri hloroethane	"		"					
Trichloro-ethylene	"		"					
richloro-luoromethane	"		"					
Vinyl hloride	"		"					
,3,7,8-Tetra-chlorodibenzo--dioxin	"		"					
-Chlorophenol	0.002		<0.001					
2,4-Dichloro-henol	0.004		0.002					
,4-Dimethyl-phenol	<0.001		<0.001					
,6-Dinitro-O-resol	<0.001		<0.001					
2,4-Dinitro-henol	<0.001		<0.001					
-Nitrophenol	<0.001		<0.001					
-Nitrophenol	<0.001		<0.001					
-Chloro-M-Cresol	0.008		0.003					
entachloro-henol	0.010		0.007					
Phenol	0.003		0.002					

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ARO W.O. 21,666W-11848 REPORT DATE 9/13/85

STATION Buffalo Industrial Park

	TP III-9		TP III-12 @ 5.5'		SAMPLE 3		AVERAGE	
Pollutant	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)	Conc (ppm)	Mass (lbs)
?,4,6-Tri-hlorophenol	<0.001		<0.001					
Acenaphthene	<0.001		<0.001					
cenaphtylene	0.002		<0.001					
nthracene	<0.001		<0.001					
Benzidine	<0.001		<0.001					
Benzo(a) nthracene	<0.001		<0.001					
Benzo(a) Pyrene	<0.001		<0.001					
,4-Benzo-luoranthene	<0.001		<0.001					
Benzo(ghi) erylene	<0.001		<0.001					
enzo(k) luoranthene	<0.001		<0.001					
Bis(2-Chloro-thoxy)Methane	<0.001		<0.001					
is(2-Chloro-ethyl)Ether	<0.001		<0.001					
is(2-Chloro-sopropyl)Ether	<0.001		<0.001					
Bis(2-Ethyl-hexyt)Phthalate	<0.001		<0.001					
-Bromophenyl henyl Ether	<0.001		<0.001					
Butyl Benzyl nthalate	<0.001		<0.001					
-Chloro-naphthalene	<0.001		<0.001					
-Cholorophenyl henyl Ether	<0.001		<0.001					
Chrysene	<0.001		<0.001					
ibenzo(a,h) nthracene	<0.001		<0.001					
1,2-Dichloro-enzene	<0.001		<0.001					
,3-Dichloro-benzene	<0.001		<0.001					

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ARO W.O. 21,666W-11848 REPORT DATE 9/13/85

STATION Buffalo Industrial Park

Pollutant	TPIII-9 Conc (ppm)	TPIII-9 Mass (lbs)	TPIII-12 @ 5.5' Conc (ppm)	TPIII-12 @ 5.5' Mass (lbs)	SAMPLE 3 Conc (ppm)	SAMPLE 3 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
1,4-Dichloro-benzene	<0.001		<0.001					
3,3-Dichloro-benzidine	<0.001		<0.001					
Diethyl Phthalate	<0.001		<0.001					
Dimethyl Phthalate	<0.001		<0.001					
Di-N-Butyl Phthalate	<0.001		<0.001					
2,4-Dinitro-toluene	<0.001		<0.001					
2,6-Dinitro-toluene	<0.001		<0.001					
Di-N-Octyl Phthalate	<0.001		<0.001					
1,2-Diphenyl-hydrazine (as azobenzene)	<0.001		<0.001					
Fluoranthene	<0.001		<0.001					
Fluorene	<0.001		<0.001					
Hexa-chlorobenzene	<0.001		<0.001					
Hexa-chlorobutadiene	<0.001		<0.001					
Hexachloro-cyclopentadiene	<0.001		<0.001					
Hexachloro-ethane	<0.001		<0.001					
Indeno (1,2,3-cd) Pyrene	<0.001		<0.001					
Isophorone	<0.001		<0.001					
Naphthalene	<0.001		<0.001					
Nitrobenzene	<0.001		<0.001					
N-Nitro-sodimethylamine	<0.001		<0.001					
N-Nitro-sodiphenylamine	<0.001		<0.001					

LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

TELEPHONE 683-0440
AREA CODE 716
TELEX 315078

CUSTOMER Goldberg-Zoino Associates P. O.

ARO W.O. 21,666W-11848 REPORT DATE 9/13/85

TATION Buffalo Industrial Park

Pollutant	TP III-9 Conc (ppm)	TP III-9 Mass (lbs)	TP III-12 @ 5.5' Conc (ppm)	TP III-12 @ 5.5' Mass (lbs)	SAMPLE 3 Conc (ppm)	SAMPLE 3 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
N-Nitrosodi--Propylamine	<0.001		<0.001					
Phenanthrene	<0.001		<0.001					
yrene	<0.001		<0.001					
1,2,4-Tri-chlorobenzene	N.D.		N.D.					
Aldrin	N.D.		N.D.					
α-BHC	N.D.		N.D.					
β-BHC	N.D.		N.D.					
γ-BHC	N.D.		N.D.					
δ-BHC	N.D.		N.D.					
Chlordane	N.D.		N.D.					
,4'-DDT	N.D.		N.D.					
4,4'-DDE	N.D.		N.D.					
,4'-DDD	N.D.		N.D.					
Dieldrin	N.D.		N.D.					
α-Endosulfan	N.D.		N.D.					
β-Endosulfan	N.D.		N.D.					
-Endosulfan Sulfate	N.D.		N.D.					
Endrin	N.D.		N.D.					
Endrin Aldehyde	N.D.		N.D.					
Heptachlor	N.D.		N.D.					
Heptachlor Epoxide	N.D.		N.D.					
PCB-1242	N.D.		N.D.					
PCB-1254	N.D.		N.D.					

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LIFE SUPPORT PRODUCTS DIVISION
THE ARO CORPORATION
3695 BROADWAY, BUFFALO, N.Y. 14227

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CUSTOMER Goldberg-Zoino Associates P. O.

