



Golder Associates Inc.

CONSULTING ENGINEERS

64

Industri-Plex
6.4
0001



SDMS DocID 000230853

SDMS #230853



PRE-DESIGN INVESTIGATION
TASK SW-1
EXTENT OF HAZARDOUS SUBSTANCES IN
WETLANDS AND SURFACE WATER SEDIMENTS
INTERIM FINAL REPORT

INDUSTRI-PLEX SITE
WOBURN, MASSACHUSETTS

Volume 2 of 2

Prepared for:

Industri-Plex Site Remedial Trust
800 North Linbergh Boulevard
St. Louis, Missouri 63167

DISTRIBUTION:

- 8 Copies - Industri-Plex Site Remedial Trust
- 6 Copies - U.S. Environmental Protection Agency
- 1 Copy - Massachusetts Dept. of Environmental Protection
- 1 Copy - NUS Corporation
- 1 Copy - Roux Associates
- 2 Copies - Golder Associates Inc.

September 1990

Project No.: 893-6255

APPENDIX A

Summary of Remedial Investigation Data For Stream Sediments

B
TABLE 9 SEDIMENT ANALYSIS

Page 1 of 3
November 24, 1982

HEAVY METAL CONCENTRATION -PPM

LOCATION	Ref. #	HEAVY METAL CONCENTRATION -PPM														ORGANIC POLLUTANT		
		3/Be	4/Cd	5/Co	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	17/Sb	2/Bi	8/Hg	10/Se	COMPOUND	PPH	
		1LD	1	5	2	5	2	1	10	1	10	2	2	1	2			
1	73631231		2	470	31	39	10		20	75	82		10				Di Methyl Propane	5
																	Sulfur	100
																	Methoxy phenylethanyl benzene	55
																	Unknown BE	69
																	BE 13	20
																	BE 24	9
																	BE 25	51
																	BE 26	2
																	BE 29	11
																	BE 41	2
5	1233		2	99	193	270	19		10	250	98		22				Phthalate	8
																	diethyl ester hexane diolo acid	27
																	BE 13	17
																	BE 26	1
																	BE 29	3
5a	1232		1	43	410	299	62		20	289	78		133				Oxybia Ethanol	230
																	Hexadecanoic Acid	3
																	BE 13	11
																	BE 24	1
																	BE 29	2
6	1301		3	81	284	636	23	3		606	170		808	3			Subst Ketone	10
																	Methoxy Ethanol	10
																	Phthalate	6
																	Sulfur	77
																	diethyl ester hexane diolo acid	29
																	BE 3	2
																	BE 13	13
																	BE 24	4
																	BE 25	8
																	BE 26	3
6a	1234		1	10	223	394	17	3		212	140		548	96			Unknown BE	6
																	Phthalate	9
																	Hexadecanoic Acid	5
																	diethyl ester hexane diolo acid	17
																	Trideca Triene Nitrile	6
																	BE 13	7
																	BE 26	1
																	BE 29	2
																	VO 24	25
																	VO 29	22

B
TABLE 9 SEDIMENT ANALYSIS

Page 2 of 3
November 24, 1982

HEAVY METAL CONCENTRATION - PPM

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM													ORGANIC POLLUTANT			
		3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/NI	11/Ag	12/TL	13/Zn	16/Ba	17/Sb	2/As	8/Hg	10/Se	COMPOUND	PPM	
		LLD	1	1	5	2	5	2	1	10	1	10	2	2	1	2		
7	1304			13	33		17			20	180	25		15			Hexadecanoic Acid	5
																	Sulfur	180
																	Phthalate	29
																	DE 13	77
																	DE 15	3
																	DE 26	2
																	DE 29	28
8	1230		1	59	27	83	22			100	63						Oryzic Ethanol	20
																	Sulfur	52
																	DE 13	10
																	DE 24	1
8c	1313		10	66	3366	653	42	4	45	1386	110		129		2		Methyl Naphthalene	4
																	Hexadecanoic Acid	5
																	Sulfur	79
																	Phthalate	35
																	DE 29	26
																	VO 3	320
8d	1311		2	160	27	66	28			100	50		5					
9c	1314	2	4	143	879	1374	29	3		566	130		131	1	3		Sulfur	119
																	DE 13	41
																	DE 24	2
																	DE 29	36
																	Methyl Ethyl Ketone	140
12	1310		1	35	55	147	26			167	79		13				Hexadecanoic Acid	10
																	Sulfur	91
																	diethyl ester hexano dioic acid	20
																	DE 13	8
																	VO 22	15

B
TABLE 9 SEDIMENT ANALYSIS

Page 3 of 3
 November 29, 1982

HEAVY METAL CONCENTRATION -PPM

LOCATION	Ref. #	HEAVY METAL CONCENTRATION -PPM														ORGANIC POLLUTANT	
		3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	17/Sb	27/As	8/Hg	10/Se	COMPOUND	PPM
		LLD	1	5	2	5	2	1	10	1	10	2	2	1	2		
15	1229			43	12	24			10	54	35		2			Oxybis Ethanol	5
																Sulfur	41
																DE 13	7
																VO 22	16
16	1306			20	31	29	25			72	25		7			Sulfur	18
																DE 13	10
																DE 29	2
19	1307			25	55				20				22	77		2-Propanone	14
																Oxybis Ethanol	21
																Sulfur	8
																DE 13	19
																DE 15	6
																DE 26	1
																DE 29	2
																VO 22	15

B
TABLE 10

<u>Drainage Area Figure</u>	<u>Sediment Sample Number</u>	<u>Description of Location</u>	<u>Prominent Metals</u>	<u>Organics</u>
A	5, 5a	Hall's Brook	Lead, Copper	=
B	6, 6a	Chromium Lagoon Ditch by Mayflower Trucking and Railroad Spur	Lead Zinc Arsenic Mercury	=
C	8d	East Waste Pile	Chromium	=
D	8c	West Waste Pile	Copper	Benzene
E	9c	Arsenic Pit/ Pond Finger to West	Lead Copper Zinc Chromium	Methyl ethyl ketone
F	15	Aberjona Onsite	=	=
G	16	Phillips Pond/ Aberjona on Commerce Way	=	=
H	12	Ditch from Pond to Aberjona	Lead	=
I	7	Offsite South Railroad Ditch	=	=
J	19	Aberjona Near Mishawum Road	Mercury	=

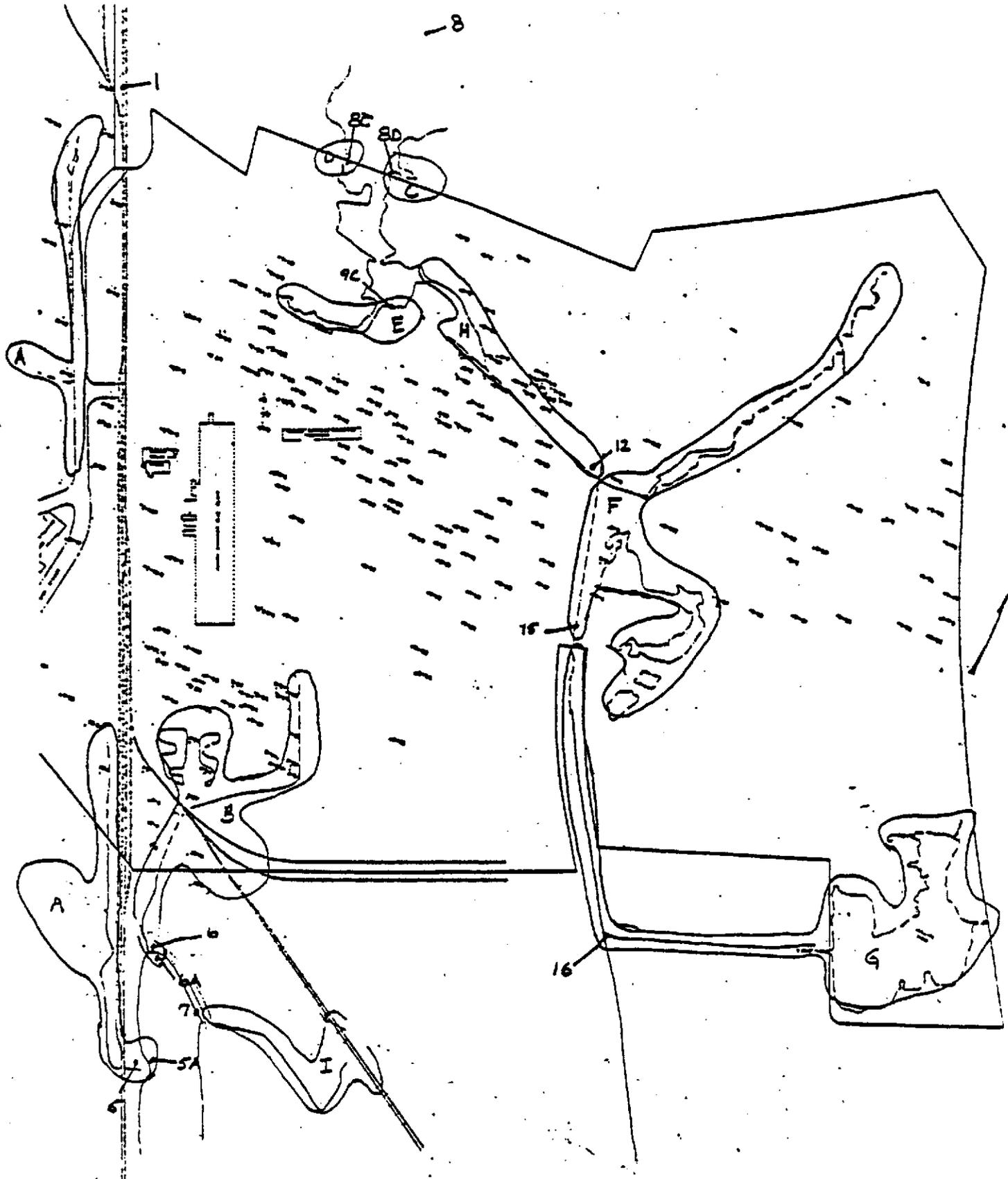


Figure V-a
Sediment Drainage Area

APPENDIX B
Technical Procedures

List of Procedures
Golder Associates Inc.

Drilling, Sampling, and Logging of Soils

Field Identification of Soil

Sampling Surface Soil for Chemical Analysis

Collection of Composite Soil Samples

Procedure for Laboratory Identification of Hide Residue in
Soil

1. PURPOSE

The purpose of this technical procedure is to establish uniform and consistent methods for drilling, sampling, and logging soils.

2. APPLICABILITY

This technical procedure is applicable to all Golder Associates Inc. representatives engaged in subsurface soils investigations. It is to be used at either uncontaminated or contaminated sites.

3. DEFINITIONS

3.1 Breaking Drill Rod

Breaking drill rod is defined as withdrawing and decoupling drill rod in order to advance the boring, retrieve samples, or abandon the hole.

3.2 Down Time

Down time is defined as non-productive time due to a drilling contractor's operational problems.

3.3 Contaminated Site

A contaminated site is defined as a location at which an environmental investigation is being conducted for the purpose of determining the existence or extent of hazardous waste or groundwater contamination.

3.4 In Situ Soil Sample

An in situ soil sample is, a (theoretically) undisturbed sample which represents the soil as it exists in the ground. Although all samples are disturbed to a certain extent, in situ sampling methods attempt to minimize disturbance.

3.5 In Situ Soil Testing

In situ soil testing is performed on the soil at its naturally existing location or interval; examples include cone penetrometer, standard penetration, and in situ vane shear testing.

3.6 Production Time

Production time is defined as the time spent performing contractually required activities under the drilling contract other than drilling. An example might be the time spent installing piezometers.

3.7 Stand-by Time

Stand-by time is defined as non-productive time due to the Golder Associates Geologist/Field Engineer halting work.

3.8 Subsurface Investigation

A subsurface investigation is defined as the exploration of the soil stratigraphy, groundwater and other characteristics below the earth's surface; investigative techniques typically include drilling and sampling and excavation of test pits; test pitting is addressed in TP-1.1-3, "Test Pit Logging and Sampling."

4. REFERENCES

- 4.1 Golder Associates Technical Procedure TP-1.2-6, "Field Identification of Soils"
- 4.2 ASTM-D-1586, "Penetration Test and Split-Barrel Sampling of Soils"
- 4.3 ASTM-D-1587, "Standard Practice for Thin-Walled Tube Sampling of Soils"
- 4.4 ASTM-D-3550, "Ring-Lined Barrel Sampling of Soils"

5. DISCUSSION

The purpose of any drilling and sampling program is to obtain information which will be used in evaluation of the characteristics and conditions of a particular site. The quality of any design or assessment hinges on the quality of the samples obtained and the data derived from them. Specified guidelines and procedures for drilling operations, sampling, and logging must be followed in order to obtain uniformly useful samples. It is the Project Manager's responsibility to design the drilling and sampling program for the project, and to select the drilling and sampling techniques to be used. Standard drilling techniques are included in Appendix A, and sampling techniques in Appendix B. It is the Geologist/Field Engineer's responsibility to see that samples are obtained in compliance with the defined methods, and that accurate and complete drilling data is recorded. Drilling data should include the soil types and conditions encountered during drilling, and any variations from prescribed drilling and sampling standards. All variations must be documented on Procedure Alteration Checklists (Exhibit A) and approved by the Project Manager. Standard forms used for recording drilling and sampling information are the History of Hole form (Exhibit B) and the Record of Borehole log (Exhibit C). Samples shall be labeled, stored and transported as appropriate for the sample type.

Field personnel must understand the purpose and goals of their efforts in order to make appropriate judgement calls. It is the responsibility of the Project Manager to make this information available to the Geologist/Field Engineer, just as it is the responsibility of the Geologist/Field Engineer to make every effort to fully understand the purpose of the task.

6. RESPONSIBILITIES

6.1 Project Manager

The Project Manager is responsible for the overall management of the drilling and sampling project, but may delegate responsibilities to other qualified team members. Duties include design of the drilling and sampling program, location of boreholes, establishing minimum sampling frequency and sampling techniques, approving all variations from established procedures, ensuring that contractual agreements are established with the contractors, preparing the scope of work, and briefing all field personnel on the expectations and requirements peculiar to the project.

6.2 Geologist/Field Engineer

The Geologist/Field Engineer is responsible for documenting all on-site geotechnical activity. These activities include: ensuring that samples of adequate quality are obtained, documenting variations from standard procedures, logging samples, ensuring sample integrity in storage and transportation to the laboratory for testing, and reviewing the daily drilling report with the drilling contractor. The Geologist/Field Engineer shall develop an understanding of the ultimate goal of the investigation in order to adequately record needed information and be able to make sound decisions in case of unforeseen circumstances.

7. EQUIPMENT OR MATERIALS

7.1 Contractor-Supplied Equipment

The following equipment is typically supplied by the drilling contractor; actual requirements shall be as specified in the scope of work established by the Project Manager.

- Drill rig and all drilling tools, rods, bits, water tank, and related equipment.
- Sampling tools, such as spilt-tube samplers and bailers.

- Portable steam cleaners for cleaning environmental sampling equipment, the drilling and other drilling equipment are generally required in investigations of potentially contaminated sites, and may be provided by the drilling contractor or rented separately.
- Shelby tubes and caps

7.2 General Field Supplies

Supplies required for Golder Associates field personnel generally include the following:

- Technical Procedures Field Book
- Health and Safety Plan
- Knife or spatula
- Indelible ink pens and felt tip markers
- Shipping containers
- Procedure Alteration Checklists (Exhibit A)
- History of Hole Forms (Exhibit B)
- Record of Borehole Logs (Exhibit C)
- Sample jars or bags
- Sample labels (Exhibit D)
- Folding rule
- Clipboard
- Engineering tape measure
- Flagging
- Golder staff telephone list
- Other items as dictated by project need

7.2.1 Field Supplies for Environmental Sampling

Additional items needed for acquiring environmental samples at a potentially contaminated site shall be as specified by the Project Manager and/or site health and safety plans, and may include the following:

- Cooler for sample transport, with "blue ice" or dry ice
- Sample Jars with Teflon lids
- Organic Vapor Analyzer, HNU, TIP or combustible gas detector
- Chain of custody forms and seals

8. PROCEDURE

8.1 Project Briefing and Site Preparation

The Project Manager shall ensure that all Golder Associates and Contractor personnel are briefed on the importance of proper drilling and sampling techniques, health and safety requirements, and the other issues addressed by this technical procedure. All personnel shall be advised that unanticipated conditions may dictate changes in standard and accepted procedures as outlined in this technical procedure. All such variations shall be documented on a Procedure Alternation Checklist (Exhibit A) and reviewed and approved as noted in Section 8.5 below.

All downhole drilling and sampling equipment shall be measured for correct length prior to use for the purpose of measuring depth during drilling. Measurements shall be recorded by the Geologist/Field Engineer.

8.2 History-of-Hole Forms

A record of events related to each borehole shall be maintained by the Geologist/Field Engineer on the History of Hole form (Exhibit B). The purpose of this form is to document events associated with drilling each hole in case questions arise later. All events which could affect the successful and timely completion of a borehole should be recorded. All information available prior to the initiation of drilling a borehole should be recorded, including job number and location; borehole number; name of contractor, driller, and Geologist/Field Engineer; weather conditions; and temperature. Other data requested on the form shall be completed as it becomes available.

The names and responsibilities of people working at or visiting the site should be recorded, as well as the time of their arrival and departure. Other items that should be noted include the shift time, beginning and end of drilling or production time, down time, stand-by time, total footage drilled, quantities of supplies used (i.e., sand, grout, piezometer piping, etc.), depth water was encountered, and the number and type of samples taken.

8.3 Drilling Methods

Many types of drilling methods exist for the purpose of advancing boreholes through soil or other unconsolidated deposits. Unconsolidated deposits present special drilling problems due to the nature of the material, specifically a tendency to collapse. The Project Manager shall determine the most appropriate technique for the types of material expected to be encountered. The most commonly used methods include hollow stem augering, air or mud rotary drilling, and cable tool drilling. Drilling methods are discussed in detail in Appendix A.

8.4 Sampling Considerations

Sampling shall start at the ground surface and continue at depth intervals as specified in the project work plan or as directed by the Project Manager. Unless otherwise directed by the Project Manager, drill samples shall be obtained at the surface and at 5 foot depth intervals even if no other sample is obtained.

The sampler shall be removed from the hole avoiding excess jarring to the sampler when breaking the drill rods, as such jarring may result in loss of all or a portion of the sample. Excess jarring also disturbs the integrity of samples intended to be in situ samples, making test results on soil strengths erroneous. Excess jarring of in situ samples should be noted on the Record of Borehole (Exhibit C).

Procedures for managing poor recovery shall be established with the Project Manager prior to initiating drilling and sampling activities.

If a sample is lost or poor recovery is realized (defined as more than 50 percent missing from the sampled length), the following minimum procedures shall be followed:

- 1) The Geologist/Field Engineer shall confirm that the appropriate sample catcher and ball check valve are in operating order, unless other types of samples arrangements are specified by the Project Manager.
- 2) The boring shall be advanced to the bottom of last sample interval and a second sample attempt made after considering what sampling technique variable may be adjusted to improve recovery. Variables may include:
 - Adjusting the frequency of blows used to advance the sampler.
 - Letting the sampler "rest" after being driven the 18-inch sample interval.
 - Placing a plastic "sock" around the sample catcher.
 - Pushing the sampler rather than driving with a hammer.
 - Design of the catcher.
 - Condition of the sampler shoe, replace if necessary.
- 3) If poor recovery continues, contact the Project Manager or refer to project- or site-specific directions.

8.4.1 Types of Samplers

There are a variety of samplers which may be used on drilling projects, each with its own purpose and advantages. Several of the most widely used samplers are described in Appendix B along with guidelines for their use. The Project Manager is responsible for selecting the sampling method(s) most desirable for the project.

8.4.2 Sample Logging

All samples, whether in situ or disturbed, shall be inspected and logged by the Geologist/Field Engineer. The soil shall be classified according to the procedures presented in TP-1.2-6, "Field Identification of Soil", and recorded on the Record of Borehole (Exhibit C).

The Record of Borehole log provides both a graphic and descriptive record of observations made during the drilling of the borehole. All immediately available information shall be filled out first; including borehole number, drilling date, drill rig, job number, contractor's name, driller's name, and Geologist/Field Engineer's name. Other information, such as elevation and location coordinates may be added later if they are not immediately known. The log may be modified by the Project Manager to include information such as station number, offset distance, and inclination of hole, to suit the needs of a particular project. Minor variations to this log have been used in the past and may be preferred for consistency for a particular client.

A scale which will allow enough space for soil descriptions shall be chosen and recorded in the first column under the heading "Depth Scale" starting at 0 feet. This scale shall be used to align the information across the form so that data can be easily related to the proper depth at which it was encountered. The method of drilling shall be recorded in the next column, marking the appropriate depths that the method was used. The next 3 columns (Soil Profile Description, Graphic Log, and USCS) may be left blank until the type of material has been determined and a change in soil type has been encountered. The Geologist/Field Engineer shall observe the soil cuttings coming out of the hole to make an approximation of depth of change. This may be verified by comparing samples on either side of the change. Top and bottom depths of each soil horizon shall be noted in the "Soil Profile Description" column, followed by a description of the material. A pictorial representation of the zone shall be sketched in the "Graphic Log" column, and material designation according to the Unified Soils Classification System (see TP-1.2-6) be placed in the "USCS" column. A line shall be drawn across these 3 columns corresponding to the top and bottom depths on the Depth Scale. A straight line across the Graphic Log column represents a known depth of change, while a slanted line represents an approximate depth.

The sample number, type of sample taken, blow count, and percent recovery shall be recorded in the appropriate columns at the corresponding scaled depths. Lines shall be sketched across these columns to show top and bottom of the sample. Blow counts, taken during Standard Penetration Tests (SPT), shall be recorded for every 6 inches in an 18 inch sample. The percent recovery shall be recorded as a fraction, i.e., the number of inches recovered over the number of inches sampled.

Each sample shall be described according to TP-1.2-6 and recorded in the Sample Description column. The sample number should be recorded first, followed by the sample interval depth, and then the description. An effort should be made to line the descriptions up with the corresponding scaled

depth; however, it is much more important that all pertinent information be recorded. This column is also the appropriate place to make notes which may prove to be important in the later analysis, such as the depth of the water table, definite changes in drilling speed, unexpected materials or odors coming up with the cuttings, or excessive jarring of the sample.

In the event that a piezometer is installed in the hole, a graphic representation of the installation shall be drawn showing the bottom of the casing in relationship to the bottom of the hole, screened zones, bentonite seals, sand back fill, and other back fill zones if applicable.

8.4.3 Decontamination of Environmental Sampling

For environmental sampling and drilling, equipment must be thoroughly cleaned to avoid cross-sample contamination. Environmental sampling devices must be decontaminated prior to obtaining each sample; drilling equipment must be decontaminated prior to use on another borehole. Unless specified otherwise in project plans, tools and equipment shall be decontaminated by steam cleaning or by washing with a non-phosphate detergent and rinsing with distilled water. Wash and rinse fluids shall be collected; responsibility for disposal shall be defined in the governing project plans.

8.4.4 Sample Containers

Sample containers shall be specific to the needs of the project. They may be wide mouth glass pint jars with teflon lined caps for potentially contaminated samples, or plastic jars for standard soil samples. Plastic bags may be used in some cases. The type of sample containers to be used shall be determined by the Project Manager.

8.4.5 Sample Labeling

A label shall be affixed to the jar or thin-walled tube on site as the samples are collected. Standardized labels (Exhibit D) should be used. These labels shall be completed as accurately and completely as possible, with notation made of the following:

- project number
- hole number
- sample number
- depth of sample
- blow counts per 6-inches, if applicable
- Geologist/Field Engineer's name
- driller's name
- date sample collected

Other labels and/or information may be added or substituted as directed by the Project Manager.

8.4.6 Interim Sample Storage

Storage arrangements specific to the type of sampling should be outlined by the Project Manager and provisions made by the Geologist/Field Engineer prior to leaving for the field. It is frequently important to protect samples from freezing.

Samples shall be stored as appropriate for the type of sample taken. Shelby tubes shall be wax sealed and the caps taped to prevent desiccation, and shall be stored in an upright position at all times. Samples taken for moisture content determination shall be stored in air tight jars or double bagged in plastic, with as much air as possible squeezed out of the bags prior to sealing. Field storage shall be in a safe place where sample containers will not be disturbed or lost.

Environmental samples collected for chemical analysis shall be stored on ice in coolers in compliance with the sampling plan for the project. They must be stored in a locked storage area or kept in view of the Geologist/Field Engineer or other responsible Golder personnel.

8.5 Abandonment of the Borehole

Unless otherwise directed by regulatory requirements or project work plans, boreholes shall be abandoned by backfilling with cuttings. If monitoring wells or piezometers are to be installed in the borehole, refer to applicable monitoring well installation procedures for further direction.

8.6 Procedure Alteration Checklist

Variation from established procedure requirements may be necessary due to unique circumstances encountered on individual projects. All variations from established procedures shall be documented on Procedure Alteration Checklists (Exhibit A) and reviewed by the Project Manager and the QA Manager.

The Project Manager may authorize individual Geologist/Field Engineers to initiate variations as necessary. If practical, the request for variation shall be reviewed by the Project Manager and the QA Manager prior to implementation. If prior review is not possible, the variation may be implemented immediately at the direction of the Geologist/Field Engineer, provided that the Project Manager is notified of the variation within 24 hours of implementation, and the Procedure Alteration Checklist is forwarded to the Project Manager and QA Manager for review within 2 working days of implementation. If the variation is unacceptable to either reviewer, the activity shall be reperformed or action shall be taken as indicated in the Comments section of the Checklist.

All completed Procedure Alteration Checklists shall be maintained in project records.

PROCEDURE ALTERATION CHECKLIST

Job/Task Number: _____

Procedure Reference: _____

Requested Variation: _____

Reason for Variation: _____

Special Equipment, Material or Personnel Required: _____

Alteration Requested By: _____ Date: _____

Title: _____

Reviewed By: _____ Date: _____

Title: GAI Project Manager

Comments: _____

Reviewed By: _____ Date: _____

Title: GAI QA Manager

Comments: _____

Golder Associates
HISTORY OF HOLE
Job # _____

Sheet _____ of _____

Geologist _____ Date _____ Boring # _____
Driller _____ Surface Elevation _____ Weather _____ Temperature _____ of
Contractor _____ Drill Fluid _____ Depth _____ to _____
Location _____ Type of Barrel _____ Casing Size _____ Core Size _____

BEGINNING OF SHIFT

END OF SHIFT

Time _____ Depth of Hole _____
Depth to WL _____ Depth to Casing _____

Time _____ Hrs. Productive _____ Hrs. Delayed _____
Depth of Hole _____ Depth of Casing _____ Depth to WL _____

EXAMPLE

Checked by:

RECORD OF BOREHOLE #

SHEET OF
 DATUM
 DRILL RIG

STA. OFFSET L R
 PROJECT NO. 863-1504 SR-504
 INCLINATION AZIMUTH

ELEVATION
 DRILLING DATE

DEPTH SCALE (FEET)	BORING METHOD	SOIL PROFILE	GRAPHIC LOG	USCS	SAMPLES			SAMPLE DESCRIPTION	NOTES — PIEZOMETER — STANDPIPE INSTALLATION
		SOIL PROFILE DESCRIPTION			NUMBER	TYPE	BLOWS/ 6 IN.		
<div style="position: absolute; top: 50%; left: 50%; transform: translate(-50%, -50%); opacity: 0.5; font-size: 100px; pointer-events: none;"> EXAMPLE </div>									

DEPTH SCALE
 DRILLING CONTRACTOR
 DRILLER

LOGGED BY
 CHECKED
 DATE



Sample I.D. No.

Date _____ Time _____
Station _____ Depth _____
Media _____
Preservative _____
Sampled by _____

HYDROLOGICAL SAMPLE LABEL



Location _____
Job No. _____ Date _____
Boring No. _____ Sample No. _____
Depth _____ Blows _____
Description _____

Driller _____ Engr. _____

GEOTECHNICAL SAMPLE LABEL

Golder Associates		Sent By: _____
Seal Number		Date: _____
2455		

Tamper Proof Seal

APPENDIX A DRILLING METHODS

1. GENERAL DRILLING CONSIDERATIONS

Many types of drilling techniques exist for advancing boreholes in unconsolidated deposits. The methods described below include the hollow stem auger method, air rotary drill and drive, and cable tool drilling methods. This list is not intended to be all inclusive. Unconsolidated deposits present special drilling problems due to the nature of the material, and the Project Manager shall determine the most appropriate drilling technique for the types of materials expected to be encountered. The drilling method selected shall provide a reasonable opportunity to notice gross material changes and to make periodic depth soundings at the point at which the phreatic ground water level is encountered. Borehole instability or the tendency of the hole to collapse is common to all drilling methods in unconsolidated deposits.

