915228

Remediation Work Plan

Eastern Electric Apparatus Facility
1132 Seneca Street
Buffalo, New York

August 30, 1989

Westinghouse Environmental and
Geotechnical Services, Inc.

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Remediation Work Plan
Eastern Electric Apparatus Facility
Buffalo, New York

1.0 Work Plan Objectives

The objective of this work plan is to present procedures that will be employed to remediate the active spray booth area and the contaminated sludge piles at the Eastern Electric Apparatus Repair Company, Inc. facility, located at 1132 Seneca Street in Buffalo, New York.

Methods will be outlined as to how the water and sludge will be removed from the spray booth pit and the precautions that will be taken to prevent contaminated or cleaning water from escaping the pit area. The method of removal of the small piles of contaminated sludge in the northeast corner of the Eastern Electric property will also be addressed.

The work plan will review the procedures that will be used to decontaminate the spray booth area and to dispose of contaminated soil, water, and sludge from the property. It will also discuss the quality control program that will provide for the safe and successful completion of this project.

2.0 Site History

Westinghouse constructed the present repair facility in 1932. Since that time, the facility has been used to repair tranformers, motors, generators, and other electrical apparatus. On June 30, 1986, Westinghouse sold the Buffalo repair facility to Eastern Electric Apparatus Repair Company, Inc.

Westinghouse initiated discussions with the New York State Department of Environmental Conservation in October 1988, and submitted a work plan concerning remediation of the spray booth and of two sludge piles located in the northeast corner of the facility. In an effort to define the extent of contamination arising from the sludge piles and to assess the spray booth, Westinghouse obtained several samples of sludge, soil, and spray booth wastewater. The results of this sampling are presented in Appendix A.

3.0 Project Overview

The remediation project at the Eastern Electric Company facility in Buffalo, NY, consists of two separate tasks. The first involves the decontamination of the spray booth located inside the Eastern Electric building. This task requires liquid and sludge removal, and washing of concrete and metal surfaces to reduce concentrations of PCB contamination to acceptable levels. The second task requires the excavation and disposal of two sludge piles located in the northeast corner of the property. These sludge piles resulted from the disposal of materials formerly removed from the above-mentioned spray booth.

4.0 Site Description

4.1 Spray Booth

The spray booth is a 12 ft. X 12 ft. area at floor level that is sectioned off from the remainder of the room by two parallel vertical walls. The booth has a steel grate floor and is above a bi-level pit. This first level of the pit was found to be 9 ft. wide by 12 ft. long by 3 ft. deep and the second level 7 ft. wide by 12 ft. long by 7 ft. deep (refer to drawing C-1). The pit contains approximately 850 to 1000 gallons of pumpable liquid and 5 cubic yards of sludge. Adjacent to the pit is a sump that is connected by a decantation pipe, which pours off into the sewer system. All waters flow from the sewer system into two pits (primary and secondary). There is no known carryover of solids from the pits into the sewer system. As described in section 5.3, further investigations for sludges in the sewer system are proposed.

4.2 Sludge Piles

The second area to be addressed is two sludge piles located in the northeast corner of the property. Pile #1 straddles Eastern Electric property and the adjoining property. The surface dimensions of the pile are 9 feet wide by 13 feet long (refer to drawing C-4). The pile has a maximum height of approximately 20 inches and slopes downward to about 6 inches high on the neighboring property (refer to drawing C-3). Pile #1 contains approximately 8 cubic yards of contaminated material. Pile #2 is located between Pile #1 and a block building 40 feet away (refer to drawing C-2). This pile has dimensions of 3 feet wide by 4 feet long by 11 inches high. The pile contains about one-half cubic yards of material.

5.0 Scope of Work

The tasks included in this work plan center around two separate work areas: the spray booth area, and the contaminate sludge pile area. This section will describe the methods and procedures that will be used during the remediation of these two areas.

5.1 Spray Booth Area

5.1.1 Site Set Up

Upon arrival on site, the cleanup team will establish a Hot zone, Support zone, and a decontamination area for exit/entry. The Hot zone will consist of the booth area and a small work area surrounding the booth for staging and handling of drums. The booth will be enclosed by a visqueen curtain to contain contamination migration. The work area will be established by barrier tape to prevent improper entry/exit into the Hot zone. This area will also be covered by visqueen, secured to the floor, to limit the spread of contamination.

A decontamination area will be established on the edge of the work area. In this area, equipment and personnel will be cleaned and expendable gear discarded before entering into other areas of the plant.

A Support zone will be established adjacent to the decontamination area. This area will consist of a First Aid Station, personal protective equipment area, and drum staging area.

5.1.2 Material Removal

Upon completion of site set up, the cleanup team will commence material removal by pumping pumpable sludge and water from the pit into DOT approved drums. Care will be taken to prevent spillage when handling these materials. Several drums will be brought into the work area at a time. These drums will be filled, closed, wiped off, and transferred back to the Support area for later disposition. When the water has been completely removed, the crew will begin containerizing the remaining sludge into 17H drums. This will be performed in two different steps. A 2-inch diaphragm pump will be utilized to pump as much of the sludge as possible. The remainder of the heavier sludge will be shoveled into buckets, raised, and poured into drums.

5.1.3 Decontamination

After the completion of material removal, a two phase washing process will begin. All concrete and metal surfaces will be scrubbed with stiff bristle brushes and Kerosene/Diesel fuel. The liquid will then be absorbed utilizing organic sorbent pads. After all surfaces have been treated in this manner, a penetone Power Cleaner 155 solution will be applied and allowed to soak into the surfaces. A high pressure washer will be utilized to rinse all surfaces twice. A penetone and water solution will be used in the rinsing process. All wash and and rinse waters will be pumped into 17E drums for disposition with other contaminated liquids. The sump and decantation pipe will be cleaned in the same manner as the pit, as well as associated grating.

The decontamination method described was selected based on experience gained from numerous other projects. This method was selected based on the following:

1. Small overall surface area to be cleaned
2. The number of vertical and horizontal features associated with the location
3. The limitation of possible risk of spreading contamination to adjacent work areas
4. Economic factors

The kerosene/diesel fuel acts as a "solvent" to remove the PCBs from the concrete or metal surface. Once removed, the PCBs become bonded with the kerosene/diesel which is collected and disposed of properly. The Penetone Power Cleaner (an alkaline degreaser) is applied to help remove the kerosene/diesel fuel. The product has a surfactant that enables the organic solvent to be removed from the surface material.

Care will be taken during the cleaning operation to minimize escape of initial wash or rinse from the pit area, as well as spray from the washing procedure. Drains in the area will be plugged prior to startup and protective covering will be erected where necessary to keep misting to a minimum. All wash and rinse liquids will be handled as potentially contaminated or analyzed and verified clean.

5.1.4 Site Breakdown

This last phase of work is a combination of many small tasks. After the pit, grates, sump, and booth are cleaned, breakdown procedures will begin with decontamination of all reusable equipment. This will be done by washing all pumps, hoses, etc., with penetone and water. All visqueen, sorbent etc., will be placed into DOT containers for disposition. The remaining wash waters will be transferred into containers for disposition at approved facilities after sampling and analysis.

While samples are being taken, all containers will be properly labeled and checked to be sure that they are properly closed and ready for shipment. The containers will then be taken to a staging area where they will be stored until they are ready to be delivered to an approved TSCA/RCRA disposal facility.

5.2 Contaminated Soil Area

There are two contaminated sludge piles located in the northeast corner of the Eastern Electric property. Pile #1 extends over onto an adjacent property. The second smaller pile lies between Pile #1 and a block building at the rear of the property (refer to drawing C-2).

Primary target cleanup levels are determined to be non-detectable for PCBs and non-detectable for total volatile organics. Field screening levels for volatile organics, as recorded by an organic vapor analyzer, will be 10 PPM, and are further discussed in section 5.2.3.

5.2.1 Site Set Up

As stated before, for the spray booth area, the cleanup crew will establish a Hot zone, Support zone, and a decontamination area for exit/entry. Pile #1 has been secured with a 7 foot high chainlink fence with 3 strands of barbed wire at the top. The fenced area measures 25 ft. X 25 ft. The taped Hot zone will encompass Pile #2, the fenced Pile #1, and an area sufficiently large enough to contain the excavation equipment and waste containers. The Decontamination area and Support zone will be established as previously described.

5.2.2 Materials Removal

A trackhoe (Catapillar 215 or equal) will be used for excavating the contaminated piles. The trackhoe will initially be positioned on the Eastern Electric side of Pile #1. Following removal of one side of the chainlink fence, excavation will proceed. The excavation will include the piled material and 6 to 12 inches of soil beneath the pile. All excavated soil will be stored in a 20-yard rolloff box supplied by a licensed special waste hauler. The positioning of the trackhoe and the rolloff box relative to the two contaminated piles will be such to minimize travel by the trackhoe. The excavation will extend 4 to 8 feet beyond the limits of each pile.

Following excavation and sampling, the entire excavated area will be covered with visqueen to prevent infiltration of rain-water. Once laboratory test sample results are obtained (estimated to be less than 24 hours), the visqueen will be removed and the excavated area readied for either backfilling or additional excavation.

5.2.3. Contaminant Screening

Post excavation soil samples will be taken at several locations within the excavated area. Soils will be field screened for volatile organics. Screening will be done by filling a sample container with soil, sealing the container with aluminum foil, and closing the lid. After five minutes, an organic vapor analyzer probe, OVA, will be inserted into the container through the foil and the headspace measurement recorded. If the soil sampling results indicate the presence of volatile organics greater than 10 PPM (headspace readings), additional soils will be excavated and the screening process repeated.

Field screening for PCBs is not proposed. Testing to within the target levels of 1 PPM requires the use of a portable (field) gas chromatograph, GC. This remediation project is not of sufficient size to economically justify the mobilization of the GC. Other field tests for PCBs (Clor-N-Oil Test Kit by Dexsil Corp.), do not have the sensitivity needed to confirm that acceptable target levels have been obtained. For these reasons, soil samples will be collected following completion of the anticipated excavation and sent by overnight courier to NUS Corporation for quantification of PCBs. We anticipate 24-hour turn-around in obtaining the results. As described above, the excavation will be covered and secured while the testing is being performed.

Once the excavation of soil and sludge has been completed, the trackhoe will be mobilized onto a portable decon pad in preparation for decontamination. High pressure water rinse will be used to clean the entire trackhoe, including the undercarriage, of all soil, sludge, and dust. Those parts of the trackhoe that come into contact with the PCB contaminated material will be wiped cleaned with penetone prior to water rinsing. All the rinseate will be collected on the decon pad and then placed in 55-gallon drums. The drums will then be disposed of as described in the work plan.

5.2.4 Sampling and Analytical Testing

All soil sampling and field screen testing will be conducted in accordance with procedures outlined in Appendix B. Screening samples for volatile organics will be taken at the surface within each 100 square feet of excavated area and 6 inches below the ground surface on four sides of Pile #1 excavation, and two sides of Pile #2 excavation. These samples will be tested with an OVA and if headspace concentrations are below 10 PPM, then they will be shipped overnight to NUS Laboratory and tested for PCB and total volatile organic content. If the laboratory test results reveal concentrations that meet the target levels, then the screening samples results will be submitted to NYSDEC as confirmation of cleanup.

All Analytical testing methods will be conducted under EPA SW 846. The laboratory will submit reportables and deliverables specified in SW 846 section 1.5. NUS Laboratory is currently approved by NYSDOH and has submitted all documentation to NYSDEC. They are currently awaiting a NYSDEC audit. NUS Laboratory's standard operating procedures are included in Appendix C.

The screening/confirmation procedures described above (section 5.2.3) will be repeated until the laboratory has confirmed that primary target levels have been attained The target levels will be non-detectable for PCBs and non-detectable for total volatile organics.

In the event the primary target levels cannot be attained, Westinghouse will achieve a secondary cleanup level of 1 PPM for PCBs and 1 PPM volatiles. If the primary target levels are not achieved, NYSDEC may determine whether or not a groundwater investigation is warranted. The purpose of the groundwater

investigation would be to assess the effect upon groundwater quality of residual soil contamination resulting from the sludge piles. In making such a determination, the NYSDEC will consider all relevant factors, including the nature and quantity of residual contaminants, soil types, depth to groundwater, site or regional geology and hydrogeology, and groundwater quality standards and use.

If the NYSDEC determines that a groundwater investigation is required, NYSDEC shall provide Westinghouse with a written explanation of the basis for its decision. Westinghouse may comment upon NYSDEC's determination and NYSDEC agrees to consider Westinghouse's comments.

In the event Westinghouse does not agree with the NYSDEC as to the need for, or the extent of groundwater investigation, either party may, upon written notice of the other, apply to the court which issued the Order of Conditional Discharge, dated February 9, 1989, for a determination as to whether such a groundwater investigation is justified. Otherwise, NYSDEC and Westinghouse reserve all rights and remedies otherwise available to them.

5.2.5. Backfilling

Following removal of contaminated soil to acceptable levels, the excavation will be backfilled. Several suppliers will be contacted to acquire backfill material. Remediation personnel will visit each potential borrow location and acquire backfill samples. Samples collected from the preferred supplier (based on cost, availability, and routing) will be analyzed for PCBs.

Once the backfill soil has been verified free of PCBs, it will be trucked to the project site. There, it will be dumped in the excavation and spread and compacted with the trackhoe. Grass seed and mulch will be placed on the ground surface. The security fence will be removed and the site fencing restored in its original location.

5.3 Sewer System Inspection

Upon mobilization to the site, remediation personnel will inspect the settling pits and sewer manholes located on the site for evidence of sludges. The manholes will be entered and the influent and effluent lines inspected using a flashlight. The pits will be visually inspected in a like manner and a shovel or sampling bucket will be used to determined if sludges are present. If the inspection (as described) reveals the presence of sludges, samples will be obtained and analyzed for the presence of PCBs and volatile organics. The need for further remediation will be determined after receipt of the laboratory results.