ARO W.O. 21,666W-11848 REPORT DATE 9/13/85

STATION

Pollutant	TPIII-9 Conc (ppm)	TPIII-9 Mass (lbs)	TPIII-12 @5.5' Conc (ppm)	TPIII-12 @5.5' Mass (lbs)	SAMPLE 3 Conc (ppm)	SAMPLE 3 Mass (lbs)	AVERAGE Conc (ppm)	AVERAGE Mass (lbs)
PCB-1221	N.D.		N.D.					
PCB-1232	N.D.		N.D.					
PCB-1248	N.D.		N.D.					
PCB-1260	N.D.		N.D.					
PCB-1016	N.D.		N.D.					
Toxaphene	N.D.		N.D.					
Antimony	N.D.		N.D.					
Arsenic	N.D.		N.D.					
Beryllium	N.D.		N.D.					
Cadmium	N.D.		N.D.					
Chromium	N.D.		N.D.					
Copper	N.D.		N.D.					
Lead	N.D.		N.D.					
Mercury	N.D.		N.D.					
Nickel	N.D.		N.D.					
Selenium	N.D.		N.D.					
Silver	N.D.		N.D.					
Thallium	N.D.		N.D.					
Zinc	N.D.		N.D.					

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of New York, P.C.

Bernard J. Gruca

Bernard J. Gruczal, Ph.D.
Dir., Environmental Laboratory

APPENDIX B

TEST PIT LOGS
TP-III - TPIII-23

July 18, 1985 and July 19, 1985

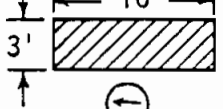
TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-1 FILE No. R5669 DATE 7/18/85
GZA ENGINEER G. Klawinski WEATHER Clear & Warm	EXCAVATION EQUIPMENT CONTRACTOR Amherst Construction, Inc. OPERATOR Gene Ward MAKE Case MODEL 580 CAPACITY --- cu.yd. REACH 14 ft.	GROUND ELEV. TIME STARTED 8:30 TIME COMPLETED 9:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, brown, Sand and Silt with intermixed concrete pieces, wood, roots, and wire	M	6 A	
1'	layer of intermixed black cinders, sand, and silt	E		
2'	layer of gray, uncemented concrete-like material	E		
3'	. . . frequent rust stained slag	E		
4'		E		
5'	. . . occasional pockets of rust stained soils, some gravel size fragments	E		
6'		E		
7'	Bottom of Hole 6.5 Feet			
8'				
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. Slight ground water seepage at 6.0 feet
2. Water seepage collected for pH measurement in the field

TEST PIT PLAN



VOLUME = 7.2 cu.yd.

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

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

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

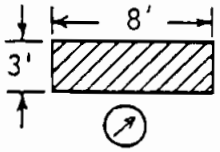
TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-2 FILE No. R5669 DATE 7/18/85
GZA ENGINEER G. Klawinski WEATHER clear, warm	EXCAVATION EQUIPMENT CONTRACTOR Amherst Construction, Inc. OPERATOR Gene Ward MAKE Case MODEL 580 CAPACITY ____ cu.yd. REACH ~14 ft	GROUND ELEV. ____ TIME STARTED 9:00 TIME COMPLETED 9:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, brown, silt and sand with intermixed bricks, concrete, wood, gravel size stone fragments	M	~3 A	
1'		E		
2'		E		
3'		E		
4'		E		
5'	Miscellaneous Fill, dark brown, Sand and Silt, fill intermixed with dark purple fiberous sludge, occasional pockets of clayey Silt, overall oily appearance with no petroleum odor	E		2
6'		E		
7'		E		1
8'	Bottom of Hole 8.0 ft.			
9'				
10'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
11'				
12'				
13'				
14'				

REMARKS:
1. No ground water seepage.
2. Sample collected at ~6 ft. for possible analytical testing

TEST PIT PLAN



VOLUME = 7.1 cu.yd.

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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GR. - GRAY
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YEL. - YELLOW

EXCAVATION EFFORT

E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

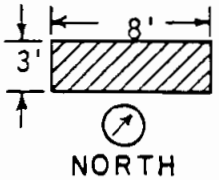
GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-3 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski WEATHER Clear & Warm	EXCAVATION EQUIPMENT CONTRACTOR Amherst Construction, Inc. OPERATOR Gene Ward MAKE Case MODEL 580 CAPACITY --- cu.yd. REACH 14 ft.	GROUND ELEV. TIME STARTED 9:30 TIME COMPLETED 10:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, brown and black, Silt and Sand, with numerous bricks and cinders throuhout	M		
1'				
2'	Isolated pocket of purple waste 3" in diameter	E		
3'		E		
4'		E		
5'	Miscellaneous Fill, black, intermixed cinders, Sand, and Gravel size materials with an overall oily appearance	E		
6'		E		
7'		E		
8'		E		
9'		E		
10'	Bottom of Hole 9.0 ft.			
11'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
12'				
13'				
14'				

REMARKS: 1. Slight ground water seepage at 9.0 feet

TEST PIT PLAN



VOLUME = 8.0 cu.yd.

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

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-4 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski
WEATHER clear and warm

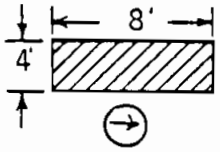
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY --- cu.yd. REACH ~14 ft

GROUND ELEV. ---
TIME STARTED 10:00
TIME COMPLETED 10:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, brown, Silt and Sand with intermixed bricks, wire, pieces of concrete (<6"), and gravel size material	M		
1'		M		
2'		M		
3'	Layer of black asphalt	M		
4'	Clayey SILT, brown, some fine Sand, little Gravel, moist	M		
5'		M		
6'		D		1
7'	Bottom of Hole 6.0 ft.			
8'	Note: Obstruction in bottom of test pit prevented further excavation			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS: 1. Slight ground water seepage entering test pit at 6.0 ft.