All drive casing used in the drilling operation shall be of such design and wall thickness as to prevent collapse or deformation when driven through the in situ materials. All welding of drive casing or alternate approved methods of joining the casing shall follow acceptable practices to prevent separation at joints. If welding is employed, all welds shall have a minimum of three passes made on the weld joint and have a minimum of three "star welds."

2. METHODS

2.1 Hollow Stem Auger Method

The hollow stem auger method consists of advancing continuous flight augers into the ground. The terminal flight section is equipped with a drill bit or cutting teeth. In situ soils are sampled through the center of the hollow stem. Drill cuttings are brought to the surface by the "screw conveyor" action of the auger flights. Borehole stability is established by the augers. The maximum depth of penetration is usually 100 ft., although 160 to 180 foot drilling depths have been achieved in certain geologic materials. Auger flights are joined by clamping pins or by screw fittings. Grease shall not be used on the joints for lubrication if the particular project is an environmental investigation.

2.2 Air Rotary Drill and Drive

The air rotary drill and drive technique employs a tri-cone roller bit, pneumatic downhole hammer, or both, on drill rods to achieve penetration. Steel drive casing (usually 0.25 inch minimum wall thickness) is advanced for borehole stability directly behind the bit/hammer by driving with a pneumatic casing hammer. The drive casing is connected either by welding or flush

coupled threaded joints. The terminal end of the drive casing is equipped with a hardened steel drive shoe for strength during penetration. Drill cuttings are removed from the borehole by circulating high volume compressed air to the bottom of the borehole through the drill rods and blowing the cuttings to the surface within the annular space between the rods and casing. On environmental investigations the air from the compressor must be filtered to remove the entrained oil before downhole use. In situ soils may be sampled through the drive casing after the bit/hammer and drill rods are removed from the borehole. Maximum depths for this drilling method depend of the size of the rig and compressor, but are normally greater than 300 feet.

2.3 Cable Tool Drilling

Cable tool drilling is slow, but offers some advantages for sampling. The technique employs a heavy downhole chopping bit which is dropped onto the underlying sediments to loosen the materials. The bit is connected to the drill rig by a wire (cable) line. The drill rig activates the up and down action for the bit. Steel drive casing (usually 0.25 inch minimum wall thickness) is advanced for borehole stability directly behind the downhole bit. The casing is driven by a hammer and anvil using the same up and down action of the drill rig. The steel drive casing sections are connected either by welding or flush coupled threaded joints. The terminal end of the drive casing is equipped with a hardened steel drive shoe for strength during penetration. Cuttings are allowed to accumulate until they start to lessen the impact of the bit and then are removed with a sand bailer or sand pump. In situ soils are sampled through the drive casing after the bit is removed from the borehole. It is necessary to add water to the borehole in the vadose zone for bailing cuttings from the hole. In environmental investigations, the composition of the added water must be known, particularly with regard to the analytes of concern.

APPENDIX B
SAMPLING METHODS

1. SPLIT-BARREL METHOD

1.1 Sampling Equipment Requirements

- split-tube samplers constructed in accordance with ASTM-D-1586, "Penetration Test and Split-Barrel Sampling of Soils" (see Figure B-1); 2, 4, and 6 inch diameter samplers should be available; all samples shall be fitted with hardened drive shoes and basket retainers.
- drive weight assembly constructed in accordance with ASTM-D-1586, affixed to a length of drill rod for advancing the sampler
- stainless steel spatulas
- sample containers as required

1.2 Method

The sampling horizon may be exposed by any drilling technique that will produce suitable wall clearance for insertion of the sampler. Depth to the sample horizon shall be measured using the combined lengths of the downhole tools, drill rod or auger flight lengths, and amount of stickup above the drill collar. Particular attention must be paid to the calculated depth to ensure that the sampler is resting on the desired sample interval. Sampler diameter selection shall be based on geologic logging observations. 2-inch diameter samplers are appropriate for nonlithified clays, silts, sands and fine gravels; 4- or 6-inch samplers shall be selected for zones with coarse gravels and cobbles, or when larger sample volumes are required. Samplers shall be driven 18 inches with the drive weight (noting the weight of the hammer being used); blow counts for the first 18 inches of penetration shall be recorded in 6-inch increments, counted, and recorded on the Borehole Log.

2. THIN-WALLED ("SHELBY") TUBE SAMPLING METHOD

2.1 Sampling Equipment Requirements

- thin-walled metal sample tubes, manufactured in compliance with ASTM-D-1587, "Standard Practice for Thin-Walled Tube Sampling".
- tube end caps or seals, as required
- sample containers, as required

- stainless steel spatulas, if contents of tube are examined and transferred to sample containers at the surface prior to transfer to the laboratory

2.2 Method

This method is normally used to obtain undisturbed samples of cohesive soils for geotechnical analysis, although thin walled sampling techniques (commonly referred to as Shelby tube techniques) may be used to sample other cohesive materials such as sludges. Sampling methods should be in general accordance with ASTM-D-1587, "Standard Practice for Thin-Walled Tube Sampling of Soils." Any drilling technique is acceptable to expose the sampling horizon provided that sufficient clearance is present to permit insertion of the sampling equipment. Depth measurements shall be based on cumulative measurements of drill rods or auger flights, downhole tool length, and amount of stick up at the drill collar. Particular attention must be paid to the depth calculations to ensure that the sampler is resting on the desire sample interval. The sample tube is attached to an appropriate Shelby head subassembly, which is then connected to the drill rods, or auger flights, inserted to a maximum of 15 tube diameters by steady pressure with no rotation. Depending upon soil conditions the tube will be left in place for a period of time (5-10 minutes) to dissipate negative pressure prior to withdrawal of the tube. Depending on project-specific requirements, the sample tube may be capped and sealed at the surface and routed directly to the laboratory. Alternately, the sample may be exposed at the surface, removed with a stainless steel spatula and transferred to a suitable container after visual examination.

3. DRIVE TUBE (RING-LINED BARREL OR "CALIFORNIA") SAMPLING METHOD

3.1 Sampling Equipment Requirements

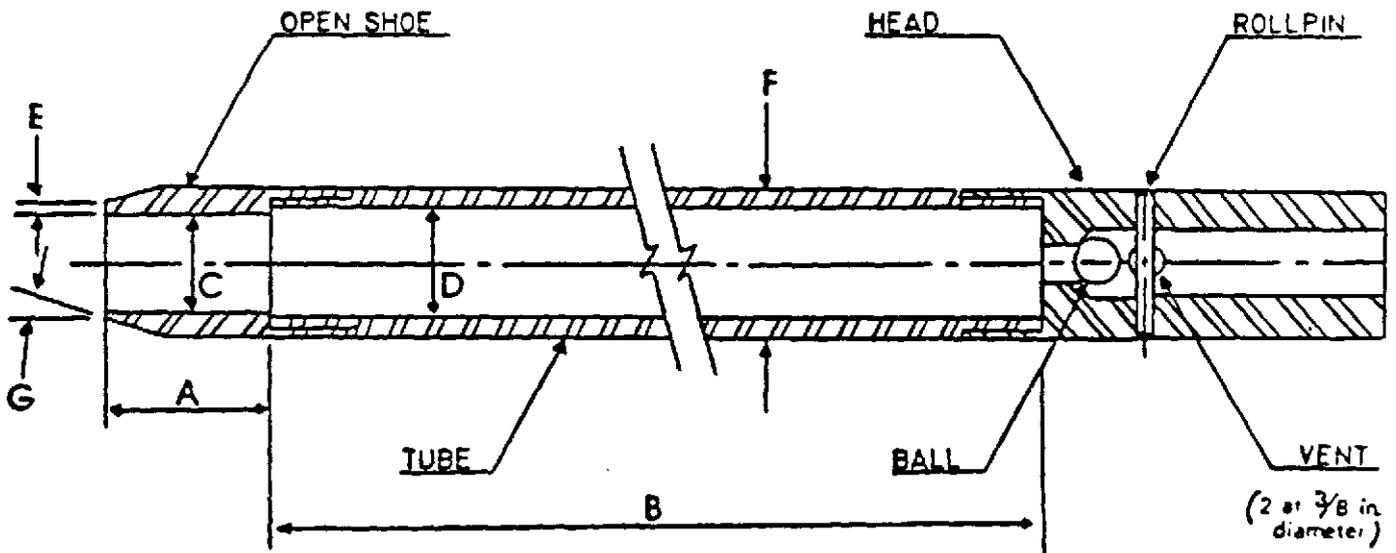
- drive tube (ring-lined barrel) assembly manufactured in compliance with ASTM-D-3550, "Ring-Lined Barrel Sampling of Soils" (see Figure B-2)
- sampler barrel with removable rings
- surface or downhole drive weight assembly
- stainless steel spatulas
- sample containers as required

3.2 Method

This method is normally used to obtain relatively undisturbed geotechnical samples, although this technique is useful in obtaining samples when volatile organic compounds are among the analytes of concern.

The sampling horizon may be exposed by any drilling technique that will produce suitable wall clearance for insertion of the sampler. Depth to the sample horizon shall be measured using the combined lengths of the downhole tools, drill rod or auger flight lengths, minus the amount of stick up above the drill collar. Particular attention must be paid to the depth calculations to ensure that the sampler is resting on the desired sample interval. Samplers shall be driven 18 inches with a surface or downhole drive weight assembly (noting the weight of the hammer being used); sampler insertion should be by pushing in lieu of driving wherever possible. If required by project-specific requirements, blow counts of the first 18 inches of penetrations shall be counted and recorded in 6-inch increments on the Borehole Log. The sampler shall be retrieved and carefully disassembled. Trim the soil flush with the sampling barrel with the spatula, and remove the specimen-filled rings. Place each ring in a suitable container and cap and seal with clean aluminum foil at both ends.

(From ASTM-D-1586 "Penetration Test and Split-Barrel Sampling of Soils")

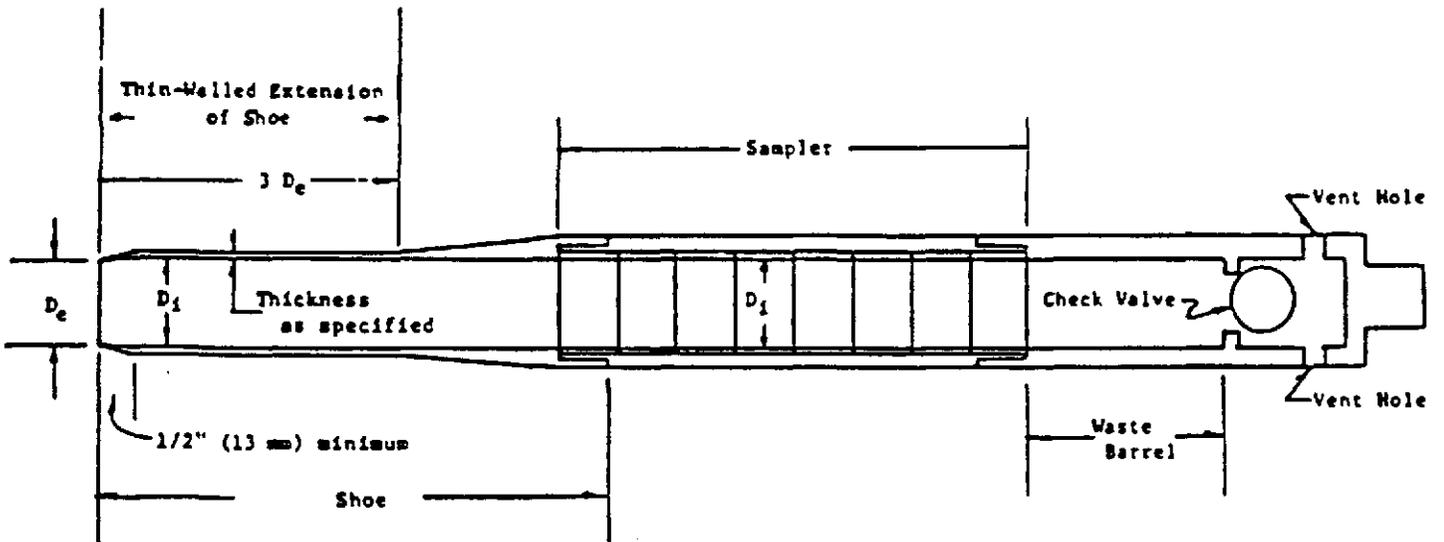


- A = 1.0 to 2.0 in. (25 to 50 mm)
- B = 18.0 to 30.0 in. (0.457 to 0.762 m)
- C = 1.375 ± 0.005 in. (34.93 ± 0.13 mm)
- D = 1.50 ± 0.05 - 0.00 in. (38.1 ± 1.3 - 0.0 mm)
- E = 0.10 ± 0.02 in. (2.54 ± 0.25 mm)
- F = 3.00 ± 0.05 - 0.00 in. (50.8 ± 1.3 - 0.0 mm)
- G = 16.0° to 23.0°

The 1 1/4 in. (38 mm) inside diameter split barrel may be used with a 16-gage wall thickness split liner. The penetrating end of the drive shoe may be slightly rounded. Metal or plastic retainers may be used to retain soil samples.

FIG. 2 Split-Barrel Sampler

(From: ASTM-D-3550, Standard Practice For Ring-Lined Barrel Sampling of Soils)



NOTE 1—Inside clearance ratio = $(D_e - D_i)/D_e$
NOTE 2—Dimensional tolerance of D_i = ± 0.003 in. (± 0.08 mm)

1. PURPOSE

This technical procedure describes uniform procedures for identification of soils.

2. APPLICABILITY

This technical procedure is applicable to all persons engaged in soils identification.

3. DEFINITIONS

Definitions are contained within Section 8.

4. REFERENCES

ASTM Standards, 1979, Standard Recommended Practice for Description of Soils (Visual-Manual Procedure), D 2488-69, American Society for Testing and Materials, Philadelphia, Pennsylvania.

Rock-Color Chart, Geological Society of America, Boulder, Colorado.

5. DISCUSSION

Soil identification techniques are employed to characterize and describe soil for geologic and hydrologic interpretation, foundation engineering, well screen sizing, and a wide range of other purposes.

6. RESPONSIBILITY

Each individual designated responsibilities for soil identification shall utilize this procedure.

7. EQUIPMENT AND MATERIALS

- Supply of water
- Pocket knife or small spatula
- Small test tube with stopper or glass jar with sealed lid
- Small hand lens
- Pocket penetrometer or shear gage
- One-half-inch (12 mm) rebar

- Five-pound hammer
- Notebook
- Exploration logs

8. PROCEDURE

8.1 General

The recommended Soils Classification System is based on the Unified Classification System as summarized on Figure 1.

The soil description involves the following general format:

- (1) Consistency or Density, (2) Color, (3) Structural Characteristics,
- (4) Composition with Major Component in Capital Letters, (5) Minor Char.,
- (6) Geologic Description in Capital Letters

Thus, for example, a typical description might include:

Stiff, Grey, stratified, SILTY CLAY, trace Sand, slickensides,
(LACUSTRINE)

The following sections discuss the different elements (1-6 above) of the soil description.

8.2 Determination of Consistency or Relative Density

8.2.1 N-Values

The standard penetration test (SPT), or number of blows required by a 140-pound hammer or weight dropped 30 inches to drive a two-inch O.D. (1 3/8-inch ID) drive-open sampler, will indicate the relative density of cohesionless soils and the consistency of cohesive soils. The standard test penetrates 18 inches. N values are the blows required to drive the sampler the last 12 inches. The blows required to drive the sampler the first six inches are normally not taken into account unless one or both of the subsequent blow counts are affected by gravel or cobbles. Blows are recorded for each six-inch interval. The relative density of coarse-grained soils is shown in Table 1.

8.2.1.1 Relative Density of Granular Soils

The relative density modifiers given in Table 1 for coarse-grained soils should also be used for fine-grained non-plastic soils described predominately by SILT.

8.2.1.2 Consistency of Fine-Grained, Cohesive Soils

Shown in Table 2 are criteria for the quantitative and qualitative determination of the consistency of fine-grained, cohesive soils. The criterion based on N-Values is considered unreliable and should be used with caution. The criterion based on undrained shear strength may be used when values of undrained shear strength are available. The field identification test is simple and reliable and is the method which can be used in most instances.

8.3 Determination of Color

Color can be an important property in identifying materials of similar geologic origin and in identifying organic soils. Although qualitative color names are somewhat helpful, positive color identifications obtained by comparison with a standard color chart are even more useful. If the sample contains layers or patches of varying colors, this should be noted and all representative colors should be described for moist samples. If possible, color should be described for moist samples. The Geologic Society of America Rock-Color Chart should be used to identify color. Provide both the color name and chromal hue symbols in soil descriptions. Mottled soils show the presence of spots, streaks, or splotches of one or more colors in a soil mass of another predominant color. In mottled soils, the colors are not mixed and blended, but each is more or less distinct in the general ground color.

8.4 Definitions of Structural Characteristics

8.4.1 Stratified

Composed of, or arranged in, layers. The layers are parallel to one another, and composed of soils visibly different from each other.

8.4.2 Parting

Paper-thin separation of one soil type within another. Usually applied to cohesive soils.

8.4.3 Rhythmic

Consisting of alternative thin layers of sand, silt or clay. Each layer generally less than one-half-inch in thickness. Lacustrine deposits with annual layers are termed varves or are said to be varved.

8.4.4 Lenses

A particular soil type significantly different from the surrounding soils which thins out laterally is said to be a lens or be lens-shaped.

8.4.5 Pocket

A different soil type of limited thickness and lateral extent.

8.4.6 Homogenous

Of uniform structure.

8.4.7 Heterogenous

Consisting of dissimilar constituents, mixed.

8.4.8 Slickensided/Polished/Scratched Surfaces

A polished and scratched surface that results from friction of one block of material moving relative to another block. Polished and/or scratched surfaces may be related to minor movement along discontinuities or may be related to faults and termed slickensides.

6

8.4.9 Fissured

This term applies to hard, over-consolidated silts and clays and refers to physical discontinuities such as fissures and cracks that formed during or after consolidation. The abundance and character of the fissuring can be described as follows:

"Highly Fissured" - Fractures are spaced one-half-inch or closer over most of the interval described.

"Moderately Fissured" - Sample contains two or more fractures or thin fracture zones per six-inch sample, but average spacing is wider than one-half inch.

"Locally Fissured" - Only one fracture or narrow (less than three inches) fracture zone is observed in a sample.

Fissuring characteristics that can be noted and/or described include attitude, length, width, aperture (closed, tight, open), staining/infilling, roughness, curvature, continuity, slickensides, polish, gouge, relation to other structures and other distinguishing features.

8.5 Determination of Soil Composition

8.5.1 General

For purposes of soil description, the material is considered to be composed of the coarse fraction or of particles larger than the No. 200 sieve (+.074 mm) and the fine fraction or those smaller than the No. 200 sieve. The coarse fraction is described based on its particle size while the fines are described on its plasticity.

The following terminology is used to denote the percentage by dry weight of each soil component:

<u>Descriptive Term</u>	<u>Range of Proportion</u>
Trace	0-5%
Little	5-12%
Some or Adjective*	12-30%
And	30-50%

*Adjective: silty, sandy, gravelly, etc.

For example: "SILT, some Sand, trace Gravel" describes a basic soil component of silt (30-50 percent), with minor components of sand (12-30 percent), and gravel (0-5%).

Soils are to be described according to the following criteria with the principal constituents written in capital letters. Other constituents are preceded by descriptive terminology that is used to denote the percentage by weight of each component. Soil descriptions are determined visually except where laboratory classification test data are available. The following abbreviations are acceptable:

c = coarse
m = medium
f = fine

8.5.2 Field Indication Tests - Fines

8.5.2.1 Fine-Grained Soil Descriptions

The description of fine-grained soil components (i.e., passing the No. 200 sieve or smaller than 0.074 mm) is based on plasticity and not grain size. Thus, terms like SILT, trace Clay or Silt, little Clay are not used. Rather, the terms, SILT, CLAYEY SILT, SILTY CLAY, and CLAY are applied to the fine-grained component as a whole. Their characteristics are described in Table 4.

8.5.2.2 Field Test for Plasticity

Plasticity refers to the ability of a material to be deformed rapidly without cracking or crumbling and then maintain that deformed shape after the deforming force has been released. A soil is said to be highly plastic if there is a wide range of moisture content over which it remains in the plastic state. High plasticity indicates a high clay content. Identification of cohesive soils in relation to their plasticity can be made on the following basis: The natural soil is worked until its moisture content is such that a 1.5-inch diameter ball formed from the soil shows a flattened contact surface of 7/8-inch diameter when dropped from a height of two feet (gravel sizes are not included in the ball). The smallest thread possible without crumbling is

then rolled from the above soil sample. The approximate relationships below are then used for identification:

<u>Thread Diameter</u>	<u>Descriptive Term</u>
1/4-inch	SILT
1/8- to 1/16-inch	CLAYEY SILT
1/32-inch	SILTY CLAY
1/64-inch	CLAY

8.5.2.3 Dry Strength

A portion of the soil is allowed to dry out completely in air. An angular fragment (about one-half-inch) of the dried soil is pressed between the fingers. The dry strength of the fragment is expressed as very low, low, medium, high and very high. Fragments with very high strength cannot be injured at all, whereas, those of very low strength disintegrate completely on gentle pressure. The strength is called medium if the fragment can be reduced to powder only with great effort. Those materials with greater dry strengths are predominately clayey, and those with less dry strength are predominately silty.

8.5.2.4 Stickiness

A high degree of stickiness in the natural state is indicative of higher plasticity.

8.5.2.5 Shine Test

If a moist lump of soil is stroked with considerable pressure with the flat of a pen knife blade or fingernail, the type of surface imparted is an indication of the soil. If a shiny surface results, the presence of clay is indicated. Silt is indicated if a dull surface is produced.

8.5.2.6 Grittiness Test

THIS TEST SHOULD NOT BE PERFORMED WHEN HAZARDOUS WASTE CONTAMINATION IS SUSPECTED OR KNOWN TO BE PRESENT. In other cases, when a small amount of the uncontaminated soil is placed between the teeth, the presence of grit will indicate silt or sand, but if no grit is detected, a pure clay is present.

8.5.3 Field Identification Tests - Organic Soils

8.5.3.1 Organic Soil

Description of organic soils depends on the percentage and distribution of organics in the soil. If the soil matrix is inorganic with occasional pieces of organic matter, this can be described under Minor Characteristics.

If the soil is primarily inorganic, but contains a significant amount of organic, the modifier organic can be used. If the soil is primarily organic, then it should be called a Peat. Examples include:

- Silty SAND, occasional organic matter
- Organic SILT
- Sandy PEAT

Table 5 includes a system for classifying organic soils.

8.5.3.2 Organic Cohesive Soils

Organic cohesive soils display the following characteristics.

- A dark-brown, dark-gray, black color indicates the presence of organic matter.
- An odor of decaying vegetation is typical. If organic matter cannot be distinguished, it can sometimes be brought out by a small amount of heat.
- The presence of fibrous or root structures, twigs, leaves or shells is common.
- At least a three-quarter reduction in the liquid limit value after oven-drying is considered positive identification of organic soil.
- The plasticity of fine-grained organic soils is greatly reduced on oven-drying due to irreversible changes in organic colloids.
- Organic clays feel spongy in the plastic range as compared to inorganic clays.

8.5.3.3 Organic Soil - Peat

Peat is usually dark brown to black; contains fibrous particles of vegetation in varying states of decay; has characteristic organic odor; is usually spongy and compressible; commonly contains natural moisture contents of over 100 percent and can contain organic and inorganic silts and clays in varying amounts and concentrations.

8.5.4 Field Identification Tests - Cohesionless Soils

8.5.4.1 Visual Identification of Grain Size

The constituent parts of a soil sample are defined by grain size, as indicated in Table 3.

8.5.4.2 Grittiness Test

THIS TEST SHALL NOT BE PERFORMED WHEN HAZARDOUS WASTE CONTAMINATION OF THE SOIL IS SUSPECTED OR KNOWN TO BE PRESENT.

The soil is handled lightly between the thumb and forefinger to get an idea of the grittiness or softness of the soil. A pinch of uncontaminated soil is smeared with considerable pressure between the thumb and forefinger to determine the degree of harshness and grittiness. When a small amount of uncontaminated soil is placed between the teeth, the presence of grit will indicate silt or sand, but if no grit is detected, an almost pure clay is present.

- Coarse to medium sand exhibits a typically harsh and very gritty smear.
- Coarse to fine sand has a less harsh feel, but exhibits a very gritty smear.
- Medium to fine sand exhibits a less gritty feel and smear.
- Fine sand has a softer feel and much less gritty smear.

8.5.4.3 Test Tube Test

A small sample of the soil (lumps are first broken up) is shaken in a test tube or glass jar filled with water and is allowed to settle. All the fine sand will settle out (four-inch fall) in 30 seconds; the silt in 50 minutes. A rough idea of the grain sizes can be obtained by this test.

8.5.4.4 Dilatancy Test

When a wet pat of soil is shaken vigorously in the hand, the surface will become glassy and show free water. If the pat of soil is then squeezed in the fingers with free water disappearing and the surface becomes dull, the soil is NOT a clay soil, but a silt or fine sand. If the free water on the surface disappears immediately (as walking on the beach adjacent to the water), the soil is most likely a fine sand. If the free water tends to ooze away, the soil is most likely silt.

8.5.5 Determination of Soil Types

Based on the tests and observations described in the previous text, the soil description can be made by compiling the properties of the soil and comparing them to Table 2.

8.6 Minor and/or Usual Characteristics

8.6.1 General

Minor characteristics of the soil sample should be included in its description. These characteristics include occasional traces of organic debris, mention of other types of deleterious materials such as a trash or cinder fill, portions of cobbles or boulders received in the sampler, and pockets and/or lenses of material other than those already mentioned in the description. A minor constituent, such as gravel, which is part of the overall soil matrix, would be described using the modifiers presented in 8.5.1.2 (i.e., trace, little, etc.). In some cases, a minor constituent is scattered throughout the unit and is not part of the matrix. In this case, it would not be described as a minor characteristic. An example would be a lacustrine clay with ice rafted pebbles. Thus, the soil would be described as SILTY CLAY, scattered pebbles, and not SILTY CLAY, little gravel.

8.6.2 Determination of Moisture Content

Moisture descriptions should not generally be used and can be misleading. A general qualitative description can be applied if necessary. The following descriptions can be used:

- Dry: No discernable moisture present.
- Damp: Enough moisture present to darken the appearance, but no moisture on materials adheres to the hand.
- Moist: Will moisten the hand.
- Wet: Visible water present; plastic materials will leave sticky residue in hand when remolded.

As an example, hard clays often appear dry, but may be saturated even above the water table. However, in soft soils or granular soils, the moisture content can be relevant.

8.7 Definitions of General Geologic Descriptions

Generally, a geologic term, in capital letters, should be applied to major soil units, if appropriate. However, in many cases, there is inadequate information to determine a precise geologic description. In these cases, the term "possible" can be applied (i.e., possible TILL).

As appropriate, specific geologic names such as Lawton Clay can be used. However, when used, there should be sufficient specific geologic evidence of the name designation. If in doubt, do not use specific name or add "possible."

8.7.1 Fill

Material placed by humans.

8.7.2 Peat or Organic Matter

Natural deposit composed primarily of organic matter.

8.7.3 Lacustrine Deposits

Deposited in lakes.

8.7.4 Alluvial Soil

Any soil that has been deposited by a stream. Such soils usually contain some sand and rounded gravel or cobbles.

8.7.5 Till

A nonstratified random mixture of clay, silt, sand, gravel and boulders deposited by glaciers. Alternating layers of clayey till and till containing boulders are possible.

6

8.7.6 Outwash

A stratified alluvial soil transported and deposited by a glacial meltwater stream.

8.7.7 Loess

A uniform aeolian (wind) deposit of silty material having an open structure and relatively high cohesion due to a clay matrix or cementation by calcareous material at grain contacts. A characteristic of loess deposits is that they display nearly vertical slopes.

8.7.8 Pedogenic Soils

Soils that have formed in place due to decomposition of rock. Shales form residual clays. Limestones form lean brown and fat red clays. Granitic rocks form silty sand with angular sand grains.

6

8.7.9 Colluvial Soil

A nonstratified mixture of angular sand, gravel and boulder size material accumulated at the foot of a slope or on the slope itself chiefly under the influence of gravity.

8.8 Reaction To Dilute Hydrochloric Acid

Some soils show definite evidence of cementation in the intact state. Where this is noted, the degree of cementation may be described as weak or strong. Since calcium carbonate is the most common cementing agent, a report of its presence on the basis of the reaction with dilute hydrochloric acid is important. The intensity of the HCl reaction should be described as none (NR), weak (WR), or strong (SR).

8.9 Unified Symbols

The Unified Classification System symbols should be indicated on the final boring and test pit logs. These symbols are based on soil groupings as shown on Figure 1.