6.0 Disposal of Waste & Reporting

All containers of waste water and sludge from the spray booth will be shipped to APTUS in Coffeeville, KS, for ultimate disposal. Contaminated soil and sludge from the sludge piles are to be temporarily stored in the 20 yard rolloff box. Once excavation is complete, the stored soil will be sampled and characterized for disposal at an approved facility. All containers of solids will be taken to either APTUS or a Chemical Waste Management facility in either Model City, NY, or Emelle, AL. The selected location will depend on approval, transportation and disposal costs, and scheduling requirements. Results of the analytical protocol and data will be maintained on file and submitted to NYSDEC. Upon completion of the site remediation, a report concerning the activities and test results will be prepared.

7.0 Project Coordination

Following a tentative agreement with NYDEC for the execution of this work plan, Eastern Electric Apparatus and Penn Central will be notified of the remediation project and schedule. Penn Central has been informed of this project and has previously granted Westinghouse Electric a right-of-entry which expired on March 31, 1989. Westinghouse will need to resurrect this request for access rights. Therefore, a quick review and approval is necessary to operate under this access privilege.

Prior to actual remediation, cleanup personnel will meet to review Health and Safety Plans and to inform Eastern Electric's Plant Manager of the remediation procedures and schedulings. Concurrently NYSDEC will be notified as to when the remediation will begin and at the following stages:

1. After initial setup of staging areas, hot zones, and support zones.
2. At the start and after cleaning of the sludge pit, but prior to reinstallation of the grates.
3. At the start of excavation of the outside sludge pile and upon completion of preliminary removal.

It should be noted that the entire remediation activity will take less than 5 work days. Once on the site, remediation crews will work continuous 8 to 10 hours each day with the exception of waiting for analytical test results. Even during this short shutdown period, other activities will be assigned to excavation personnel.

8.0 Specific Health & Safety Plan

The Health & Safety plan is attached. Provisions for protecting the community during excavation and transportation of the sludge and soil is indicated on page 17. The levels of protection are identified on page 11. A map and directions to the nearest hospital are indicated on page 13. Pages 14 through 16 are used as a check list by the H&S officer before entry into a confined space which the pit is classified. Air monitoring is done just prior to entry. The results are used to verify or modify required personal protection. For these reasons, the permit form is not filled out as part of the site specific H&S plan.

9.0 Certification of New York P.E. Engineer

The services of Dane Horna of Westinghouse Environmental and Geotechnical Services, Inc., will be contacted to oversee cleanup activities at the Eastern Electric site Mr. Schwartz is a licensed engineer in the state of New York. He will certify that all work complies with this work plan. His certification number is 56359.

Project certification will be submitted within 60 days of completion of field work. Certification will include:

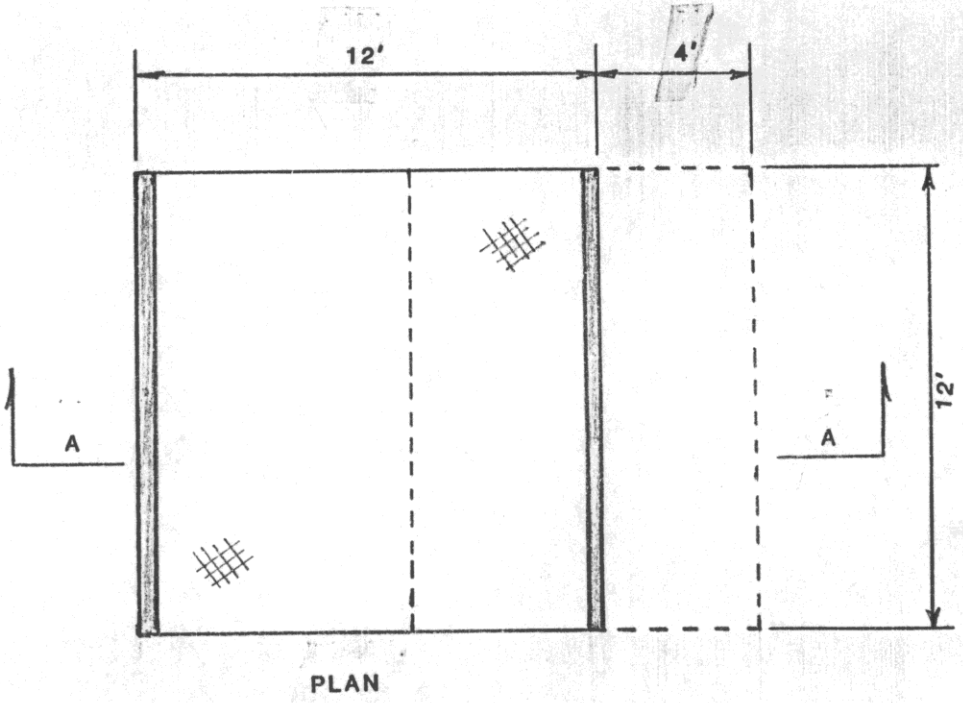
1. A description of cleanup activities.
2. Quantities of sludge and soil removal and disposal (from inside and outside the plant).
3. Photocopies of manifest and disposal documents.
4. Sketch showing sampling locations.
5. Results of sewer evaluation and recommendations.
6. Laboratory results along with SW 846 section 1.5 QA/QC reportables and deliverables package.
7. Certification that the work was done in accordance with the approved work plan.

DRAWINGS

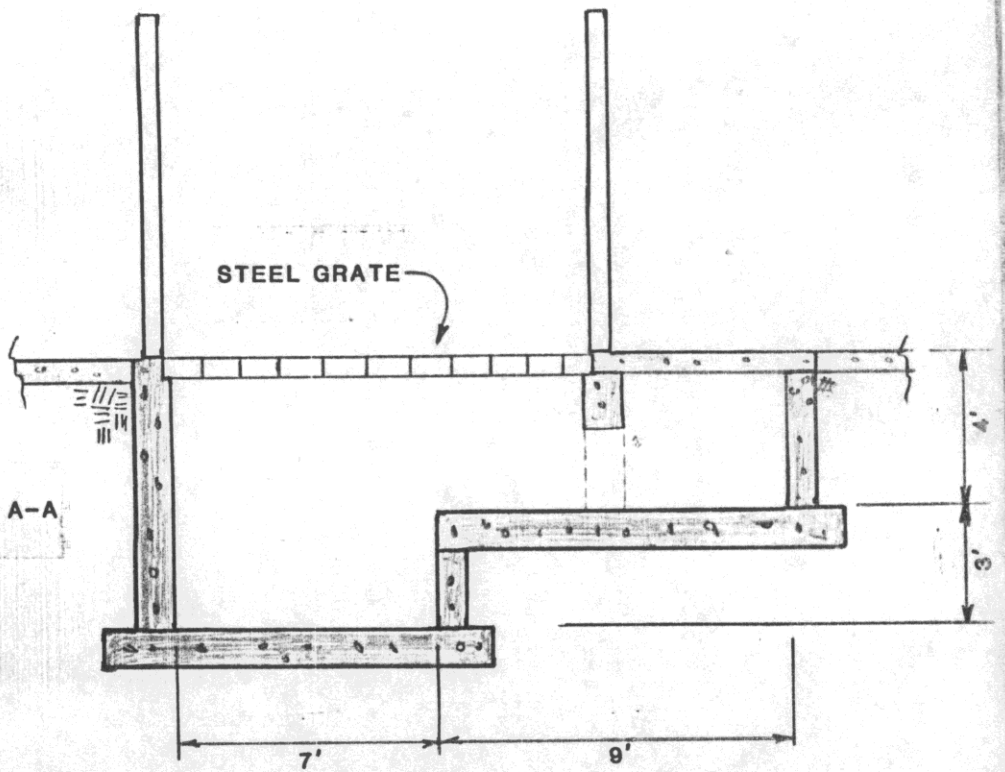
&

REPORT OF FINDINGS

NOVEMBER 10, 1988

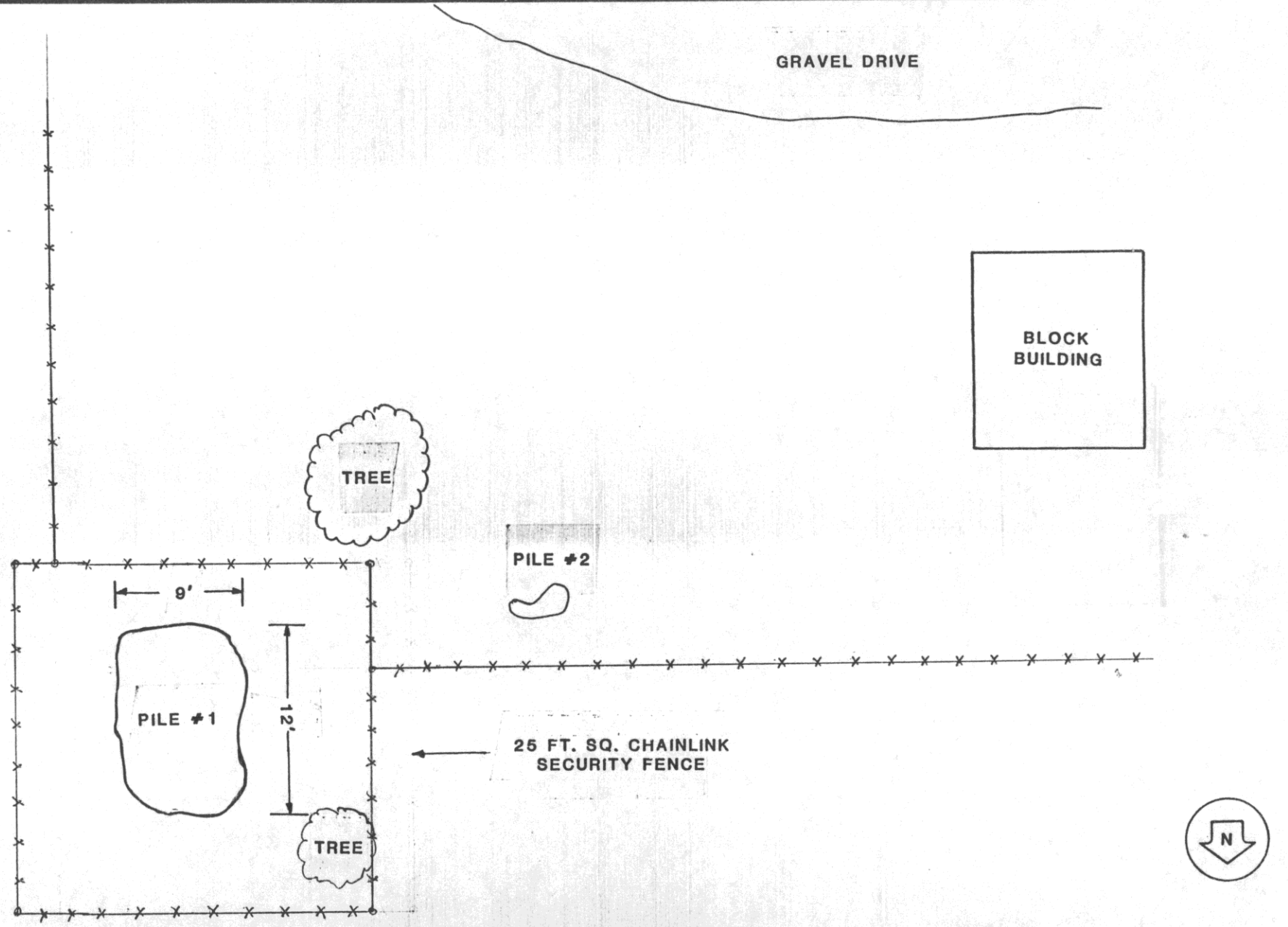


PLAN



SECTION A-A

C-1 SPRAY BOOTH PIT	SCALE: 1"-50' DATE: 3/9/89	Westinghouse ENVIRONMENTAL SERVICES	EASTERN ELECTRIC APPARATUS BUFFALO, N.Y.