TEST PIT PLAN



VOLUME = 7.1 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-5 FILE No. R5669 DATE 7/18/85

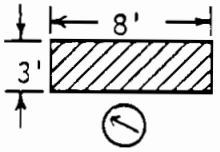
GZA ENGINEER G. Klawinski WEATHER Clear & Warm	EXCAVATION EQUIPMENT CONTRACTOR Amherst Construction, Inc OPERATOR Gene Ward MAKE Case MODEL 580 CAPACITY --- cu.yd. REACH ~14 ft	GROUND ELEV. TIME STARTED 10:30 TIME COMPLETED 11:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, gray-brown, Silt and Sand, with intermixed bricks, pieces of concrete, and gravel size fragments	M		
1'		E		
2'		E		
3'		E		
4'	. . . overall rust stained with frequent pieces of metal, occasional slag, pockets of black asphalt material	E		
5'		E		
6'		E		
7'		E		1
8'	Bottom of Hole 7.0 feet			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS:

1. Rust stained ground water seepage at 7.0 feet.

TEST PIT PLAN



VOLUME = 6.2 cu.yd.

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
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EXCAVATION EFFORT

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

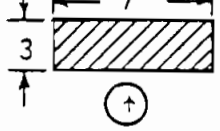
GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-6 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski WEATHER clear, warm	EXCAVATION EQUIPMENT CONTRACTOR Amherst Construction, Inc. OPERATOR Gene Ward MAKE Case MODEL 580 CAPACITY ____ cu.yd. REACH ~14 ft.	GROUND ELEV. ____ TIME STARTED 11:00 TIME COMPLETED 11:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, gray, Silt and Sand, some Gravel; intermixed with frequent pieces of slag, concrete, bricks and asphalt	M		
1'		M		
2'		M		
3'		M		
4'		M		
5'		M		
6'		M		1
7'	Bottom of Hole 6.0 ft.			
8'	Note: Boulders prevented further excavation			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS: 1. Slight ground water seepage at 5.5 feet

TEST PIT PLAN



VOLUME = 4.7 cu.yd.

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

EXCAVATION EFFORT

E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-7 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

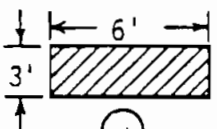
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 11:30
TIME COMPLETED 12:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, gray-brown, Silt and Sand with frequent intermixed bricks	M		
1'		M		
2'		E		
3'	Miscellaneous Fill, brown, Clayey Silt with intermixed brick fragments	E		
4'		E		
5'		E		
6'	Clayey SILT, brown, some Sand, little Gravel, moist	E		1
7'		E		2
8'	Bottom of Hole 7.5 ft.			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. Ground water seepage at 7.0 ft.
2. Water sample collected from ~7.5 ft. for in-situ pH measurement

TEST PIT PLAN



VOLUME = 5.0 cu.yd.

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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YEL. - YELLOW

EXCAVATION EFFORT
E —— EASY
M —— MODERATE
D —— DIFFICULT

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

TEST PIT FIELD LOG

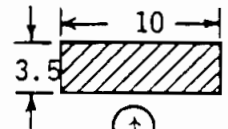
GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-8 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski WEATHER clear, warm	EXCAVATION EQUIPMENT CONTRACTOR Amherst Construction, Inc. OPERATOR Gene Ward MAKE Case MODEL 580 CAPACITY ____ cu.yd. REACH ~14 ft.	GROUND ELEV. ____ TIME STARTED 12:00 TIME COMPLETED 12:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, gray, Silt and Sand, little Gravel; with frequent pieces of slag, concrete, bricks and asphalt	M		
1'		E		
2'		E		
3'	Possible Industrial Fill, purple, fibrous sludge material	E		2
4'	0.1' layer of white chalky material	E		3
5'	Miscellaneous Fill, gray with rust staining, Silt and Sand, little Gravel; with intermixed slag, wire	E		
6'		E		1
7'	Bottom of Hole 7.0 ft.			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. No ground water seepage observed
2. Sample collected from 3.5 ft. for possible analytical testing
3. Sample collected from 4.2 ft. for possible analytical testing

TEST PIT PLAN



VOLUME = 9.1 cu.yd.

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

E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-9 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski
WEATHER Clear & Warm

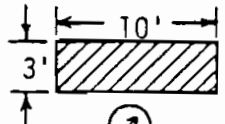
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY --- cu.yd. REACH 14 ft.

GROUND ELEV.
TIME STARTED 13:45
TIME COMPLETED 14:15

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Asphalt			
1'	Miscellaneous Fill, gray, Silt and Sand, little Gravel; intermixed with occasional asphalt and roots	M		
2'		M		
3'	. . . black, occasional rust stained pockets layer of white chalky material	E		3
4'	Miscellaneous Fill, brown, Sand and Clayey Silt; with intermixed rust staining, slag, and gravel size material	E		
5'		E		
6'		E		
7'		E		1,2
	Bottom of Hole 7.0 feet			
8'				
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. Ground water seepage at 7.0 feet
2. Ground water seepage collected for in-situ pH measurement
3. Sample collected from 3 feet for possible analytical testing

TEST PIT PLAN



NORTH
VOLUME = 7.8 cu.yd.

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
E — EASY
M — MODERATE
D — DIFFICULT

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-10 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

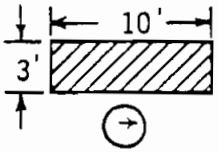
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft

GROUND ELEV. ____
TIME STARTED 14:15
TIME COMPLETED 14:45

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous lumber, trash, paper and roots	D		
1'	Miscellaneous Fill brown-gray Clayey Silt and Sand; intermixed with slag, wire, and occasional brick fragments	M		
2'		E		
3'		E		
4'		E		
5'	suspected Industrial Fill, gray, Sand and Gravel, little Silt; intermixed with fibrous material	E		2
6'		E		
7'		E		1
8'	Bottom of Hole 7.5 ft.			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. Ground water seepage at 7.5 ft.
2. Sample collected from ~ 6 ft. for possible analytical tests.

TEST PIT PLAN



VOLUME = 8.3 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

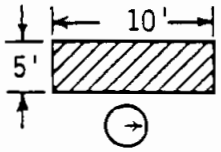
GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-11 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski WEATHER clear, warm	EXCAVATION EQUIPMENT CONTRACTOR Amherst Construction, Inc. OPERATOR Gene Ward MAKE Case MODEL 580 CAPACITY ____ cu.yd. REACH ~14 ft.	GROUND ELEV. ____ TIME STARTED 14:45 TIME COMPLETED 15:15

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, gray, Silt and Sand, little Gravel; with frequent cobbles and boulders, occasional random pockets of brown Clayey Silt	D		
1'		D	3-A	
2'		D		
3'		D		1, 2
4'	Bottom of Hole 4.0 ft.			
5'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
6'				
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. Ground water seepage containing oil at 4.0 ft.
2. Ground water seepage sample collected for in-situ pH measurements.