8.10 Report Format

The boring logs used in the report should conform to the general format shown on the attached example boring log, Figure 2. In addition to the logs, all reports should include the Classification System as shown in Tables 1 through 6. Some specific comments on the final boring log include:

- **ACTUAL BLOW COUNTS:** The actual blow count raw data shall be shown on the logs; i.e., blows per six inches.
- **UNIFIED SYMBOL:** A column will be used to show the Unified Symbol for the soil.
- **PENETRATION/RECOVERY:** The amount of sample penetration and recovery will be shown on the log.
- **COLUMN FOR LAB TESTS:** The locations of all lab tests (except for water contents and Atterberg limits which are shown graphically) should be indicated in shorthand as shown on the Sample Log and on Figure 1.
- **SOIL CONTACTS:** Under "Description" on Figure 2, horizontal solid and dashed lines are used to represent soil contacts. Solid lines represent soil contacts between major units; dashed lines represent gradation contacts within the same major unit. Inclined lines in the "USCS Class" column represent uncertainty of the depth of actual soil contact.
- **TYPED:** Logs shall be typed and not hand-lettered unless requested by the client.
- **PLOTTING OF BLOW COUNTS AND MOISTURE CONTENTS:** All logs shall include a disclaimer relating to these plots due to the liability associated with interpretations that could be applied to these graphs.

TABLE 1

RELATIVE DENSITY OF COARSE-GRAINED SOILS

<u>Relative Density</u>	<u>N. Blows/Foot*</u>	<u>Field Identification</u>
Very Loose	0-4	Easily penetrated with shovel handle.
Loose	4-10	Easily penetrated with 1/2-inch rebar pushed by hand. Easily excavated with hand shovel.
Compact	10-30	Easily penetrated with 1/2-inch rebar driven with five-pound hammer. Difficult to excavate with hand shovel.
Dense	30-50	Penetrated one foot with 1/2-inch rebar driven with a five-pound hammer. Must be loosened with pick to excavate.
Very Dense	>50	Penetrated only a few inches with 1/2-inch rebar driven with a five-pound hammer.

* Judgment required if soils contain gravel and cobbles since the "N" value may be unreliable in determining relative density.

TABLE 2
 CONSISTENCY OF COHESIVE SOILS

<u>Consistency</u>	<u>N (blows/ft.) (unreliable)</u>	<u>Undrained Shear Strength* (psf)</u>	<u>Field Identification</u>
Very soft	0-2	Less than 250	Extrudes from between fingers when squeezed in hand.
Soft	2-4	250-500	Molded by light finger pressure.
Firm	4-8	500-1,000	Molded by strong finger pressure.
Stiff	8-15	1,000-2,000	Indented by thumb.
Very stiff	15-30	2,000-4,000	Indented by thumbnail.
Hard	Greater than 30	Greater than 4,000	Difficult to indent with thumbnail.

*Undrained shear strength equals one-half the unconfined compressive strength.

TABLE 3

COMPONENT DEFINITIONS BY GRADATION

<u>Component</u>	<u>Size Range</u>
Boulders	Above 12 inches in diameter
Cobbles	3 to 12 inches
Gravel	3 inches to No. 4 (4.76 mm)
Coarse Gravel	3 inches to 3/4 inch
Fine Gravel	3/4 inches to No. 4 (4.76 mm)
Sand	No. 4 (4.76 mm) to No. 200 (0.074 mm)
Coarse Sand	No. 4 (4.76 mm) to No. 10 (2.0 mm)
Medium Sand	No. 10 (2.0 mm) to No. 40 (0.42 mm)
Fine Sand	No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Finer than No. 200 (0.074 mm)

COMPONENT PROPORTION

<u>Descriptive Term</u>	<u>Range of Proportion</u>
Trace	0-5%
Little	5-12%
Some or Adjective*	12-30%

*Adjective: silty, sandy, gravelly, etc.

For example: "SILT, some Sand, trace Gravel" describes a basic soil component of silt (30-50 percent), with minor components of sand (12-30 percent), and gravel (0-5%).

TABLE 4

FINE GRAIN DESCRIPTIONS

<u>Descriptive Term</u>	<u>Plastic Index*</u>	<u>Characteristics</u>
SILT	Less than 2	Rapid pronounced response to shaking test, very low dry strength; has almost a granular appearance and feel; thread cannot be rolled or can only be rolled with great difficulty.
CLAYEY SILT	2-15	Noticeable response to shaking and squeezing test, but appreciably less pronounced than for silt; low medium dry strength; slightly sticky, slightly slick and smooth smear; can roll a thread easily.
SILTY CLAY	15-40	No response to shaking and squeezing test; medium to high dry strength; rather sticky when moistened; moderately slick and smooth smear; can roll a thread when moderately dry.
CLAY	Greater than 40	No response to shaking test; high to very high dry strength; slick and waxy, can roll a thread when quite dry.

*Plastic Index: Liquid limit minus plastic limit.

DESCRIPTION BASED ON FIELD TEST FOR PLASTICITY

<u>Thread Diameter</u>	<u>Descriptive Term</u>
1/4-inch	SILT
1/8- to 1/16-inch	CLAYEY SILT
1/32-inch	SILTY CLAY
1/64-inch	CLAY

TABLE 5

SOIL CLASSIFICATION FOR ORGANIC SOILS

Category	Name	Organic Content (I by wt.)	Group Symbols (See Table 3)	Distinguishing Characteristics for Visual Identification	Range of Laboratory Test Values
ORGANIC MATTER	FIBROUS PEAT (woody, mts, etc.)	75 to 100% Organics either visible or inferred	Pt	Light weight, spongy and often elastic at w_n —shrinks considerably on air drying. Much water squeezes from sample.	w_n —500 to 1200% γ —60 to 70 pcf G —1.2 to 1.8 $C_c/(1+e_0)$ —.4+
	FINE GRAINED PEAT (amorphous)			Light weight, spongy but not often elastic at w_n —shrinks considerably on air drying. Much water squeezes from sample.	w_n —400 to 800% LL —400 to 900% PI —200 to 300 γ —60 to 70 pcf G —1.2 to 1.8 $C_c/(1+e_0)$ —.35 to .4+
HIGHLY ORGANIC SOILS	Silty Peat	30 to 75% Organics either visible or inferred	Pt	Relatively light weight, spongy. Thread usually weak and spongy near PL shrinks on air drying; medium dry strength. Usually can squeeze water from sample readily—slow dilatency.	w_n —250 to 500% LL —250 to 600% PI —150 to 350 γ —65 to 90 pcf G —1.8 to 2.3 $C_c/(1+e_0)$ —.3 to .4
	Sandy Peat			Sand fraction visible. Thread weak and friable near PL; shrinks on air drying; low dry strength. Usually can squeeze water from sample readily—high dilatency—"gritty."	w_n —100 to 400% LL —150 to 300% (plot below A line) PI —50 to 150 γ —70 to 100 pcf G —1.8 to 2.4 $C_c/(1+e_0)$ —.2 to .3
ORGANIC SOILS	Clayey ORGANIC SILT	5 to 30% Organics either visible or inferred	OH	Often has strong H ₂ S odor. Thread may be tough depending on clay fraction. Medium dry strength, slow dilatency.	w_n —65 to 200% LL —65 to 150% (usually plot at or near A line) PI —50 to 150 γ —70 to 100 pcf G —2.3 to 2.6 $C_c/(1+e_0)$ —.20 to .35
	Organic SAND or SILT		OL	Threads weak and friable near PL—or may not roll at all. Low dry strength; medium to high dilatency.	w_n —30 to 125% LL —30 to 100% (usually plot well below A line) PI —non-plastic to 40 γ —90 to 110 pcf G —2.4 to 2.6 $C_c/(1+e_0)$ —.1 to .25
SLIGHTLY ORGANIC SOILS	SOIL FRACTION and slightly Organic	Less than 5% Organics combined visible and inferred	Depend upon inorganic fraction	Depend upon the characteristics of the inorganic fraction.	Depend upon inorganic fractions.

TABLE 6

DESCRIPTION OF SOIL BASED ON OBSERVATION AND TESTS

<u>Typical Name</u>	<u>Description</u>
BOULDERS	Larger than 12 inches in diameter
COBBLES	3 to 12 inches in diameter
GRAVEL	No. 4 sieve to 3 inches in diameter
Coarse to	No. 200 to No. 4 sieve sizes; all
Fine SAND	particles are visible to the naked eye

	<u>Dilatancy Test</u>	<u>Test Tube Test</u>	<u>Plasti-city</u>	<u>Dry Strength</u>	<u>Sticki-ness</u>	<u>Shine Test</u>
fine SAND	rapid	30 sec	none	extremely	none	none
SILT	moderate	50 min	none	very low	none	none
SILT	slow	+50 min	slight	low	none	none
CLAYEY SILT	none	hours	medium	low to to high	slight	smooth & dull
SILTY CLAY	none	hours	high	medium to high	moderate to high	moderately slick & smooth
CLAY	none	+24 hrs	very high	high to very high	high to very high	slick & waxy
organic SILT	moderate	±50 min	slight to medium	low	none	dull & silky
organic CLAY	none	±24 hrs	medium to high	medium to high	moderate to high	dull, smooth & silky

Unified Soil Classification System

Component Definitions by Gradation

Criteria for Assigning Group Symbols and Names			Soil Classification	
			Generalized Group Descriptions	
COARSE-GRAINED SOILS More than 50% retained on No. 200 sieve	GRAVELS More than 50% of coarse fraction retained on No. 4 Sieve	CLEAN GRAVELS Less than 3% fines	GW	Well-graded Gravels
		GRAVELS WITH FINES More than 12% fines	GP	Poorly-graded gravels
		CLEAN SANDS Less than 3% fines	GM	Grave and Silt Mixtures
	SANDS 50% or more of coarse fraction passes No. 4 Sieve	CLEAN SANDS Less than 3% fines	SW	Well-graded Sands
		SANDS WITH FINES More than 12% fines	SP	Poorly-graded Sands
		SANDS AND SILT MIXTURES	SM	Sand and Silt Mixtures
FINE-GRAINED SOILS 50% or more passes the No. 200 sieve	SILTS AND CLAYS Liquid limit less than 50	INORGANIC	CL	Low-plasticity Clays
		ORGANIC	OL	Non-plastic and Low-plasticity Organic Clays Non-plastic and Low-plasticity Organic Silts
		SILTS AND CLAYS Liquid limit greater than 50	CH	High-plasticity Clays
	INORGANIC	MH	High-plasticity Silts	
	ORGANIC	OH	High-plasticity Organic Clays High-plasticity Organic Silts	
	HIGHLY ORGANIC SOILS	Primarily organic matter, dark in color, and organic odor	PT	Peat

Component	Size Range
Boulders	above 12 in.
Cobbles	3 in. to 12 in.
Gravel	3 in. to No. 4 (4.75mm)
Coarse gravel	3 in. to 3/4 in.
Fine gravel	3/4 in. to No. 4 (4.75mm)
Sand	No. 4 (4.75mm) to No. 200 (0.075mm)
Coarse sand	No. 4 (4.75mm) to No. 10 (2.0mm)
Medium sand	No. 10 (2.0mm) to No. 40 (0.425mm)
Fine sand	No. 40 (0.425mm) to No. 200 (0.075mm)
Silt and Clay	Smaller than No. 200 (0.075mm)

Samples

SS	SPT Sampler (2 1/2" OD)
HD	Heavy Duty Split Spoon
SH	Shelby Tube
P	Packer Sample
B	Bulk
C	Core

Unless otherwise noted, drive sampler advanced with 140 lb hammer with 30 in drop

Relative Density or Consistency Utilizing Standard Penetration Test Values

Cohesionless Soils (a)			Cohesive Soils (b)		
Density (c)	N, blows/ft. (c)	Relative Density (%)	Consistency	N, blows/ft. (c)	Undrained Shear Strength (psf) (d)
Very loose	0 to 4	0 - 15	Very soft	0 to 2	<250
Loose	4 to 10	15 - 35	Soft	2 to 4	250-500
Compact	10 to 30	35 - 65	Firm	4 to 8	500-1000
Dense	30 to 50	65 - 85	Stiff	8 to 15	1000-2000
Very Dense	over 50	>85	Very Stiff	15 to 30	2000-4000
			Hard	over 30	>4000

- (a) Soils consisting of gravel, sand, and silt, either separately or in combination, possessing no characteristics of plasticity, and exhibiting drained behavior
- (b) Soils possessing the characteristics of plasticity, and exhibiting undrained behavior
- (c) Refer to text of ASTM D 1586-84 for a definition of N, in normally consolidated cohesionless soils. Relative Density terms are based on N values corrected for overburden pressures
- (d) Undrained shear strength = 1/2 unconfined compression strength

Laboratory Tests

Test	Designation
Moisture	(1)
Density	D
Grain Size	G
Hydrometer	H
Atterberg Limits	(1)
Consolidation	C
Unconfined	U
UU Triax	UU
CU Triax	CU
CD Triax	CD
Permeability	P

(1) Moisture and Atterberg Limits plotted on log

Descriptive Terminology Denoting Component Proportions

Descriptive Terms	Range of Proportion
Trace	0-5%
Little	5-12%
Some or Adjective (a)	13-30%
And	30-50%

(a) Use Gravelly, Sandy, or Silty as appropriate

Silt and Clay Descriptions

Description	Typical Unified Designation
Silt	ML (non-plastic)
Clayey Silt	CL-ML (low plasticity)
Silty Clay	CL
Clay	CH
Plastic Silt	MH
Organic Silt	OL, OH, Pt



FIGURE 1

SOIL CLASSIFICATION/LEGEND

FIGURE 2

RECORD OF BOREHOLE BH-1

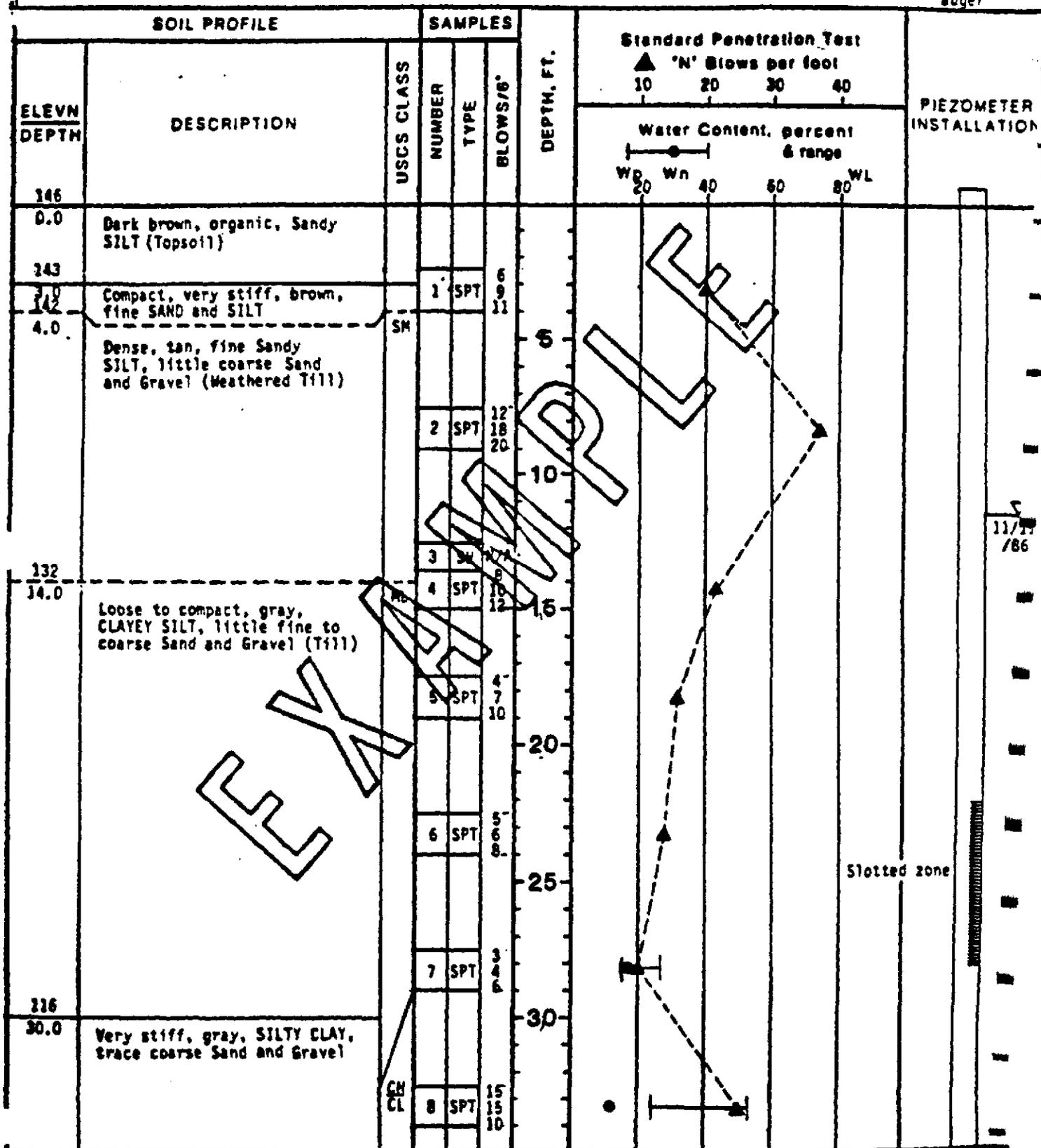
LOCATION: See Figure 2

DATUM: 146 (estimated)

DATE: 10-30-86

SAMPLER HAMMER WEIGHT: 140 LB., DROP 30 IN.

BORING METHOD: Hollow stem auger



REMARKS: SPT = Standard penetration test.

SH = Shelby tube sample

DISCLAIMER: Dotted lines connecting test results are intended for clarity only; they do not imply any distribution.

VERTICAL SCALE:
1 IN. TO 5 FT.

ADDENDUM TO TP-1.2-6

FIELD IDENTIFICATION OF SOILS

pg 7 of 11	<p>Section 8.5.3.2 - Organic Cohesive Soils Hides display an odor due to anaerobic decomposition, resulting in hydrogen sulfide and mercaptan compounds. Hydrogen sulfide can be recognized as a "rotten egg" odor. Hides also can contain hair.</p>
Table 6	<p>Descriptive tests for hides include their odor and the presence of hair or other recognizable hide materials.</p>

1.0 PURPOSE

This Technical Procedure is to be used to establish uniform methods of sampling of surface soils. Provisions are made for analyses and recording of data.

2.0 APPLICABILITY

This Technical Procedure is applicable to personnel sampling surface soils for chemical analyses.

3.0 DEFINITIONS

- 3.1 Surface Soil: Any soils that are on the land surface or are exposed by hand digging or boring within five (5) feet of the land surface.
- 3.2 Sampling Interval: The depth interval which the soil sample represents.
- 3.3 In Situ Soils: Soils that are in place within the soil column.

4.0 REFERENCES

- 4.1 U.S. EPA, 1982 (updated 1984). Test Methods for Evaluating Solid Waste: Physical/Chemical Methods: SW-846. Office of Solid Waste and Emergency Response. Washington, D.C.

5.0 DISCUSSION

- 5.1 None

6.0 RESPONSIBILITY

- 6.1 Sampling Technician: Responsible for completing the assigned sampling in accordance with this Technical Procedure.
- 6.2 Task Leader: Responsible for determining the soils to be sampled and ensuring that sampling procedure and sample documentation are in accordance with this procedure and applicable project plans.

6.3 Project Manager: Responsible for determining the type of chemical analyses to be performed on the soil samples.

7.0 EQUIPMENT AND MATERIALS

- 7.1 Site map, map board and/or clipboard.
- 7.2 Field notebook or Field Report forms (Exhibit A).
- 7.3 Assorted standard field equipment (e.g., hammers, post-hole digger, shovel, hand auger) for exposing soils to be sampled.
- 7.4 Measuring tape.
- 7.5 Engineers rule (minimum 6 feet long, with 0.10 foot graduations).
- 7.6 Indelible ink pens.
- 7.7 Two inch wood stakes and flagging material.
- 7.8 Sampling equipment appropriate for soils to be analyzed for non-volatile constituents. All such equipment shall be metal (steel, stainless steel or aluminum) and includes split spoon samplers, hand augers, hand scoops, sampling thieves or sampling tiers (see reference 4.1 for details on sampling equipment).
- 7.9 If volatile constituents are to be analyzed in the soil samples, the sampling equipment shall be designed to minimize exposure to the atmosphere. A metal drive tube appropriate for the size of the soil particles shall be used.
- 7.10 Sample bottles, size commensurate with the desired sample and soil particle size.
- 7.11 Chain-of-Custody Records and seals.
- 7.12 Sample Integrity Data Sheets (Exhibit B).
- 7.13 Carbon paper, if necessary.
- 7.14 Decontamination solutions such as organic free distilled/deionized water, non-phosphate detergent, tap water, methanol (for organic analytes), nitric acid (for metal analytes).
- 7.15 Decontamination equipment such as brushes, sprayers and containers for capturing waste solutions.

7.16 Sample labels.

8.0 PROCEDURE

- 8.1 The sample location will have been surveyed and marked with a wooden stake, labeled with the boring number, prior to sampling.
- 8.2 Relevant sampling events, including on-site personnel and visitors, shall be recorded on the Field Report forms (Exhibit A) in triplicate. Events shall be recorded chronologically with the time of each event noted.
- 8.3 All sampling equipment (split spoons, hand augers, drive tubes, etc.) shall be decontaminated before and after each use. Hollow stem auger flights shall be steam cleaned prior to use at each sample location. The sampling equipment will be washed with non-phosphate detergent solution. Brushes shall be used to aid in removing all visible soil grit. A tap water rinse will be used to thoroughly removal all detergent solution. If trace metals are of interest, rinse three times with distilled water, followed by a rinse with 10 percent trace-metal analysis grade nitric acid, followed by another triple rinse of distilled water. If organics are to be analyzed, a final step is required, consisting of an HPLC-grade methanol rinse followed by a triple rinse with distilled water. The methanol should be allowed to evaporate before a final rinse with distilled water. All rinseate shall be captured and contained for proper disposal. Responsibility for disposal shall be as identified in the project plans.
- 8.4 The soils to be sampled will be exposed prior to sample acquisition. If the upper six inches of soils are to be sampled, then surface vegetation shall be removed. If samples are to represent discrete depth intervals below land surface then overlying soils shall be removed by a shovel, post-hole digger or hand auger to the desired interval.
- 8.5 A soil sample of in-situ materials shall be obtained from the desired sampling interval. If analytes are not volatile, an in-situ soil sample can be obtained from the desired sampling interval using the most convenient equipment such as: a hand scoop, hand auger, sampling (thief) or tier, whichever is most suitable for obtaining in-situ soils. The soils shall be visually inspected and immediately put into the

- appropriate sample bottle. No preservatives shall be added to the sample.
- 8.6 If analytes are volatile, the in-situ soil sample shall be obtained from the desired sampling interval using a drive tube sampler. Contact between the atmosphere and the sample must be minimized. The drive tube sampler shall be driven into the materials with a hammer.
- 8.7 Materials shall be transferred from the sampler directly to the sample container using spatulas (plastic for metals analysis, stainless steel or aluminum for organics). Special care should be taken to avoid sample contact with other materials. An airtight cap shall be placed immediately on the sample bottle. No preservatives shall be added to the sample.
- 8.8 If soil sample composites are to be established, equal volumes of individual samples will be added together for the composite sample. The composite sample will be given an individual sample number and the sample number of each added sample (compositing the composite sample) will be recorded on the Sample Integrity Data Sheet (Exhibit B). Locations of the individual samples are recorded on the base map.
- 8.9 Samples are immediately labeled and relevant data recorded on the Sample Integrity Data Sheet for each sample. Site-specific details regarding labeling and recording shall be provided in the project QA plan.
- 8.8 Samples shall be placed in a cold cooler (about 4°C) as soon as possible and the temperature of the cooler shall be recorded on the Sample Integrity Data Sheet. The cooler of samples shall be within view of the Golder Geologist/Hydrogeologist at all times or in locked storage. A Chain-of-Custody Record shall be filled out and maintained as specified in the project QA plan.
- 8.9 Samples sent or delivered to the chemical analytical laboratory shall be transferred in accordance with the project QA plan. The original Chain-of-Custody Record shall accompany the samples to the laboratory.
- 8.10 Any hole made to obtain samples shall be backfilled with soil materials removed from the hole, unless the hole collapses.
- 8.11 Field Report forms (Exhibit A) shall be prepared by the Golder Geologist/Hydrogeologist to record daily sampling activities. The Field Report forms shall follow chronological format and include the time of

each event documented. The base map shall be used to record each sampling location by the Golder Field Engineer/Geologist. Sample Integrity Data Sheets shall be used to record information regarding soil samples that will be chemically analyzed. Chain-of-Custody Records shall be used to record the custody and transferal of samples.

8.11.1 Field records shall be made in triplicate at the work site and the originals (except Chain-of-Custody Records) shall be transmitted to the home office on a daily basis. A copy shall be given to the Task Leader and the Golder Geologist/Hydrogeologist shall retain the other copy for reference.

8.11.2 All copies of field records (including original base map and chain-of-custody record) shall be hand delivered to the home office upon completion of the field activity.

SAMPLE INTEGRITY DATA SHEET

Plant/Site _____ Project No. _____
Site Location _____ Sample ID _____
Sampling Location _____

Technical Procedure Reference(s) _____

Type of Sampler _____

Date _____ Time _____

Media _____ Station _____

Sample Type: grab time composite space composite

Sample Acquisition Measurements (depth, volume of static well water and purged water, etc.)

Sample Description _____

Field Measurements on Sample (pH, conductivity, etc.) _____

Aliquot Amount	Container	Preservation/Amount
----------------	-----------	---------------------

Sampler (signature) _____ Date _____

Supervisor (signature) _____ Date _____

1.0 PURPOSE

This technical procedure is to be used to establish a uniform procedure for the collection of composite soil samples for the remedial design project for the Industri-Plex Site in Woburn, MA.

2.0 APPLICABILITY

This technical procedure is applicable to all personnel involved with the collection of soil samples from the Industri-Plex Site in Woburn, MA.

3.0 DEFINITIONS

3.1 Composite Soil Sample: a soil sample representative of a given location and depth interval of soil where several discreet samples representative of smaller depth intervals could be collected.

3.2 Mixing and Quartering: a procedure where a sample is rigorously mixed, separated into four equal portions (quarters), one of the quarters is again mixed and quartered, and the process repeated until the desired sample size is obtained.

4.0 REFERENCES

4.1 None

5.0 DISCUSSION

This procedure has been prepared specifically for the soil and sediment sampling programs at the Industri-Plex Site.

6.0 RESPONSIBILITY

6.1 Field Engineer: Field engineers are responsible for sample collection in compliance with this procedure.

6.2 Task Leader: The Task Leader is responsible for:

- o Direct supervision of personnel collecting samples;
- o Ensuring that the proper equipment is available to accomplish the task;
- o Review and approval of the work.

6.3 Project Manager: The Project Manager is responsible for:

- o Assigning qualified staff to perform the sampling;
- o Scheduling;
- o Ensuring the completion of the task in accordance with this procedure and the Quality Assurance Project Plan.

7.0 EQUIPMENT AND MATERIALS

7.1 Plastic spoons.

7.2 Stainless steel or aluminum scoops or spoons.

7.3 Sample jars, chain of custody seals and forms.

7.4 Engineers scale or ruler.

8.0 PROCEDURE

Collect soil samples according to the procedure for Sampling Surface Soils for Chemical Analysis and carefully open the sampler.

Cut the recovered sample into halves using a clean knife. The knife should be stainless steel or aluminum for samples to be analyzed for the full Target Compound List. It should be plastic for samples to be analyzed for trace metals only. One half of the sample is for the primary laboratory sample and the second half is for split, duplicate, matrix spike, and/or matrix spike duplicate samples.

For samples to be analyzed for trace metals, carefully cut a ribbon of soil out of the middle of the flat side of the sample half using a clean plastic spoon. The ribbon should be of approximately equal size along the entire length of the composite interval and should be sized in accordance with (1) the minimum sample size for analysis given in the Field Sampling Plan and (2) the size of the bottle.

For samples to be analyzed for the full Target Compound List, carefully cut a ribbon of soil out of the middle of the flat side of the sample half using a clean stainless steel or aluminum knife decontaminated in the same way as the split spoon sampler. The ribbon should be of

approximately equal size along the entire length of the composite interval and should be sized in accordance with (1) the minimum sample size for analysis given in the Field Sampling Plan and (2) the size of the bottle.