C-2

SITE PLAN

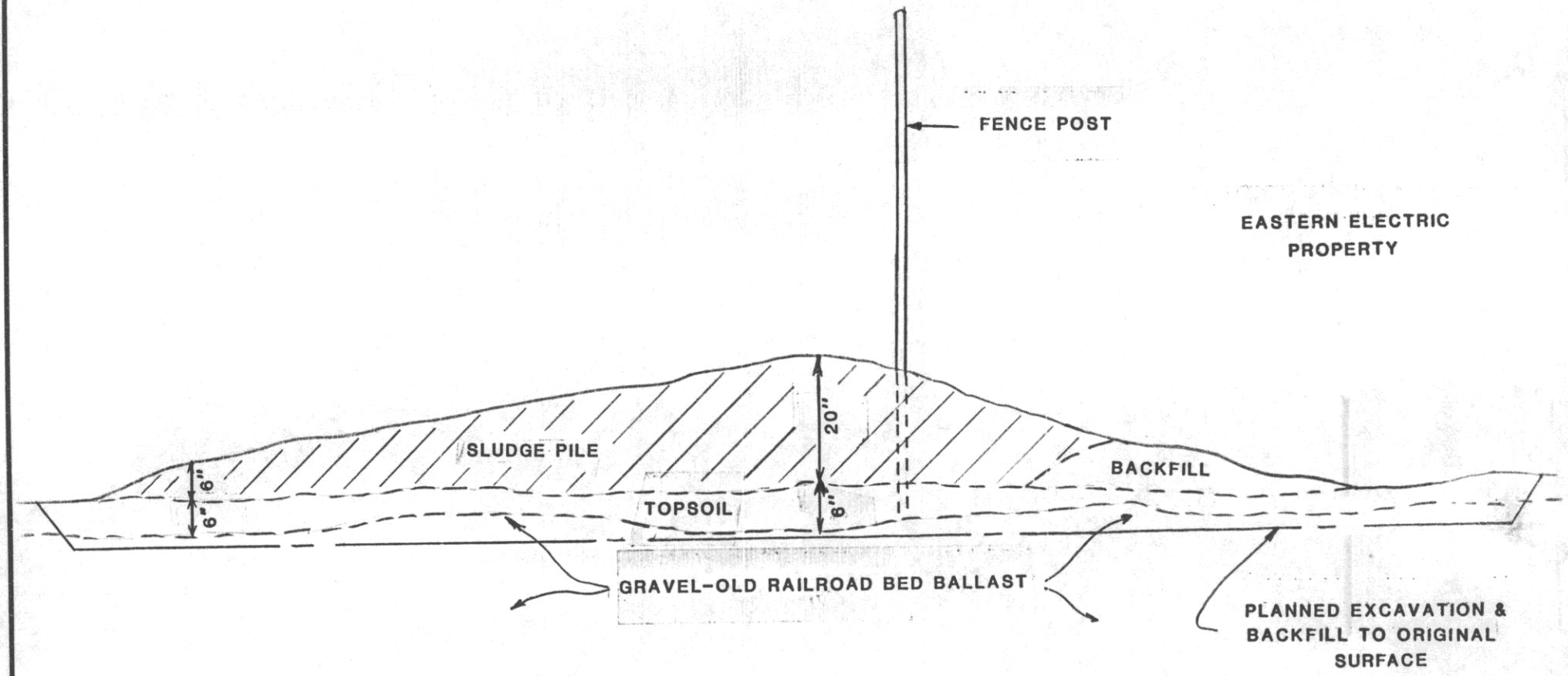
SCALE: 1"-10'

DATE: 3/9/89

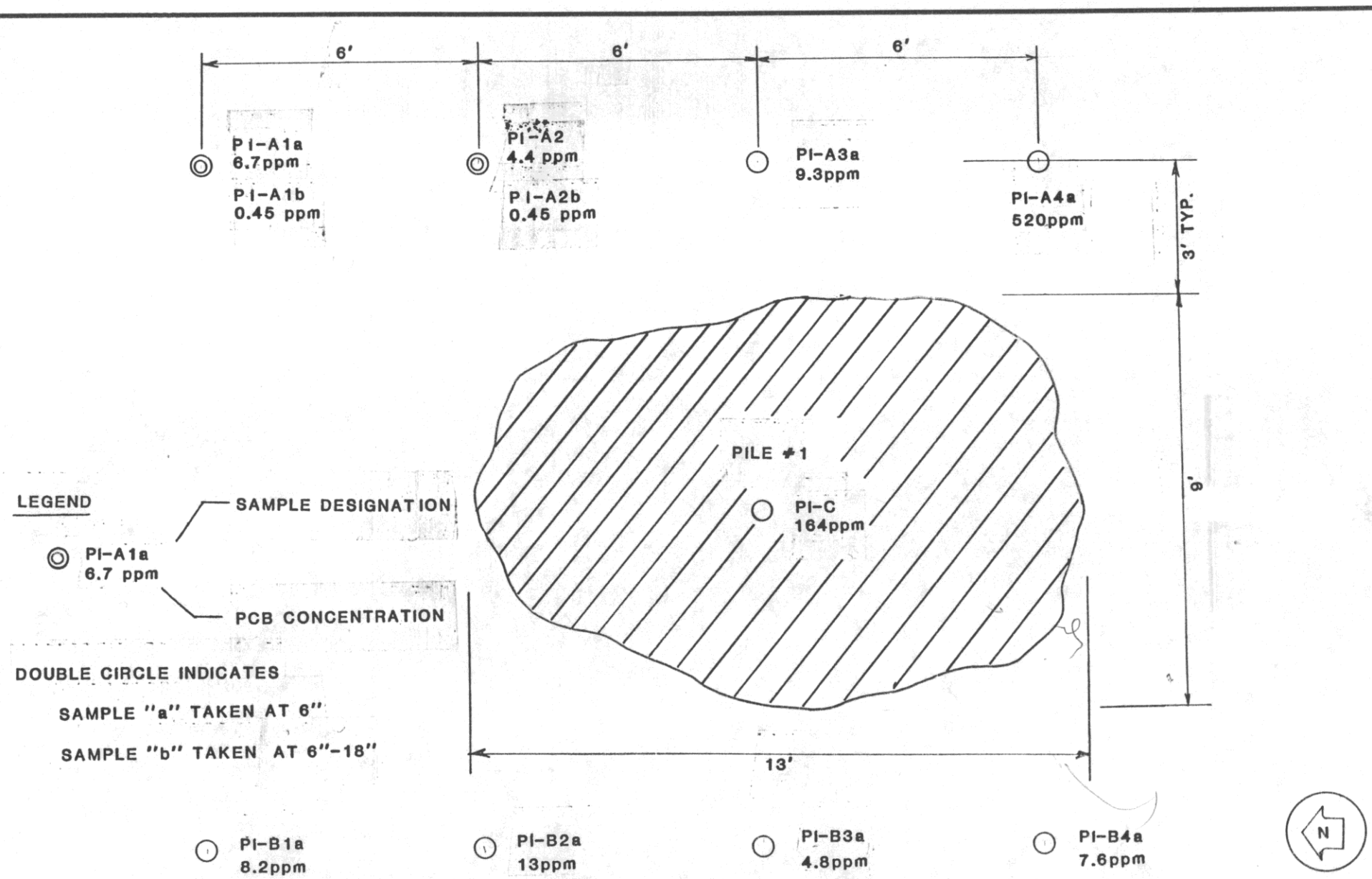
Westinghouse
ENVIRONMENTAL SERVICES

EASTERN ELECTRIC APPARATUS

BUFFALO, N.Y.



C-3 CROSS-SECTION PILE #1	SCALE: 1"-30' DATE: 3/9/89	Westinghouse ENVIRONMENTAL SERVICES	EASTERN ELECTRIC APPARATUS BUFFALO, N.Y.



C-4 SAMPLING LAYOUT	SCALE: 1"-20' DATE: 3/9/89	Westinghouse ENVIRONMENTAL SERVICES	EASTERN ELECTRIC APPARATUS BUFFALO, N.Y.

Site Inspection & Sampling

November, 1988

Westinghouse/Haztech mobilized a crew to the Eastern Electric facility on November 10, 1988, to sample waste for disposal and assess the site for cleanup procedures. Upon arrival at the site, Haztech personnel surveyed (inspected) the two areas to be cleaned up.

The first area is the pit below a spray booth containing approximately 850 gallons of pumpable liquid and 5 cubic yards of sludge.

The second area is two sludge piles located in the northeast corner of Eastern Electric's property and an adjoining property. The pile consists of approximately 8 cubic yards of sludge.

Area 1 is a paint booth with the dimensions of 12 ft. X 12 ft., containing a bi-level pit beneath the floor. The first level was found to be 3 ft. wide X 12 ft. long X 9 ft. wide and the second level at 7 ft. wide X 12 ft. long X 7 ft. deep (refer to drawing C-1).

Area 2 consists of two soil piles located in the northeast corner of the property.

Pile #1 surface dimensions were identified as approximately 9 ft. wide X 13 ft. long. The pile is approximately 20 inches high and slopes down to about 6 inches high on the neighboring property (refer to drawing C-2 and C-3).

Pile #2 is located between the first pile and a block building. This pile had dimensions of 3 ft. wide X 4 ft. long X 11 ft. high.

These piles are located on approximately 6 inches of topsoil which is underlaid by coarse gravel and sand. The area was sampled in the following manner:

Pile #1 A grid 18 ft. wide X 24 ft. long (refer to drawing C-3) was laid out on 6 foot intervals. A composite sample was made of the pile. Then the area surrounding the pile was sampled approximately 3 feet out from the pile at 6 foot intervals lengthwise down the pile at a depths of 6 inches.

Pile #2 Two composite samples were taken. One composite (P2-1C) was taken 2 feet out at four locations around the pile to a depth of 6 inches to test for migration. The other composite (P2-C) was taken from the pile.

The Analytical test results of these samples are attached.

SAMPLE DESIGNATION	PCB'S AROCLOR: 1016	1242	1260	METALS: EP TOX Ba	Cd	Pb	Hg	Cr	PH UNITS	TETRA CHLORO ETHENE	ETHYL BENZENE	XYL, M	XYL, O,P	1 MECL	ACE TONE	2 MEK	TOL UENE	3 1.1.1 TRI CHL	NON TARGET COMPS
P1-A1a	ND	ND	6.7	.22	ND	ND	ND	ND	7.6	<.33	<.33	<.33	<.33						0.63
P1-A2	ND	ND	4.4	.71	ND	ND	ND	ND	7.8	1.2	<.33	<.33	<.33						ND
P1-A3a	ND	ND	9.3	.32	ND	ND	ND	ND	7.2	1.5	<.33	<.33	<.33						0.53
P1-A4a	ND	ND	520	.69	ND	2.5	ND	ND	7.6	.22	<.33	<.33	<.33						1.2
P1-B1a	ND	ND	8.2	.73	ND	ND	ND	ND	6.9	<.33	<.33	<.33	<.33						0.64
P1-B2a	ND	ND	13	.23	ND	ND	ND	ND	7.2	<.33	<.33	<.33	<.33						ND
P1-B3a	ND	ND	4.8	.32	ND	ND	ND	ND	6.9	.27	<.33	<.33	<.33						ND
P1-B4a	ND	ND	7.6	.50	ND	ND	ND	ND	7.9	<.33	<.33	<.33	<.33						ND
P1-A1b	ND	ND	.45	.23	ND	ND	.024	ND	7.9										(<7.9)*
P1-A2b	ND	ND	.45	.42	ND	ND	ND	ND	8.3										(<4.7)*
P1-C	ND	85	79	.56	.041	ND	.025	ND	7.8	62		45	64						ND
P2-1C	ND	30	23	1.0	.064	.18	.03	ND	7.9										(<7.6)*
P2-C	ND	330	150	.94	.28	NA	ND	ND	8.9										(<9.3)*
WB-S	170	ND	56	1.8	.28	.36	ND	ND	8.9	<.33	62	210	170						ND
WB-W	ND	ND	ND	.39	ND	.86	ND	.09	7.9	<.33	.087	.22	.23	13	.26	.057	.087	.0008	

*Samples are to be rerun at lower detection limit data available 11/29

1 - Methylene Chloride
2 - Methylethyl Ketone
3 - 1.1.1 Trichloroethane

Note: All units are expressed in PPM.

QA/QC

ENVIRONMENTAL SAMPLE METHODS

ENVIRONMENTAL SAMPLE METHODS

This document provides a summary of procedures employed by Westinghouse Environmental Services for collection and handling of environmental samples. Additional stepwise, media-specific protocols and procedures are included in the Westinghouse Environmental Services Standard Operating Procedures and are tailored to and included in site specific plans, as appropriate. All personnel who perform sampling are trained in all applicable Westinghouse Environmental Services and State and Federal requirements pertaining to sample collection, documentation and handling. All meters and probes utilized for the collection of field measurements will be in good repair and properly calibrated in accordance with the manufacturers specifications and Westinghouse protocols.

1.0 SAMPLE COLLECTION PROCEDURES

The exact procedures and equipment used for sampling will depend on the matrix sampled and analyses to be performed. The following are general procedures relevant to all sampling performed.

1.1 Sampling Container Preparation

All containers (regardless of age) used in the sampling of soils, ground water, surface water and sediment shall be cleaned according to the following EPA approved procedures.

Sample containers for organic analyses and metals will generally be cleaned using these sequential steps:

a) Nonphosphate detergent/hot water wash
b) Tap water rinse
c) Distilled/deionized water rinse
d) Acetone rinse
e) Pesticide-grade hexance rinse

Containers for metal analyses may, with the approval of the Project Manager, be cleaned using these sequential steps:

a) Nonphospate detergent wash
b) 1:1 Nitric acid rinse
c) Potable water rinse
d) 1:1 Hydrochloric acid rinse
e) Potable water rinse
f) Reagent grade water rinse

These procedures will not apply to manufacturer prepared sample containers or cartridges used to collect subsurface gas samples. Any containers that are provided for sampling use, in any media, that are certified clean from the manufacturer or laboratory performing the analyses, will be exempted from these cleaning requirements. All other containers shall be cleaned and certified clean through the laboratory providing the analytical services or containers. The container type and preservative requirements will follow the specifications of the laboratory QA/QC Plan and EPA Manual SW-846.

1.2 Decontamination Procedures

All field equipment used during sample collection that comes in contact with the sample has the potential to cause the introduction of contamination or to induce cross contamination shall be decontaminated prior to use. This procedure applies to augering and boring equipment, sample equipment, and field sampling instruments and probes.

Cleaning and decontamination procedures for all field sampling equipment and instrumentation will be conducted in a thorough and step-wise manner as indicated by the methods set forth for the media to be sampled. If necessary, specific areas to be utilized as contaminant reduction zones will be designated in a site specific health and safety plan. All rinse water will be contained or diverted in a manner which prevents contamination of surrounding areas. All rinsate will be collected in a compatible container and properly disposed of to prevent possible contamination to the borehole and/or adjacent areas. Clean, new, disposable latex gloves will be worn when handling sediment sampling equipment, ground-water sampling equipment and monitor well construction materials. All decontamination procedures will be documented on either the Field Report Form (Figure 1) or the Water Sampling Report Form (Figure 2) as appropriate.