TEST PIT PLAN



VOLUME = 7.4 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-12 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

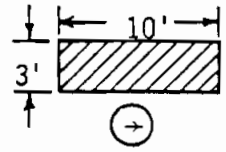
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft

GROUND ELEV. ____
TIME STARTED 15:15
TIME COMPLETED 15:45

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill; intermixed bricks, sand, and Gravel	M		
1'	Miscellaneous Fill, black, foundry (?) sand, cinders, ash, and gravel size material with random pockets of apparent tar	E		
2'		E		3
3'		E		1
4'	Clayey SILT, brown, some Sand, little Gravel, moist	E		
5'	. . . grading to gray-green with possible oil staining	E		2, 4
6'	Bottom of Hole 5.5 ft.			
7'				
8'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. Slight ground water seepage containing oil at 3.5 ft.
2. Water sample collected at ~5' for in-situ pH measurement.
3. Sample collected from ~3.0 ft. for possible analytical testing.
4. Sample collected from ≈5.5 ft. for possible analytical testing.

TEST PIT PLAN



VOLUME = 6.1 cu.yd.

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
E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Indust. Pk LOCATION Buffalo, New York	TEST PIT No. III-13 FILE No. R5669 DATE 7/18/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

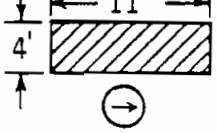
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 15:45
TIME COMPLETED 16:15

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0				
1'	Miscellaneous Fill, gray, Silt and Sand, with intermixed wire and frequent bricks	E		
2'		E		
3'		E		
4'		E		
5'	Miscellaneous Fill, black, Sand and Gravel; with apparent bottom ash and cinders	E		
6'		E		
7'		E		
8'		E		
9'		E		1
10'	Bottom of Hole 9.0 ft.			
11'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
12'				
13'				
14'				

REMARKS: 1. No ground water seepage observed.

TEST PIT PLAN



VOLUME = 14.6 cu.yd.

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

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-14 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear and warm

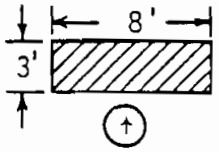
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY --- cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 8:00
TIME COMPLETED 8:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Topsoil and Roots, black; with intermixed bricks	E		
1'	Miscellaneous Fill, brown, clayey Silt, little Sand; with occasional brick fragments	E		
2'		E		
3'		E		
4'	0.2' layer of black oily sand	E		2
5'	Clayey SILT, brown, little fine Sand, trace Gravel, moist	E		
6'		E		
7'		E		1
8'	Bottom of Hole 7.5 ft.			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. Slight ground water seepage from 7.5 ft.
2. Sample collected from 4.2 ft. for possible analytical testing.

TEST PIT PLAN



VOLUME = 6.7 cu.yd.

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
E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-15 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

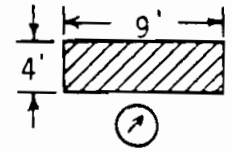
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 8:30
TIME COMPLETED 9:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, brown, Silt and Sand; with intermixed pieces of wood and wood fragments	E		
1'		E		
2'	Miscellaneous Fill, black, Sand and Gravel; with intermixed bottom ash and cinders	E		
3'		E		
4'		E		
5'		E		
6'		E		
7'	Clayey SILT, brown, little Sand, trace Gravel, moist	E		1
8'	Bottom of Hole 7.0 ft.			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS: 1. No ground water seepage observed.

TEST PIT PLAN



VOLUME = 9.3 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

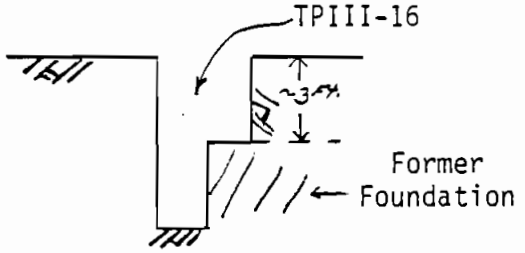
GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-16 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft

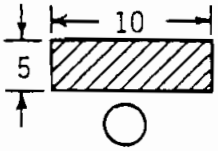
GROUND ELEV. ____
TIME STARTED 9:00
TIME COMPLETED 9:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, Sand and Silt; with intermixed wood, metal, bricks, pipes, etc. (construction debris)	D		
1'		D		
2'		D		
3'		D		
4'		D		
5'		D		
6'		D		1
7'	Bottom of Hole 6.0 ft.			
8'	Note: Obstruction prevented further excavation			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				



REMARKS: 1. No ground water seepage observed.

TEST PIT PLAN



VOLUME = 11.0 cu.yd.

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

E —— EASY
M —— MODERATE
D —— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, New York	TEST PIT No. III-17 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft

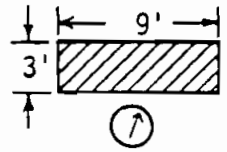
GROUND ELEV. ____
TIME STARTED 9:30
TIME COMPLETED 10:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, brown, sand and silt, some gravel, frequent bricks, pipes, wood	E		
1'		M		
2'		D		
3'		D		
4'		D		
5'		D		
6'	. . . becomes black and oily	M		2
7'	Clayey SILT, brown, little Sand, trace Gravel, moist, overall slightly plastic	E		1
8'	Bottom of Hole 8.0 ft.			
9'				
10'				
11'				
12'				
13'				
14'				

The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.

REMARKS:
1. Slight, black, water seepage at 7.0 ft.
2. Sample collected from ~6.5 ft. for possible analytical testing.