Under no circumstances shall a rigorous mixing and quartering procedure be used for samples being analyzed for the full Target Compound List. This is to avoid loss of volatile organic compounds during mixing, and the possibility of cross contamination during excessive sample handling.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
PROCEDURE FOR LABORATORY IDENTIFICATION
OF HIDE RESIDUE IN SOIL

1. Follow the Laboratory Health and Safety Plan for the Industri-Plex Project.
2. Assemble typical hide residue material from 5-gallon buckets of auger cuttings collected from the East and West Hide Piles at the site. Also assemble hydrogen sulfide calibration gas and soil samples known to contain hide materials (S-1/98, SW-1/22). Note the distinct odor of hide residue which is slightly different from pure hydrogen sulfide (rotten egg smell). Also note the presence of hair and any other non-mineral constituents. Hide residue tends to be black and odorous, but could be confused with black anoxic sediments which are present in the site ponds. Hair follicles are to be used as indicators of the presence of hide residue. Hairs sometimes adhere to the inside of the plastic bag containing the sample. Hair is most easily noticed sticking out of the edges of freshly broken clumps of material. Do not confuse hairs with roots or other plant remains. A firm yellow-white non-mineral material was noted in some samples from the site in the vicinity of known hide residues. This material might also be hide residue.
3. Describe the appearance of each sample on the attached form and note any odors, hair, or other non-mineral constituents. Each sample should be visually examined both with the unaided eye and under a binocular microscope. A minimum of two moist and two oven dried aliquots of each sample should be examined. Observations should be recorded on the attached form.
4. For the first few samples (which are suspected to contain hides), try describing both moist and oven-dried samples. If drying samples facilitates identification of hair follicles, then all samples should be described in both moist and oven-dried conditions. If drying does not significantly enhance hair follicle identification, then describe samples with their natural moisture content.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
LABORATORY IDENTIFICATION OF HIDE RESIDUE IN SOIL

Golder Associates Job No. 893-6255

Golder Associates Task No. _____

PDI Task _____

Sample No. _____

Examined By _____

Date _____

Soil Description _____

Are odors resembling hydrogen sulfide (rotten eggs) or hides noticeable? _____

	Unaided Eye	Microscope
Are hair follicles visible in moist samples?	_____	_____

Are hair follicles visible in oven-dried samples?	_____	_____
---	-------	-------

Describe any other non-earth materials present in the sample (e.g. roots, leaves, plant matter, fill materials, etc.)

Unaided Eye: _____

Microscope: _____

Revision (0)
June 28, 1990

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
PROCEDURE FOR LABORATORY IDENTIFICATION
OF HIDE RESIDUE IN SOIL

SUPPLEMENT

1. Oven drying of soil samples can be used to distinguish hair fibers from roots. The roots will begin to peel after being dried, but hair will still appear smooth.
2. Although the examination sheets specifies the observation of hair follicles, hair fibers are used as an indication of hide residue.
3. When it is believed that hides have been detected in a moist sample, but the oven-dried sample does not indicate hide residue, the oven dried sample is used as the final result and hide residue is not present.

APPENDIX C
Field Change Orders

FIELD CHANGE DOCUMENTATION

DATE: _____

FIELD CHANGE #: _____

PERSON REQUESTING CHANGE: Bob Glazier

COMPANY/TITLE: Golder Associates/Field Manager

FIELD CHANGE: Relocate Task SW-1 stream/pond boring locations 30 and

31 to the south-southwest "arm" of the pond between East and West Hide Piles.

Boring 31 would be located west of boring 29, and boring 30 would be located between

28 and 29.

REASON FOR FIELD CHANGE: Borings were located in a swamp already

sampled under Task S-1 boring number 72-77.

ACKNOWLEDGEMENT

ISRT: *[Signature]*

NUS/USEPA/MDEP: *M. Macaulay*

WORK PLAN ADDENDUM REQUIRED (Y/N): _____

ADDENDUM SUBMITTED TO ISRT (Y/N): _____

ADDENDUM SUBMITTED TO NUS/USEPA/MDEP (Y/N): _____

FIELD CHANGE DOCUMENTATION

DATE: _____

FIELD CHANGE #: _____

PERSON REQUESTING CHANGE: Bob Glazier

COMPANY/TITLE: Golder Associates/Field Manager

FIELD CHANGE: Collect soft, fine-grained stream sediments at sediment-water interface by scooping sediment directly into sample jar.

REASON FOR FIELD CHANGE: Soft materials compressed by split spoon, resulting in uncertainty in depth interval being sampled. Collect soft sediments on top of rip rap/bedrock at locations 18, 19, 20 in Commerce Way, such that upstream sampling can proceed.

ACKNOWLEDGEMENT

ISRT: *A. Hoff*

NUS/USEPA/MDEP: *M. MacAWAY*

WORK PLAN ADDENDUM REQUIRED (Y/N): _____

ADDENDUM SUBMITTED TO ISRT (Y/N): _____

ADDENDUM SUBMITTED TO NUS/USEPA/MDEP (Y/N): _____

FIELD CHANGE DOCUMENTATION

DATE: 5/31/90

FIELD CHANGE #: _____

PERSON REQUESTING CHANGE: Chris Devine/Mark Macaulay/Bob Glazier

COMPANY/TITLE: ISRT site Manager/NUS Field Representative/Golder Field Manager

FIELD CHANGE: Regarding Task SW-1 OVA headspace screening to select depth intervals for CLP sampling: (1) If headspace results for all depth intervals are < 10ppm, collect composite sample, (2) If results for specific depth interval(s) are 10-100ppm and > 10 times results for other depth intervals, sample that interval(s) (3) If results for specific depth interval(s) are > 100ppm and > 2 times results for other depth intervals,

REASON FOR FIELD CHANGE: sample that specific interval(s) (4) If all depths are > 10ppm but < 10 times results for other depth intervals (or > 100ppm but < 2 times results for other depth intervals), sample 27-36 inch depth interval.

Work plan does not provide specific guidance on significant headspace readings, and the deeper intervals are of interest for conservative design of remediation

ACKNOWLEDGEMENT

ISRT: [Signature]

NUS/USEPA/MDEP: [Signature]

WORK PLAN ADDENDUM REQUIRED (Y/N): _____

ADDENDUM SUBMITTED TO ISRT (Y/N): _____

ADDENDUM SUBMITTED TO NUS/USEPA/MDEP (Y/N): _____

FIELD CHANGE DOCUMENTATION

DATE: 6/12/90

FIELD CHANGE #:

PERSON REQUESTING CHANGE: Bob Glazier

COMPANY/TITLE: Golder Associates/Field Manager

FIELD CHANGE: Relocate boring 47 under Task SW-1 to the location labelled "SW-1" on Pre-Design Work Plan Figure 36.

REASON FOR FIELD CHANGE: Location "SW-1" is a location to be sampled under the GSIP, but the sample was actually collected between locations 41 and 48 on Figure 36. Data are needed at the original "SW-1" location because it is adjacent to the East Hide Pile, and the potential ^{exists} for runoff of ~~contaminated~~ soil containing metals above Consent Decree action levels.

ACKNOWLEDGEMENT

ISRT: [Signature]

NUS/USEPA/MDEP: M. MACAULAY

WORK PLAN ADDENDUM REQUIRED (Y/N):

ADDENDUM SUBMITTED TO ISRT (Y/N):

ADDENDUM SUBMITTED TO NUS/USEPA/MDEP (Y/N):

APPENDIX D
Borehole Logs

BOREHOLE LOG SW-1/001

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/16/90
SURFACE ELEV: 72.3 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,359 E 694,829

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	Brown medium to fine SAND, trace silt. (SP)
	--	OVA = 5 ppm
	-- 4.0	
	--	
2	-- 6.0	
	--	
	-- 8.0	
	--	OVA = 2 ppm
	-- 10.0	
3	-- 12.0	
	--	
	-- 14.0	OVA = 7 ppm
	--	
	-- 16.0	Black medium to fine SAND, some silt, slight sheen. (SM)
4	-- 18.0	
	--	
	-- 20.0	
	--	OVA = 9 ppm
	-- 22.0	
5	-- 24.0	
	-- 26.0	
	--	
	-- 28.0	
	-- 30.0	Gray medium to fine SAND, trace silt. (SP)
	--	OVA = 5 ppm
	-- 32.0	
	--	
	-- 34.0	
	--	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/02A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 69.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,227 E 694,810

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	0	0-2" Black medium SAND, some silt, some organics (SM)
	2.0	
2	4.0	Brown medium to fine SAND, some silt
	6.0	
3	8.0	
	10.0	
4	12.0	
	14.0	
5	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
	28.0	
	30.0	
	32.0	No recovery
	34.0	
	36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/02B

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/5/90
SURFACE ELEV: 69.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,227 E 694,810

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	A single composite methyl mercury sample and its duplicate were taken from this hole.
	-- 2.0	
	-	0-36" Black fine SAND, some silt (SM)
	-- 4.0	
	-	
	-- 6.0	
	-	
	-- 8.0	
	-	
	-- 10.0	
	-	
	-- 12.0	
	-	
	-- 14.0	
	-	
	-- 16.0	
	-	
	-- 18.0	
	-	
-- 20.0		
-		
-- 22.0		
-		
-- 24.0		
-		
-- 26.0		
-		
-- 28.0		
-		
-- 30.0		
-		
-- 32.0		
-		
-- 34.0		
-		
-- 36.0		
-		

BOREHOLE LOG SW-1/03L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 68.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,233 E 694,880

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- -- 2.0 -- -- 4.0 -- -- 6.0	0-6" black fine SAND, some organics (SP)
2	-- -- 8.0 -- -- 10.0 -- -- 12.0 -- -- 14.0	6-29" gray-brown medium to fine SAND
3	-- -- 16.0 -- -- 18.0 -- -- 20.0 -- -- 22.0	
4	-- -- 24.0 -- -- 26.0 -- -- 28.0	
5	-- -- 30.0 -- -- 32.0 -- -- 34.0 -- -- 36.0	No recovery

BOREHOLE LOG SW-1/03M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 68.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,233 E 694,880

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	0-7" Dark brown and gray medium to fine SAND, large black patch (possibly hides) (SP)
	-- 2.0	
	-- 4.0	
	-- 6.0	
2	-- 8.0	7-27" Gray medium to fine SAND
	-- 10.0	
	-- 12.0	
	-- 14.0	
3	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
4	-- 24.0	Asphalt-like smell, probably due to the black fine sand at the top
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	No recovery
	-- 34.0	
	-- 36.0	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/03R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 68.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,233 E 694,880

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Note: This hole was overdriven and passed through a thick layer of muck or silt (which was not recovered) and may be 2 feet thick. 0-6" Dark brown medium SAND, trace silt (SP)
	-- 4.0	
2	-- 6.0	6-10" Brown medium SAND (SP)
	-- 8.0	
3	-- 10.0	10-27" light gray medium SAND (SP)
	-- 12.0	
4	-- 14.0	No recovery
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/04L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 68.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,971 E 694,993

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	0-5" Reddish brown SILT, some medium to fine sand (ML)
	-- 2.0	
	-	
	-- 4.0	
2	-	5-10" Black, fine SAND, organic, partially decayed leaves (SM)
	-- 6.0	
	-	
	-- 8.0	
3	-	10-15" Yellow brown fine GRAVEL, trace fine sand (GP)
	-- 10.0	
	-	
	-- 12.0	
	-	
	-- 14.0	
	-	
	-- 16.0	
	-	
	-- 18.0	
-	No recovery	
-- 20.0		
-		
-- 22.0		
-		
-- 24.0		
-		
-- 26.0		
-		
-- 28.0		
-	Most of interval taken by large rock, very little fine sediments.	
-- 30.0		
-		
-- 32.0		
-	Most of interval taken by large rock, very little fine sediments.	
-- 34.0		
-		
-- 36.0		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/04M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 68.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,971 E 694,993

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	0-11" Black ORGANIC CLAYEY SILT (OL)
	-- 4.0	
	-- 6.0	
	-- 8.0	
2	-- 10.0	11-13" Brown medium to fine SAND, some silt (SM)
	-- 12.0	
3	-- 14.0	13-18" Dark brown medium SAND, some silt
	-- 16.0	
	-- 18.0	
	-- 20.0	
4	-- 22.0	18-26" Yellow-brown fine GRAVEL, some medium to fine sand (GP)
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	
		No recovery

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/04R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 68.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,971 E 694,993

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	0-4" Reddish-brown coarse to medium SAND, some silt (SM)
	-- 2.0	
	--	
	-- 4.0	
2	--	4-12" Black ORGANIC CLAYEY SILT, fine sand (OL)
	-- 6.0	
	-- 8.0	
	-- 10.0	
3	--	12-18" Dark brown SAND, some silt (SM)
	-- 12.0	
	-- 14.0	
	-- 16.0	
4	--	18-30" Yellow-brown coarse to fine SAND and GRAVEL, some silt (GP)
	-- 18.0	
	-- 20.0	
	-- 22.0	
5	--	No recovery
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/05L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 66.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,735 E 695,117

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	0-3" Brown fine GRAVEL, some medium sand, some silt (GM)
	-- 2.0	
	--	
	-- 4.0	
2	--	3-6" Dark brown medium SAND (SP)
	-- 6.0	
	--	
	-- 8.0	
3	--	6-18" Brown coarse to fine SAND, some silt, some fine gravel (SM)
	-- 10.0	
	--	
	-- 12.0	
4	--	18-21" Brown fine GRAVEL, some coarse sand
	-- 14.0	
	--	
	-- 16.0	
No recovery	-- 18.0	No recovery
	-- 20.0	
	--	
	-- 22.0	
	--	
	-- 24.0	
	--	
	-- 26.0	
	--	
	-- 28.0	
--		
-- 30.0		
--		
-- 32.0		
--		
-- 34.0		
--		
-- 36.0		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/05M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 66.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,735 E 695,117

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	0-2" Black to red medium to fine SAND, some fine gravel, some silt (SM)
	-- 2.0	
	-- 4.0	
	-- 6.0	
2	-- 8.0	6-21" Yellow-brown coarse to medium SAND, some fine gravel (SP)
	-- 10.0	
	-- 12.0	
	-- 14.0	
3	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
4	-- 24.0	No recovery
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/05R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/15/90
SURFACE ELEV: 66.7 **DATUM:** MSL1
DRILLING METHOD: Split Spoon **LOCATION:** N 553,735 E 695,117

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	0-8" Black and red medium to fine SAND, some fine gravel, plastic, metal, and glass
	-- 2.0	
	--	
	-- 4.0	
	--	
2	-- 6.0	8-21" Yellow-brown fine GRAVEL, some coarse sand (GP)
	-- 8.0	
	--	
	-- 10.0	
	--	
3	-- 12.0	
	--	
	-- 14.0	
	--	
	-- 16.0	
4	-- 18.0	21-23" Gray fine GRAVEL, some coarse sand
	--	
	-- 20.0	
	--	
	-- 22.0	
	-- 24.0	No recovery
	--	
	-- 26.0	
	--	
	-- 28.0	
	-- 30.0	
	--	
	-- 32.0	
	--	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/06L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/14/90
SURFACE ELEV: 64.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,532 E 695,218

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	- -- 2.0 - -- 4.0 -	0-18" Brown fine GRAVEL, some medium to fine sand, some silt (GM)
2	- -- 6.0 - -- 8.0 - -- 10.0 -	
3	- -- 12.0 - -- 14.0 - -- 16.0 - -- 18.0 -	
	- -- 20.0 - -- 22.0 -	Spoon refusal at 18" (Rubble)
	- -- 24.0 - -- 26.0 - -- 28.0 -	
	- -- 30.0 - -- 32.0 - -- 34.0 - -- 36.0 -	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/06M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/14/90
SURFACE ELEV: 64.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,532 E 695,218

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	0-4" Black, organic fine SAND, some silt (SM-OL)
	-- 2.0	
	-- 4.0	
	--	
2	--	4-13" Reddish-brown coarse SAND (SP)
	-- 6.0	
	-- 8.0	
	-- 10.0	
3	--	13-23" Light brown medium to fine SAND
	-- 12.0	
	-- 14.0	
	-- 16.0	
4	--	No recovery
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
-- 36.0		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/06R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/14/90
SURFACE ELEV: 64.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,532 E 695,218

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	0-6" Dark to brown coarse to fine SAND
	-- 2.0	
	--	
	-- 4.0	
	--	
	-- 6.0	
2	--	6-30" Light gray medium SAND (SP)
	-- 8.0	
	--	
	-- 10.0	
	--	
	-- 12.0	
3	--	
	-- 14.0	
	--	
	-- 16.0	
	--	
	-- 18.0	
4	--	
	-- 20.0	
	--	
	-- 22.0	
	--	
	-- 24.0	
5	--	
	-- 26.0	
	--	
	-- 28.0	
	--	
	-- 30.0	
	--	No recovery
	-- 32.0	
	--	
	-- 34.0	
	--	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/07L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/16/90
SURFACE ELEV: 65.1 **DATUM:** MSL
DRILLING METHOD: Post Hole Digger/8" **LOCATION:** N 553,528 E 694,981

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	
	-- 4.0	
	-- 6.0	Black SILT, some fine sand, little organics (ML) (OL)
	-- 8.0	
2	-- 10.0	
	-- 12.0	
	-- 14.0	Gray-brown fine SAND, some silt (SM)
	-- 16.0	
	-- 18.0	
3	-- 20.0	Brown medium to fine SAND, trace silt (SP)
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	Light brown slightly medium to fine SAND, trace silt (SP)
4	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/07M

PROJECT: Industri-Plex Site' Pre-Design Investigation **DATE:** 5/16/90
SURFACE ELEV: 65.1 **DATUM:** MSL
DRILLING METHOD: Post Hole Digger **LOCATION:** N 553,528 E 694,981

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Black ORGANIC SILT (OL)
	-- 4.0	
2	-- 6.0	Black to gray fine SAND, some silt (SM)
	-- 8.0	
3	-- 10.0	
	-- 12.0	
4	-- 14.0	
	-- 16.0	
5	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/07R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/16/90
SURFACE ELEV: 65.1 **DATUM:** MSL
DRILLING METHOD: Post Hole Digger **LOCATION:** N 553,528 E 694,981

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	---	Dark gray-brown fine SAND, some silt	
	--- 2.0		

	--- 4.0		
2	---		
	--- 6.0		

	--- 8.0		
3	---		
	--- 10.0		

	--- 12.0		
4	---	18-30" Gray-brown fine SAND, trace silt, trace organics (SM)	
	--- 14.0		

	--- 16.0		
5	---		
	--- 18.0		

	--- 20.0		
	---		No recovery
	--- 22.0		

	--- 24.0		

	--- 26.0		

	--- 28.0		

	--- 30.0		

	--- 32.0		

	--- 34.0		

	--- 36.0		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/008

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/5/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,516 E 696,102

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Very dark brown to black SILT and CLAY, trace fine sand (ML) OVA = 1,000 ppm
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	OVA = 900 ppm Black CLAYEY SILT, trace fine gravel, trace coarse to fine sand
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
3	-- 22.0	OVA = 60 ppm
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
4	-- 32.0	OVA = 40 ppm (duplicate)
	-- 34.0	
	-- 36.0	
	-- 38.0	
	-- 40.0	
		NOTE: All depths could contain Hides

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/009

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/4/90
SURFACE ELEV: 59.2 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,348 E 696,183

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	Dark brown CLAYEY SILT, some fine sand (ML)
	-- 4.0	
2	-- 6.0	Black fine SAND and SILT, hide residue odor (SM)
	-- 8.0	
	-- 10.0	
3	-- 12.0	Black fine SAND, some silt, little fine gravel (SM)
	-- 14.0	
	-- 16.0	
4	-- 18.0	Very dark red-brown fine SAND, some fine gravel, some silt (SM)
	-- 20.0	
	-- 22.0	
5	-- 24.0	
	-- 26.0	
	-- 28.0	Black fine GRAVEL, some coarse to fine sand, some silt (GM)
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/010

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/5/90
SURFACE ELEV: 58.8 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,567 E 696,236

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Brown CLAYEY SILT, some fine sand (ML)
	-- 4.0	
	-- 6.0	
2	-- 8.0	Dark brown CLAYEY SILT and red fine sand, some silt (ML)
	-- 10.0	
	-- 12.0	
3	-- 14.0	Red-brown SILT and dark brown silty clay, some fine sand (ML)
	-- 16.0	
	-- 18.0	
4	-- 20.0	Dark brown CLAYEY SILT, some fine sand (ML)
	-- 22.0	
	-- 24.0	
5	-- 26.0	Gray-brown SILT, some fine to medium sand (ML)
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/011

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/4/90
SURFACE ELEV: 57.5 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,398 E 696,283

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Light brown fine SAND, some silty clay (SC) OVA = 200 ppm
	-- 2.0	
	-- 4.0	
	-- 6.0	
2	-	Light gray-brown SILTY CLAY, some fine sand (CL) OVA = 60 ppm
	-- 8.0	
	-- 10.0	
	-- 12.0	
3	-	Light brown CLAYEY SILT, some fine sand (ML) OVA = 5.1 ppm
	-- 14.0	
	-- 16.0	
	-- 18.0	
4	-	OVA = 7.3 ppm
	-- 20.0	
	-- 22.0	
	-- 24.0	
5	-	Dark brown SILTY CLAY, some fine sand (CL) OVA = 1.9 ppm
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/012L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 68.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,247 E 696,278

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	
	-- 2.0	
	-	
	-- 4.0	Brown-gray fine GRAVEL, some fine sand, some silt (GM)
	-	
	-- 6.0	<hr/> Auger refusal at 6" (Bedrock)
	-	
	-- 8.0	
	-	
	-- 10.0	
	-	
	-- 12.0	
	-	
	-- 14.0	
	-	
	-- 16.0	
	-	
	-- 18.0	
	-	
-- 20.0		
-		
-- 22.0		
-		
-- 24.0		
-		
-- 26.0		
-		
-- 28.0		
-		
-- 30.0		
-		
-- 32.0		
-		
-- 34.0		
-		
-- 36.0		
-		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/012R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 68.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,247 E 696,278

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	Gray fine GRAVEL, some fine sand, some clayey silt (GM)
	--	
	-- 4.0	
	--	
	-- 6.0	
	--	
	-- 8.0	Auger refusal at 6" (Bedrock)
	--	
	-- 10.0	
	--	
	-- 12.0	
	--	
	-- 14.0	
	--	
	-- 16.0	
	--	
	-- 18.0	
--		
-- 20.0		
--		
-- 22.0		
--		
-- 24.0		
--		
-- 26.0		
--		
-- 28.0		
--		
-- 30.0		
--		
-- 32.0		
--		
-- 34.0		
--		
-- 36.0		
--		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/013L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 60.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,977 E 696,408

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark gray fine SAND, some silt, some fine gravel (SM)
	-- 4.0	
	-- 6.0	No recovery
	-- 8.0	
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/013R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 60.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,977 E 696,408

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- -- 2.0 -- -- 4.0 -- -- 6.0	Dary gray fine SAND, some silt (SM)
2	-- -- 8.0 -- -- 10.0 -- -- 12.0 -- -- 14.0 -- -- 16.0 -- -- 18.0 -- -- 20.0 -- -- 22.0 -- -- 24.0 -- -- 26.0 -- -- 28.0 -- -- 30.0 -- -- 32.0 -- -- 34.0 -- -- 36.0 --	No recovery

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/014L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 59.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,742 E 696,513

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Note: Surface sample; taken by hand from surface sediments Dark gray fine SAND, some silt, some decayed leaves (SM)
	-- 2.0	
	-- 4.0	
2	-- 6.0	7-18" Gray fine SAND, trace silt (SP)
	-- 8.0	
	-- 10.0	
3	-- 12.0	No recovery
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/014M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 59.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,742 E 696,513

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Gray fine SAND, some fine gravel, some decayed leaves (SP)
	-- 4.0	
2	-- 6.0	6-18" Brownish gray fine SAND, trace silt, 1" thick black layer at 9"
	-- 8.0	
3	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	Spoon refusal (Bedrock)
	-- 22.0	Note: First 6" sampled with stainless steel cooking spoon. Remaining 2 intervals sampled with 2" split spoon.
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/014R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 59.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,742 E 696,513

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark brown fine SAND, some silt, some decayed leaves (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
2	-- 10.0	6-15" gray to brown-gray fine SAND, trace silt
	-- 12.0	
	-- 14.0	
	-- 16.0	
3	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
4	-- 26.0	Spoon refusal at 26" (Bedrock)
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/015L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/17/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,550 E 696,585

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	0-5" Brown medium fine SAND (SM)
	-- 2.0	
	-- 4.0	
	-	
2	-	5-6" Black SILTY CLAY (CL)
	-- 6.0	
	-- 8.0	
	-	
3	-	6-15" Black to dark gray medium SAND, some silt (SM)
	-- 10.0	
	-- 12.0	
	-	
4	-	15-20" black SILTY CLAY, with lenses of medium sand (CL)
	-- 14.0	
	-- 16.0	
	-	
5	-	20-30" Dark gray medium SAND (SP)
	-- 18.0	
	-- 20.0	
	-	
6	-- 22.0	No recovery
	-- 24.0	
	-- 26.0	
	-- 28.0	
7	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/015M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/17/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,550 E 696,585

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Black organic SILT, trace sand (OL)
	-- 2.0	
	--	
	-- 4.0	
	--	
2	-- 6.0	Black organic SILT, some m-f sand (OL)
	--	
	-- 8.0	
	--	
	-- 10.0	
3	-- 12.0	Black organic fine SAND, some silt (SM)
	--	
	-- 14.0	
	--	
	-- 16.0	
4	-- 18.0	Black organic fine SILT, some sand (OL)
	--	
	-- 20.0	
	--	
	-- 22.0	
5	-- 24.0	Gray medium SAND, trace silt (SP)
	--	
	-- 26.0	
	--	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	--	
	-- 34.0	
	--	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/015R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/6/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,550 E 696,585

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark brown fine to very fine SAND, trace silt silt (SP)
	-- 4.0	
	-- 6.0	Very dark brown organic fine SAND, some silt (SM)
2	-- 8.0	
	-- 10.0	
	-- 12.0	Black organic SILT (OL)
3	-- 14.0	
	-- 16.0	
	-- 18.0	Dark brownish gray fine to medium SAND (SP)
4	-- 20.0	
	-- 22.0	
	-- 24.0	
5	-- 26.0	Dark gray fine to medium SAND
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/016L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/17/90
SURFACE ELEV: 59.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,607 E 696,576

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	0-2" Brown SAND, trace gravel, some silt
	-- 2.0	
2	-- 4.0	2-11" Dark brown organic SILTY CLAY (OL)
	-- 6.0	
	-- 8.0	
	-- 10.0	
3	-- 12.0	11-27" Dark brown organic CLAYEY SILT (OL)
	-- 14.0	
	-- 16.0	
	-- 18.0	
4	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
5	-- 28.0	Brown SAND, trace gravel, some silt (SM)
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/016M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/17/90
SURFACE ELEV: 59.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,607 E 696,576

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	0	0-7" Dark brown organic fine to medium SAND, little clayey silt (SM)
	2.0	
	4.0	
2	6.0	7-11" Black organic SILTY CLAY (OL)
	8.0	
	10.0	
3	12.0	11-27" Dark brown organic CLAYEY SILT (OL)
	14.0	
	16.0	
	18.0	
	20.0	
4	22.0	Dark brown SILT, some sand, trace gravel (ML)
	24.0	
	26.0	
	28.0	
5	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/016R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/17/90
SURFACE ELEV: 59.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,607 E 696,576

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	
	--	
	-- 4.0	
	--	
	-- 6.0	
2	--	6-18" Dark brown organic CLAYEY SILT
	-- 8.0	
	--	
	-- 10.0	
	--	
	-- 12.0	
3	--	
	-- 14.0	
	--	
	-- 16.0	
	--	
	-- 18.0	
4	--	Dark brown m-f SAND, some silt, little gravel (SM)
	-- 20.0	
	--	
	-- 22.0	
	--	
	-- 24.0	
5	--	
	-- 26.0	
	--	
	-- 28.0	
	--	
	-- 30.0	
	-- 32.0	
	--	
	-- 34.0	
	--	
	-- 36.0	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/017L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/14/90
SURFACE ELEV: 58.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,178 E 696,266

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	0-3" Reddish brown SILT, some fine sand, little root mass (ML)
	-- 2.0	
2	-	3-23" Gray-brown fine medium GRAVEL, some coarse sand (GP)
	-- 4.0	
	-- 6.0	
	-- 8.0	
3	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
4	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	23-25" Red-brown medium to coarse SAND (SP)
	-- 32.0	
	-- 34.0	
	-- 36.0	
		No recovery

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/017M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/14/90
SURFACE ELEV: 58.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,178 E 696,266

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	0-5" Reddish brown SILT, some fine sand, roots (ML)
	-- 2.0	
	-- 4.0	
	-	
2	-	5-27" Gray to red fine GRAVEL, little m-f sand, little silt (GM)
	-- 6.0	
	-- 8.0	
	-- 10.0	
	-- 12.0	
	-	
3	-- 14.0	
	-- 16.0	
	-- 18.0	
	-	
4	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
-- 36.0	No recovery	
		1 sample for hide ident. taken from this borehole

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/017R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/14/90
SURFACE ELEV: 58.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,178 E 696,266

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	0-7" Reddish-brown fine SAND, some silt, root mass present (SM)
	-- 4.0	
	-- 6.0	
2	-- 8.0	7-23" Gray-brown to yellow-brown fine GRAVEL, some m-f sand (GW)
	-- 10.0	
	-- 12.0	
3	-- 14.0	
	-- 16.0	
	-- 18.0	
4	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	No recovery
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/018R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 60.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,849 E 697,603