Soil Sampling Decontamination

Cleaning and decontamination procedures for all soil sampling equipment will be conducted in a uniform manner. Any deviations from these procedures will be thoroughly documented on the Field Report Form. Decontamination will be conducted in accordance with the following procedures:

a. Clean sediment sample equipment with potable water and phosphate-free laboratory detergent (Alconox or equivalent), using a brush, if necessary, to remove particulate mater and surface films.

b. Rinse thoroughly with potable (tap) water.

c. Rinse thoroughly with deionized water.

d. Rinse thoroughly with isopropyl alcohol.

e. Triple rinse with deionized water.

f. Allow to air dry.

g. Wrap with aluminum foil, if appropriate, to prevent contamination if equipment is to be stored or transported prior to immediate use.

For field sampling equipment utilized at sites with potential metals contamination, an alternative cleaning and decontamination procedure may be employed. Due to the nature of the work, complexity of the procedure and potential remoteness of some sites, this procedure will be used only when absolutely necessary and with the approval of the Project Manager. The alternative decontamination procedure for metals is as follows:

a. Clean sediment sample equipment with potable water and phosphate-free laboratory detergent (Alconox or equivalent), using a brush if necessary, to remove particulate mater and surface films.

b. Rinse thoroughly with 1:1 nitric acid/water solution.

c. Rinse thorough with distilled water.

d. Rinse thoroughly with 1:1 hydrochloric acid/water solution.

e. Rinse thoroughly with distilled water.

f. Allow to air dry (if applicable).

Ground-Water Sampling Equipment Decontamination

All ground-water sampling and monitoring equipment, including bailers,

pumps and lines, will be decontaminated prior to sampling in accordance with the following decontamination procedures:

a. Rinse thoroughly with tap water.

b. Wash with phosphate-free laboratory detergent (Alconox or equivalent).

c. Rinse with deionized water.

d. Rinse with isopropyl alcohol.

e. triple rinse with deionized water.

f. allow to air dry (if applicable).

g. Wrap with aluminum foil, to prevent contamination if equipment is to be stored or transported prior to immediate use.

h. Secure for transport in field vehicle (if applicable).

If decontamination is performed in the field, all rinse water will be contained in a manner which prevents the introduction of contamination to surrounding areas. As warranted based on site conditions, all rinsate will be collected in a compatible container and properly disposed of to prevent possible contamination of adjacent areas. Sampling personnel will avoid contacting bailers or pumps with the surrounding soils or unprotected hands. All bailers or pumps which have contacted any soil, unprotected hands, or anything which may contaminate the equipment will be decontaminated according to the above procedures.

Bottles will be cleaned prior to delivery to the field by the chemical laboratory. For safety reasons and to minimize contamination, preservatives may be added to the sample bottles prior to delivery to the site.

Sampling personnel will don new, laboratory quality disposable gloves. These gloves will be replaced as necessary during the well evacuation and sampling procedure and will always be changed between wells.

Field Analytical Instrument Decontamination

All probes serving analytical instruments used in the field (e.g., pH, and specific conductance meters) will be rinsed with deionized or distilled water prior to each use. Electric water level probes will be cleaned with laboratory grade soap and triple rinsed between wells. During soil sampling, equipment used for monitoring organic vapors (e.g., HNu and OVA) will be properly cleaned, according to manufacturer specification, prior to use.

1.3 Procedures to Prevent Cross Contamination

Personnel collecting soil, ground water, and air samples will take the following precautions to minimize sample contamination or cross-contamination between samples:

- At a minimum, latex surgical gloves will be used while taking all samples, disposed of after equipment has been decontaminated, and a clean pair used for the next sample.

- Sampling personnel will not touch the inside of the sampling container.

- o Sampling personnel will not walk over any areas where samples will be taken.

- o Only equipment that has been properly decontaminated will be used for environmental collection.

Immediately following the collection of the sample, the container will be sealed and the sample will be labeled and entered in the field log book. At this time, the Chain-of-Custody Form (Figure 3) will be completed to note the acquisition of the sample.

The sample will then be placed in the shipping container and preserved according to the directions of the laboratory and EPA manual SW-846 procedures.

1.4 Sample Identification and Labeling

Each sample shall be identified in the log book and on the sample container label. The sample label shall include the following information:

- o Date and time
- o Sample ID number
- o Project number
- o Sampler (name)
- o Sample location (and depth, if applicable)
- o Preservation
- o Matrix type

1.5 Field Quality Control Samples

The quantity and types of field quality control samples collected will depend on a variety of factors including: the sampling procedure, media sampled, regulatory classification of the site (i.e. RCRA/CERCLA), potential for cross contamination, and sensitivity of the analyses to be performed.

- o Duplicate samples are blind quality control samples which are duplicates of field samples. They will be collected and labeled as an additional environmental sample. Collection of the duplicate sample must be documented in the field log book. Analytical results of duplicate samples are compared to those of the original sample for final date verification.

- o Trip blanks are prepared by the contract laboratory, and are used to determine if analytical or equipment errors at the laboratory have caused false positive results. Analyses of trip blanks are generally performed for volatile organic samples only. The samples will be submitted blind to the laboratory in coolers containing volatile organic field samples. Trip blanks accompany the field samples during sampling, storage, and transportation to the laboratory. The containers will be filled with material appropriate to the media sampled, as follows:

  - When sampling soil or sediment, the samples will be filled with native soil free of contamination.

- When sampling ground water or surface water, they will contain deionized water.
- When taking ambient air samples, unused filters or adsorptive media will be used.

o Field blanks are quality control samples provided to determine whether ambient conditions may affect the quality of samples collected. Field Blanks will be taken as appropriate or as requested by the client, and will consist of materials appropriate to the media sampled, as follows:

- Background soils are used as field blanks when sampling soil or sediment.
- Deionized water is used when analyzing ground water or surface water.
- Background air samples are used during ambient air sampling.

o Split samples are the same as duplicate samples, except that they are submitted to two or more different chemical laboratories. Split samples for volatile organic analyses will be grab samples as opposed to composite samples. When samples are split with an outside source or government agency, the split will be noted. If either party refuses a split sample, the refusal will be noted and signed by both parties.

o Equipment blanks will be made by pouring laboratory grade deionized water over decontaminated sampling equipment prior to sampling to

determine the effectiveness of decontamination procedures. The samples will be submitted blind to the chemical laboratory for groundwater samples, equipment blanks are generally collected at least once during each sampling day, unless dedicated equipment is used or otherwise specified by the client.

2.0 DOCUMENTATION OF SAMPLING AND HANDLING PROCEDURES

Generally, several documentation methods are used simultaneously to provide complete, legally admissable records of sampling activities performed. Methods utilized include the recording of information in field log books, on sampling forms and field on a chain-of-custody form.

2.1 Field Log Book and Field Report Form

A bound field log book will be maintained by the field sampling team manager to provide a daily record of events. At the beginning of each entry, the following will be recorded:

- Date
- Time
- Meteorological conditions
- Field personnel present
- Level of personal protection
- List of on-site visitors and the level of personal protection
- Signature of the person making the entry

Field log book entries will be in as much detail as necessary so that essential information is properly documented. All documentation in field books will be in ink. If an error is made, corrections will be made by crossing a line through the error and entering the correct information. Corrections will be dated and initialed. No entries will be obliterated or rendered unreadable.

If no map of sample locations is available prior to sampling, a simple drawing of the site (not to scale) will be included in the log book to provide an illustration of all sampling points.

The cover of each log book used will contain:

- Person and organization to whom the book is assigned
- Book number
- Start date
- End date

Entries in the log book will include at a minimum the following for each sample date:

- Site identification
- Location of sampling points
- Description of sampling points
- References to photographs (if applicable) and brief sketch of sampling points
- Sample identification number

- o Number of samples taken
- o Time of sample collection
- o Reference to sample location map
- o Number of QA samples taken
- o Collectors' names
- o Field observations
- o Sample distribution (e.g., QA laboratory, split samples)
- o All field measurements made (e.g., pH, temperature, specific conductance)

Daily activities shall be summarized on the Field Report Form. If surface or ground-water are sampled, data will be recorded on the Water Sampling Report Form. These forms will be maintained in the project file. Data to be included on the form will include travel time, time at the site and a summary of activities, and observations. The Field Report Form may refer to the field log notebook for additional specific information.

2.2 Sample Chain-of Custody Record Form

In order to maintain an accurate record of sample collection, transport, analysis, and disposal, the following methodologies will be used:

- o Samples will be accompanied by a Chain-of-Custody Form at all times.

- o The Chain-of-Custody Form will be used by personnel responsible for

ensuring the integrity of samples from the time of collection until shipment to the laboratory.

- The Chain-of-Custody Form will be signed by each individual who has the samples in his or her possession. Preparation of the Chain-of-Custody Form will be as follows:

- The Chain-of-Custody Form will be initialed in the field by the person collecting the sample, for every sample. Every sample will be assigned a unique identification number, to be entered on the Chain-of-Custody Form. Up to 12 samples can be grouped for shipment using a single form.

- The record will be completed in the field to indicate project, sampling team, etc.

- If the person collecting the sample does not transport the samples to the laboratory or deliver the sample containers for shipment, the first block for "Relinquished by _____," "Received by _____" will be completed in the field.

- The person transporting the samples to the laboratory or delivering them for shipment will sign the record form as "Relinquished by ___."

- If the samples are shipped to the laboratory by commercial carrier, the Chain-of-Custody Form will be sealed in a watertight container, placed

in the shipping container, and the shipping container sealed prior to being given to the carrier.

- If the samples are transported directly to the laboratory, the Chain-of-Custody Form will be kept in the possession of the person delivering the samples.

- For samples shipped by commercial carrier, the waybill will serve as an extension of the chain-of-custody record between the final field custodian and receipt in the laboratory.

- Upon receipt in the laboratory, the Sample Receiving Supervisor will open the shipping containers, compare the contents with the chain-of-custody record, ensure that document control information is accurate and complete, and sign and date the record. Any discrepancies will be noted on the Chain-of-Custody Form.

- In the event of the discrepancies, the samples in question will be segregated from normal sample storage and the field personnel immediately notified.

- The Chain-of-Custody Form is completed upon receipt of the samples by the analytical service. The completed Chain-of-Custody Form will be returned to the Project Manager and maintained in the project file.

3.0 SAMPLE PACKAGING

Samples collected must be handled and shipped in a manner that will protect against any detrimental effects on the samples or the environmental due to breakage, leakage or spoilage. Sample handling procedures will be closely supervised and recorded to minimize the potential for loss, modification, or tampering during shipment to the analytical laboratory. Package labeling specification will depend on the type of materials being sent, and will be in accordance with Department of Transportation (DOT) regulations (49 CFR, Parts 171 through 177). Samples of hazardous materials will be stored and handled in accordance with all applicable Federal, State and Westinghouse corporate requirements.

Samples will be immediately placed in the sample cooler. Once the cooler is filled with samples, it will be locked and securely positioned in a sampling vehicle or other secure storage facility until the completion of the day's sampling activities. The following protocol will be used for packaging of samples:

- Only waterproof metal or equivalent strength plastic ice chests and coolers will be used.

- The volume level will be marked on each bottle with a grease pencil.

- Strapping tape or custody seals will be placed around the lid of all sample containers except for volatile organic samples.

- Samples will be packed properly for shipment so that bottles will not dislodge and/or break during shipment.

- Approximately three inches of inert cushioning material will be placed in the bottom of the cooler.

- The sample containers will be placed upright in the cooler in such a way that they do not touch and will not touch during shipment. In addition, all sample containers will be placed in clear, plastic, leak proof bags. Care will then be taken to ensure that sample labels are legible through the bag.

- Additional inert packing material will be placed in the cooler to partially cover the sample containers. Freeze packs will be placed around, among, and on top of the sample containers.

- Each cooler will be filled with additional cushioning materials to prevent movement of samples during shipment.

- The Chain-of-Custody Form will be placed in a waterproof plastic bag and placed just under the lid of the cooler. Methodology of shipment, courier name(s), and other pertinent information will be recorded on the Chain-of-Custody Form.

- If the cooler is equipped with a drain plug, it will be taped shut.

- The lid will be secured with strapping tape at a minimum of two locations. No labels will be covered.

- The completed shipping label will be attached to the top of the cooler.

- "This Side Up" arrow labels will be placed on two sides of the cooler, and "Fragile" labels will be placed on all four sides.

- Numbered and signed custody seals will be placed on the front right and back left of each cooler. These seals will be covered with clear tape.

- Samples will be transported by courier in an approved, cooled shipping container, ensuring that the maximum holding times between simple collection and analysis will not be violated.

- The weight limit of the shipper will be maintained.

- All records pertaining to the shipment of a sample will be retained freight bills, post office receipts, and bills of lading).

- The packaged samples will meet all applicable DOT requirements prior to shipment.

FIGURE 1

Westinghouse
Environmental Services

PROJECT	
LOCATION	
DATE	JOB NO.
CONTRACTOR	OWNER
WEATHER	TEMP. ° at AM ° at PM
PRESENT AT SITE	

TO _____

_____

_____

THE FOLLOWING WAS NOTED:

TIME: _____

MILEAGE: _____

COPIES TO _____

_____

FIELD REPORT

SIGNED _____

FIGURE 2

Westinghouse
ENVIRONMENTAL SERVICES

Page _____ of _____
WELL NO. _____
JOB NO. _____

WATER SAMPLING REPORT

A. GENERAL

1. Owner _____
2. Sampled By _____ 3. Weather _____
4. Location (Sketch on back) _____

B. WATER-LEVEL INFORMATION

1. Date: _____ Time: _____ Description of Measuring Pt. (M.P.) _____
2. Ht. of M.P. above Land Surface _____ 3. Elev. of M.P. _____
4. Method of Water Level measurements _____
5. Static Level (ft) _____ below M.P. 6. Elevation _____ MSl

C. EVACUATION PROCEDURE

1. Date: _____ 2. Time evacuation started _____; finished _____
3. Method of Evacuation _____ 4. Pumping Level (ft) _____ below M.P.
5. Total Well Depth _____ below M.P. 6. Ht. of Water Column (h) _____ ft.
7. Casing Diameter (r) _____ ft.
8. Volume of Water in Well: $(\pi r^2 h)7.48$ _____
9. Discharge rate: _____ 10. Flow Measurement method: _____
11. Volume of Water Evacuated: _____ 12. Depth of Intake: _____
13. Decontamination Procedure: _____

D. SAMPLING INFORMATION

1. Previously Sampled? Yes _____ No _____; Date _____ Firm _____
2. Sample Type: Well _____; Stream _____; Impoundment _____; Other _____
3. Date of Sample Collection; _____ 4. Time: _____
5. Water Level after Sample: _____
6. Decontamination Procedure: _____
7. Additional Comments: _____

E. FIELD ANALYSES

1. Temperature _____ 2. pH: _____ 3. DO _____
4. Specific Conductance: Initial _____; Final _____
5. Physical Appearance: _____
6. Additional Observations: _____

Westinghouse
ENVIRONMENTAL SERVICES

WATER SAMPLING REPORT (cont.)