TEST PIT PLAN



VOLUME = 8.0 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-18 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

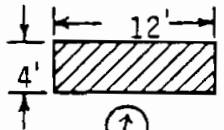
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 10:00
TIME COMPLETED 10:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, brown, Sand and Silt, little Gravel; intermixed with frequent timber and pieces of wood	M		
1'		M		
2'		M		
3'	. . . timber contaminated with oil below 2.5 feet	M		2
4'		M		
5'		M		
6'		M		
7'		M		1
8'		M		
9'	Bottom of Hole 8.0 ft.			
10'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
11'				
12'				
13'				
14'				

REMARKS:
1. Slight ground water seepage, containing oil, at 7.0 ft.
2. Sample collected from 4.0 ft. for possible analytical testing.

TEST PIT PLAN



VOLUME = 14.2 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-19 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

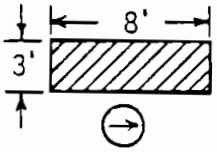
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ___ cu.yd. REACH ~14 ft

GROUND ELEV. ___
TIME STARTED 10:30
TIME COMPLETED 11:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Topsoil, roots			
1'	Miscellaneous Fill, gray, intermixed bricks, wire, cement and pieces of concrete	M		
2'	Miscellaneous Fill, black, Silt and Sand, little gravel; with intermixed cinders and bottom ash	E		
3'		E		
4'	Clayey SILT, brown, some Sand, trace Gravel, moist, overall slightly plastic	E		
5'		E		
6'		E		1
7'	Bottom of Hole 6.0 ft.			
8'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: 1. No ground water seepage observed

TEST PIT PLAN



VOLUME = 5.3 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-20 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

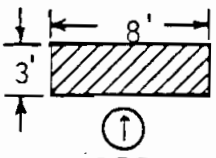
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 11:00
TIME COMPLETED 11:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Topsoil, roots			
1'	Miscellaneous Fill, brown, Silt and Sand, intermixed bricks and brick fragments	E		
2'		E		
3'	Miscellaneous Fill, dark brown-black, Clayey Silt, little Sand, moist with pockets of brown silty clay	E		2
4'		E		
5'		E		
6'		E		
7'		E		1
8'	Bottom of Hole 6.5 ft.			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. No ground water seepage observed
2. Sample collected from 3.0 ft. for possible analytical testing

TEST PIT PLAN



VOLUME = 5.8 cu.yd.

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

E — EASY
M — MODERATE
D — DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-21 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

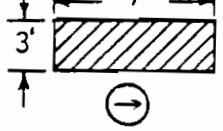
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 13:00
TIME COMPLETED 13:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Topsoil, roots			
1'	Miscellaneous Fill, gray-black, cinders, wire, bottom ash	E		
2'	. . . Silt and Sand, slag	E		
3'	0.2' layer of white chalky material with rust staining	E		2
4'	Clayey SILT, gray-green, little Sand, trace Gravel, moist	E		
5'	Bottom of Hole 4.5 ft.	E		1
6'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
7'				
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS:
1. No ground water seepage observed
2. Sample of white chalky material from ~2.0 ft. collected for possible analytical testing.

TEST PIT PLAN



VOLUME = 3.5 cu.yd.

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

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-22 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

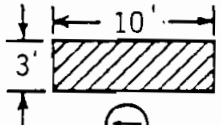
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 13:30
TIME COMPLETED 14:00

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Misc. Fill, black, intermixed Sand, cinders and roots	E		
1'		E		
2'	. . . occasional coal fragments, gravel size material, damp	E		
3'		E		
4'		E		
5'		E		1
	Bottom of Hole 5.0 ft.			
6'	Note: Concrete slab prevented further excavation			
7'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
8'				
9'				
10'				
11'				
12'				
13'				
14'				

REMARKS: 1. No ground water seepage observed.

TEST PIT PLAN



VOLUME = 6 cu.yd.

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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M - MEDIUM
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F/M - FINE TO MEDIUM
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GR. - GRAY
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YEL. - YELLOW

EXCAVATION EFFORT

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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

TEST PIT FIELD LOG

GOLDBERG · ZOINO & ASSOC., INC GEOTECHNICAL/GEOHYDROLOGICAL CONSULTANTS	PROJECT DESCRIPTION New Buffalo Industrial Park LOCATION Buffalo, NY	TEST PIT No. III-23 FILE No. R5669 DATE 7/19/85

GZA ENGINEER G. Klawinski
WEATHER clear, warm

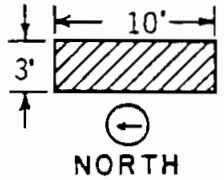
EXCAVATION EQUIPMENT
CONTRACTOR Amherst Construction, Inc.
OPERATOR Gene Ward
MAKE Case MODEL 580
CAPACITY ____ cu.yd. REACH ~14 ft.

GROUND ELEV. ____
TIME STARTED 14:00
TIME COMPLETED 14:30

DEPTH	SOIL DESCRIPTION	EXCAV. EFFORT	BOULDER COUNT QTY. CLASS.	REMARK No.
0	Miscellaneous Fill, black, intermixed Sand, cinders, coal fragments, and roots	E		
1'		E		
2'		E		
3'	Miscellaneous Fill, black-brown, Clayey Silt with intermixed cinders and slag, damp	M		
4'		M		
5'	Clayey SILT, brown-green, little fine Sand, moist overall slightly plastic	M		
6'		M		
7'		M		1
8'	Bottom of Hole 7.5 ft.			
9'	The stratification lines represent the approximate boundary between fill and soil types at the location of the test pit. The actual transition may vary from that shown.			
10'				
11'				
12'				
13'				
14'				

REMARKS: 1. No ground water seepage observed.

TEST PIT PLAN



VOLUME = 8 cu.yd.