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	Dark gray organic fine SAND, some silt (SM)
	--	
	-- 4.0	
	--	
	-- 6.0	<hr/>
	--	Auger refusal at 6".
	-- 8.0	
	--	
	-- 10.0	
	--	
	-- 12.0	
	--	
	-- 14.0	
	--	
	-- 16.0	
	--	
	-- 18.0	
--		
-- 20.0		
--		
-- 22.0		
--		
-- 24.0		
--		
-- 26.0		
--		
-- 28.0		
--		
-- 30.0		
--		
-- 32.0		
--		
-- 34.0		
--		
-- 36.0		
--		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/019L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/18/90
SURFACE ELEV: 60.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,080 E 697,457

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	- - -- 2.0 - - -- 4.0 - - -- 6.0	Dark brown fine SAND, some silt, trace organics (leaves) Sample was taken by hand with a stainless steel spoon.
2	- - -- 6.0 - - -- 8.0 - - -- 10.0 - - -- 12.0 - - -- 14.0 - - -- 16.0 - - -- 18.0 - - -- 20.0 - - -- 22.0 - - -- 24.0 - - -- 26.0 - - -- 28.0 - - -- 30.0 - - -- 32.0 - - -- 34.0 - - -- 36.0 -	Black fine SAND, some silt, strong asphalt odor (SM) This sample was taken May 19, 1990 at 8:30 Auger refusal at 12"

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/019M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/16/90
SURFACE ELEV: 60.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** 553,080 E 697,457

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	--		
	-- 2.0	Dark brown SAND, some silt (SM)	
	--		
	-- 4.0	This sample was taken by hand with a stainless steel spoon.	
	--		
	-- 6.0	<hr/>	
	--	Black fine SAND, some silt, strong asphalt odor (SM)	
	-- 8.0		
	--		
	-- 10.0	This samle is a composite of sediments recovered by the split spoon sampler below a depth of 6".	
	--		
	-- 12.0		
	--		
	-- 14.0		
	--		
	-- 16.0		
	2	-- 18.0	
		--	
-- 20.0			
--			
-- 22.0			
--			
-- 24.0			
--			
-- 26.0			
--			
-- 28.0			
--			
-- 30.0			
--			
-- 32.0			
--			
-- 34.0			
--			
-- 36.0	<hr/>		
--			

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: B. Glazier

BOREHOLE LOG SW-1/020L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/19/90
SURFACE ELEV: 60.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,265 E 697,366

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Very dark brown organic fine SAND, some silt (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
2	-- 22.0	Note: This sample was a composite sample taken between depths of 18" to 36". No sample for hide identification was taken for this composite sample.
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	
	--	
	--	
	--	

BOREHOLE LOG SW-1/020M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/19/90
SURFACE ELEV: 60.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,265 E 697,366

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	-- 2.0	Dark brown organic medium to fine SAND, some silt (SM)	
	-- 4.0	The surface sample was taken with a stainless steel spoon.	
	-- 6.0	No recovery	
	-- 8.0		
	-- 10.0		
	-- 12.0		
	-- 14.0		
	-- 16.0		
	-- 18.0		
	-- 20.0	Dark gray fine gravel, some silt, little m-f sand (GM) Composite sample of 18-36" depth	
	-- 22.0	Note: No sample for hide identification taken for composite. A composite sample was taken between the depths of 18" to 36".	
	-- 24.0		
	2	-- 26.0	
		-- 28.0	
		-- 30.0	
		-- 32.0	
		-- 34.0	
		-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/021L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/21/90
SURFACE ELEV: 61.4 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,578 E 697,252

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Dark brown fine SAND and SILT, some organic matter (SM) OVA = 25 ppm
	-- 2.0	
	-	
	-- 4.0	
	-	
2	-- 6.0	Dark brown fine SILT and SAND, some organic matter (OL) OVA = 100 ppm
	-	
	-- 8.0	
	-	
	-- 10.0	
3	-- 12.0	Dark brown fine SAND and SILT (SM) OVA = 110 ppm
	-	
	-- 14.0	
	-	
	-- 16.0	
4	-- 18.0	Gray medium SAND (SP) OVA > 100 ppm
	-	
	-- 20.0	
	-	
	-- 22.0	
5	-- 24.0	Gray medium SAND (SP) OVA > 100 ppm
	-	
	-- 26.0	
	-	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/021M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/21/90
SURFACE ELEV: 61.4 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,578 E 697,252

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Brown fine SAND, little silt (SM) OVA = 25 ppm
	-- 2.0	
	-- 4.0	
	-- 6.0	
	-- 8.0	
2	-	Brown fine to medium SAND, little silt (SM) OVA = 30 ppm
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
3	-	Brown fine SAND, little silt (SM) OVA = 55 ppm
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
4	-	Dark gray fine to memdium SAND (SP) OVA = 90 ppm
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
5	-	Brown fine SAND, little silt OVA = 52 ppm
	-- 34.0	
	-- 36.0	
	--	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/021R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/21/90
SURFACE ELEV: 61.4 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,578 E 697,252

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Brown fine SAND and SILT (SM) OVA = 75 ppm
	2.0	
	4.0	
	6.0	
	8.0	
2	-	Brown fine SAND, little silt (SM) OVA = 100 ppm
	10.0	
	12.0	
	14.0	
	16.0	
3	-	Dark brown fine SAND, little silt OVA = 100 ppm
	18.0	
	20.0	
	22.0	
	24.0	
4	-	Dark gray fine to medium SAND, little silt (SM) OVA = 92 ppm
	26.0	
	28.0	
	30.0	
	32.0	
5	-	Dark gray to brown fine SAND, some silt, trace Gravel (SM) OVA = 45 ppm
	34.0	
	36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/022L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/21/90
SURFACE ELEV: 61.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,764 E 697,197

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Dark gray to brown fine SAND and GRAVEL, little silt (SM) OVA = 45 ppm
	-- 2.0	
	-	
	-- 4.0	
	-	
2	-- 6.0	Very dark gray to brown fine SAND and SILT (SM) OVA = 30 ppm
	-	
	-- 8.0	
	-	
	-- 10.0	
3	-- 12.0	OVA = 10 ppm
	-	
	-- 14.0	
	-	
	-- 16.0	
4	-- 18.0	OVA = 0 ppm
	-	
	-- 20.0	
	-	
	-- 22.0	
5	-- 24.0	OVA = 0 ppm
	-	
	-- 26.0	
	-	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-	
	-- 34.0	
	-	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/022M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/21/90
SURFACE ELEV: 61.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,764 E 697,197

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	Dark gray fine SAND, some silt. High content of organic matter (SM)
	-- 4.0	
2	-- 6.0	Dark gray fine SAND, some silt (SM)
	-- 8.0	
	-- 10.0	
3	-- 12.0	
	-- 14.0	
	-- 16.0	
4	-- 18.0	
	-- 20.0	
	-- 22.0	
5	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: B. Glazier

BOREHOLE LOG SW-1/022

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/6/90
SURFACE ELEV: 61.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,764 E 697,197

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark gray fine SAND and SILT (SM)
	-- 4.0	This hole was drilled to collect a composite sample for methyl mercury analysis.
	-- 6.0	
	-- 8.0	
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/022R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/21/90
SURFACE ELEV: 61.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,764 E 697,197

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- -- 2.0	Gray brown fine to medium SAND (SP)
	-- -- 4.0	
2	-- -- 6.0	<hr/> Dark gray fine SAND and GRAVEL, little Silt (SM)
	-- -- 8.0	
3	-- -- 10.0	
	-- -- 12.0	
4	-- -- 14.0	
	-- -- 16.0	
5	-- -- 18.0	
	-- -- 20.0	
4	-- -- 22.0	
	-- -- 24.0	
5	-- -- 26.0	
	-- -- 28.0	
5	-- -- 30.0	
	-- -- 32.0	
5	-- -- 34.0	
	-- -- 36.0	<hr/>

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/023M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/21/90
SURFACE ELEV: 62.3 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,116 E 697,100

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Very dark brown fine SAND and SILT. High content of organic matter (SM)
	-- 2.0	
	-	
	-- 4.0	
	-	
2	-- 6.0	Black very fine SAND and SILT. High content of organic matter (SM)
	-- 8.0	
	-- 10.0	
	-- 12.0	
	-- 14.0	
3	-- 16.0	Dark brown fine to medium SAND, little silt. Possible hides present.
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
4	-- 26.0	Dark gray fine SAND and SILT. High content of organic matter. Possible presence of hides. (SM)
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
5	-- 36.0	Dark gray fine SAND and SILT (SM)
	-	
	-	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agolia

BOREHOLE LOG SW-1/025M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/24/90
SURFACE ELEV: 68.7 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,230 E 696,654

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark gray fine SAND and SILT, organic matter present (SM)
	-- 4.0	
	-- 6.0	
2	-- 8.0	Dark gray fine to medium SAND and SILT (SM)
	-- 10.0	
	-- 12.0	
3	-- 14.0	Red fine SAND and SILT (SM)
	-- 16.0	
	-- 18.0	
4	-- 20.0	Red fine to medium SAND and SILT, some Gravel
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
5	-- 32.0	Red-brown fine to medium SAND, little silt (SM)
	-- 34.0	
	-- 36.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/026M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/24/90
SURFACE ELEV: 70.4 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,418 E 696,418

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark gray-brown fine to medium SAND and SILT (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	Dark gray fine SAND, little Silt (SM)
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
3	-- 22.0	Gray-brown fine to medium SAND, little silt (SM)
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
4	-- 32.0	Dark gray fine SAND and SILT (SM)
	-- 34.0	
	-- 36.0	
	-- 38.0	
	-- 40.0	
5	-- 42.0	Dark gray fine to medium SAND and SILT (SM)
	-- 44.0	
	-- 46.0	
	-- 48.0	
	-- 50.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/026R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/24/90
SURFACE ELEV: 70.4 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,418 E 696,418

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark brown fine SAND and SILT with a yellow-brown layer (SM)
	-- 4.0	
	-- 6.0	
2	-- 8.0	Dark gray-brown fine SAND, little silt (SM)
	-- 10.0	
	-- 12.0	
3	-- 14.0	Brown fine to medium SAND (SP)
	-- 16.0	
	-- 18.0	
4	-- 20.0	
	-- 22.0	
	-- 24.0	
5	-- 26.0	Brown fine to medium SAND, grades to light gray-brown fine SAND (SP)
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/027

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/7/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,436 E 696,171

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Gray fine SILT and SAND OVA = 50 ppm
	-- 2.0	
	-	
	-- 4.0	
	-	
2	-- 6.0	Dark brown fine to medium SAND and SILT OVA = 12 ppm
	-	
	-- 8.0	
	-	
	-- 10.0	
3	-- 12.0	OVA = 28 ppm
	-	
	-- 14.0	
	-	
	-- 16.0	
4	-- 18.0	OVA = 58 ppm
	-	
	-- 20.0	
	-	
	-- 22.0	
5	-- 24.0	Dark reddish brown fine to medium SAND and SILT (SM) OVA = 300 ppm
	-	
	-- 26.0	
	-	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agolia

BOREHOLE LOG SW-1/028

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/8/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,364 E 696,120

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Dark gray to brown fine SAND and SILT, some clay (ML)
	-- 2.0	
	--	
	-- 4.0	
	--	
2	-- 6.0	OVA > 1,000 ppm
	--	
	-- 8.0	
	--	
	-- 10.0	
3	-- 12.0	Very dark brown fine SILT and SAND (ML)
	--	
	-- 14.0	
	--	
	-- 16.0	
4	-- 18.0	Very dark brown fine to medium SAND and SILT (SM)
	--	
	-- 20.0	
	--	
	-- 22.0	
5	--	OVA = 600 ppm
	-- 24.0	
	--	
	-- 26.0	
	--	
5	-- 28.0	Light gray-brown fine to medium SAND and SILT (SM)
	--	
	-- 30.0	
	--	
	-- 32.0	
	--	OVA = 800 ppm
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/029

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/6/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,158 E 695,890

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Brown SILT and SAND, little Gravel (ML)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	Brown SILT and SAND, some Gravel (ML)
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
3	-- 22.0	Gray-brown fine to medium SAND and SILT (SM)
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
4	-- 32.0	Gray-brown medium SAND and SILT (SM)
	-- 34.0	
	-- 36.0	
	-- 38.0	
	-- 40.0	
5	-- 42.0	
	-- 44.0	
	-- 46.0	
	-- 48.0	
	-- 50.0	

BOREHOLE LOG SW-1/030

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/8/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,213 E 696,101

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark brown fine SILT and SAND (ML)
	-- 4.0	
	-- 6.0	
2	-- 8.0	Brown medium to fine SAND and SILT (SM)
	-- 10.0	
	-- 12.0	
3	-- 14.0	Brown fine SAND and SILT (SM)
	-- 16.0	
	-- 18.0	
4	-- 20.0	Refusal in two attempts at different locations was encountered at 27"
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agolia

BOREHOLE LOG SW-1/031

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/6/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** NA

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Brown GRAVEL and SILT, some Sand (GM) OVA = 120 ppm
	-- 2.0	
	--	
	-- 4.0	
	--	
2	-- 6.0	Reddish-brown CLAY and SILT, some Gravel (CL) OVA = 290 ppm
	-- 8.0	
	--	
	-- 10.0	
	-- 12.0	
3	--	Reddish-brown CLAY and SILT, little Gravel and Sand (CL) OVA = 140 ppm
	-- 14.0	
	--	
	-- 16.0	
	-- 18.0	
4	--	Brown fine SAND and SILT, little Gravel (SM) OVA = 180 ppm
	-- 20.0	
	--	
	-- 22.0	
	-- 24.0	
5	--	
	-- 26.0	
	--	
	-- 28.0	
	-- 30.0	
	--	
	-- 32.0	
	--	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agolia

BOREHOLE LOG SW-1/032

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/8/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,414 E 696,052

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Brown medium to fine SAND and SILT (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
2	-- 10.0	Gray fine SAND and SILT (SM)
	-- 12.0	
	-- 14.0	
	-- 16.0	
3	-- 18.0	Brown fine SILT and SAND, some Clay (ML)
	-- 20.0	
	-- 22.0	
	-- 24.0	
4	-- 26.0	Brown SAND and SILT (SM)
	-- 28.0	
	-- 30.0	
	-- 32.0	
5	-- 34.0	
	-- 36.0	
	--	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/033

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/7/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,466 E 696,133

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Black fine SAND and SILT, possible hides, high content of organic matter (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	Black fine SAND and SILT grading to brown fine to medium SAND, little Silt (SM)
	-- 14.0	
	-- 16.0	
	-- 18.0	
3	-- 20.0	Brown fine to medium SAND, little Silt (SM)
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
4	-- 36.0	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/034

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/11/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,461 E 696,034

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	Black fine SAND and SILT (SM)
	-- 4.0	
2	-- 6.0	Black fine SILT and SAND, some Clay (CL)
	-- 8.0	
	-- 10.0	
3	-- 12.0	
	-- 14.0	
	-- 16.0	
4	-- 18.0	Brown fine to medium SAND and CLAY, some Silt (SM-SC)
	-- 20.0	
	-- 22.0	
5	-- 24.0	
	-- 26.0	
	-- 28.0	Brown fine to medium SAND, some Clay, little Silt (SM-SC)
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/035

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/6/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,520 E 696,957

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Black fine SILT and SAND (ML)
	-- 2.0	
	-- 4.0	OVA > 1,000 ppm
	-- 6.0	<hr/>
2	--	Black SAND and SILT (SM)
	-- 8.0	
	-- 10.0	OVA > 1,000 ppm
	-- 12.0	<hr/>
3	--	Gray-brown fine to medium SAND and SILT (SM)
	-- 14.0	
	-- 16.0	OVA = 620 ppm
	-- 18.0	
4	-- 20.0	
	-- 22.0	OVA > 1,000 ppm
	-- 24.0	
	-- 26.0	
5	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	<hr/>

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/036

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/11/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,623 E 695,937

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Black SILT and SAND, some Clay (ML)
	-- 4.0	
	-- 6.0	
2	-- 8.0	Dark brown fine SAND and SILT, some Clay (SM-SC)
	-- 10.0	
	-- 12.0	
3	-- 14.0	Brown fine to medium SAND, little Silt (SM)
	-- 16.0	
	-- 18.0	
4	-- 20.0	
	-- 22.0	
	-- 24.0	
5	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/038

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/8/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,789 E 695,852

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Black fine SILT and SAND, some Gravel (ML) OVA = 480 ppm
	--- 2.0	

	--- 4.0	

2	---	Black fine SAND and GRAVEL, some silt (SM) OVA = 150 ppm
	--- 6.0	

	--- 8.0	

3	---	OVA = 260 ppm Possible hides (visible hair) at 18"
	--- 12.0	

	--- 14.0	

4	---	Light brown fine to medium SAND, little silt (SM) OVA = 360 ppm
	--- 18.0	

	--- 20.0	

	--- 22.0	

	--- 24.0	

	--- 26.0	
5	---	OVA - 500 ppm
	--- 28.0	

	--- 30.0	

	--- 32.0	

	--- 34.0	

	--- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/039

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/7/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,770 E 695,851

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Very dark brown SILT, little Sand. High in organic matter
	-- 2.0	
	-- 4.0	
	-- 6.0	
2	-- 8.0	OVA = 120 ppm
	-- 10.0	
	-- 12.0	
	-- 14.0	
3	-- 16.0	Dark brown SILT and CLAY, little Sand (ML)
	-- 18.0	
	-- 20.0	
	-- 22.0	
4	-- 24.0	Gray to brown f-m SAND, little silt (SM)
	-- 26.0	
	-- 28.0	
	-- 30.0	
5	-- 32.0	OVA = 60 ppm
	-- 34.0	
	-- 36.0	
	-- 38.0	
	-- 40.0	OVA = 5 ppm

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/040

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/12/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 555,055 E 695,731

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Very dark brown SILT and SAND, some clay. High content of organic matter (OL)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	<hr/> Gray-brown fine to medium SAND, little silt (SM)
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
3	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
4	-- 32.0	
	-- 34.0	
	-- 36.0	
	--	
	--	
5	--	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/041

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/11/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,859 E 695,882

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- -- 2.0 -- -- 4.0 -- -- 6.0	Black SILT and CLAY with organic matter (OL)
2	-- -- 8.0 -- -- 10.0 -- -- 12.0	Light brown fine to medium SAND, little silt (SM)
3	-- -- 14.0 -- -- 16.0 -- -- 18.0	
4	-- -- 20.0 -- -- 22.0 -- -- 24.0 -- -- 26.0	
5	-- -- 28.0 -- -- 30.0 -- -- 32.0 -- -- 34.0 -- -- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/042

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/13/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 555,054 E 695,804

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Dark brown fine SAND and silt
	-- 2.0	
	-- 4.0	
	--	
2	-- 6.0	OVA = 500 ppm
	-- 8.0	
	-- 10.0	
	-- 12.0	
3	--	Brown fine to medium SAND, some silt (SM)
	-- 14.0	
	-- 16.0	
	-- 18.0	
4	-- 20.0	OVA = 20 ppm
	-- 22.0	
	-- 24.0	
	-- 26.0	
5	-- 28.0	OVA = 14 ppm
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

BOREHOLE LOG SW-1/043

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/12/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 555,095 E 695,654

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Black SILT and CLAY, little sand (ML)
	-- 4.0	
	-- 6.0	
2	-- 8.0	Dark brown fine to medium SAND and SILT (SM)
	-- 10.0	
	-- 12.0	
3	-- 14.0	Brown fine to medium SAND and SILT (SM)
	-- 16.0	
	-- 18.0	
4	-- 20.0	Brown medium to fine SAND, some silt (SM)
	-- 22.0	
	-- 24.0	
5	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/044

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/12/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,983 E 695,677

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Very dark brown SILT and CLAY, little sand. High content of organic matter (OL)
	-- 4.0	
2	-- 6.0	
	-- 8.0	
3	-- 10.0	
	-- 12.0	
4	-- 14.0	
	-- 16.0	Gray-brown fine to medium SAND, little silt (SM)
-- 18.0		
5	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/045

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/12/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 555,157 E 695,760

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Black SILT and CLAY, little Sand (ML)
	-- 4.0	
	-- 6.0	
	-- 8.0	
2	-- 10.0	Dark gray to brown fine to medium SAND and SILT some Clay (SM-SC)
	-- 12.0	
	-- 14.0	
	-- 16.0	
3	-- 18.0	Dark gray-brown fine to medium SAND and SILT (SM)
	-- 20.0	
	-- 22.0	
	-- 24.0	
4	-- 26.0	Brown fine to medium SAND, little silt (SM)
	-- 28.0	
	-- 30.0	
	-- 32.0	
5	-- 34.0	
	-- 36.0	
	--	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/046

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/12/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 555,195 E 695,654

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Black SILT and SAND, some clay (ML)
	-- 4.0	
2	-- 6.0	Brown fine to medium SAND and SILT (SM)
	-- 8.0	
3	-- 10.0	
	-- 12.0	
4	-- 14.0	
	-- 16.0	
5	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/048

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/11/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,849 E 695,806

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Black fine SILT and SAND, some clay with organic matter (OL)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	Gray-brown fine to medium SAND and SILT (SM)
	-- 14.0	
	-- 16.0	
	-- 18.0	
3	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
4	-- 32.0	
	-- 34.0	
	-- 36.0	
	--	
	--	
	--	
5	--	
	--	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/050L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/23/90
SURFACE ELEV: 63.5 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,468 E 697,494

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark gray fine SAND and SILT (SM)
	-- 4.0	
2	-- 6.0	
	-- 8.0	
3	-- 10.0	
	-- 12.0	
4	-- 14.0	
	-- 16.0	Dark gray to brown fine SAND and GRAVEL, little silt (SM)
-- 18.0		
5	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agolia

BOREHOLE LOG SW-1/051L

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/19/90
SURFACE ELEV: 69.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,821 E 698,219

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	
	-- 2.0	Brown fine SAND and SILT (SM)
	--	
	-- 4.0	
2	--	
	-- 6.0	Brown fine SAND, some silt (SM)
	--	
	-- 8.0	
3	--	
	-- 10.0	
	--	
	-- 12.0	
4	--	
	-- 14.0	
	--	
	-- 16.0	
5	--	
	-- 18.0	
	--	
	-- 20.0	
6	--	
	-- 22.0	
	--	
	-- 24.0	
7	--	
	-- 26.0	
	--	
	-- 28.0	
8	--	
	-- 30.0	
	--	
	-- 32.0	
9	--	
	-- 34.0	
	--	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/051M

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/19/90
SURFACE ELEV: 69.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,821 E 698,219

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Brown fine SAND and SILT with organic matter 0" - 6" (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	Brown fine SAND, some silt (SM)
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
3	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
4	-- 32.0	
	-- 34.0	
	-- 36.0	
	-- 38.0	
	-- 40.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/052R

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/25/90
SURFACE ELEV: 64.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,825 E 698,685

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	0" - 12" Gray to brown medium SAND. High content of organic matter (SP)
	-- 4.0	
2	-- 6.0	
	-- 8.0	
3	-- 10.0	
	-- 12.0	
4	-- 14.0	12" - 23" Gray fine SAND and SILT (SM)
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	No recovery
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/055

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/30/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,456 E 697,611

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Fine SILT and SAND (ML)
	-- 2.0	
	--	
	-- 4.0	
	--	
2	-- 6.0	Dark brown fine SILT and CLAY, some fine SAND, trace organic matter (ML-CL)
	--	
	-- 8.0	
	--	
	-- 10.0	
3	-- 12.0	
	--	
	-- 14.0	
	--	
	-- 16.0	
4	-- 18.0	Gray-brown medium SAND and SILT (SM)
	--	
	-- 20.0	
	--	
	-- 22.0	
5	-- 24.0	
	--	
	-- 26.0	
	--	
	-- 28.0	
	-- 30.0	
	--	
	-- 32.0	
	--	
	-- 34.0	
	--	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/057

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/31/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,767 E 697,379

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Dark brown medium to fine SAND, some silt (SM) OVA = 34 ppm
	--- 2.0	

	--- 4.0	

2	---	OVA = 0.4 ppm
	--- 6.0	

	--- 8.0	

3	---	OVA = 4.3 ppm
	--- 10.0	

	--- 12.0	

4	---	OVA = 0 ppm
	--- 14.0	

	--- 16.0	

5	---	OVA = 0.4 ppm
	--- 18.0	

	--- 20.0	

	--- 22.0	

	--- 24.0	

	--- 26.0	

	--- 28.0	

	--- 30.0	

	--- 32.0	

	--- 34.0	

	--- 36.0	

BOREHOLE LOG SW-1/058

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/31/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,802 E 697,552

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	Dark brown fine SAND and SILT (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
2	-- 12.0	Gray medium to fine SAND (SP)
	-- 14.0	
	-- 16.0	
	-- 18.0	
3	-- 20.0	Dark gray-brown fine to medium SAND, little silt (SM)
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
4	-- 32.0	Dark gray to brown fine to medium SAND (SM-SP)
	-- 34.0	
	-- 36.0	
	-- 38.0	
	-- 40.0	
	-- 42.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/059

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/30/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,558 E 697,573

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	-	Light brown fine to medium SAND with dark brown fine SAND and SILT lenses (SP-SM)	
	-- 2.0		
	-- 4.0		OVA = 2 ppm
	-- 6.0		
2	-- 8.0	OVA = 1.0 ppm	
	-- 10.0		
	-- 12.0		
	-- 14.0		Light brown fine to medium SAND (SP)
3	-- 16.0	OVA = 0.4 ppm	
	-- 18.0		
	-- 20.0		Light brown fine SAND (SP)
	-- 22.0		
4	-- 24.0	OVA = 0.4 ppm	
	-- 26.0		
	-- 28.0		
	-- 30.0		
5	-- 32.0	OVA = 0.2	
	-- 34.0		
	-- 36.0		
	--		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agolia

BOREHOLE LOG SW-1/071

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/18/90
SURFACE ELEV: 75.7 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,461 E 696,470

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- -- 2.0 -- -- 4.0 -- -- 6.0 -- -- 8.0 -- -- 10.0	Brown fine to medium SAND and SILT (SM) Sample for hide identification taken.
2	-- -- 12.0 -- -- 14.0 -- -- 16.0 -- -- 18.0 -- -- 20.0 -- -- 22.0 -- -- 24.0	
3	-- -- 26.0 -- -- 28.0 -- -- 30.0 -- -- 32.0 -- -- 34.0 -- -- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/073

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/18/90
SURFACE ELEV: 71.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,490 E 696,286

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	0"-1" humus (OL) Hide identification sample taken
	-- 2.0	2"-5" Orangish-brown fine CLAY and SAND (CL)
	-- 4.0	
	-- 6.0	5"-17" Brown to black fine SAND and SILT (SM)
	-- 8.0	
2	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	17"-36" Black fine SAND and SILT. Decaying organic odor (SM)
3	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/074

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/18/90
SURFACE ELEV: 71.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,518 E 696,158

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Hide identification sample taken: 0"-2" humus (OL)
	-- 2.0	
	--	2"-6" Gray fine SAND and SILT, some Gravel (SM)
	-- 4.0	
	--	
	-- 6.0	
2	--	6"-18" Brown SAND and SILT (SM)
	-- 8.0	
	--	
	-- 10.0	
	--	
	-- 12.0	
	--	
	-- 14.0	
	--	
	-- 16.0	
	--	
	-- 18.0	
3	--	18"-20" Black fine SAND and SILT
	-- 20.0	
	--	
	-- 22.0	
	--	
	-- 24.0	
	--	
	-- 26.0	
	--	
	-- 28.0	
	--	
	-- 30.0	
--	No recovery	
-- 32.0		
--		
-- 34.0		
--		
-- 36.0		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/076

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/19/90
SURFACE ELEV: 71.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,548 E 696,077

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	-	Only hide identification sample taken.	
	-- 2.0		
	-		
	-- 4.0		
2	-	3"-17" Gray fine SAND and Gravel, little silt and clay (GM-GC) Concrete fragments present (Fill)	
	-- 6.0		
	-		
	-- 8.0		
	-		
	-- 10.0		
	-		
	-- 12.0		
	-		
	-- 14.0		
	-		
	-- 16.0		
	-		Spoon refusal at 17" (concrete)
	-- 18.0		
	-		
	-- 20.0		
-			
-- 22.0			
-			
-- 24.0			
-			
-- 26.0			
-			
-- 28.0			
-			
-- 30.0			
-			
-- 32.0			
-			
-- 34.0			
-			
-- 36.0			
-			

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/077

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/19/90
SURFACE ELEV: 71.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,604 E 696,015