Page_____ of _____
Well No._____
Job No. _____

F. SAMPLE DESCRIPTION

1. Number of Containers Collected:_____
2. Analysis to be Performed:_____
3. Metal Samples Filtered? Yes_____ No_____
4. Filtration Equipment:_____
5. Preservative added in Field? Yes_____ No_____
6. Preservatives added to bottles? Yes_____ No_____

G. Record of Well Evacuation

Time					
Volume Purged (gallons-cumulative)					
Turbidity L-M-H (subjective)					
Odor (subjective)					
Water Temperature (°c)					
pH (standard units)					
Specific Conductivity (umhos/cm)					

FIGURE 3

Westinghouse
Environmental Services

Branch:

Department:

CHAIN OF CUSTODY RECORD

S&ME Job No.	Project Name															
Samplers: (signature)																
Station No.	Date	Time	Comp.	Grab	Station Location	Number of Containers										REMARKS

Relinquished by: (signature)	Date:	Time:	Received by:(signature)	Relinquished by: (signature)	Date:	Time:	Received by:(signature)
Relinquished by: (signature)	Date:	Time:	Received by:(signature)	Relinquished by: (signature)	Date:	Time:	Received by:(signature)
Relinquished by: (signature)	Date:	Time:	Received by:(signature)	Date:	Time:	Remarks	

6/87

DISTRIBUTION: White and Canary copies accompany sample shipment.
Pink and Goldenrod copies maintained in file.

NUS Corporation Test Methods and Certification

DOH STATE OF NEW YORK
DEPARTMENT OF HEALTH
Corning Tower The Governor Nelson A. Rockefeller Empire State Plaza Albany, New York 12201

David Axelrod, M.D.
Commissioner

OFFICE OF PUBLIC HEALTH
Linda A. Randolph, M.D., Ph.D.
Director

WADSWORTH CENTER FOR
LABORATORIES AND
RESEARCH
Herbert W. Dickerman, M.D., Ph.D.
Director

Dear Laboratory Director:

Enclosed are the Certificate(s) of Approval and, if applicable, Addendum for permit year 1988-89 issued to your environmental laboratory. The certificate(s) supersede any previously issued and are in effect through March 31, 1989. Please carefully examine both the certificate(s) and addendum to insure that the categories and analytes for which your laboratory is approved are listed correctly, as well as verifying your laboratory's name, address, director and identification number.

In addition, please destroy your expired 1987-88 ELAP Certificate of Approval.

Please notify this office of any corrections required. We may be reached at (518) 474-8519.

Sincerely,

Margaret M. Prevost

Margaret M. Prevost
Administrator
Environmental Laboratory
Approval Program

MMP/bl
Enclosure

PROPERTY OF

NEW YORK STATE DEPARTMENT OF HEALTH

DAVID AXELROD, M.D. *COMMISSIONER*

Expires 12:01 AM April 1, 1989
ISSUED April 1, 1988

INTERIM CERTIFICATE OF APPROVAL FOR LABORATORY SERVICE

(Issued in accordance with the Laws of New York State)

pursuant to Section 503 of the Public Health Law

Laboratory ID. Number 10759

Director: Mr. Albert Kupiec

Laboratory Name: Nus Corporation
Number & Street: 5350 Campbells Run Road
City,State,Zip : Pittsburgh PA 15205

is hereby APPROVED as an Environmental Laboratory for the category

ENVIRONMENTAL ANALYSES/SOLID AND HAZARDOUS WASTE

All approved subcategories and/or analytes are listed below:

Characteristic Testing :
- Corrosivity
- Ignitability
- Reactivity

Polynuclear Aromatic Hydrocarbons (ALL)
Priority Pollutant Phenols (ALL)

Miscellaneous :
- Cyanide, Total
- Hydrogen Ion (pH)

Metals I (ALL)
Polychlorinated Biphenyls (ALL)
Purgeable Aromatics (ALL)

Acrolein and Acrylonitrile (ALL)
Chlorinated Hydrocarbons (ALL)
Haloethers (ALL)
Nitroaromatics Isophorone (ALL)
Phthalate Esters (ALL)
Purgeable Halocarbons (ALL)

Herbert W. Dickerman, M.D., Ph.D.
Director
Wadsworth Center for Laboratories and Research

4139

FORM LR 23.F

PAGE.003

PROPERTY OF
NEW YORK STATE DEPARTMENT OF HEALTH

DAVID AXELROD, M.D. *COMMISSIONER*

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Laboratory Name: Nus Corporation
Number & Street: 5350 Campbells Run Road
City,State,Zip: Pittsburgh PA 15205

Director: Mr. Albert Kupiec

is hereby APPROVED as an Environmental Laboratory for the category

NON-POTABLE WATER

All approved subcategories and analytes are listed on the attached addendum

Herbert W. Dickerman, M.D., Ph.D.
Director
Wadsworth Center for Laboratories and Research

3778

FORM LR 23.F

Lab ID: I0755 Nus Corporation

Non - Potable Water

Demand

Biochemical Oxygen Demand
Chemical Oxygen Demand

Nutrient

Ammonia (as N)
Kjeldahl Nitrogen, Total
Nitrate (as N)
Nitrite (as N)
Orthophosphate (as P)
Phosphorus, Total

Wastewater Metals III

Cobalt, Total
Molybdenum, Total
Tin, Total
Thallium, Total
Titanium, Total

Chlorinated Hydrocarbons

2-Chloronaphthalene
Hexachlorobenzene
Hexachlorobutadiene
Hexachloroethane
Hexachlorocyclopentadiene
1,2,4-Trichlorobenzene

Nitrosoamines

N-Nitrosodimethylamine
N-Nitrosodiphenylamine
N-Nitrosodi-n-propylamine

Residue

Solids, Total Dissolved
Solids, Total Suspended
Solids, Total

Wastewater Metals I

Barium, Total
Cadmium, Total
Calcium, Total
Chromium, Total
Copper, Total
Iron, Total
Lead, Total
Magnesium, Total
Manganese, Total
Nickel, Total
Potassium, Total
Silver, Total
Sodium, Total

Acrolein and Acrylonitrile

Acrolein
Acrylonitrile

Haloethers

Bis(2-chloroethyl)ether
2,2-oxybis(1-chloropropane)
Bis(2-chloroethoxy)methane
4-Chlorophenylphenyl ether
4-Bromophenylphenyl ether

Phthalate Esters

Benzyl butyl phthalate
Bis(2-ethylhexyl) phthalate
Diethyl phthalate
Dimethyl phthalate
Di-n-butyl phthalate
Di-n-octyl phthalate

Mineral

Acidity
Alkalinity
Chloride
Fluoride, Total
Calcium Hardness
Hardness, Total
Sulfate (as SO4)

Wastewater Metals II

Aluminum, Total
Arsenic, Total
Beryllium, Total
Chromium VI
Mercury, Total
Selenium, Total
Zinc, Total

Benzidines

Benzidine
3,3-Dichlorobenzidine

Nitroaromatics and Isophorone

2,4-Dinitrotoluene
2,6-Dinitrotoluene
Isophorone
Nitrobenzene

Polychlorinated Biphenyls

PCB-1016
PCB-1221
PCB-1232
PCB-1242
PCB-1248
PCB-1254
PCB-1260

Non - Potable Water

Polynuclear Aromatics

Acenaphthene
Anthracene
Acenaphthylene
Benzo(a)anthracene
Benzo(a)pyrene
Benzo(b)fluoranthene
Benzo(ghi)perylene
Benzo(k)fluoranthene
Chrysene
Dibenzo(a,h)anthracene
Fluoranthene
Fluorene
Indeno(1,2,3-cd)pyrene
Naphthalene
Phenanthrene
Pyrene

Purgeable Halocarbons

Bromodichloromethane
Bromoform
Bromomethane
Carbon tetrachloride
Chloroethane
2-Chloroethylvinyl ether
Chloroform
Chloromethane
Dibromochloromethane
Dichlorodifluoromethane
1,1-Dichloroethane
1,2-Dichloroethane
1,1-Dichloroethene
trans-1,2-Dichloroethene
1,2-Dichloropropane
trans-1,3-Dichloropropene
cis-1,3-Dichloropropene
Methylene chloride
1,1,2,2-Tetrachloroethane
Tetrachloroethene
1,1,1-Trichloroethane
1,1,2-Trichloroethane
Trichloroethene
Trichlorofluoromethane
Vinyl chloride

Priority Pollutant Phenols

4-Chloro-3-methylphenol
2-Chlorophenol
2,4-Dichlorophenol
2,4-Dimethylphenol
2,4-Dinitrophenol
2-Methyl-4,6-dinitrophenol
2-Nitrophenol
4-Nitrophenol
Pentachlorophenol
Phenol
2,4,6-Trichlorophenol

Chlorinated Hydrocarbon Pesticides

Aldrin
alpha-BHC
beta-BHC
delta-BHC
Lindane
Chlordane
4,4'-DDD
4,4'-DDE
4,4'-DDT
Dieldrin
Dichloran
Endosulfan I
Endosulfan II
Endosulfan sulfate
Endrin
Endrin aldehyde
Heptachlor
Heptachlor epoxide
Toxaphene

Purgeable Aromatics

Benzene
Chlorobenzene
1,2-Dichlorobenzene
1,3-Dichlorobenzene
1,4-Dichlorobenzene
Ethyl benzene
Toluene
m-Xylene
o-Xylene
p-Xylene

Wastewater Miscellaneous Analytes

Boron, Total
Cyanide, Total
Phenols
Oil & Grease, Total Recoverable
Specific Conductance
Surfactants
Silica, Dissolved
Color
Corrosivity
Bromide
Organic Carbon, Total
Sulfide (as S)
Hydrogen Ion (pH)

TARGET COMPOUND LIST (TCL) AND CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)*

Volatiles	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
Acetone	10	10
Benzene	5	5
Bromodichloromethane	5	5
Bromoform	5	5
Bromomethane	10	10
2-Butanone	10	10
Carbon disulfide	5	5
Carbon tetrachloride	5	5
Chlorobenzene	5	5
Chloroethane	10	10
Chloroform	5	5
Chloromethane	10	10
Dibromochloromethane	5	5
1,1-Dichloroethane	5	5
1,2-Dichloroethane	5	5
1,1-Dichloroethene	5	5
1,2-Dichloroethene (total)	5	5
1,2-Dichloropropane	5	5
cis-1,3-Dichloropropene	5	5
trans-1,3-Dichloropropene	5	5
Ethyl benzene	5	5
2-Hexanone	10	10
4-Methyl-2-pentanone	10	10
Methylene chloride	5	5
Styrene	5	5
Tetrachloroethane	5	5

TARGET COMPOUND LIST (TCL) AND
CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
PAGE TWO

Volatiles	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
1,1,2,2-Tetrachloroethane	5	5
1,1,1-Trichloroethane	5	5
1,1,2-Trichloroethane	5	5
Trichloroethene	5	5
Toluene	5	5
Vinyl acetate	10	10
Vinyl chloride	10	10
Xylene (total)	5	5

Acid Extractables	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
p-Chloro-m-cresol	10	330
2-Chlorophenol	10	330
2,4-Dichlorophenol	10	330
2,4-Dimethylphenol	10	330
4,6-Dinitro-o-cresol	50	1600
2,4-Dinitrophenol	50	1600
2-Methylphenol	10	330
4-Methylphenol	10	330
2-Nitrophenol	10	330
4-Nitrophenol	50	1600
Pentachlorophenol	50	1600
Phenol	10	330
2,4,5-Trichlorophenol	50	1600

TARGET COMPOUND LIST (TCL) AND
CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
PAGE THREE

Acid Extractables	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
2,4,6-Trichlorophenol	10	330
Base-neutral extractables		
Acenaphthene	10	330
Acenaphthylene	10	330
Anthracene	10	330
Benzo (a) anthracene	10	330
Benzo (b) fluoranthene	10	330
Benzo (k) fluoranthene	10	330
Benzo (a) pyrene	10	330
Benzo (g,h,i) perylene	10	330
Benzoic acid	50	1600
Benzyl alcohol	10	330
bis (2-Chloroethoxy) methane	10	330
bis (2-Chloroethyl) ether	10	330
bis (2-Chloroisopropyl) ether	10	330
bis (2-Ethylhexyl) phthalate	10	330
4-Bromophenyl phenyl ether	10	330
Butyl benzyl phthalate	10	330
4-Chloroaniline	10	330
2-Chloronaphthalene	10	330
4-Chlorophenyl phenyl ether	10	330
Chrysene	10	330
Dibenz (a,h) anthracene	10	330
Dibenzofuran	10	330

TARGET COMPOUND LIST (TCL) AND
CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
PAGE FOUR