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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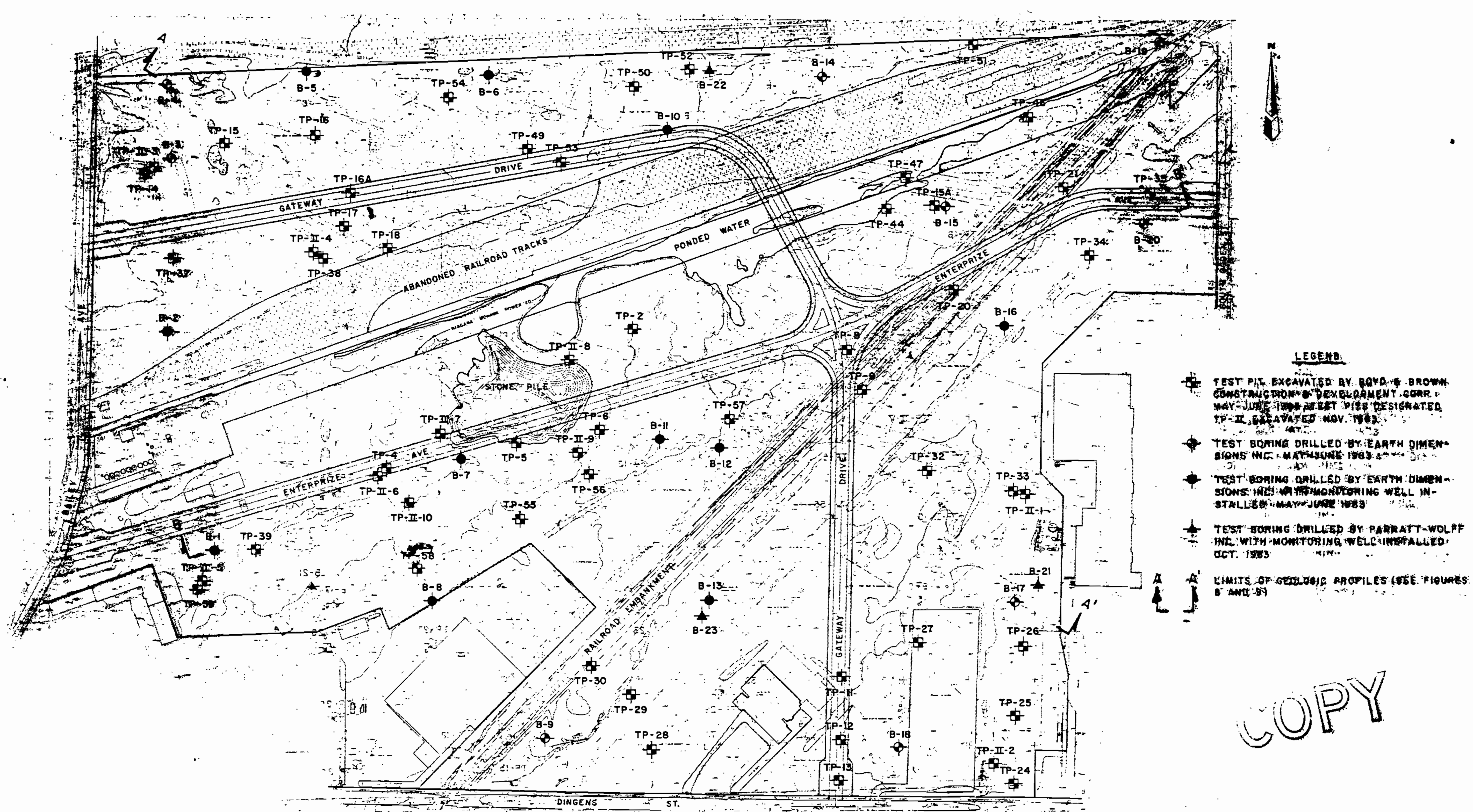
EXCAVATION EFFORT

E ——— EASY
M ——— MODERATE
D ——— DIFFICULT

GROUNDWATER

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



NOTES: 1) EXPLORATIONS WERE LOCATED IN THE FIELD BY GZA AND PLOTTED ON BASE PLAN MAP PREPARED BY OLSON & TERZIAN, P.C. THE LOCATIONS SHOULD BE CONSIDERED ACCURATE ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

2) THIS DRAWING WAS ADAPTED FROM BASE PLAN MAP PREPARED BY OLSON & TERZIAN, P.C.

SCALE 0 150 300 450 (ft)