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	-	Hide identification samples collected only 0"-22" Gray-brown fine SAND and SILT, some Gravel (SM)	
	-- 2.0		
	-		
	-- 4.0		
	-		
	-- 6.0		
	-		
	-- 8.0		
	-		
	-- 10.0		
2	-		
	-- 12.0		
	-		
	-- 14.0		
	-		
	-- 16.0		
	-		
	-- 18.0		
	-		
	-- 20.0		
3	-	22"-26" Black fine SILT-like material, probably hides	
	-- 22.0		
	-		
	-- 24.0		
	-		
	-- 26.0		
	Spoon refusal at 26"		
	-		
	-- 28.0		
	-		
-- 30.0			
-			
-- 32.0			
-			
-- 34.0			
-			
-- 36.0			
-			

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/078

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/19/90
SURFACE ELEV: 70.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,633 E 696,021

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Only hide identification samples taken.
	-- 2.0	
	-- 4.0	
	-- 6.0	
2	-- 8.0	Gray-brown fine SAND and SILT, some Gravel (SM)
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
3	-- 20.0	Possible hides at 22" (1" thick)
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	
	-	
		No recovery

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/079

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/19/90
SURFACE ELEV: 70.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,692 E 696,972

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Only hide identification samples taken.
	-- 2.0	0"-6" Brown medium to fine SAND and SILT (SM)
	-- 4.0	
2	-- 6.0	<hr/>
	-- 8.0	6"-26" Gray medium SAND and SILT with fine black laminae (SP)
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
3	-- 26.0	<hr/>
	-- 28.0	26"-36" Black fine SILT-like material, possible hides
	-- 30.0	
5	-- 32.0	
	-- 34.0	
	-- 36.0	<hr/>
	--	

BOREHOLE LOG SW-1/080

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/11/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,827 E 695,908

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	-	Only hide identification samples taken.	
	-- 2.0		
	-- 4.0		
	-- 6.0		
	-- 8.0		
2	-- 10.0	Dark brown SILT and SAND, some clay (ML)	
	-- 12.0		
	-- 14.0		
	-- 16.0		
	-- 18.0		
3	-- 20.0		Light brown medium to fine SAND, little silt (SM)
	-- 22.0		
	-- 24.0		
	-- 26.0		
	-- 28.0		
4	-- 30.0		
	-- 32.0		
	-- 34.0		
	-- 36.0		
	-		
5	-		

BOREHOLE LOG SW-1/082

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/19/90
SURFACE ELEV: 71.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,866 E 696,098

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Only hide identification samples taken. 0"-2" humus (OL)
	-- 2.0	
	-- 4.0	
	-- 6.0	
2	-- 8.0	2"-8" Dark brown medium to fine SAND and SILT (SM)
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
3	-- 20.0	8"-24" Gray-brown SAND and SILT (SM)
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	24"-36" Black medium to fine grained SAND (SP)

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/083

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/19/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** NA

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Only hide identification samples taken.
	-- 2.0	
	-- 4.0	
	-- 6.0	
2	-- 8.0	5"-33" Brown medium to coarse SAND (SP)
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
3	-- 28.0	33"-36" Black silt-like material, possibly hides
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	
	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/085

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/20/90
SURFACE ELEV: 72.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,207 E 695,706

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">1</div> <div style="border: 1px solid black; width: 100px; height: 100px; margin-right: 10px;"></div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">2</div> <div style="border: 1px solid black; width: 100px; height: 100px; margin-right: 10px;"></div> </div> <div style="display: flex; align-items: center;"> <div style="margin-right: 10px;">3</div> <div style="border: 1px solid black; width: 100px; height: 100px; margin-right: 10px;"></div> </div>	<p align="center">-</p> <p align="center">-- 2.0</p> <p align="center">-</p> <p align="center">-- 4.0</p> <p align="center">-</p> <p align="center">-- 6.0</p> <p align="center">-</p> <p align="center">-- 8.0</p> <p align="center">-</p> <p align="center">-- 10.0</p> <p align="center">-</p> <p align="center">-- 12.0</p> <p align="center">-</p> <p align="center">-- 14.0</p> <p align="center">-</p> <p align="center">-- 16.0</p> <p align="center">-</p> <p align="center">-- 18.0</p> <p align="center">-</p> <p align="center">-- 20.0</p> <p align="center">-</p> <p align="center">-- 22.0</p> <p align="center">-</p> <p align="center">-- 24.0</p> <p align="center">-</p> <p align="center">-- 26.0</p> <p align="center">-</p> <p align="center">-- 28.0</p> <p align="center">-</p> <p align="center">-- 30.0</p> <p align="center">-</p> <p align="center">-- 32.0</p> <p align="center">-</p> <p align="center">-- 34.0</p> <p align="center">-</p> <p align="center">-- 36.0</p> <p align="center">-</p>	<p>Only hide identification samples taken.</p> <p>0"-36" Reddish-brown SILT and CLAY, some sand (ML)</p>

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/086

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/20/90
SURFACE ELEV: 71.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,305 E 695,719

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Only hide identification samples taken.
	-- 2.0	
2	--	0"-27" Light to dark reddish SAND (SP)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
	-- 12.0	
3	-- 14.0	--
	-- 16.0	--
	-- 18.0	--
	-- 20.0	--
	-- 22.0	--
	-- 24.0	--
	-- 26.0	--
	-- 28.0	Spoon refusal at 27"
	-- 30.0	--
	-- 32.0	--
-- 34.0	--	
-- 36.0	--	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/091

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/23/90
SURFACE ELEV: 70.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,458 E 695,890

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION	
1	-	Only hide identification samples taken.	
	-- 2.0		
	-- 4.0		
	-- 6.0		
2	-- 7.0	7"-15" Gray brown coarse GRAVEL and SAND (GP)	
	-- 8.0		
	-- 10.0		
	-- 12.0		
	-- 14.0		
	-- 15.0		
	-- 16.0		Spoon refusal at 15"
	-- 18.0		
	-- 20.0		
	-- 22.0		
	-- 24.0		
-- 26.0			
-- 28.0			
-- 30.0			
-- 32.0			
-- 34.0			
-- 36.0			

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/095

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/9/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,607 E 695,860

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Only hide identification samples taken.
	-- 2.0	
	-- 4.0	
2	-	Very dark brown fine SILT and SAND (ML-OL). High content of organic matter
	-- 6.0	
	-- 8.0	
3	-	
	-- 10.0	
	-- 12.0	
4	-	
	-- 14.0	
	-- 16.0	
5	-	Dark brown silty fine to medium SAND and SILT (SM-OL). High in organic matter
	-- 18.0	
	-- 20.0	
	-	
	-- 22.0	
	-- 24.0	
	-	
	-- 26.0	
	-- 28.0	
	-	
	-- 30.0	
	-- 32.0	
	-	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/097

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/9/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,665 E 695,827

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Only hide identification samples taken.
	2.0	
2	4.0	Very dark brown SILT, trace Sand (ML-OL) with Organic matter
	6.0	
	8.0	
	10.0	
3	12.0	
	14.0	
	16.0	
	18.0	
4	20.0	
	22.0	
	24.0	
	26.0	
5	28.0	Light brown fine to medium SAND and SILT (SM)
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/099

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/11/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,754 E 695,798

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	--	Only hide identification samples taken.
	-- 2.0	Black SILT, some sand, trace Gravel (ML)
	--	
	-- 4.0	
	--	
2	-- 6.0	Black SILT, some Gravel, trace sand (ML)
	--	
	-- 8.0	
	--	
	-- 10.0	
3	--	
	-- 12.0	
	--	
	-- 14.0	
	--	
4	-- 16.0	
	--	
	-- 18.0	Black CLAY and SILT, some Gravel, trace sand (CL)
	--	
	-- 20.0	
5	--	
	-- 22.0	
	--	
	-- 24.0	
	--	
	-- 26.0	
	--	
	-- 28.0	Dark brown CLAY and SILT (CL)
	--	
	-- 30.0	
	--	
	-- 32.0	
	--	
	-- 34.0	
	--	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/100

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/23/90
SURFACE ELEV: 70.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,759 E 695,760

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Only hide identification samples taken. 0"-2" Brown medium to fine SAND and SILT (SM) <hr/> 2"-29" Brown to gray-brown SILT and SAND, some, Clay, trace gravel (ML)
	-- 2.0	
	-	
	-- 4.0	
	-	
	-- 6.0	
	-	
	-- 8.0	
	-	
	-- 10.0	
2	-	
	-- 12.0	
	-	
	-- 14.0	
	-	
	-- 16.0	
	-	
	-- 18.0	
	-	
	-- 20.0	
3	-	
	-- 22.0	
	-	
	-- 24.0	
	-	
	-- 26.0	
	-	
	-- 28.0	
	-	
	-- 30.0	
	-	<hr/> No recovery <hr/>
-- 32.0		
-		
-- 34.0		
-		
-- 36.0		

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/105

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/23/90
SURFACE ELEV: 71.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,826 E 695,563

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-	Only hide identification samples taken.
	-- 2.0	
	-	
	-- 4.0	
	-	
	-- 6.0	
	-	
	-- 8.0	
	-	
	-- 10.0	
2	-	10"-32" Yellow brown medium SAND (SP)
	-- 12.0	
	-	
	-- 14.0	
	-	
	-- 16.0	
	-	
	-- 18.0	
	-	
	-- 20.0	
3	-	No recovery
	-- 22.0	
	-	
	-- 24.0	
	-	
	-- 26.0	
	-	
	-- 28.0	
	-	
	-- 30.0	
	-- 32.0	
	-	
	-- 34.0	
	-	
	-- 36.0	
	-	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/108

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/23/90
SURFACE ELEV: 63.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,827 E 697,265

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	0"-27" Black to gray medium SAND (SP)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
	-- 12.0	
2	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
3	-- 26.0	
	-- 28.0	Spoon refusal at 27"
	-- 30.0	
	-- 32.0	
	-- 34.0	
	-- 36.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

BOREHOLE LOG SW-1/111

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/23/90
SURFACE ELEV: 64.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,743 E 697,444

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
<div style="display: flex; align-items: center;"> <div style="width: 20px; height: 100%; border: 1px solid black; margin-right: 5px;"></div> <div style="display: flex; flex-direction: column; justify-content: space-between; width: 20px;"> 1 2 </div> </div>	-	
	-- 2.0	0"-17" Dark brown medium GRAVEL and SAND, some silt (GM)
	-	
	-- 4.0	
	-	
	-- 6.0	
	-	
	-- 8.0	
	-	
	-- 10.0	
	-	
	-- 12.0	
	-	
	-- 14.0	
	-	
	-- 16.0	
	-	Spoon refusal at 17"
-- 18.0		
-		
-- 20.0		
-		
-- 22.0		
-		
-- 24.0		
-		
-- 26.0		
-		
-- 28.0		
-		
-- 30.0		
-		
-- 32.0		
-		
-- 34.0		
-		
-- 36.0		
-		

BOREHOLE LOG SW-1/112

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/24/90
SURFACE ELEV: 63.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,752 E 697,558

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION		
1	-- 2.0	0"-10" humus with SILT and SAND (ML)		
	-- 4.0			
	-- 6.0			
	-- 8.0			
	-- 10.0			
	2		-- 12.0	10"-11" Gray brown medium SAND and SILT (SM)
			-- 14.0	11"-15" humus with SAND and SILT (ML)
			-- 16.0	15"-17" Gray-brown medium GRAVEL and SAND, some silt (SM)
			-- 18.0	17"-18" humus with SILT and SAND (ML)
			-- 20.0	18"-26" Gray-brown medium GRAVEL and SAND, some silt (GM)
-- 22.0				
3	-- 24.0			
	-- 26.0	Spoon refusal at 26"		
	-- 28.0			
	-- 30.0			
	-- 32.0			
	-- 34.0			
	-- 36.0			
	--			
	--			
	--			

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
Checked: C. Agoglia

BOREHOLE LOG SW-1/115

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/25/90
SURFACE ELEV: 67.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,670 E 697,481

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	-- 2.0	0"-12" Dark brown fine SAND and SILT, some Gravel (SM)
	-- 4.0	
	-- 6.0	
	-- 8.0	
	-- 10.0	
	-- 12.0	
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
2	-- 12.0	12"-18" Yellowish-brown fine SAND and SILT, some Gravel (SM)
	-- 14.0	
	-- 16.0	
	-- 18.0	
	-- 20.0	
	-- 22.0	
	-- 24.0	
	-- 26.0	
	-- 28.0	
	-- 30.0	
	-- 32.0	Spoon refusal at 18"
	-- 34.0	
	-- 36.0	
	-- 38.0	
	-- 40.0	
	-- 42.0	

Job No. 893-6255

GOLDER ASSOCIATES INC.

Logged: I. Kennedy
 Checked: C. Agoglia

APPENDIX E
Chain-of-Custody Forms

CHAIN-OF-CUSTODY RECORD



AMPLER: (Signature) C Upton DATE SHIPPED 6/13/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158623 COOLER NO. E 160, E721, E261

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazer
 COMPANY Holder
 ADDRESS 20000 Horizon Way Ste 500
Mt. Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L Gulizia PROJECT NAME Holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Upton</u>	RECEIVED BY (Signature) _____	DATE <u>6/13/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/swi/042/006/1/11	Soil	13 June 1990 8:20	_____	
IP/swi/042/006/1/12	"	"	CLP UOA (2 jars)	
IP/swi/042/006/1/13	"	"	CLP Semivolatiles	
IP/swi/042/006/1/14	"	"	CLP Pest / PCBs	
IP/swi/042/006/1/15	"	"	CLP TAL Metals	
IP/swi/042/012/1/11	"	"	Pb, As, Cr	
IP/swi/042/012/1/11	"	"	"	
IP/swi/042/012/1/11	"	"	"	
IP/swi/042/036/1/11	"	"	"	
IP/swi/042/006/1/11	"	9:00	"	

SPECIAL INSTRUCTIONS / COMMENTS:
02573 > E261
02571 > E261
Seal # 03607 > E160 cooler
03608 > E160 cooler
03609 > E721 cooler
03606 > E721 cooler
 CVA head-space reading for IP/swi/42... = max of 500ppm

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: _____ Immediate Attention (200% Surcharge) _____ RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only) _____

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) C Yates DATE SHIPPED 6/13/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158623 COOLER NO. E160, E121, E261

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Gulzig

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/13/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/047/01/1/1</u>	<u>Soil</u>	<u>13 June 1990 9:00</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/047/01/8/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/047/02/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/047/02/2/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/047/02/3/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/047/01/8/1/M/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/047/02/7/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/003/06/1/1</u>	<u>"</u>	<u>10:30</u>	<u>"</u>	
<u>IP/S-1/004/06/1/1</u>	<u>"</u>	<u>11:20</u>	<u>"</u>	
<u>IP/S-1/004/05/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal #
03607 > E160
03608 > E160
03609 > E121
03606 > E121
02573 > E261
02571 > E261

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	Standard
------------------------------	--------------------------------------	--------------------------	----------

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/13/90 CARRIER Fed X
 PHONE (609) 938-1553 AIRBILL NO. 4370158623 COOLER NO. E160, E121, E261

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glatzer
 COMPANY Golder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 213-1110

ATTENTION L. Gulezica

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/13/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>PLS-1004/018/H/1</u>	<u>Soil</u>	<u>13 June 1990 11:20</u>	<u>Pb, As, Cr</u>	
<u>PLS-1004/027/H/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>PLS-1004/027/H/2</u>	<u>"</u>	<u>"</u>	<u>CLP UOA (2 jars)</u>	
<u>PLS-1004/027/H/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semiqualitative 2 samples</u>	
<u>PLS-1004/027/H/4</u>	<u>"</u>	<u>"</u>	<u>Pest/PCB 3 in jar</u>	
<u>PLS-1004/027/H/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>PLS-1005/006/H/1</u>	<u>"</u>	<u>12:10</u>	<u>Pb, As, Cr</u>	
<u>PLS-1005/018/H/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>PLS-1005/006/H/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>PLS-1005/006/H/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>PLS-1005/006/H/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>PLS-1005/006/H/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 03607 > E160
03608 > E160
03609 > E121
03606
02573 > E261
02571 > E261

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/13/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158623 COOLER NO. E160, E721, E261

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 213-1110

ATTENTION L Gulizia

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>6/13/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IPK-1/005/030/1/2</u>	<u>Soil</u>	<u>13 June 1990</u>	<u>Pb, As, Cr CLP VOA (2 jars)</u>	
<u>IPK-1/005/030/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semiconductile? 2 samples</u>	
<u>IPK-1/005/030/1/4</u>	<u>"</u>	<u>"</u>	<u>Pest/PEB } in 2 jar</u>	
<u>IPK-1/005/030/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>IPK-1/002/006/1/1</u>	<u>"</u>	<u>13:00</u>	<u>Pb, As, Cr</u>	
<u>IPK-1/002/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPK-1/002/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPK-1/002/036/1/2</u>	<u>"</u>	<u>"</u>	<u>CLP VOA (2 jars)</u>	
<u>IPK-1/002/036/1/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPK-1/002/036/1/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPK-1/002/036/1/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Soil #
03607 > E160
03608 > E160
03609 > E721
03606
02573 > E261
02571 > E261

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C. Uats DATE SHIPPED 6/13/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158623 COOLER NO. E160, E721, E261
 SHIP TO: Enseco East, 2200 Cottontail Lane, Somerset, NJ 08873, (201) 469-5800, (201) 469-7516 Fax #.
 SEND RESULTS TO: CLIENT NAME Bob Glazier, COMPANY Golder, ADDRESS 20000 Horizon Way Ste 500 Mt. Laurel NJ 08054, PHONE NO. (609) 273-1110
 ATTENTION L. Gulizia

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a
 RELINQUISHED BY (Signature) C. Uats RECEIVED BY (Signature) _____ DATE 6/13/90 TIME 16:30
 RELINQUISHED BY (Signature) _____ RECEIVED BY (Signature) _____ DATE _____ TIME _____
 RELINQUISHED BY (Signature) _____ RECEIVED BY (Signature) _____ DATE _____ TIME _____
 RELINQUISHED FROM LAB BY (Signature) _____ RECEIVED BY (Signature) _____ DATE _____ TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IPS-1/002/036/1/1/3	Soil	13 June 1990 13:00	CLP Semivolatile and Pest/PCB	
IPS-1/002/036/1/1/4				
IPS-1/002/036/1/1/3				
IPS-1/002/036/1/1/4				
IPS-1/002/036/1/1/3				
IPS-1/002/036/1/1/4				
IPS-1/002/036/1/1/3				
IPS-1/002/036/1/1/4				
IPS-1/002/036/1/1/5	"	"	CLP TAL Metals	
IPS-1/002/036/1/1/5	"	"		
IPS-1/002/036/1/1/4	"	"		
IPS-1/002/056/1/1/5	"	"		
IPS-1/021/006/1/1/1		14:00	Pb, As, Cr	
IPS-1/021/018/1/1/1				

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 03607 > E160
 03608 > E160
 03609 > E721
 03606 > E721
 02573 > E261
 02571 > E261

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) _____ RUSH (50-100% Surcharge) _____ Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/13/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158623 COOLER NO. E160, E721, E261

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Gulizia

PROJECT NAME holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/13/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/S-1/021/018/1/1	P Soil	13 June 1990 14:45	Pb, As, Cr	
IP/S-1/021/020/1/1	"	"	"	
IP/S-1/021/020/1/M	"	"	"	
IP/S-1/021/020/1/N	"	"	"	
IP/S-1/022/016/1/1	"	14:30	"	
IP/S-1/022/018/1/1	"	"	"	
IP/S-1/022/018/1/N	"	"	"	
IP/S-1/EB56/001/1/1	<u>Aqueous</u>	<u>9:10</u>	<u>"</u>	
IP/S-1/EB58/001/1/1	<u>"</u>	<u>12:30</u>	<u>"</u>	
IP/S-1/EB59/001/1/1	<u>"</u>	<u>14:15</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03607 > E160
 03608 > E160
 03609 > E721
 03606 > E721
 02573 > E261
 02571 > E261

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



AMPLER: (Signature) C Yates DATE SHIPPED 6/13/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158 COOLER NO. E160, E721, E261

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 489-5800
 (201) 489-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazior
 COMPANY Golder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L Kulizia PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/13/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>RS-1/EB57/000/1/2</u>	<u>Aqueous</u>	<u>13 June 1990 11:25</u>	<u>CLP UOA (2 vials)</u>	
<u>RS-1/EB57/000/1/4</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatile (2 jars)</u>	
<u>RS-1/EB57/000/1/4</u>	<u>"</u>	<u>"</u>	<u>CLP Pest/PCBs (2 jars)</u>	
<u>RS-1/EB57/000/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>RIP BLACK</u>	<u>"</u>	<u>6/18/90</u>		

SPECIAL INSTRUCTIONS / COMMENTS:

- Seal # 03607 > E160
03608
- 03609 > E721
03606
- 02573 > E261
02571

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CleanHarbors

Clean Harbors Analytical, 213 Burlington Rd., Bedford, MA 01730

CHAIN OF CUSTODY RECORD

Sample Custodian - (617) 275-6111

Page 1 of 1

Client: Golder Associates Project Name: Industri-flex He-Design Invest. ^{or FSR} Project/P.O. #: 893-6255-7 Date: 6/6/90
 Report To: Elizabeth Auda Address: 20,000 Horizon Way, Suite 500, Mt Laurel, NJ 08054 Phone #: (609) 273-1110
 Invoice To: Elizabeth Auda Address: Same as above
 Date Samples Collected: June 4-6, 1990 by: Bob Glazier Date Samples Received: June 6, 1990

Airbill/Bill of Lading? Y N NOTE: Samples received unpreserved will be preserved upon arrival at CHAS. Samples were: Preserved Unpreserved

Sample I.D.	Sampling Information				Analysis	# of con.	Comments (Special instructions, cautions, etc.)	CHAS Sample #
	Date	Time	Station Location	Sample Type				
SW-1/9	6-4-90	1300	SW-1/9	Soil	X		1	1P/SW/009/036/1/1/35
SW-1/10	6-5-90	1120	SW-1/10		X		1	1P/SW/010/036/1/1/35
SW-1/2	6-5-90	1350	SW-1/2		X		1	1P/SW/022/036/1/1/35
SW-1/22	6-6-90	0830	SW-1/22		X		1	1P/SW/022/036/1/1/35
SW-1/29	6-6-90	1200	SW-1/29		X		1	1P/SW/029/036/1/1/35
SW-1/d	6-5-90	1350	SW-1/2		X		1	duplicate 1P/SW/022/036/1/1/35
SW-1/M	6-6-90	0830	SW-1/22		X		1	matrix spike 1P/SW/022/036/1/1/35
SW-1/N	6-6-90	0830	SW-1/22	↓	X		1	matrix spike duplicate 1P/SW/022/036/1/1/35
SW-1/EB	6-5-90	1350	SW-1/9	aqueous	X		1	equipment rinse blank 1P/SW/EB/036/1/1/35
SW-1/TB	N/A	N/A	N/A	↓	X		1	trip blank

Relinquished by: Robert M. Glazier VOA Vial _____
 Date: 6-6-90 Time: 1600 Glass Bottle X
 Received by: _____ Plastic Bot. _____
 Date: _____ Time: _____ Pres. _____
 Relinquished by: _____ Volume _____
 Date: _____ Time: _____
 Received by: _____ Preservation Key: A - Acidified with _____
 Date: _____ Time: _____ B - Filtered, C - Sample chilled, D - NaOH,
 E - Methiosulfate, W - Sample Ambient, F - Other

REMARKS: (Sample storage, nonstandard sample bottles, special instructions)
 Hand delivered w/ ENSEIO chain of custody seal NOS. 03558, 03557
 AHA: Lou Macri

Standard laboratory turnaround time is 2 weeks from date of receipt. Accelerated turnaround may be assessed a surcharge. Accelerated turnaround requested: _____ Location of samples: _____
 Confirmed by: _____ Surcharges: _____ Turnaround: 24 Hrs 48 Hrs 1 Week 2 Weeks Other: _____

CHI 124

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <u>C Yates</u>	DATE SHIPPED <u>6/12/90</u>	CARRIER <u>Fed X</u>
ONE (67) 938-1553	AIRBILL NO. <u>4370158612</u>	COOLER NO. <u>EE-518</u>

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME <u>Bob Glazier</u>
			COMPANY <u>Golder</u>
			ADDRESS <u>20000 Horizon Way Jc 500 Mt Laurel NJ 08054</u>
			PHONE NO. <u>(609) 273-1110</u>
ATTENTION <u>L. Galizia</u>			

PROJECT NAME <u>Golder</u>	PROJECT NO.	P.O. NO. <u>n/a</u>
RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/12/90</u> TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW/040/06/1/1	<u>Soil</u>	<u>12 June 1990 9:00</u>	<u>Pb, As, Cr</u>	
IP/SW/040/012/1/1	"	"	"	
IP/SW/040/015/1/1	"	"	"	
IP/SW/040/027/1/1	"	"	"	
IP/SW/040/026/1/1	"	"	"	
IP/SW/044/06/1/1	"	<u>10:20</u>	"	
IP/SW/044/012/1/1	"	"	"	
IP/SW/044/018/1/1	"	"	"	
IP/SW/044/018/1/2/1	"	"	"	
IP/SW/044/027/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

- Seal # 02572
02560

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/12/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158612 COOLER NO. EE-518

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazer
 COMPANY Goldier
 ADDRESS 20000 Harmon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Gulizia

PROJECT NAME Goldier PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/12/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/044/027/1/1</u>	<u>Soil</u>	<u>12 June 1990</u> <u>10:30</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/044/028/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/044/028/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/043/025/1/1</u>	<u>"</u>	<u>11:30</u>	<u>"</u>	
<u>IP/SW/043/026/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/043/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/043/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/043/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/046/004/1/1</u>	<u>"</u>	<u>12:30</u>	<u>"</u>	
<u>IP/SW/046/004/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS/COMMENTS:

Seal # 02572
02560

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) C Uates DATE SHIPPED 6/12/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158612 COOLER NO. EE-518

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glacier
 COMPANY Golder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO.