Base-neutral extractables	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
1,2-Dichlorobenzene	10	330
1,3-Dichlorobenzene	10	330
1,4-Dichlorobenzene	10	330
3,3'-Dichlorobenzidine	20	660
Diethyl phthalate	10	330
Dimethyl phthalate	10	330
Di-n-butyl phthalate	10	330
2,4-Dinitrotoluene	10	330
2,6-Dinitrotoluene	10	330
Di-n-octyl phthalate	10	330
Fluoranthene	10	330
Fluorene	10	330
Hexachlorobenzene	10	330
Hexachlorobutadiene	10	330
Hexachlorocyclopentadiene	10	330
Hexachloroethane	10	330
Indeno (1,2,3-cd) pyrene	10	330
Isophorone	10	330
2-Methyl naphthalene	10	330
Naphthalene	10	330
2-Nitroaniline	50	1600
3-Nitroaniline	50	1600
4-Nitroaniline	50	1600
Nitrobenzene	10	330
N-Nitroso-di-n-propylamine	10	330

TARGET COMPOUND LIST (TCL) AND
CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
PAGE FIVE

Base-neutral extractables	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
N-Nitrosodiphenylamine	10	330
Phenanthrene	10	330
Pyrene	10	330
1,2,4-Trichlorobenzene	10	330

Pesticides	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
Aldrin	0.05	8.0
alpha-BHC	0.05	8.0
beta-BHC	0.05	8.0
delta-BHC	0.05	8.0
gamma-BHC (Lindane)	0.05	8.0
alpha-Chlordane	0.5	80.0
gamma-Chlordane	0.5	80.0
4,4'-DDD	0.10	16.0
4,4'-DDE	0.10	16.0
4,4'-DDT	0.10	16.0
Dieldrin	0.10	16.0
Endosulfan I	0.05	8.0
Endosulfan II	0.10	16.0
Endosulfan sulfate	0.10	16.0
Endrin	0.10	16.0
Endrin ketone	0.10	16.0
Heptachlor	0.05	8.0

TARGET COMPOUND LIST (TCL) AND
CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
PAGE SIX

Pesticides	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
Heptachlor epoxide	0.05	8.0
Methoxychlor	0.5	80.0
Toxaphene	1.0	160.0
Polychlorinated biphenyls (PCBs)		
Aroclor 1016	0.5	80.0
Aroclor 1221	0.5	80.0
Aroclor 1232	0.5	80.0
Aroclor 1242	0.5	80.0
Aroclor 1248	0.5	80.0
Aroclor 1254	1.0	160.0
Aroclor 1260	1.0	160.0

Metals	Quantitation Limits** Water ug/L	Low Soil/Sediments* ug/Kg
Aluminum	200	
Antimony	60	
Arsenic	200	
Beryllium	5	
Cadmium	5	
Calcium	5000	
Chromium	10	
Cobalt	50	
Copper	25	

TARGET COMPOUND LIST (TCL) AND
CONTRACT REQUIRED QUANTITATION LIMITS (CRQL)
PAGE SEVEN

Metals	Quantitation Limits** Water ug/L	Low Soil/Sediments[d] ug/Kg
Iron	100	
Lead	5	
Magnesium	5000	
Manganese	15	
Mercury	0.2	
Nickel	40	
Potassium	5000	
Selenium	5	
Silver	10	
Sodium	5000	
Thallium	10	
Vanadium	50	
Zinc	20	

* Specific quantitation limits are highly matrix dependent. The quantitation limits listed are provided for guidance and may not always be achievable.

** Quantitation limits listed for soil/sediment are based on wet weight. The quantitation limits calculated by the laboratory for soil/sediment, calculated on a dry-weight basis, will be higher.

a Medium soil/sediment Contract Required Quantitation Limits (CRQL) for volatile TCL compounds are 125 times the individual low soil/sediment CRQL.

b Medium soil/sediment Contract Required Quantitation Limits (CRQL) for semivolatile TCL compounds are 60 times the individual low soil/sediment CRQL.

c Medium soil/sediment Contract Required Qantitation Limits (CRQL) for pesticides/PCB TCL compounds are 15 times the individual low soil/sediment CRQL.

d Quantitation limits for soils are based on the dilution factor from sample preparation. Normally, about 1.5 grams of sample are diluted to 200 mls.

SITE SPECIFIC

HEALTH AND SAFETY PLAN

WESTINGHOUSE HAZTECH
SITE-SPECIFIC HEALTH AND SAFETY PLAN

***** The Health and Safety Plan must be reviewed with ALL employees before work begins. Have employees SIGN site plan after it is reviewed.

Project Name: Westinghouse Eastern Electric Project Number: 2320882016

Site Address: 1132 Seneca St. Buffalo, NY Site Phone: _____

Lines of Authority

Project Mgr/Operations Mgr: Jim Kujawa Phone # 419-389-0150

Supervisor: Eric Bowman Off Site Phone # 419-389-0150

Site Health & Safety Coordinator: Eric Bowman Alternate: _____

Foreman: Paul Nowak Alternate: _____

Other Personnel:	Functions:	Other Personnel:	Functions
1.		7.	
2.		8.	
3.		9.	
4.		10.	
5.		11.	
6.		12.	

Subcontractor's Company Name:*	Functions:	Contact Person:	Phone Number:
1.			
2.			
3.			
4.			
5.			

*Give subcontractors a copy of this plan because by law, they must be told about hazards on the job.

Regulatory agencies involved: EPA _____ Other _____
Job $: Lump sum _____ T&M _____ not to exceed _____ unit rate _____
Other _____

Plans prepared by: Sonya Manejkowski
Position/Title: Ind. Hyg. Date: 1/26/89

Plans reviewed by: Ronald G. Huggins, Ph.D, CIH (#3003)
Position/Title: Director, Environmental and Occupational Health Date: 01-26-89

Amendments prepared by: _____
Position/Title: _____ Date: _____

July 8, 1988

Activities to be Performed

1. Spill clean up ____ Remedial Cleanup __X__ Asbestos ____ Sampling only ____
   1st Reconnaissance ____ Other _____
2. Soil: excavation __X__ sampling __X__ drilling ____ other _____
3. Drum: excavation ____ sampling ____ staging ____ bulking ____
   # of Drums _____ other filling w/sludge & water liquid collection &
4. Well: installation____ sampling____ grating decon
5. Building: Decontamination _____ Demolition _____
6. Tank: air monitoring _____ sampling _____ cleaning _____ repair _____
   removal _____ leak containment _____ demolition/cut up _____ other_____
7. Water Treatment: ____
8. Liquid Treatment: ____
9. Trenching _____
10. Other: 3 parts: 1. Soil excavation at back property line 2. Pumpimg of material into drums from pit, then decon of pit; then 3. PCB sampling of soil area and of pit

Existing Features

tanks ___ tank size ____ # of drums _____ containers ____
buildings ___ dikes ____ power lines ____ sumps ____ bodies of water ____
dips in the land ____ buried lines ____ telephone lines____ lagoons ____
well installations ____ neighboring homes, businesses __X__ pits ____
unusual hazards Active plant; paint booth/pit to be shut down during cleaning. Unknown oils also present and perhaps other substances in sludge
approximate size of site _____
expected duration of cleanup _____

Physical Hazards

Check the hazards which apply to the site:
Heat __X__ Cold ___ Radiation ____ Small entry/exit ____ Confined space semi
Electrical equipment/sparks ____ Scaffolds ____ Trenching ____ Earthquake____
Oxygen deficiency poss. High winds _____ Slippery ground __X__ Ice outdoors
Snake bites outdoors Turbulent weather outdoors Heavy equipment noise __X__ Falls __X__
See General Health and Safety Plan for detailed confined space information.

Medical Surveillance

All HAZTECH field employees are enrolled in the medical monitoring program which includes a minimum of a baseline, annual, and exit physical. For more information see the Medical Monitoring Program. If you are not sure if additional medical tests should be performed, contact OMA or the IHs. If Level C or B and adjusted temps are 82.5°-85° or hotter, oral temperatures must be taken every 60 minutes or more often. [Temp(adj) = ambient temp + (13 x % sunshine)] See general plan for more details.
Will taking oral temperatures and monitoring be necessary? yes____ no __X__
If yes, order thermometers. Will Steele cool vests be needed? yes ___ no __X__
If no, write in expected temperature maximum ____ 75° indoors 30° outdoors

Contaminants Attention to mild profound hypothermia necessary - see attachment hypothermia

Please fill out 1 sheet for each significant contaminant using page 4. Use the following references:

Sittig's Handbook of Toxic & Hazardous Chemicals &Carcinogens, NIOSH's Pocket Guide to Chemical Hazards, and ACGIH's TLV's Threshold Limit Values 1987-88, Condensed Chemical Dictionary, and Hazardous Chemicals Data Book. If MSDS is available, attach.

NA = not applicable DNA = data not available

TO BE COMPLETED UPON ARRIVAL

*OSHA REQUIREMENT

Site Map

Please label the following on the map:

1. prevailing wind direction
2. work areas and hot zone
3. decontamination zone
4. clean zone
5. office and/or support
6. location of eye wash
7. location of emergency shower
8. 1st aid area
9. rest areas
10. 2 or more escape routes
11. offsite meeting place (for emergency)
12. offsite landmarks
13. well installations
14. problem containment areas*
15. topography* (rivers,cliffs,etc.)
16. roads/air accessibility*
17. pathways for hazardous dispersions*

SUBSTANCE: PCB

Physical state: solid___ sludge_X_ liq. in container___ free liq.___ vapor___
on soil ___ residue on wall other _____

Fire: combust____ flam ____ pyrophoric ____ shock sensit____ explos ____ NA
DNA ___

Incompatibles: strong oxidizers (Cl, 0-0's, etc) _X_ water ____ air ____
strong acids ____ strong bases ___ active metals ____ heavy metals ____
other _____

Exposure limits: '87 TLV _____ppm or .5-1.0 mg/m3 "SKIN" yes _X_ no ____
PEL _____ppm or _____mg/m3 IDLH _____ppm _5_ mg/m3

Radioactives: yes _____ no _X_ expected _____

Warning Properties: corrosive: yes ____ no _X_
Respiratory irritant: yes____ no _X_ skin irritant: yes _X_ no ____
odor characteristics mild or none odor threshold _____

Skin absorber: yes____ no ____

SIGNS AND SYMPTOMS: If ingested, ssx haveX; if inhaled or skin absorbed - 0

_0_Abdominal pain	__Diarrhea	_X_Nausea
__Anorexia	__Dizziness	_X_Nervousness
__BAD JUDGMENT	__Drowsiness	__Nose irritation
__Blindness	_X_Excess eye discharge	__Numbness
__Breathing problems	_0_Eye burns on contact	__Pulmonary edema
__Chest pain	__Eye irritation	__Skin burns on contact
_0_Chloracne	_X_Fatigue	_X_Skin discoloration
_0_CNS depression	__Fever	_X_Skin edema
_X_Collapse	__Headache	_0_Skin irritation
_X_Coma	__Heart palpitations	_X_Skin thickening
__Confusion	__Irritability	__Throat irritation
__Convulsions	_X_Jaundice	__Tremors
__Coughing	__Lacrimation (tears)	__Vision disturbances
_X_Dark urine	__M&M irritation	_X_Vomiting
_X_Death	__Motor Incoordination	_X_Weakness
_0_Dermatitis	_X_Nail discoloration	

Other Signs/Symptoms: Elevation in liver enzymes; long term exposure may result in liver damage; chloracne most likely visible sign

Long Term Effects:
Suspect carcin _X_ human carcin____ teratogen____ mutagen____ sensitizer___NA
Damage to: CNS____ liver_X_ kidney____ skin_X_ resp poss. blood formers possible

** FIRST AID: flush eyes w/water _X_ flush skin w/water ____ wash skin _X_
Get to clean air __X_ give oxygen _X_ if not breathing, art. respir. ____X
Other _____

OPTIONAL INFORMATION:
Vapor density (air=1): heavier than air ____ lighter than air ____
Vapor pressure very, very low soluble: water ____ other _____
Appearance _____
Reaction w/incompatibles _____

Attaches to particulates, extremely hard to vaporize at normal ambient temperatures; during decon w/diesel fuel, inhalation exposure greatest

*ssx - Signs and symptoms

SUBSTANCE: Diesel fuel

Physical state: solid___ sludge___ liq. in container_X_ free liq.___ vapor_X_
on soil ___ residue ____ other _____

Fire: combust_X_ flam ____ pyrophoric ____ shock sensit____ explos ____
DNA ___

Incompatibles: strong oxidizers (Cl, 0-0's, etc) _X_ water ____ air ____
strong acids ____ strong bases ___ active metals ____ heavy metals ____
other _____

Exposure limits: '87 TLV _____ppm or _____mg/m3 "SKIN" yes ____ no ____
PEL _____ppm or _____mg/m3 IDLH _____ppm _____mg/m3

Radioactives: yes _____ no _X_ expected _____

Warning Properties: corrosive: yes ____ no _X_
Respiratory irritant: yes_X_ no ____ skin irritant: yes _X_ no ____
odor characteristics _kerosene odor_ odor threshold _odors below allowable limits

Skin absorber: yes____ no ____

SIGNS AND SYMPTOMS:

__Abdominal pain	__Diarrhea	X Nausea
__Anorexia	_X Dizziness	__Nervousness
_X BAD JUDGMENT	__Drowsiness	__Nose irritation
__Blindness	__Excess eye discharge	__Numbness
__Breathing problems	__Eye burns on contact	__Pulmonary edema
_X Chest pain	_X Eye irritation	__Skin burns on contact
__Chloracne	__Fatigue	__Skin discoloration
_X CNS depression	__Fever	__Skin edema
__Collapse	_X Headache	__Skin irritation
__Coma	__Heart palpitations	__Skin thickening
_X Confusion	__Irritability	__Throat irritation
__Convulsions	__Jaundice	__Tremors
__Coughing	__Lacrimation (tears)	__Vision disturbances
__Dark urine	__M&M irritation	__Vomiting
__Death	__Motor Incoordination	__Weakness
_X Dermatitis	__Nail discoloration	