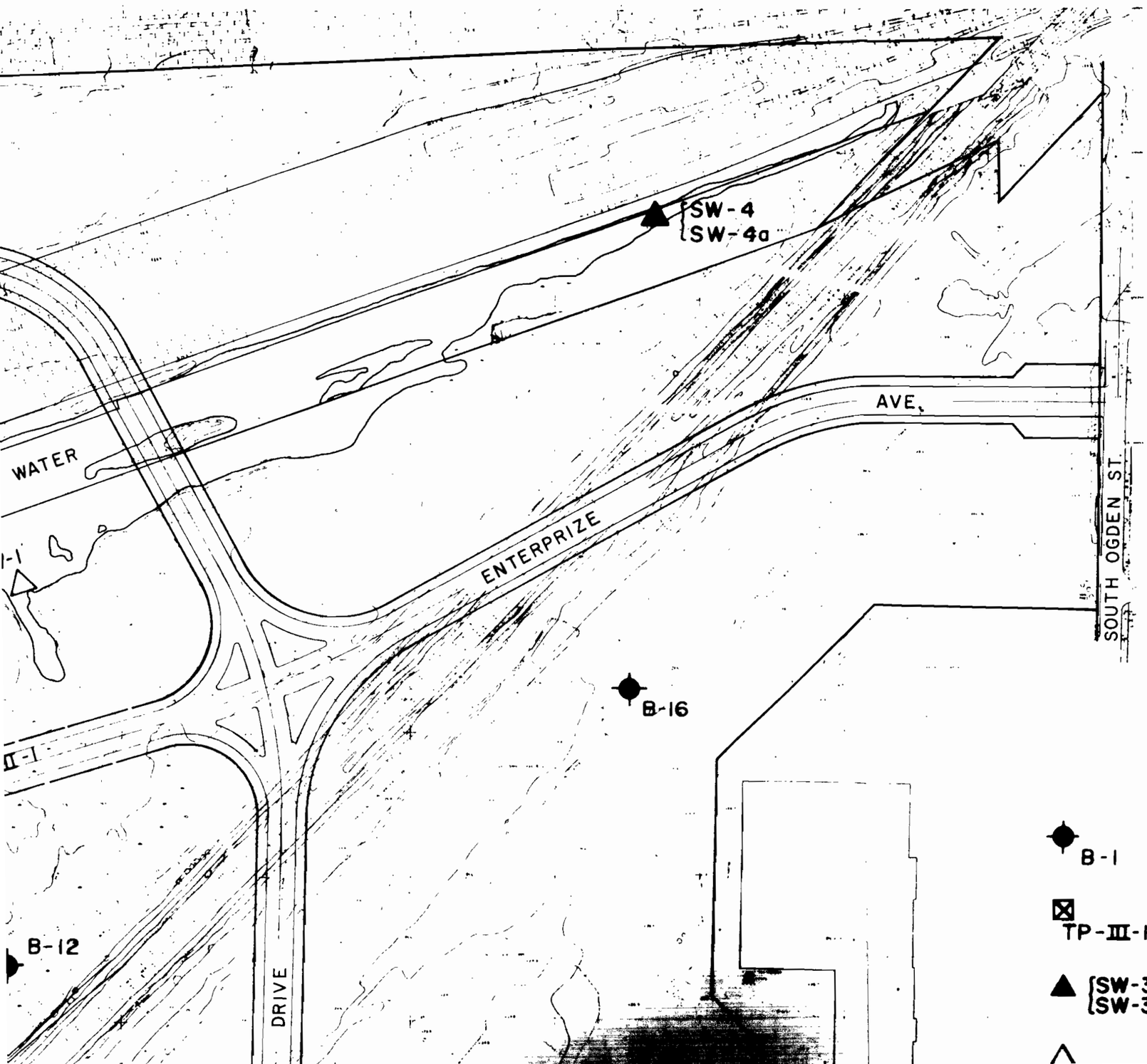
GZA

NEW BUFFALO INDUSTRIAL PARK
BUFFALO, NEW YORK

EXPLORATION LOCATION PLAN

1983 SAMPLING PROGRAM

JANUARY 1984 FIGURE No. 3



N

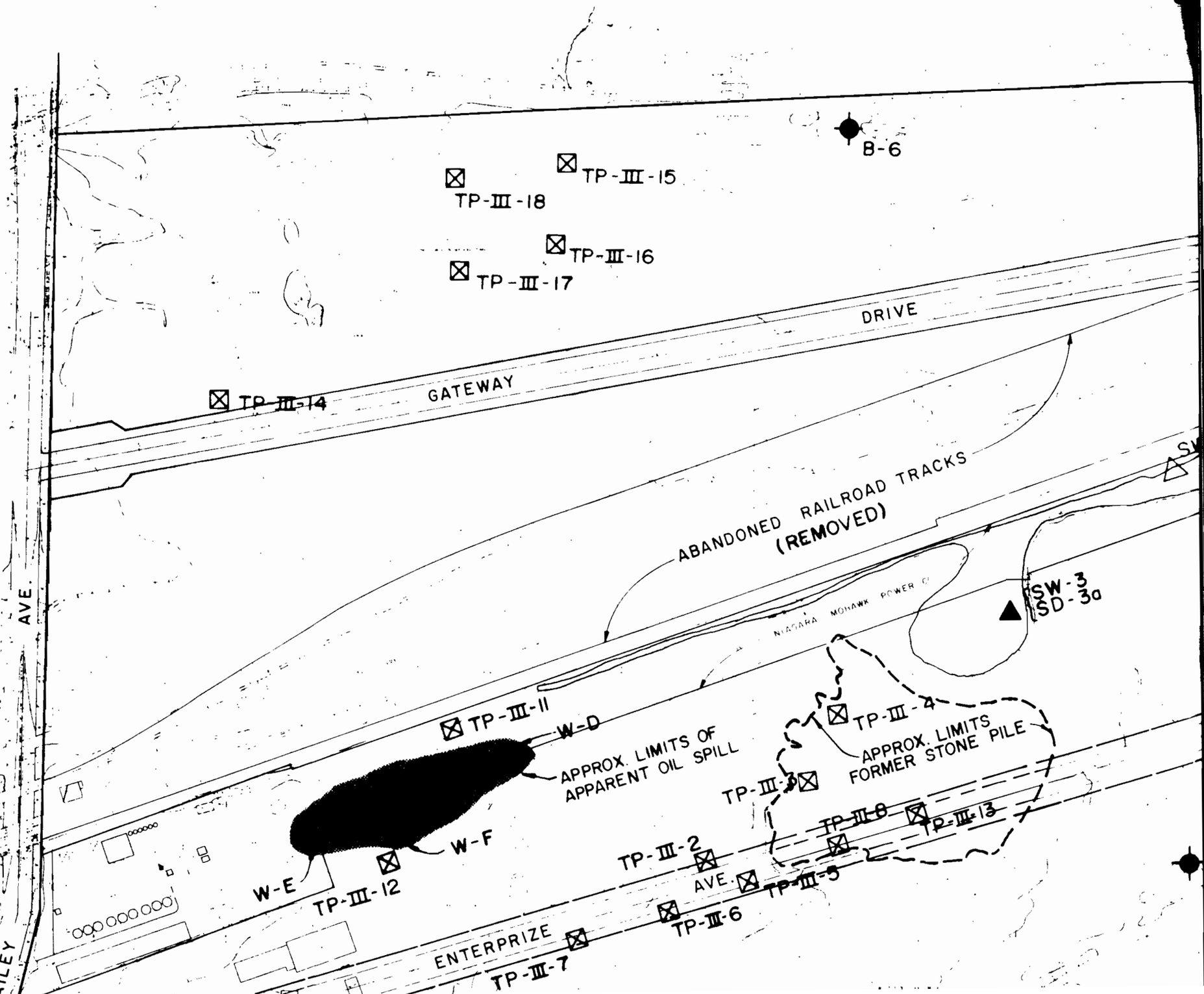
LEGEND

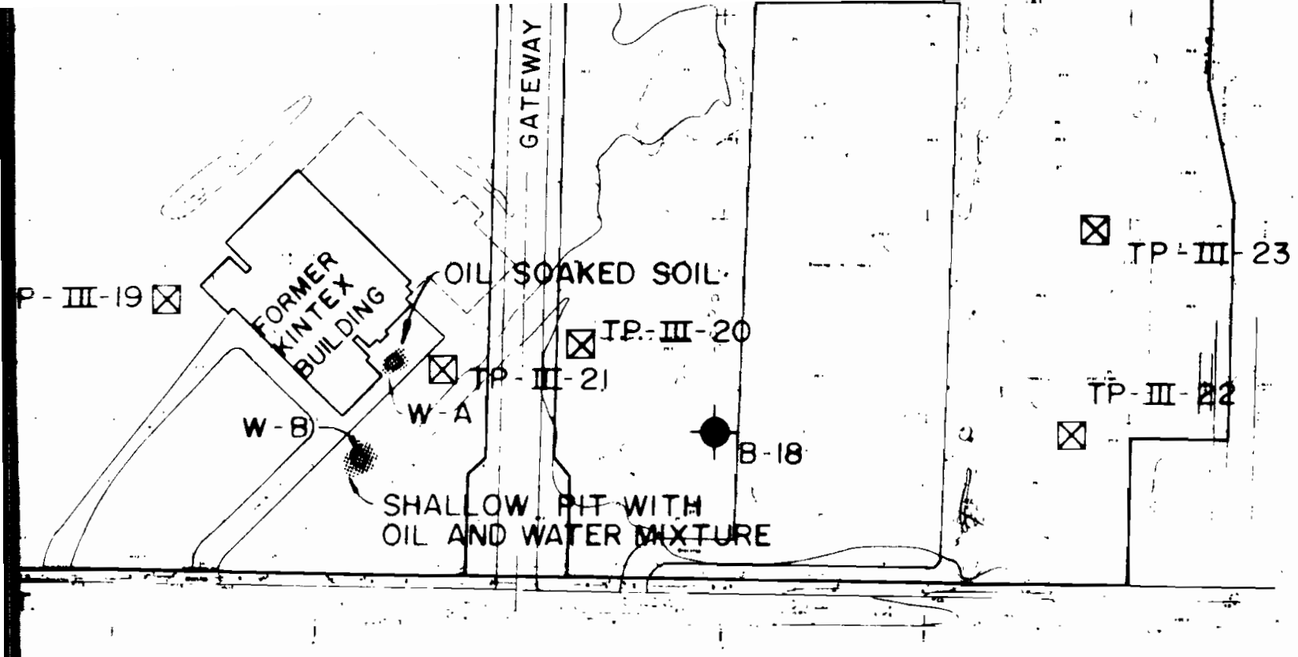
B-1 — GROUND WATER MONITORING WELLS; SAMPLED JULY, 1985

TP-III-1 — TEST PITS EXCAVATED BY AMHERST CONSTRUCTION; JULY, 1985.

SW-3 / SW-3a — SURFACE WATER/SEDIMENT SAMPLES; COLLECTED JULY, 1985.

SURFACE WATER SAMPLES;


B-6
TP-III-15
TP-III-18
TP-III-16
TP-III-17
TP-III-14
GATEWAY
DRIVE
ABANDONED RAILROAD TRACKS
(REMOVED)
NIAGARA MOHAWK POWER CO.
SW-3
SD-3a
TP-III-11
W-D
APPROX. LIMITS OF
APPARENT OIL SPILL