ATTENTION L. Galizia

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Uates</u>	RECEIVED BY (Signature)	DATE <u>6/12/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/044/021/1/1</u>	<u>Soil</u>	<u>12 June 1990 12:10</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/046/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/044/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/046/026/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/044/026/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/044/030/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/045/001/1/1</u>	<u>"</u>	<u>13:10</u>	<u>"</u>	
<u>IP/SW/045/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/045/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/045/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 02572
02560

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	Standard <input checked="" type="checkbox"/>
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)



CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <i>C Uates</i>		DATE SHIPPED 6/12/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158612	COOLER NO. EE-518	

SHIP TO Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	CLIENT NAME <i>Bob Glazer</i>
	COMPANY <i>Golder</i>
	ADDRESS <i>20000 Horizon Way Ste 500 Mt Laurel NJ 08054</i>
	PHONE NO. <i>(609) 273-1110</i>
ATTENTION <i>L Galizia</i>	SEND RESULTS TO

PROJECT NAME <i>Golder</i>	PROJECT NO.	P.O. NO. <i>n/a</i>
-------------------------------	-------------	------------------------

RELINQUISHED BY (Signature) <i>C Uates</i>	RECEIVED BY (Signature)	DATE 6/12/90	TIME 16:00
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<i>IP/SW/EBSS/02/1</i>	<i>Soil</i>	<i>12 Jun 1990 13:10</i>	<i>Pb, As, Cr</i>	
<i>IS/SW/EBSS/02/1</i>	<i>Aqueous</i>	<i>10:45</i>	<i>"</i>	
<i>IP/SW/EBSS/02/1</i>	<i>"</i>	<i>12:30</i>	<i>"</i>	

SPECIAL INSTRUCTIONS/COMMENTS:

*Seal # 02572
02560*

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) C. Yates DATE SHIPPED 6/11/90 CARRIER Fed X
 PHONE (67) 938-553 AIRBILL NO. 4370158590 COOLER NO. EE-25

SHIP TO: Enseco East
2200 Cottontail Lane
Somerset, NJ 08873
(201) 469-5800
(201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Yates</u>	RECEIVED BY (Signature)	DATE <u>6/11/90</u>	TIME <u>15:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/034/006/1/1</u>	<u>Soil</u>	<u>11 June 1990</u> <u>9:40</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/034/006/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/034/006/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/034/006/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/034/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/034/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/034/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/034/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/036/006/1/1</u>	<u>"</u>	<u>10:36</u>	<u>"</u>	
<u>IP/SW/036/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS/COMMENTS:
Seal # 02141
02576

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)



CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) C Yates DATE SHIPPED 6/11/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158590 COOLER NO. EE-25

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Hailer
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>6/11/90</u>	TIME <u>15:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/036/018/1/1</u>	<u>Soil</u>	<u>11 June 1990</u> <u>15:30</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/036/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/036/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/037/006/1/1</u>	<u>"</u>	<u>11:10</u>	<u>"</u>	
<u>IP/SW/037/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/037/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/037/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/037/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/037/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/037/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02141
02576

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SENDER: (Signature) C Yates DATE SHIPPED 6/11/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158590 COOLER NO. EE-25

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Goldier Assoc
 ADDRESS 70000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

INTENTION L Galizia PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/11/90</u>	TIME <u>15:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/037/027/1/1</u>	<u>Soil</u>	<u>11 June 1990 11:10</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/037/006/1/1</u>	"	<u>12:10</u>	"	
<u>IP/SW/041/012/1/1</u>	"	"	"	
<u>IP/SW/041/018/1/1</u>	"	"	"	
<u>IP/SW/041/027/1/1</u>	"	"	"	
<u>IP/SW/041/036/1/1</u>	"	"	"	
<u>IP/SW/048/006/1/1</u>	"	<u>13:00</u>	"	
<u>IP/SW/048/012/1/1</u>	"	"	"	
<u>IP/SW/048/018/1/1</u>	"	"	"	
<u>IP/SW/048/027/1/1</u>	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02141
02576

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C. Uates DATE SHIPPED 6/11/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158590 COOLER NO. EE-25

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Uates</u>	RECEIVED BY (Signature)	DATE <u>6/11/90</u>	TIME <u>15:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/048/016/1/1</u>	<u>Soil</u>	<u>4 June 1990</u> <u>12:00</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/EB52/002/1/1</u>	<u>Aqueous</u>	<u>6:00</u>	<u>"</u>	
<u>IP/SW/EB52/002/1/1</u>	<u>"</u>	<u>12:30</u>	<u>"</u>	
<u>IP/S-1/141/006/1/1</u>	<u>Soil</u>	<u>9 June 90</u> <u>11:00</u>	<u>"</u>	
<u>IP/S-1/141/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/S-1/141/024/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/S-1/142/006/1/1</u>	<u>"</u>	<u>11:30</u>	<u>"</u>	
<u>IP/S-1/142/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/S-1/142/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02141
02576

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/8/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158774 COOLER NO. 165 + 76

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION: L. Galizia

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>6/8/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/020/004/1/1</u>	<u>Soil</u>	<u>8 June 90 9:00</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/020/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/020/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/020/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/020/027/1/M</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/028/006/1/1</u>	<u>"</u>	<u>10:30</u>	<u>"</u>	
<u>IP/SW/028/006/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/028/006/1/d</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/028/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02575 > cooler # 165
 02578
 02563 > cooler # 76
 02561

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/8/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158774 COOLER NO. 165 + 76

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/8/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/sw/028/027/1/1</u>	<u>SOIL</u>	<u>6/8/90</u> <u>10:30</u>	<u>As Pb Cr</u>	
<u>IP/sw/028/026/1/1</u>		"		
<u>IP/sw/032/004/1/1</u>		<u>12:05</u>		
<u>IP/sw/032/012/1/1</u>		"		
<u>IP/sw/032/012/1/1</u>		"		
<u>IP/sw/032/018/1/1</u>		"		
<u>IP/sw/032/018/1/1</u>		"		
<u>IP/sw/032/027/1/1</u>		"		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02575 > cooler # 165
02578
02563 > cooler # 76
02561

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) C. Uates DATE SHIPPED 6/8/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158774 COOLER NO. 165 + 76

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Uates</u>	RECEIVED BY (Signature)	DATE <u>6/8/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/sw/028/026/1/1</u>	<u>Soil</u>	<u>8 June 90 12:00</u>	<u>CLP VOA (2 jars)</u>	
<u>IP/sw/028/026/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatiles</u>	
<u>IP/sw/028/026/1/4</u>	<u>"</u>	<u>"</u>	<u>CLP Rest / PCB</u>	
<u>IP/sw/028/026/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>IP/sw/028/006/1/1</u>	<u>"</u>	<u>14:00</u>	<u>Ph, As, Cr</u>	
<u>IP/sw/028/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/028/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/028/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/028/026/1/2</u>	<u>"</u>	<u>14:50</u>	<u>CLP VOA (2 jars)</u>	
<u>IP/sw/028/026/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatiles</u>	

SPECIAL INSTRUCTIONS / COMMENTS:
Seal # 02575 > cooler # 165 02563 > cooler # 76
02578
OVA head-space readings on CLP hole IP/sw/028 > 1000 ppm^{nc}
" " " " IP/sw/038 = 500 max

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/8/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158774 COOLER NO. 165 + 76

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Holder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ
 PHONE NO. (609) 273-1110

ATTENTION L Gwizia

PROJECT NAME holder PROJECT NO. _____ P.O. NO. na

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>6/8/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/S-1/038/034/1/4</u>	<u>Soil</u>	<u>8 June 90 14:20</u>	<u>CLP Pest / PCB</u>	
<u>IP/S-1/038/036/1/5</u>	<u>"</u>		<u>CLP TAL Metals</u>	
<u>IP/SW/EB9/009/1/1</u>	<u>Aqueous</u>	<u>18:20</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/EB9/009/1/1</u>	<u>"</u>	<u>10:45</u>	<u>"</u>	
<u>IP/S-1/054/006/1/1</u>	<u>Soil</u>	<u>8:45</u>	<u>"</u>	
<u>IP/S-1/054/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/S-1/055/036/1/16</u>	<u>"</u>	<u>9:10</u>	<u>CLP VOA (2jars)</u>	
<u>IP/S-1/055/034/1/13</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatiles</u>	
<u>IP/S-1/055/026/1/18</u>	<u>"</u>	<u>"</u>	<u>CLP Pest / PCB</u>	
<u>IP/S-1/055/026/1/15</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02575 > cooler #165
02578

02563 > cooler #76
02561

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/8/90 CARRIER Fed X
 PHONE (609) 938-1553 AIRBILL NO. 437058774 COOLER NO. 165 + 76

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Jtr 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>6/8/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>PLS-1055/006/1/1</u>	<u>Soil</u>	<u>8 June 90 9:10</u>	<u>Pb, As, Cr</u>	
<u>PLS-1055/018/1/1</u>	<u>"</u>	<u>9:10</u>	<u>"</u>	
<u>PLS-1076/004/1/2</u>	<u>"</u>	<u>12:00</u>	<u>CLP UOA (2jars)</u>	
<u>PLS-1076/000/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatiles</u>	
<u>PLS-1076/000/1/4</u>	<u>"</u>	<u>"</u>	<u>CLP Pest/PCB</u>	
<u>PLS-1076/000/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>PLS-1054/026/1/1</u>	<u>"</u>	<u>8:45</u>	<u>Pb, As, Cr</u>	
<u>PLS-1055/034/1/1</u>	<u>"</u>	<u>9:10</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal #
02575 > coder # 165
02578
02563 > coder # 76
02561

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/7/90 CARRIER Fed X
 PHONE (617) 938-9553 AIRBILL NO. 4370158796 COOLER NO. EE-6A * E296

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazer
 COMPANY Golder Assoc.
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/7/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW/039/006/1/1	Soil	7 June 1990 9:00	Pb, As, Cr	
IP/SW/039/012/1/1	"	"	"	
IP/SW/039/018/1/1	"	"	"	
IP/SW/039/018/1/M/1	"	"	"	
IP/SW/039/018/1/N/1	"	"	"	
IP/SW/039/023/1/1	"	"	"	
IP/SW/039/027/1/1	"	"	"	
IP/SW/039/036/1/1	"	"	"	
IP/SW/039/018/1/1/2	"	10:30	CLP VOA (2 jars)	
IP/SW/039/018/1/M/2	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:
 Seal # 02144 > cooler # EE-6A 02142 > cooler # E296
 02143 max.
 OVA head space readings = 300ppm for IP/SW/039.
 " " " " = 140ppm " IP/SW/027

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



AMPLER: (Signature) C Uates DATE SHIPPED 6/7/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158796 COOLER NO. EE-6A + E296

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME Holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Uates</u>	RECEIVED BY (Signature) _____	DATE <u>6/7/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/021/08/1/N/4</u>	<u>Soil</u>	<u>7 June 1990 16:30</u>	<u>CLP VOA (2 jars)</u>	
<u>P/SW/039/08/1/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>IP/SW/039/018/1/M/5</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW/039/018/1/N/5</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW/059/018/1/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatile Rest/PCB in 2 jar</u>	
<u>IP/SW/039/018/1/M/5</u>	<u>"</u>	<u>"</u>	<u>E</u>	
<u>P/SW/039/018/1/M/4</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW/039/018/1/N/3</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/039/018/1/N/4</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/EB47/002/2/1/1</u>	<u>Aqueous</u>	<u>9:30</u>	<u>Pb, As, Cr</u>	
<u>P/SW/EB48/002/2/1/2</u>	<u>"</u>	<u>11:15</u>	<u>CLP VOA (3 glass vials)</u>	
<u>IP/SW/EB48/002/2/1/2</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatile (2 bottles)</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Serial # 02144 > cooler # EE-6A
02143
02142 > cooler E296
02140

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Uates DATE SHIPPED 6/7/90 CARRIER FedEx
 PHONE (617) 938-1553 AIRBILL NO. 4370158796 COOLER NO. EE-6A + G296

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME Holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Uates</u>	RECEIVED BY (Signature) _____	DATE <u>6/7/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/sw/EB48/02/1/14</u>	<u>Aqueous</u>	<u>7 June 1990 11:15</u>	<u>CLP Pest/PCB</u>	
<u>IP/sw/EB48/02/1/15</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>IP/sw/027/006/1/1</u>	<u>Soil</u>	<u>12:00</u>	<u>Pb, As, Cr</u>	
<u>IP/sw/027/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/027/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/027/019/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/027/022/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/027/026/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/027/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/027/034/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Uates #
02144 } cooler # EE-6A
02143 } cooler # EE-6A
02142 } cooler E296
02140 } cooler E296

Samples labeled IP/sw/039/... had ^{headsapce} readings up to ~~440~~ ^{300 ppm} on an OVA
 Samples labeled IP/sw/027/... had ^{headsapce} readings up to 140 ppm on an OVA

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



IMPLER: (Signature) C Yates DATE SHIPPED 6/7/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158796 COOLER NO. EE-6A & E296

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Goldier Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Kalizia

PROJECT NAME Goldier PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/7/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/027/034/1/2</u>	<u>Soil</u>	<u>7 June 1990 13:40</u>	<u>Pb, As, Cr CLP VOA (2 jars)</u>	
<u>P/SW/027/036/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP Semi-volatile</u>	
<u>IP/SW/027/056/1/4</u>	<u>"</u>	<u>"</u>	<u>CLP Pest/PCB</u>	
<u>P/SW/027/056/1/6</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>IP/SW/EB49/000/0/1</u>	<u>Aqueous</u>	<u>12:00</u>	<u>Pb, As, Cr</u>	
<u>P/SW/023/006/1/1</u>	<u>Soil</u>	<u>14:20</u>	<u>"</u>	
<u>P/SW/033/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW/033/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW/033/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/033/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
SPECIAL INSTRUCTIONS/REMARKS: <u>Aqueous</u>		<u>11</u>	<u>VOA</u>	

Seal #
02144 > cooler # EE-6A
02143
02142 > cooler # E296
02140

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C. Yates DATE SHIPPED 6/6/90 CARRIER Fed x
 PHONE (617) 938-1553 AIRBILL NO. 4370158553 COOLER NO. EE 568

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazler
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION L. Galizia

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Yates</u>	RECEIVED BY (Signature) _____	DATE <u>6/6/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/sw1/035/036/4/3</u>	<u>Soil</u>	<u>6 June 90</u> <u>14:30</u>	<u>CLP Semi/volatile } both in the same jar</u> <u>CLP Pest/PCB }</u>	
<u>IP/sw1/035/036/4/4</u>				
<u>IP/sw1/035/036/4/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02145
02577

OVA readings of > 1,000 ppm for Samples IP/sw1/035/...
+ IP/sw1/031

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



PAGE 2 OF 3

PREPARED BY (Signature) C Yates DATE SHIPPED 6/6/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 2370158553 COOLER NO. EE 568

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/6/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW1/027/012/1/1</u>	<u>Soil</u>	<u>6 June 90 12:00</u>	<u>Pb, As, Cr</u>	
<u>P/SW1/027/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW1/029/023/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/029/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW1/035/006/1/1</u>	<u>"</u>	<u>13:30</u>	<u>"</u>	
<u>IP/SW1/035/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW1/035/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/035/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW1/035/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/035/036/1/1/2</u>	<u>"</u>	<u>14:30</u>	<u>CLP VOA (2 hrs)</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02145
02577

OVA readings of > 1,000 ppm for Samples IP/SW1/035/... head space + IP/SW1/31

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <u>C Yates</u>		DATE SHIPPED <u>6/6/90</u>	CARRIER <u>Fed X</u>
PHONE <u>(617) 938-1553</u>	AIRBILL NO. <u>4370158553</u>	COOLER NO. <u>EE 568</u>	

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME <u>Bob Glazier</u>
			COMPANY <u>Holder Assoc</u>
			ADDRESS <u>20000 Horizon Way Jte 500</u> <u>Mt Laurel NJ 08054</u>
			PHONE NO. <u>(609) 273-1110</u>
ATTENTION <u>L Galizia</u>			

PROJECT NAME <u>Holder</u>	PROJECT NO.	P.O. NO. <u>n/a</u>
-------------------------------	-------------	------------------------

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/6/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ IP/SW/031/006/1/1	Soil	6 June 1990 10:25	Pb, As, Cr	
✓ IP/SW/031/012/1/1	"	"	"	
✓ IP/SW/031/018/1/1	"	"	"	
✓ IP/SW/031/027/1/1	"	"	"	
✓ IP/SW/031/028/1/1	"	"	"	
✓ IP/SW/031/030/1/3	"	11:30	CLP Semiwl., Pest/PCB	
✓ IP/SW/031/030/1/4	"		(both in one jar)	
✓ IP/SW/031/036/1/2	Soil	11:30	CLP VOA (2jars)	
✓ IP/SW/031/036/1/5	"	"	CLP TAL Metals	
✓ IP/SW/029/006/1/1	"	12:00	Pb, As, Cr	

SPECIAL INSTRUCTIONS/COMMENTS

Seal # 02145
02577

OVA readings of 60-290ppm on samples IP/SW/031/...
head space + IP/SW/035

Did not test the other samples.

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	Standard <input checked="" type="checkbox"/>
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



APPLIER: (Signature) C Uates DATE SHIPPED 6/5/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158542 COOLER NO. EE 516

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Holder PROJECT NO. P.O. NO. N/A

LINQUISHED BY (Signature) <u>C Uates</u>	RECEIVED BY (Signature)	DATE <u>6/5/90</u>	TIME <u>15:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
LINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/swi/008/012/1/1</u>	<u>Soil</u>	<u>June 90 8:15</u>	<u>Pb, As, Cr</u>	
<u>3 SW/008/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/008/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/008/023/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/008/026/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/008/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/008/012/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/008/036/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/008/012/1/1/2</u>	<u>"</u>	<u>9:45</u>	<u>CLP VOA (2 jars)</u>	
<u>IP/swi/008/012/1/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatile</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Soil # 02147
02146

OVA readings for sample location IP/swi/008 were > 900 ppm

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <u>C Uats</u>		DATE SHIPPED <u>6/5/90</u>	CARRIER <u>Fed X</u>
PHONE <u>(617) 938-1553</u>	AIRBILL NO. <u>4370158542</u>	COOLER NO. <u>EE 566</u>	

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME <u>Bob Glazier</u>
			COMPANY <u>Golder Assoc</u>
			ADDRESS <u>20000 Horizon Way Ste 500</u> <u>Mt Laurel NJ 08054</u>
			PHONE NO. <u>(609) 273-1110</u>

ATTENTION <u>M McCall</u>	PROJECT NAME <u>Golder</u>	PROJECT NO.	P.O. NO. <u>n/a</u>
---------------------------	----------------------------	-------------	---------------------

RELINQUISHED BY (Signature) <u>C Uats</u>	RECEIVED BY (Signature)	DATE <u>6/5/90</u>	TIME <u>15:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/swi/008/012/1/1/4</u>	<u>Soil</u>	<u>5 June 90 9:45</u>	<u>CLP Pest. / PCB</u>	
<u>IP/swi/008/012/1/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>IP/swi/010/006/1/1</u>		<u>11:20</u>	<u>Pb, As, Cr</u>	
<u>IP/swi/010/012/1/1</u>		<u>"</u>	<u>"</u>	
<u>IP/swi/010/012/1/1</u>		<u>"</u>	<u>"</u>	
<u>IP/swi/010/027/1/1</u>		<u>"</u>	<u>"</u>	
<u>IP/swi/010/036/1/1</u>		<u>"</u>	<u>"</u>	
<u>IP/swi/010/045/1/1</u>	<u>Aqueous</u>	<u>8:35</u>	<u>"</u>	
			<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02147
02146

OVA readings for sample location IP/swi/008
were > 900ppm

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/4/90 CARRIER Fed X
 PHONE (609) 938-1553 AIRBILL NO. 4370158531 COOLER NO. EE-536

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazer
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>6/4/90</u>	TIME <u>15:00</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/swi/009/006/1/1</u>	<u>Soil</u>	<u>4 June 1990 13:00</u>	<u>Pb, As, Cr</u>	
<u>IP/swi/009/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/009/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/009/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/009/026/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/011/006/1/1</u>	<u>"</u>	<u>10:00</u>	<u>"</u>	
<u>IP/swi/011/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/011/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/011/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/swi/011/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02138
02139

IP/swi/011/006/1/1/1 had OVA head space of 200ppm.

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/4/90 CARRIER Fed X
 PHONE (619) 938-1553 AIRBILL NO. 4370158531 COOLER NO. EE-536

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Molder Assoc
 ADDRESS 20000 Horizon Way Ste 300
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/4/90</u>	TIME <u>15:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/011/006/4/2</u>	<u>Soil</u>	<u>4 June 1990</u> <u>11:40</u>	<u>CLP VOA (2 jars)</u>	
<u>IP/SW/011/006/4/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/011/006/4/2</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatiles</u>	
<u>IP/SW/011/006/4/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/011/006/4/4</u>	<u>"</u>	<u>"</u>	<u>CLP Pest/PCB</u>	
<u>IP/SW/011/006/4/4</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/011/006/4/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>IP/SW/011/006/4/5</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02138
02139

IP/SW/011/006/1/1/1 had OVA head space = 200 ppm

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 6/1/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 437058505 COOLER NO. EE-151

SEND RESULTS TO Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

CLIENT NAME Bob Glazer
 COMPANY Goldor
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

SUBJECT NAME Goldor PROJECT NO. P.O. NO. N/C

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/1/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>SW/049/036/1/1</u>	<u>Soil</u>	<u>1 Jun 1990 13:30</u>	<u>CLP Pest. / PCB</u>	
<u>TP/SW/049/036/1/1</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>SW/EB4/004/1/1</u>	<u>Aqueous</u>	<u>13:00</u>	<u>Pb, As, Cr</u>	
<u>TP/SW/EB4/004/1/1</u>	<u>"</u>	<u>14:00</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS

Label # 03412
03413

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Uato DATE SHIPPED 6/1/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158505 COOLER NO. EE-151

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME BDB Glazier
 COMPANY Holder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Uato</u>	RECEIVED BY (Signature)	DATE <u>6/1/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/049/006/4/1</u>	<u>Soil</u>	<u>June 1990 13:30</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/049/012/4/1</u>				
<u>IP/SW/049/012/4/M</u>				
<u>IP/SW/049/012/4/N</u>				
<u>IP/SW/049/018/4/1</u>				
<u>IP/SW/049/018/4/2</u>				
<u>IP/SW/049/027/4/1</u>				
<u>IP/SW/049/036/4/1</u>				
<u>IP/SW/049/036/4/2</u>			<u>CLP VOA (2 jars)</u>	
<u>IP/SW/049/036/4/3</u>			<u>CLP Semivolatile</u>	

SPECIAL INSTRUCTIONS/COMMENTS:

Seal # 03410
 03413

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C. Uates DATE SHIPPED 6/1/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158505 COOLER NO. EE-151

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazer
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Uates</u>	RECEIVED BY (Signature)	DATE <u>6/1/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>SP/SW/053/027/1/1</u>	<u>Soil</u>	<u>1 June 1990</u> <u>11:30</u>	<u>Pb, As, Cr</u>	
<u>TP/SW/053/027/1/1</u>	↓	↓	↓	
<u>IP/SW/053/027/1/1</u>	↓	↓	↓	
<u>TP/SW/053/027/1/1</u>	↓	↓	↓	
<u>IP/SW/053/027/1/1</u>	↓	↓	↓	
<u>TP/SW/053/027/1/1</u>	↓	↓	↓	
<u>IP/SW/053/036/1/1</u>	↓	↓	↓	
<u>IP/SW/02/006/1/1</u>	↓	<u>13:10</u>	↓	
<u>IP/SW/102/018/1/1</u>	↓	↓	↓	
<u>IP/SW-1/02/020/1/1</u>	↓	↓	↓	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 03412
03413

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) C Yates DATE SHIPPED 6/1/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158505 COOLER NO. EE-151

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>6/1/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/054/006/H/1</u>	<u>Soil</u>	<u>1 June 1990</u>	<u>Pb, As, Cr</u>	
<u>IP/SW/054/012/H/1</u>				
<u>IP/SW/054/018/H/1</u>				
<u>IP/SW/054/027/H/1</u>				
<u>IP/SW/054/036/H/1</u>				
<u>IP/SW/054/036/H/2</u>				<u>CLP UOA (2 jars)</u>
<u>IP/SW/054/036/H/3</u>				<u>CLP Semi-volatile</u>
<u>IP/SW/054/036/H/4</u>				<u>CLP Pest./PCB</u>
<u>IP/SW/054/034/H/5</u>			<u>CLP TAL Metals</u>	
<u>IP/SW/053/006/H/1</u>		<u>11:30</u>	<u>Pb, As, Cr</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

see # 03412
03413

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLE: (Signature) C Yates DATE SHIPPED 5/31/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 2370158494 COOLER NO. E-76517 cy

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horton Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/31/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>19/SW/058/006/H</u>	<u>3011</u>	<u>5/31/90 9:00</u>	<u>As Pb Cr</u>	
<u>3/SW/058/012/H</u>		"		
<u>19/SW/058/018/H</u>		"		
<u>19/SW/058/027/H</u>		"		
<u>19/SW/058/026/H</u>		"		
<u>19/SW/057/006/H</u>		<u>10:20</u>		
<u>19/SW/057/012/H</u>		"		
<u>19/SW/057/018/H</u>		"		
<u>19/SW/057/027/H</u>		"		
<u>19/SW/057/026/H</u>		"		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02021
02022

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <u>C Yates</u>	DATE SHIPPED <u>5/31/90</u>	CARRIER <u>Fed X</u>
PHONE <u>(617) 938-1553</u>	AIRBILL NO. <u>4370158494</u>	COOLER NO. <u>E-7651708</u>

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME <u>Bob Glazier</u>
	COMPANY <u>Golder Assoc</u>		
	ADDRESS <u>2000 Horizon Way Ste 500</u> <u>Mt. Laurel NJ 08054</u>		
	PHONE NO. <u>(609) 273-1110</u>		
ATTENTION <u>M McCall</u>			

PROJECT NAME <u>Golder</u>	PROJECT NO.	P.O. NO. <u>n/a</u>
RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/31/90</u> TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>- IP/SW/057/004/1/2</u>	<u>Soil</u>	<u>31-May-1990 11:40</u>	<u>CLP VOC (2 jars)</u>	
<u>- IP/SW/057/006/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatile</u>	
<u>- IP/SW/057/006/1/4</u>	<u>"</u>	<u>"</u>	<u>CLP Pest./PCB</u>	
<u>- IP/SW/057/006/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP TAL Metals</u>	
<u>- IP/SW/2841/000/2/1</u>	<u>Argonon</u>	<u>12:35</u>	<u>Pb, As, Cr</u>	
<u>- IP/SW/056/006/1/1</u>	<u>Soil</u>	<u>12:20</u>	<u>"</u>	
<u>- IP/SW/056/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>- IP/SW/056/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>- IP/SW/056/023/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>- IP/SW/054/054/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02021
02022

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Uato DATE SHIPPED 5/31/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158494 COOLER NO. E-78517 cy

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc.
 ADDRESS 2000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Uato</u>	RECEIVED BY (Signature)	DATE <u>5/31/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>SP/SW/056/023/1/1</u>	<u>Soil</u>	<u>31 May 1990</u> <u>12:20</u>	<u>Pb, As, Cr</u>	
<u>TP/SW/056/026/1/M</u>	<u>'</u>	<u>'</u>	<u>'</u>	
<u>IP/SW/056/034/1/A</u>	<u>'</u>	<u>'</u>	<u>'</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Secu # 02021
02022

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <u>C Yates</u>	DATE SHIPPED <u>5/30/90</u>	CARRIER <u>Fed X</u>
PHONE <u>(617) 938-1553</u>	AIRBILL NO. <u>4370158483</u>	COOLER NO. <u>EE 53</u>

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME <u>Bob Glazer</u>
	COMPANY <u>Holder Assoc</u>		
	ADDRESS <u>20000 Horizon Way Ste 500</u> <u>Mt Laurel NJ 08054</u>		
	PHONE NO. <u>(609) 973-1110</u>		
ATTENTION <u>M McCall</u>			

PROJECT NAME <u>holder</u>	PROJECT NO.	P.O. NO. <u>n/a</u>
RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/30/90</u> TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ <u>IP/s-1/091/036/1/1</u>	<u>Soil</u>	<u>29 May 90 9:30</u>	<u>Pb, As, Cr</u>	
✓ <u>IP/s-1/099/036/1/1</u>	<u>"</u>	<u>9:50</u>	<u>"</u>	
✓ <u>IP/s-1/089/036/1/1</u>	<u>"</u>	<u>10:15</u>	<u>"</u>	
✓ <u>IP/s-1/089/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>IP/s-1/ES40/000/2/1</u>	<u>Aqueous</u>	<u>10:55</u>	<u>"</u>	
✓ <u>IP/s-1/095/036/1/1</u>	<u>Soil</u>	<u>11:00</u>	<u>"</u>	
✓ <u>IP/s-1/088/036/1/1</u>	<u>"</u>	<u>11:30</u>	<u>"</u>	
✓ <u>IP/s-1/088/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>IP/s-1/088/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>IP/s-1/097/036/1/1</u>	<u>"</u>	<u>12:00</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

SOIL # ~~03409~~ 03410 03411 cy

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)



CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) C Yates DATE SHIPPED 5/29/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158483 COOLER NO. EE 53

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 573-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>5/30/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/S-1/087/036/V1</u>	<u>3011</u>	<u>5/29/90 12:30</u>	<u>As Pb Cr</u>	
<u>IP/S-1/096/036/V1</u>		<u>12:50</u>		
<u>IP/S-1/086/036/V1</u>		<u>13:15</u>		
<u>IP/S-1/055/036/V1</u>		<u>13:35</u>		
<u>IP/SW/055/006/V1</u>		<u>5/30/90 9:40</u>		
<u>IP/SW/055/014/V1</u>		<u>"</u>		
<u>IP/SW/055/018/V1</u>		<u>"</u>		
<u>IP/SW/055/027/V1</u>		<u>"</u>		
<u>IP/SW/055/026/V1</u>		<u>"</u>		
<u>IP/SW/059/006/V1</u>		<u>12:20</u>		

SPECIAL INSTRUCTIONS / COMMENTS

Seal # ~~03409~~ 03410 03411 cy

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 5/30/90 CARRIER Fed Ex
 PHONE (617) 938-1553 AIRBILL NO. 4370158483 COOLER NO. EE 53

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Associates
 ADDRESS 20,000 Horizon Way, Ste. 500
Mt. Laurel, NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall
 PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/30/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/sw/059/012/M/1</u>	<u>Soil</u>	<u>30 May 1990</u> <u>12:20</u>	<u>Pb, As, Cr</u>	
<u>IP/sw/059/018/M/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/059/027/M/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/059/036/M/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/sw/059/034/M/2</u>	<u>"</u>	<u>"</u>	<u>CLP VOC (2 jars)</u>	
<u>IP/sw/059/036/M/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semivolatile</u>	
<u>IP/sw/059/036/M/4</u>	<u>"</u>	<u>"</u>	<u>CLP Pest./PCB</u>	
<u>IP/sw/059/036/M/5</u>	<u>"</u>	<u>"</u>	<u>CLP ^{TAL} Metals (Inorganics)</u>	
<u>Trip blank</u>	<u>aqueous</u>	<u>5/25/90</u> <u>- 5/30/90</u>		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03409 cy
03410
03411

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	Standard <input checked="" type="checkbox"/>
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



AMPLER: (Signature) C Yates DATE SHIPPED 5/24/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158461 COOLER NO. 568 - 160

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/24/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/24/006/1/1</u>	<u>5011</u>	<u>5/24/90 8:30</u>	<u>As Pb Cr</u>	
<u>IP/SW/24/006/1/2</u>		<u>"</u>		
<u>IP/SW/24/006/1/3</u>		<u>9:30</u>		
<u>IP/SW/24/006/1/4</u>		<u>"</u>		
<u>IP/SW/24/006/1/5</u>		<u>"</u>		
<u>IP/SW/24/006/1/6</u>		<u>10:00</u>		
<u>IP/SW/24/006/1/7</u>		<u>"</u>		
<u>IP/SW/24/006/1/8</u>		<u>"</u>		
<u>IP/SW/24/006/1/9</u>		<u>"</u>		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03405 > cooler # 568
 03406 >
 03407 > cooler # 160
 03408 >