Other Signs/Symptoms: _____

_____

_____

_____

Long Term Effects: _____

suspect carcin____ human carcin____ teratogen____ mutagen____ sensitizer___NA

damage to: CNS_X_ liver____ kidney____ skin_X_ resp_X_ blood formers____

** FIRST AID: flush eyes w/water _X_ flush skin w/water ____ wash skin _X_

get to clean air _X_ give oxygen _X_ if not breathing, art. respir. _X_

other _____

OPTIONAL INFORMATION:

Vapor density (air=1): heavier than air ____ lighter than air ____

Vapor pressure ____ soluble: water ____ other _____

Appearance _____

Reaction w/incompatibles _____

Combustible, if spilled in hot area, flammability danger increases

SUBSTANCE: unidentified oils

Physical state: solid___ sludge_X_ liq. in container___ free liq.___ vapor___
on soil ___ residue ____ other floating on surface

Fire: combust_X_ flam _X_ pyrophoric ___ shock sensit____ explos ____
DNA ___

Incompatibles: strong oxidizers (Cl, O-O's, etc) _X_ water ____ air ____ no other
strong acids ____ strong bases ___ active metals ____ heavy metals ___ expected
other _____

Exposure limits: NA87 TLV _____ppm or _____mg/m3 "SKIN" yes ____ no ____
PEL _____ppm or ___5___mg/m3 (for mineral oil) IDLH _____ppm _____mg/m3 stel 10mg/m3

Radioactives: yes _____ no _X_ expected _____

Warning Properties: corrosive: yes ____ no _X_
Respiratory irritant: yes____ no _X_ skin irritant: yes _X_ no ____
odor characteristics _____ odor threshold _____

Skin absorber: yes_X_ no ____
possible

SIGNS AND SYMPTOMS:

__Abdominal pain
__Anorexia
__BAD JUDGMENT
__Blindness
__Breathing problems
__Chest pain
__Chloracne
_XCNS depression possible
__Collapse
__Coma
__Confusion
__Convulsions
__Coughing
__Dark urine
__Death
_XDermatitis
__Diarrhea
__Dizziness
__Drowsiness
__Excess eye discharge
__Eye burns on contact
_XEye irritation
__Fatigue
__Fever
__Headache
_XHeart palpitations
__Irritability
__Jaundice
__Lacrimation (tears)
__M&M irritation
__Motor Incoordination
__Nail discoloration
__Nausea
__Nervousness
__Nose irritation
__Numbness
__Pulmonary edema
__Skin burns on contact
__Skin discoloration
__Skin edema
__Skin irritation
__Skin thickening
__Throat irritation
__Tremors
__Vision disturbances
__Vomiting
__Weakness

Other Signs/Symptoms: _____

_____

_____

_____

Long Term Effects: _____

Suspect carcin____ human carcin____ teratogen____ mutagen____ sensitizer___NA
Damage to: CNS____ liver_X_ kidney____ skin_x__ resp_X_ blood formers____

** FIRST AID: flush eyes w/water _X_ flush skin w/water ____ wash skin _X_
Get to clean air _X_ give oxygen _X_ if not breathing, art. respir. _X_
Other _____

OPTIONAL INFORMATION:
Vapor density (air=1): heavier than air ____ lighter than air ____
Vapor pressure _very low_ soluble: water ____ other _____
Appearance _____
Reaction w/incompatibles _____

SUBSTANCE: Toluene/possibility present, used as representative solvent

Physical state: solid___ sludge_X_ liq. in container___ free liq.___ vapor___
on soil ___ residue ____ other _____

Fire: combust____ flam _X_ pyrophoric ____ shock sensit____ explos ____
DNA ___

Incompatibles: strong oxidizers (Cl, 0-0's, etc) _X_ water ____ air ____
strong acids ____ strong bases ___ active metals ____ heavy metals ____
other _____

Exposure limits: '87 TLV _100_ ppm or _____ mg/m3 "SKIN" yes ____ no ____
PEL _200_ ppm or _____ mg/m3 IDLH 2000 ppm _____ mg/m3

Radioactives: yes _____ no _X_ expected _____

Warning Properties: corrosive: yes _X_ no ____
Respiratory irritant: yes_X_ no ____ skin irritant: yes ____ no ____
odor characteristics _benzene - like_____ odor threshold _____

Skin absorber: yes_X_ no ____

SIGNS AND SYMPTOMS:

__Abdominal pain	__Diarrhea	X__Nausea
__Anorexia	_X_Dizziness	_X_Nervousness
_X_BAD JUDGMENT	_X_Drowsiness	_X_Nose irritation
__Blindness	__Excess eye discharge	__Numbness
_X_Breathing problems	__Eye burns on contact	_X_Pulmonary edema
__Chest pain	_X_Eye irritation	__Skin burns on contact
__Chloracne	_X_Fatigue	__Skin discoloration
_X_CNS depression	__Fever	__Skin edema
_X_Collapse	XXHeadache	__Skin irritation
__Coma	__Heart palpitations	__Skin thickening
_X_Confusion	__Irritability	__Throat irritation
__Convulsions	__Jaundice	__Tremors
X__Coughing	_X_Lacrimation (tears)	__Vision disturbances
__Dark urine	_X_M&M irritation	_X_Vomiting
__Death	__Motor Incoordination	_X_Weakness
XX_Dermatitis	__Nail discoloration	

Other Signs/Symptoms: giddiness dialation of pupils; insomnia; strange sensations on skin, avoidance/pain to eyes upon exposure to light (photophobia

Long Term Effects: _____
Suspect carcin____ human carcin____ teratogen____ mutagen____ sensitizer___NA
Damage to: CNS____ liver_X_ kidney_X_ skin_X_ resp_X_ blood formers_poss_

FIRST AID: flush eyes w/water _X_ flush skin w/water ____ wash skin _X_ eyes X
Get to clean air _X_ give oxygen _X_ if not breathing, art. respir. _X_
Other _____

OPTIONAL INFORMATION:
Vapor density (air=1): heavier than air ____ lighter than air ___
Vapor pressure _22mm_ (high) soluble: water ____ other _____
Appearance _____
Reaction w/incompatibles _____

Flash point 40°F

Decontamination

Wooden tools used on skin absorbing contaminants should be discarded. Remember to bag sensitive instruments before use. See the General Health and Safety Plan for possible decon layouts and list of skin absorbers.

Solution(s) to be used: detergent & water _____ Zep _____ Other: _____
Methanol _____ Isopropanol _____ Hexane _____ Radiac _____
Ivory (for oil) _____ Penatone (for PCBs) __X__ Kerosene _____
Liquinox (good for pumps) _____ Diluted HTH _____ Also pressure washer pit decon

Heavy Equipment: 1. pump 2. remove by hand remainder 3. sample 4. diesel wash 5. pressure wash w/penetone 6. pump remainder 7. sample again
Decon Plan: Waterlaser __X__ Diesel ___ Steam Cleaners ____
Other: for backhoe removing contaminated soils in back yard

Special Training or Review of Training

According to OSHA's 1910.120, the following items as they apply to the project must be discussed before work begins:

+ Emergency procedures, evacuation routes, prevailing wind direction, signals, location of eye wash, 1st aid equipment
+ Medical assistance (location, maps, phone numbers)
+ The buddy system and its responsibilities
+ Safe work practices for this particular job
+ Symptoms and signs associated with the contaminants
+ Other properties of the contaminants (carcinogenic, flammable, etc.)
+ Confined space (hazards, safe work practices, the buddy system, etc.)
+ Decontamination (solutions, layout, etc.)
+ Appropriate PPE

Please check if these topics are also relevant and consequently need review:
Heat stress ____ Cold stress __X__ Odor thresholds ____ Confined space _____
Unusual hazards ____ Handling shock sensitives _____ Drum Handling _____
Other: important to heighten awareness of frostbite, etc for outdoor work. rest/shelter must be made available should be dry and warm & preferrably in clean zone.

Air Monitoring

Air Monitoring Equipment Needed:

Nu __X__ O_2 meter __X__ Explosimeter __X__
Sample pump ensemble: Dupont or Gillian pumps __X__ Media __X__ Tubing __X__ for PCB's
Passive dosimeters for organic vapors _____ Geiger counter _____
Detector tubes (useful for inorganics) types _____
Confined space: CO ____ H_2S _____

Other: SEE PAGE 17

*Remember CONTINUOUS monitoring is necessary for confined spaces.
*** Be sure to calibrate and to attach log with air monitoring data. Send this information to H&S in Atlanta. Periodically contact H&S with results. If initial reconnaissance data is available, please attach results. If another company has air monitoring data, obtain a copy and attach to plan.

AIR MONITORING SCHEME - WRITE IN RESULTS!

Pit area (CS)

Explosimeter

b4 entry/continually within CS

O_2

b4 entry/continually within CS
especially at 7' end

HNu

b4 entry/continually/
other once every 2 hours as work progresses in pit

Detector Tubes - NA

CO: b4 entry/1 hr/4 hr/
other _____

H_2S: b4 entry/1 hr/4 hr/
other _____

Other tube type: _____

b4 entry/1 hr/4 hr/
other time _____

Other: _____

b4 entry/1 hr/4 hr/
other time _____

Sample Pumps

daily/T&R/weekly/new act
other _____

Vacuum Canisters or Grab Bag

b4 entry/wkly/new act/
once during work/
other _____

Geiger counter

b4 work/new activity/NA

Work Area/Hot Zone outdoors

Explosimeter

b4 work/continually/1/3 hr/1 hr/4 hr/daily/new act

O_2

b4 work/continually/1/3 hr/1 hr/4 hr/daily/new act

HNu

b4 work/continually/1/3 hr/1 hr/4 hr/daily/new act

Detector tubes

Tube type: _____

b4 work/1/4 hr/1/2 hr/1 hr/4 hr/daily/

other: _____

Sample Pumps
Worn by person closest to contamination sources.
Sample for which contaminant? PCB NIOSH steps attached

daily/T&R/weekly/new act/other during diesel wipe down and, if possible to keep dry, during water laser w/penetone wash

Vacuum Canisters or Grab Bag
b4 work/weekly/new act/once during work/other _____

Geiger Counter
b4 work/new act/daily/opening drums/other _____

Comments: _____

T & R = Tuesdays & Thursdays

Decon

Explosimeter

b4 work/new act/daily
other _____

O_2

b4 work/new act/daily
other _____

HNu

b4 work/new act/daily
other _____

Detector Tubes

Tube types: _____

b4 work/4 hr/new act/daily
Other: _____

Vacuum Canister or Grab Bags

b4 work/weekly/new act/once during work/
Other: _____

Geiger Counter

b4 work/new act/other _____

Rest Area

Explosimeter

b4 work/cont/4 hr/new act/NA

O_2

b4 work/cont/4 hr/new act/NA

HNu

b4 work/cont/4 hr/new act/NA

Detector Tubes

Tube types: _____

b4 work/1 hr/4 hr/new act/other ____

Geiger Counter

b4 work/new act/NA/other _____

Other Air Monitoring Comments:

_____
_____
_____
_____

OTHER INFORMATION:

Please remember the protection factor for full face cartridge respirator is 50; for SAR is 2,000; for SCBA is 10,000.
Multiply the protection factor x the TLV = maximum amount of contaminant in ppm allowed for that respirator. Exception: Switch to SARsOR SCBAs when levels are IDLH or when O_2 is 19.5% or less, or if working in confined space.

For example: full face cartridge respirator X TLV Acetic Acid
50 X 10ppm ≤ 500 ppm Acetic Acid with that respirator.
(IDLH = 1000 ppm)

Hard hats must be worn for all excavation activities.
For when hazards are unknown, Level B protection is required.
In Level C, 2 hoods must be worn, on under respirator straps and one over the straps.
Change cartridges about every 1 hour or less during laser operations. Remind crew that the mist rapidly reduces

EPA Criteria for PPE; Total Organics; FOR UNKNOWNS:
Level C 0-5ppm total organics above background
Level B 5-500 ppm total organics above background
Level A 500-1000 ppm total organics above background

Indicate the protection level expected to begin the job and what the criteria will be for a change in protection level. effectiveness of cartiridge

Personal Protective Equipment
Concentration of Contaminant
Level C __ppm to 5 ppm or activities see pg 11
Full face resp. cartridge organic vapor & HEPA filter
Protective clothing: Tyvek X Other: splash wear for wet work
Hood: 2 Tyvek X 2 Other:
Inside glove: Sample X Other: cotton gloves for all-dry work
Outside glove: PVC Other:
Footwear: Tingley (neoprene) X steel toe X other
Face Shield: X Hard hat: X
Other:

Level B __ppm to __ ppm or activities if HNu reading greater than 5ppm background
SCBA SAR X
Protective clothing: Tyvek X Chemrel acid suit (PVC) for wet work
Other: chemtuff ok
Hood: Tyvek Acid Suit Other:
Inside glove: Sample X Other:
Outside glove: PVC X Other:
Footwear: Tingley(neoprene) X steel toe X other
Face Shield: Hard hat: X
Other:

Level A __ppm to __ ppm or activities
SCBA
Encapsulating Suit
Plus what items
Other:

Non-flammable suits

LOCATION / Task	LEVEL OF PROTECTION	RISK ANALYSIS: (Prpbability Of) Fire	Heat Stress	Injury Illness	Back Injury
Hot Zone					
visqueen/hose/pump set up	A B C (D) Other	low	low	low-mod	moderate
pumping	A B (C) D Other	low-mod	very low	low	low
drum moving	A B (C) D Other gripping gloves	low	empty/full low / mod	mod	mod
pit sampling	A B (C) D Other	low	low	low	low
diesel wiping	A (B) (C) D Other level depends on HNu readings	low-mod	low	low	low-mod
penatone pressure wash	A (B) (C) D Other	low	mod	mod	mod-high
pumping again, if necessary	A B (C) D Other	low	low	low	low
2nd pit sampling	A B C D Other (D+)	low	low	low	low
backhoe operation	A B (C) D Other	low-mod	low	low	low
roll off covering	A B (C) D Other	low	low	mod	mod
sampling dirt after removal activity	A B C D Other (D+)	low	low	low	low
Decon Zone					
decon equipment	A B C D Other (D+)				
decon of personnel	A B C (D) Other				
decon of heavy equipment	A B C D Other (D+)				

Communication Procedures

Radio/Horn Blast/Siren/Other: _____ is the emergency signal to indicate that all personnel should leave the Exclusion Zone.