TP-III-4
APPROX. LIMITS
FORMER STONE PILE
TP-III-1
TP-III-8
TP-III-13
TP-III-2
W-E
W-F
TP-III-12
AVE.
TP-III-5
ENTERPRIZE
TP-III-7
TP-III-6
AVE.



W SURFACE WASTE SAMPLE

COPY

NEW BUFFALO INDUSTRIAL PARK

BUFFALO, NEW YORK

P
ATE

C.

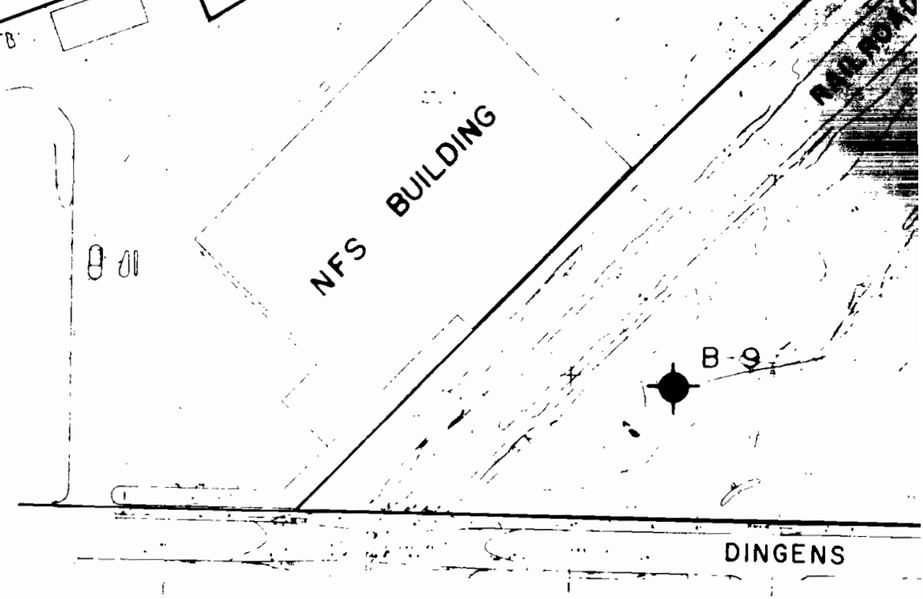
SCALE 0 150 300 450 (ft.)

EXPLORATION / SAMPLING LOCATION PLAN

1985 SAMPLING PROGRAM

SEPTEMBER 1985

FIGURE No. 2



NOTES:

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PREPARED BY OLSON & TERZIAN, P.C. THE LOCATIONS SHOULD BE CONSIDERE
ONLY TO THE DEGREE IMPLIED BY THE METHOD USED.

2) THIS DRAWING WAS ADAPTED FROM BASE PLAN MAP PREPARED BY OLSON & T

FILE No. R5613/15 DWG. No.

GZA