Hand Signals:

Hands on top of head	= Need work assistance
Hands around neck	= Out of air, can't breathe
Hands in U shape	= In trouble or out of air
Grip partner's wrist/ hands around waist	= Leave area immediately

Thumbs up = Ok, I am all right, I understand Thumbs down = No, negative

Blasts: 1 long horn blast = Evacuate 1 short blast = Attention
2 blasts---Fire

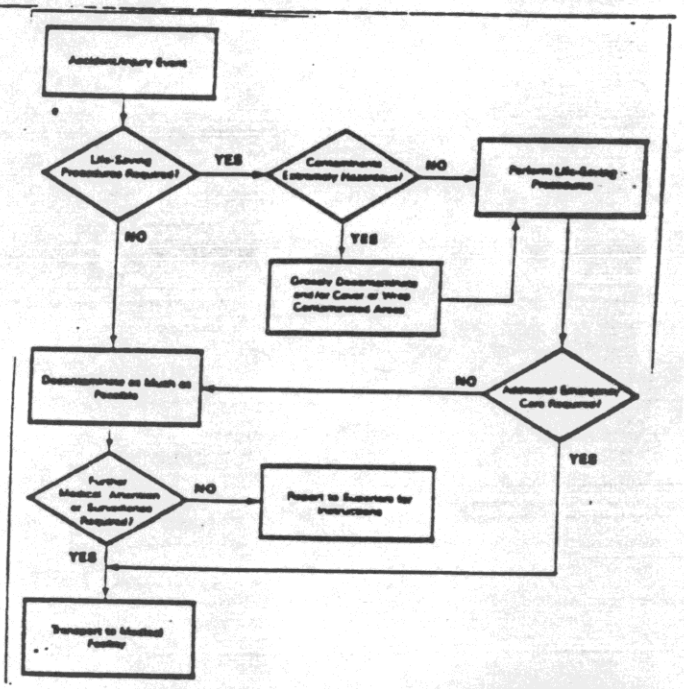
Emergency Equipment: eyewash X shower ___ lifeline ___ harness ___ SCBA ___ stretchers ___ emergency oxygen X first aid kit X PPE for the next level of protection ___ radios ___ telephones onsite airhorns X

Fire Extinguishers: A,B,C (Multiple purpose) X
A (ordinary materials) _____ B (flammables and grease) _____
C (electrical equipment) _____ D (combustible metals e.g. Mg,Na,K) _____

Other: _____

MEDICAL EMERGENCY & HEAT STRESS
(NEW GENERAL PRIORITIES)

1. Survey Situation.
2. Call for help & EMT's.
3. Decide: rescue in 1 level higher or SCBA.
4. Rapidly survey victim and area for clues. Look for chem releases.
5. Do chin lift to open airway; watch or feel for chest rise and fall for 5+ seconds. No breathing = brain damage in 3 minutes.
6. If no breathing, move from area; perform artificial respiration - 2 full breaths and check pulse. If no, 1 breath every 5 seconds for 1 minute. If no pulse, do CPR if qualified, or call out for CPR & continue artificial respiration.
7. If breathing, move to decon.
8. Chin lift! Keep airway open.
9. If contaminants are life-threatening, do cursory decon. If not, CUT OUT of PPE!! Look for contamination.
10. If fire burns - roll on dirt or use blanket. Stop clothing from smouldering. Use STERILE solution if no sterile sheet. Cut off clothing except areas stuck to skin. AIRLIFT.



11. Speedily FLUSH contaminated eyes or skin for 15+ minutes.
12. If shock, put nothing in mouth; calm.
13. For heat/stress and no shock, give cool water, keep cool.
14. Never use ice nor buckets of water.
15. Sponge or wrap in wet sheet for stress but not thermal burns.
16. Do chin lift, recheck breathing
17. Do not hesitate to use airlift.

Emergency Contacts

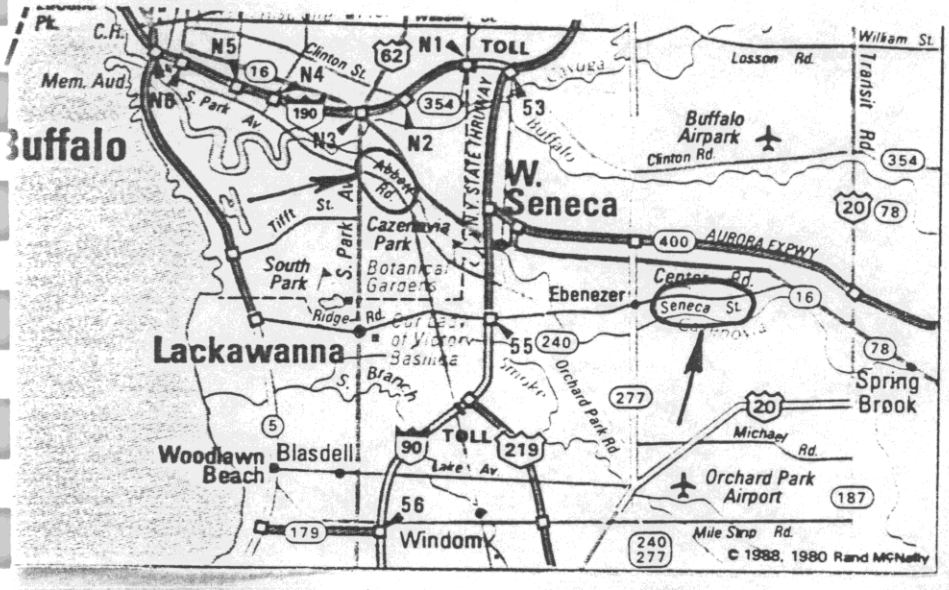
Post at Site, in many locations. Post map in vehicles likely to be used during an emergency.

1. EMT's Phone # 911 911 Available/Not Available in this area

2. Hospital: Phone # 716-826-7000 Travel Time _____

Name S. Buffalo Meruy Address 565 Abbott Rd.

Map:



Written Directions:

GO WEST ON SENECA ST. TO INTERSECTION WITH ABBOTT ROAD. TURN RIGHT ONTO ABBOTT. GO NORTH ON ABBOTT TO HOSPITAL. (SENECA ST. Changes TO Ridge Rd. just PRIOR TO INTERSECTION WITH ABBOTT Rd.)

3. Fire Phone # emergency 856-5111

4. Police Phone # 911
non-emergency 851-4444

5. Poison Center Phone # 878-7654

6. HAZMAT Phone # 877-5533 Status & capabilities to aid in an emergency 24 hrs available; consultants and cleanup work

***Medical Toxicology Consultants (813) 253-2787, (813) 253-4444
Drs. Gaar and Hillman
HAZTECH, (404) 981-9338 - 24 hour emergency
Atlanta (404) 981-9332, (404) 593-3803, (404) 593-3464
Tampa (813) 988-5650, New Jersey (609) 298-8705
Toledo (419) 882-3306, Boston (617) 353-6492
Chemtrec (24 hrs) (800) 424-9300
Bureau of Explosives (24 hrs) (202) 293-4048
National Response Center (NRC) (800) 424-8802

***Occupational Medicine Associates (OMA) (404) 449-9014, 455-7008
Dr. Henderson, Syfried, Prader
After 4:30 p.m., (404) 529-9117


GRAND ISLAND
N. Tonawanda
Tonawanda
NIAGARA
N.Y. St (Erie) Canal
Ellicott Creek Pk.
Getzville
Swormville
East Amherst
Dodge Rd.
Transit Valley
Forest Rd.
Heim Rd.
River Rd.
S. GRAND I. BRIDGE (TOLL)
YOUNGMANN EXPWY.
SUNY at Buffalo
Klein Rd.
Hopkins Rd.
Paradise Rd.
Brighton Rd.
Maple Rd.
Greiner Rd.
Military Rd.
Sawyer Rd.
Sheridan Dr.
Amherst
Kenmore
Kenmore Av.
Englewood Rd.
Eggertsville
Daemen Coll.
Main St.
Williamsville
Riverside Park
Elmwood Av.
Delaware Av.
Snyder
Grover Cleveland Park
N.Y. STATE THRUWAY
TOLL
Zoo
Bailey Av.
Kensington Av.
Harlem Rd.
Greater Buffalo International Airport
Bowmansville
Hist. Mus.
Delaware Pk.
Union Rd.
Genesee St.
Canisius College
Erie Co. Med. Cen.
Dick Rd.
Fort Erie
Ferry St.
Jefferson Av.
Fillmore Av.
Martin Luther King Park
Schiller Park
Depew
Walden Av.
Lancaster
D'Youville Coll.
Best St.
Museum of Science
BRIDGE TOLL
Buffalo Conv. Cen.
LaSalle Pk.
Broadway
P.O.
William St.
Cheektowaga
Sloan
C.H.
Clinton St.
Losson Rd.
Transit Rd.
Mem. Aud.
S. Park Av.
Buffalo
Buffalo Airpark
Clinton Rd.
Abbott Rd.
W. Seneca
Tifft St.
Cazenovia Park
AURORA EXPWY
South Park
Botanical Gardens
Center Rd.
Ebenezer
Seneca St.
Ridge Rd.
Lackawanna
S. Branch
Orchard Park Rd.
Spring Brook
Michael Rd.
Woodlawn Beach
Blasdell
Lake Av.
Orchard Park Airport
Windom
Mile Strip Rd.
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See 2nd pg

CONFINED SPACE ENTRY PERMIT
ALL CONFINED SPACE ENTRY IS DONE IN SAR OR SCBA

Location of Work: _____
Description of Work: _____
Employees Assigned: _____
_____
Entry Date: _____ Entry Time: _____
Subcontractors: _____
Job Duration: _____

HAZARDS:

Flammables - Yes/No/NA Types_____
Toxics - Yes/No/NA Types_____
Sparks - Yes/No/NA Overtime, airdriven tools will collect static electricity and spark
Spills - Yes/No/NA
Heat Strees - Yes/No/NA
Hot Equipment - Yes/No/NA
Shearing Tank - Yes/No/NA
Pressure Systems - Yes/No/NA
Cutting Up Tank - Yes/No/NA
Incompatible Reactions - Yes/No/NA
Noise Amplification - Yes/No/NA
Partner Saw Sparks - Yes/No/NA
More than one (1) foot of liquid inside space - Yes/No/NA

ISOLATION CHECKLIST:

LOCKOUT procedures are required at HAZTECH; tagging system is not sufficient.

Electrical Lockout Yes/No/NA Draining Yes/No/NA
Mechanical Lockout Yes/No/NA Tagout Yes/No/NA
Pipe, Line or Valve Disconnecting Yes/No/NA
Pile, Line or Value Blanking Yes/No/NA
Other: _____

ENGINEERING CONTROLS:

Forced ventilation _____
Purging _____ With what gas?_____
Filling to overflow three (3) times with water - Yes/No/NA
Do not hook up diesel exhaust because Carbon Monoxide (CO) is a flammable gas.
Other:_____

CLEANING:

Chemical used_____
Is it compatible with material of container? Yes/No/NA
Is it compatible with substance in container? Yes/No/NA
Steam Clean - Yes/No/NA Water laser - Yes/No/NA
If yes, tank must be cool before entry.

Please following this air monitoring protocal prior to persons entering 5-7' pit to remove remaindes of material after pumping

AIR MONITORING/TESTING

Monitor breathing zone, high overhead, near hips/knees, and at the floor (many flammable gases are heavier or lighter than air). Test different levels; if levels are >10%, proceed with further testing, five minutes apart to be certain.

For atmospheres less than 20% of the LEL, use non-sparking tools.

If LEL is greater than 20%, or if oxygen levels are greater than 21.5% (normal=20.9), entry is FORBIDDEN until engineering controls are used to alter the atmosphere. If LEL is between 10% and 20%, altering the atmosphere is wise because conditions may change.

CONTINUOUS monitoring inside the space is critical.

OXYGEN METER

	b4 entry 1st	2nd	3rd	some values during work
overhead	_____	_____	_____	_____
breathing zone	_____	_____	_____	_____
hips/ knees	_____	_____	_____	
floor	_____	_____	_____	

EXPLOSIMETER

	b4 entry 1st	2nd	3rd	some values during work
overhead	_____	_____	_____	_____
breathing zone	_____	_____	_____	_____
hips/ knees	_____	_____	_____	
floor	_____	_____	_____	

Tests Performed By: _____ _____ _____
Signature Time Date

STANDBY/RESCUE: (Phone No. for paramedics: _____)

Yes	No	
☐	☐	Will there be a standby person on the outside in constant visual or auditory communication with the person on the inside?
☐	☐	_____ Name (Person trained in CPR).
☐	☐	Will the standby person be able to see and/or hear the person inside at all times?
☐	☐	Has the standby person(s) been trained in rescue procedures?
☐	☐	Will safety lines and harness be required to remove a person?
☐	☐	Hoist needed?
☐	☐	Are you familiar with emergency rescue procedures?
☐	☐	Do you know who to notify and how in the event of an emergency?
☐	☐	SCBA or SAR Worn?
☐	☐	Rescurer in SCBA ready?
☐	☐	Communication signals reviewed?

Supervisor's Authorization for Entry:

_____ Time_____ Date_____

Employees Signatures:

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____