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) C Uates DATE SHIPPED 5/24/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158461 COOLER NO. 568 + 160

SHIP TO: Enseco East
2200 Cottontail Lane
Somerset, NJ 08873
(201) 469-5800
(201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Uates</u>	RECEIVED BY (Signature)	DATE <u>5/24/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IPSW/254/012/1/2/1</u>	<u>Soil</u>	<u>5/24/90</u> <u>10:00</u>	<u>As Pb Cr</u>	
<u>IPSW/254/006/1/1</u>		<u>10:30</u>		
<u>IPSW/254/017/1/1</u>		"		
<u>IPSW/254/018/1/1</u>		"		
<u>IPSW/254/019/1/1</u>		"		
<u>IPSW/254/027/1/1</u>		"		
<u>IPSW/254/036/1/1</u>		"		
<u>IPSW/254/006/1/1</u>		<u>11:30</u>		
<u>IPSW/254/012/1/1</u>		"		
<u>IPSW/254/012/1/1</u>		"		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03405 > cooler # 568
 03406 >
 03407 > cooler # 160
 03408 >

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)



A CORNING Company

CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) C Gates DATE SHIPPED 5/24/90 CARRIER Fed X
 PHONE (677) 938-1553 AIRBILL NO. 4370158461 COOLER NO. 568 + 160

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Gates</u>	RECEIVED BY (Signature)	DATE <u>5/24/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IPSW/25M/012/1/1</u>	<u>SOIL</u>	<u>5/24/90 11:33</u>	<u>As Pb Cr</u>	
<u>PSW/25M/018/1/1</u>		"		
<u>IPSW/25M/027/1/1</u>		"		
<u>PSW/25M/036/1/1</u>		"		
<u>IPSW/25R/006/1/1</u>		<u>12:00</u>		
<u>PSW/25R/012/1/1</u>		"		
<u>PSW/25R/018/1/1</u>		"		
<u>IPSW/25R/027/1/1</u>		"		
<u>PSW/25R/036/1/1</u>		"		
<u>IPSW/264/006/1/1</u>		<u>13:00</u>		

SPECIAL INSTRUCTIONS/COMMENTS:

Seal # 03405 > cooler # 568
 03406 >
 03407 > cooler # 160
 03408 >

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 5/24/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158461 COOLER NO. 568 + 160

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/24/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/26/017/1/1</u>	<u>SOIL</u>	<u>5/24/90 13:00</u>	<u>AS Pb Cr</u>	
<u>IP/SW/26/018/1/1</u>		"		
<u>IP/SW/26/027/1/1</u>		"		
<u>IP/SW/26/036/1/1</u>		"		
<u>IP/SW/26M/006/1/1</u>		<u>13:30</u>		
<u>IP/SW/26M/017/1/1</u>		"		
<u>IP/SW/26M/018/1/1</u>		"		
<u>IP/SW/26M/027/1/1</u>		"		
<u>IP/SW/26M/036/1/1</u>		"		
<u>IP/SW/26M/026/1/1</u>		"		

SPECIAL INSTRUCTIONS / COMMENTS

SOIL # 03405 > cooler # 568
03406 >
03407 > cooler # 160
03408 >

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)



CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) C Yates DATE SHIPPED 5/23/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 9349665953 COOLER NO. EE 567

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Goldier Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 573-1110

ATTENTION m McCau

PROJECT NAME Goldier PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>5/23/90</u>	TIME <u>15:00</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/23R/006/1/1/</u>	<u>Soil</u>	<u>5/23/90 9:00</u>	<u>Ar Pb Cr</u>	
<u>IP/SW/23R/012/1/2/</u>		<u>"</u>	<u>"</u>	
<u>IP/SW/23R/012/1/1/</u>		<u>"</u>	<u>"</u>	
<u>IP/SW/23R/012/1/1/</u>		<u>"</u>	<u>"</u>	
<u>IP/SW/23R/012/1/1/</u>		<u>"</u>	<u>"</u>	
<u>IP/SW/23R/012/1/1/</u>		<u>"</u>	<u>"</u>	
<u>IP/SW/50R/006/1/2/</u>		<u>9:40</u>	<u>"</u>	
<u>IP/SW/50R/012/1/2/</u>		<u>"</u>	<u>"</u>	
<u>IP/SW/50R/012/1/2/</u>		<u>"</u>	<u>"</u>	
<u>IP/SW/50R/027/1/2/</u>		<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03403
03404

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 5/23/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9349665953 COOLER NO. EE 567

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazer
 COMPANY Goldor Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall
 PROJECT NAME Goldor PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>5/23/90</u>	TIME <u>15:00</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>3511</u>	<u>3011</u>	<u>5/23/90 11:40</u>	<u>As Pb Cr</u>	
<u>3512</u>	<u>3011</u>	<u>"</u>	<u>"</u>	
<u>3513</u>	<u>3011</u>	<u>"</u>	<u>"</u>	
<u>3514</u>	<u>3011</u>	<u>"</u>	<u>"</u>	
<u>3515</u>	<u>3011</u>	<u>"</u>	<u>"</u>	
<u>3516</u>	<u>3011</u>	<u>"</u>	<u>"</u>	
<u>3517</u>	<u>3011</u>	<u>12:20</u>	<u>"</u>	
<u>3518</u>	<u>3011</u>	<u>"</u>	<u>"</u>	
<u>3519</u>	<u>3011</u>	<u>"</u>	<u>"</u>	
<u>3520</u>	<u>3011</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 03403
03404

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<u>Standard</u>
------------------------------	---	---------------------------------	-----------------

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 5/23/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9349665953 COOLER NO. EE 567

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall

PROJECT NAME Holder PROJECT NO. P.O. NO.

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/23/90</u>	TIME <u>15:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/502/018/1/1</u>	<u>Soil</u>	<u>5/23/90 12:20</u>	<u>Pb, Ar, Cr</u>	
<u>IP/SW/502/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/502/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/EE57/00/1/1</u>	<u>Aqueous</u>	<u>11:40</u>	<u>"</u>	
<u>IP/S-1/100/006/1/1</u>	<u>Soil</u>	<u>5/22/90 8:00</u>	<u>"</u>	
<u>IP/S-1/100/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/S-1/100/036/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/S-1/048/006/1/1</u>	<u>"</u>	<u>9:00</u>	<u>"</u>	
<u>IP/S-1/067/006/1/1</u>	<u>"</u>	<u>9:10</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03403
03404

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)



CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) C Yates DATE SHIPPED 5/21/90 CARRIER Fed X
 PHONE (619) 938-1553 AIRBILL NO. 9907837321 COOLER NO. EE 711

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 213-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/21/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ <u>P/SW/21L/006/2/1</u>	<u>Soil</u>	<u>21 May 90 8:40</u>	<u>Pb, Ar, Cr</u>	
✓ <u>P/SW/21L/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>P/SW/21L/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>P/SW/21L/027/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>P/SW/21L/036/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>P/SW/21M/006/1/2/1</u>	<u>"</u>	<u>21 May 90 9:30</u>	<u>"</u>	
✓ <u>P/SW/21M/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>P/SW/21M/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>P/SW/21M/027/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>P/SW/21M/036/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Sec# 03401
03402

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 5/21/90 CARRIER FedEx
 PHONE (609) 938-1553 AIRBILL NO. 9907837321 COOLER NO. EE 711

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 300
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/21/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ IP/SW/21R/006/1/2/1	Soil	21 May 90 10:00	Pb, Ar, Cr	
✓ IP/SW/21R/012/1/2/1	"	"	"	
✓ IP/SW/21R/018/1/2/1	"	"	"	
IP/SW/21R/027/1/2/1	"	"	"	
✓ IP/SW/21R/027/1/2/2	"	"	CLP VOC (2 jars)	
✓ IP/SW/21R/027/1/2/3	"	"	CLP Semivolatile	
✓ IP/SW/21R/027/1/2/4	"	"	CLP Pest / PCB	
✓ IP/SW/21R/027/1/2/5	"	"	CLP TAL Metals	
✓ IP/SW/21R/036/1/2/1	"	"	Pb, Ar, Cr	
✓ IP/SW/EB3600/2/2/1	Aqueous	21 May 90 12:15	"	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 03401
 03402

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) C Yates DATE SHIPPED 5/21/90 CARRIER Fed X
 PHONE (609) 938-1553 AIRBILL NO. 9907837321 COOLER NO. EE 711

SHIP TO: Enseco East
2200 Cottontail Lane
Somerset, NJ 08873
(201) 469-5800
(201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
COMPANY Holder Assoc
ADDRESS 2000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

ATTENTION M McCann

PROJECT NAME Holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/21/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ <u>19SW/22/006/1/2/1</u>	<u>Soil</u>	<u>21 May 90 11:00</u>	<u>Pb, Ar, Cr</u>	
✓ <u>19SW/22/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>19SW/22/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>19SW/22/027/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>19SW/22/036/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>19SW/22M/006/1/2/1</u>	<u>"</u>	<u>21 May 90 11:30</u>	<u>"</u>	
✓ <u>19SW/22M/012/1/2/1</u>	<u>"</u>		<u>"</u>	
✓ <u>19SW/22M/018/1/2/1</u>	<u>"</u>		<u>"</u>	
✓ <u>19SW/22M/027/1/2/1</u>	<u>"</u>		<u>"</u>	
✓ <u>19SW/22M/036/1/2/1</u>	<u>"</u>		<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03401
03402

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 5/21/90 CARRIER Fed X
 PHONE (619) 938-1553 AIRBILL NO. 9907837321 COOLER NO. EE 711

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/21/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IPSW/22M/036/1/1/1</u>	<u>Soil</u>	<u>21 May 90 11:30</u>	<u>Pb, As, Cr</u>	
<u>IPSW/22R/006/1/1/1</u>	<u>"</u>	<u>21 May 90 11:50</u>	<u>"</u>	
<u>IPSW/22R/012/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/22R/018/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/22R/027/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/22R/036/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23M/006/1/1/1</u>	<u>"</u>	<u>21 May 90 13:00</u>	<u>"</u>	
<u>IPSW/23M/012/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23M/018/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23M/012/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03401
03402

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<u>Standard</u>
------------------------------	---	---------------------------------	-----------------

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER (Signature) C Yates DATE SHIPPED 5/21/90 CARRIER Fed X
 PHONE (677) 938-1553 AIRBILL NO. 990783732 COOLER NO. EE 711

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc.
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 213-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/21/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IPSW/23M/012/1/1/1</u>	<u>Soil</u>	<u>21 May 90 13:00</u>	<u>Pb, Ar, Cr</u>	
<u>IPSW/23M/027/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23M/036/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23L/006/1/2/1</u>	<u>"</u>	<u>21 May 90 13:30</u>	<u>"</u>	
<u>IPSW/23L/017/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23L/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23L/027/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23L/036/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/23L/006/1/2/1</u>	<u>"</u>	<u>21 May 90 14:00</u>	<u>"</u>	
<u>IPSW/23L/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 03401
03402

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <i>C Yates</i>		DATE SHIPPED 5/21/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 9907837.921	COOLER NO. EE 711	

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME Bob Glazier
			COMPANY Golder Assoc
			ADDRESS 20000 Horizon Way Ste 500 Mt Laurel NJ 08054
			PHONE NO. (609) 273-1110
ATTENTION M McCall			

PROJECT NAME Golder	PROJECT NO.	P.O. NO. n/a
------------------------	-------------	-----------------

RELINQUISHED BY (Signature) <i>C Yates</i>	RECEIVED BY (Signature)	DATE 5/21/90	TIME 16:30
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ IP/SW/23R/08/12/1	Soil	21 May 90 14:00	Pb, Ar, Cr	
✓ IP/SW/23R/027/12/1	"	"	"	
✓ IP/SW/23R/036/12/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03401
03402

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLE: (Signature) <i>[Signature]</i>		DATE SHIPPED 19 May 90	CARRIER Federal Express
PHONE 617-938-1553	AIRBILL NO. 4370158800	COOLER NO. EE 723	

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME Bob Glazier
			COMPANY Golder Associates
			ADDRESS 20,000 Horizon Way, Ste. 500 Mt Laurel NJ 08054
			PHONE NO. (609) - 273-1110

ATTENTION M. McCall	PROJECT NAME Golder	PROJECT NO.	P.O. NO. N/A
------------------------	------------------------	-------------	-----------------

RELINQUISHED BY (Signature) <i>C. Yates</i>	RECEIVED BY (Signature)	DATE 5/19/90	TIME 16:00
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW/194/02/1/2/1	Soil	19 May 90 8:20	Pb, Ar, Cr	
IP/SW/194/02/1/2/1	"	19 May 90 9:00	"	
IP/SW/194/02/1/2/1	"	19 May 90 9:10	"	
IP/SW/206/006/1/2/1	"	19 May 90 10:10	"	
IP/SW/206/006/1/2/1	"	"	"	
IP/SW/206/006/1/2/1	"	19 May 90 10:20	"	
IP/SW/206/006/1/2/1	"	"	"	
IP/SW/206/006/1/2/1	"	19 May 90 10:00	"	
IP/SW/512/006/1/2/1	"	19 May 90 11:30	"	
IP/SW/512/006/1/2/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 2259

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) *[Signature]* DATE SHIPPED _____ CARRIER **Federal Express**
 PHONE **617-938-1553** AIRBILL NO. **4370158800** COOLER NO. **EE 723**

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME **Bob Glazier**
 COMPANY **Gober Associates**
 ADDRESS **20,000 Horizon Way Ste. 500**
Mt. Laurel, NJ 08054
 PHONE NO. **(609) 273-1110**

ATTENTION **M. McCall**

PROJECT NAME **Gober** PROJECT NO. _____ P.O. NO. _____

RELINQUISHED BY (Signature) <i>C. Uato</i>	RECEIVED BY (Signature) _____	DATE 5/19/90	TIME 16:00
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW/S1R/018/1/2/1	Soil	19 May 90 11:30	Pb, Ar, Cr	
IP/SW/S1R/027/1/2/1	"	"	"	
IP/SW/S1R/026/1/2/1	"	"	"	
IP/SW/S1M/006/1/2/1	"	19 May 90 11:50	"	
IP/SW/S1M/012/1/2/1	"	"	"	
IP/SW/S1M/018/1/2/1	"	"	"	
IP/SW/S1M/023/1/2/1	"	"	"	
IP/SW/S1M/036/1/2/1	"	"	"	
IP/SW/S1L/006/1/2/1	"	19 May 90 12:00	"	
IP/SW/S1L/012/1/2/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

See # 2259

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge) _____	RUSH (50-100% Surcharge) _____	Standard <input checked="" type="checkbox"/>
------------------------------	--	--------------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) *[Signature]* DATE SHIPPED **19 May 90** CARRIER **Federal Express**
 PHONE **617-938-1553** AIRBILL NO. **4370158800** COOLER NO. **EE 723**

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME **Bob Glazier**
 COMPANY **Golder Associates**
 ADDRESS **20,000 Horizon Way Ste. 500**
Mt. Laurel, NJ 08054
 PHONE NO. **(609) 273-1110**

ATTENTION **M. McCall**

OBJECT NAME **Golder** PROJECT NO. P.O. NO.

RELINQUISHED BY (Signature) <i>C. Ukates</i>	RECEIVED BY (Signature)	DATE 5/19/90	TIME 16:00
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<i>IT-22/S14/018/h/h/</i>	<i>Soil</i>	<i>19 May 90 1200</i>	<i>Pl, Ar, Cr</i>	
<i>IT-22/S14/027/h/h/</i>	<i>"</i>	<i>"</i>	<i>"</i>	
<i>IT-22/S14/026/h/h/</i>	<i>"</i>	<i>"</i>	<i>"</i>	

SPECIAL INSTRUCTIONS / COMMENTS

See # 2259

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <u>Jan Kennedy</u>	DATE SHIPPED <u>5/18/90</u>	CARRIER <u>Fed X</u>
PHONE <u>(617) 938-1553</u>	AIRBILL NO. <u>4370158811</u>	COOLER NO. <u>E-119</u>

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME <u>Bob Glazier</u>
	COMPANY <u>Golder Assoc</u>		
	ADDRESS <u>20000 Horizon Way Ste 500</u> <u>Mt. Laurel NJ 08054</u>		
	PHONE NO. <u>(609) 273-1110</u>		
ATTENTION <u>M McCall</u>			

PROJECT NAME <u>Golder</u>	PROJECT NO.	P.O. NO. <u>n/a</u>
RELINQUISHED BY (Signature) <u>C. Gates</u>	RECEIVED BY (Signature)	DATE <u>5/18/90</u> TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>X IP/SW/141/004/1/2/1</u>	<u>Soil</u>	<u>18 May 90 8:40</u>	<u>Pb, Ar, Cr</u>	
<u>X IP/SW/144/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>X IP/SW/144/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>✓ IP/SW/144/006/1/2/1</u>	<u>"</u>	<u>18 May 90 9:50</u>	<u>"</u>	
<u>✓ IP/SW/144/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>✓ IP/SW/144/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/144/006/1/2/1</u>	<u>"</u>	<u>18 May 90 10:10</u>	<u>"</u>	
<u>IP/SW/144/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/144/018/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>✓ IP/SW/144/012/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 2258

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Jan Kunder DATE SHIPPED 5/18/90 CARRIER Fed X
 PHONE (617) 938-1558 AIRBILL NO. 4370158811 COOLER NO. E-119

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. P.O. NO.

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
		<u>5/18/90</u>	<u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/18R/006/4/1</u>	<u>Soil</u>	<u>5/18/90 13:10</u>	<u>Pb, Ar, Cr</u>	
<u>IP/SW/19L/006/4/1</u>	<u>"</u>	<u>13:55</u>	<u>"</u>	
<u>IP/SW/19M/006/4/1</u>	<u>"</u>	<u>14:00</u>	<u>"</u>	
<u>IP/SW/19R/006/4/1</u>	<u>"</u>	<u>14:05</u>	<u>"</u>	
<u>IP/SW/EB33/006/2/1</u>	<u>Aqueous</u>	<u>8:15</u>	<u>"</u>	
<u>IP/SW/EB33/006/2/1</u>	<u>"</u>	<u>11:00</u>	<u>"</u>	
<u>IP/SW/19R/006/1/1</u>	<u>Soil</u>	<u>14:05</u>	<u>"</u>	
<u>IP/SW/19R/006/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 2258

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<u>Standard</u>
------------------------------	---	---------------------------------	-----------------

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) [Signature] DATE SHIPPED 5/18/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158811 COOLER NO. E-119

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazer
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>[Signature]</u>	RECEIVED BY (Signature) _____	DATE <u>5/18/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IPSW/12L/006/4/1</u>	<u>SOIL</u>	<u>5/18/90 11:10</u>	<u>As Pb Cr</u>	
<u>IPSW/13M/006/1/1</u>	<u>"</u>	<u>11:20</u>	<u>"</u>	
<u>IPSW/13M/006/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/13M/006/1/2/1</u>	<u>"</u>	<u>11:50</u>	<u>"</u>	
<u>IPSW/124/006/1/2/1</u>	<u>"</u>	<u>11:45</u>	<u>"</u>	
<u>IPSW/12M/006/4/1</u>	<u>"</u>	<u>12:00</u>	<u>"</u>	
<u>IPSW/12R/006/1/1</u>	<u>"</u>	<u>12:20</u>	<u>"</u>	
<u>IPSW/10L/006/4/1</u>	<u>"</u>	<u>13:00</u>	<u>"</u>	
<u>IPSW/18M/006/4/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IPSW/18M/006/4/1</u>	<u>"</u>	<u>13:05</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 2258

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u> </u> Immediate Attention (200% Surcharge)	<u> </u> RUSH (50-100% Surcharge)	<u> ✓ </u> Standard
------------------------------	--	--	-----------------------

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) <i>[Signature]</i>	DATE SHIPPED: 5/17/90	CARRIER: Fed X
PHONE: (617) 938-1553	AIRBILL NO.: 9907837310	COOLER NO.: E-118

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME: Bob Glazier
	COMPANY: Holder Assoc		
	ADDRESS: 20000 Horizon Way Ste 500 Mt Laurel NJ 08054		
	PHONE NO.: (609) 273-1110		

ATTENTION: M McCall	PROJECT NAME: Holder	PROJECT NO.:	P.O. NO.: n/a
---------------------	----------------------	--------------	---------------

RELINQUISHED BY (Signature): <i>[Signature]</i>	RECEIVED BY (Signature):	DATE: 5/17/90	TIME: 16:30
RELINQUISHED BY (Signature):	RECEIVED BY (Signature):	DATE:	TIME:
RELINQUISHED BY (Signature):	RECEIVED BY (Signature):	DATE:	TIME:
RELINQUISHED FROM LAB BY (Signature):	RECEIVED BY (Signature):	DATE:	TIME:

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ P/SW/16L/006/1/2/1	SOIL	5/17/90 9:20	As Pb Cr	
✓ P/SW/16L/012/1/2/1		↓		
✓ P/SW/16L/018/1/2/1		↓		
✓ P/SW/16L/027/1/2/1		↓		
✓ P/SW/16L/036/1/2/1		↓		
✓ P/SW/16M/006/1/2/1		10:00		
✓ P/SW/16M/012/1/2/1		↓		
✓ P/SW/16M/018/1/2/1		↓		
✓ P/SW/16M/027/1/2/1	↓			

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02890
02892

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <i>[Signature]</i>	DATE SHIPPED 5/17/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 9907837310	COOLER NO. E-118

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME Bob Glazler
			COMPANY Holder Assoc
			ADDRESS 20000 Horizon Way Ste 500 Mt Laurel NJ 08054
			PHONE NO. (609) 273-1110
ATTENTION M. McCall			

PROJECT NAME Holder	PROJECT NO.	P.O. NO. n/a
------------------------	-------------	-----------------

RELINQUISHED BY (Signature) <i>C. Gates</i>	RECEIVED BY (Signature)	DATE 5/17/90	TIME 16:30
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ IP/SW/16M/026/1/2/1	SD11	5/17/90 10:00	As Pb Cr	
✓ IP/SW/16M/006/1/2/1		10:20		
✓ IP/SW/16M/006/1/2/1				
✓ IP/SW/16M/006/1/2/1				
✓ IP/SW/16M/012/1/2/1				
✓ IP/SW/16M/018/1/2/1				
✓ IP/SW/16M/027/1/2/1				
✓ IP/SW/16M/036/1/2/1				
✓ IP/SW/15L/006/1/2/1		12:30		
✓ IP/SW/15L/012/1/2/1				

SPECIAL INSTRUCTIONS / COMMENTS:

 Seal # 02890
 02892

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	Standard <input checked="" type="checkbox"/>
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SENDER: (Signature) Tan Kennedy DATE SHIPPED 5/17/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9907837310 COOLER NO. E-118

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazer
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 873-1110

ATTENTION M. McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Gates</u>	RECEIVED BY (Signature)	DATE <u>5/17/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/15L/018/1/1</u>	<u>SOIL</u>	<u>5/17/90</u> <u>12:30</u>	<u>As, Pb, Cr</u>	
<u>IP/SW/15L/027/1/1</u>		↓		
<u>IP/SW/15L/039/1/1</u>		↓		
<u>IP/SW/15M/006/1/1</u>		<u>13:00</u>		
<u>IP/SW/15M/012/1/1</u>		↓		
<u>IP/SW/15M/014/1/1</u>		↓		
<u>IP/SW/15M/021/1/1</u>		↓		
<u>IP/SW/15M/027/1/1</u>		↓		
<u>IP/SW/15M/036/1/1</u>		<u>13:40</u>		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02890
02890

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Jan Kennedy DATE SHIPPED 5/17/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 0907837310 COOLER NO. E-118

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall

PROJECT NAME holder PROJECT NO. P.O. NO.

RELINQUISHED BY (Signature) <u>C. Yates</u>	RECEIVED BY (Signature)	DATE <u>5/17/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/15R/012/1/1</u>	<u>Soil</u>	<u>5/17/90 13:40</u>	<u>Ar, Pb, Cr</u>	
<u>IP/SW/15R/018/1/1</u>	↓	↓	↓	
<u>IP/SW/15R/027/1/1</u>	↓	↓	↓	
<u>IP/SW/15R/036/1/1</u>	↓	↓	↓	
<u>IP/SW/15R/041/1/1</u>	↓	↓	↓	
<u>IP/SW/EB33600/2/1/1</u>	<u>aqueous</u>	<u>5/17/90 12:15</u>	<u>Ar, Pb, Cr</u>	
<u>IP/SW/15L/030/1/1</u>	<u>Soil</u>	<u>12:30</u>	<u>Ar, Pb, Cr</u>	
<u>IP/SW/15L/030/1/1</u>	<u>Soil</u>	<u>12:30</u>	<u>Ar, Pb, Cr</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02890
02892

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



IMPLER. (Signature) Jan Kennedy DATE SHIPPED 5/16/90 CARRIER Fed X
 PHONE (609) 273-1110 AIRBILL NO. 9907837365 COOLER NO. E 701

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

CLIENT NAME: Bob Glazier
 COMPANY: Golder Assoc
 ADDRESS: 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION: M McCull

PROJECT NAME: Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
<u>C. Uates</u>		<u>5/16/90</u>	<u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW1/07M/006/1/2/1</u> ✓	<u>5011</u>	<u>5/16/90</u> <u>11:30</u>	<u>As Pb Cr</u>	
<u>IP/SW1/07M/022/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/07M/018/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/07M/027/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/07M/036/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/07R/006/1/2/1</u> ✓	<u>"</u>	<u>12:00</u>	<u>"</u>	
<u>IP/SW1/07R/012/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/07R/018/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/07R/027/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/07R/030/1/2/1</u> ✓	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

seal #02888
 02887

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)



CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) Jan Kennedy DATE SHIPPED 5/16/90 CARRIER Fed X
 PHONE (607) 938-1553 AIRBILL NO. 9907837365 COOLER NO. E 701

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 213-1110

ATTENTION M McCall PROJECT NAME holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>5/16/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW1/074/006/1/2/1 ✓	SOIL	5/16/90 2:30	As Pb Cr	
IP/SW1/074/012/1/2/1 ✓		"		
IP/SW1/074/018/1/2/1 ✓		"		
IP/SW1/074/027/1/2/1 ✓		"		
IP/SW1/074/036/1/2/1 ✓		"		
IP/SW1/001/006/1/2/1 ✓		14:20		
IP/SW1/001/006/1/2/1 ✓		"		
IP/SW1/001/018/1/2/1 ✓		"		
IP/SW1/001/027/1/2/1 ✓		"		
IP/SW1/001/036/1/2/1 ✓		"		

SPECIAL INSTRUCTIONS / COMMENTS.

Seal # 02888
02887

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



AMPLER: (Signature) [Signature] DATE SHIPPED 5/16/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9907837365 COOLER NO. E701

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Gates</u>	RECEIVED BY (Signature)	DATE <u>5/16/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP SW 1/001/036/1/2/2</u>	<u>5011</u>	<u>5/16/90 14:20</u>	<u>CLP VOL</u>	
<u>IP W 1/001/036/1/2/3</u>	<u>"</u>	<u>"</u>	<u>CLP Semivol</u>	
<u>IP SW 1/001/036/1/2/4</u>	<u>"</u>	<u>"</u>	<u>CLP Pest / PCB</u>	
<u>IP W 1/001/036/1/2/5</u>	<u>"</u>	<u>"</u>	<u>CLP Metals (inorganics)</u>	

SPECIAL INSTRUCTIONS / COMMENTS:
Seal # 02887
02888

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Jim Kennedy DATE SHIPPED 5/15/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9708 050730 COOLER NO. E-111

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. N/A

RELINQUISHED BY (Signature) <u>C Gates</u>	RECEIVED BY (Signature)	DATE <u>5/15/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW/05/06/06/1/1	SO11	5/15/90	AS PO CR	
IP/SW/05/04/02/1/1	11	"	"	
IP/SW/05/01/01/1/1	11	"	"	
IP/SW/05/02/1/1/1	11	"	"	
IP/SW/05M/004/1/1	11	9:00	11	
IP/SW/05M/006/1/1	11	"	11	
IP/SW/05M/012/1/1	11	"	11	
IP/SW/05M/018/1/1	11	"	11	
IP/SW/05M/021/1/1	11	"	11	
IP/SW/05R/006/1/1	11	9:30	11	

SPECIAL INSTRUCTIONS / COMMENTS:

SEAL # 02891
 02894

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Tom Kennedy DATE SHIPPED 5/15/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9708050730 COOLER NO. E-111

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall
 PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Uates</u>	RECEIVED BY (Signature)	DATE <u>5/15/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>1P/SW/05R/012/1/1</u>	<u>Soil</u>	<u>5/15/90 9:30</u>	<u>As Pb Cr</u>	
<u>1P/SW/05R/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1P/SW/05R/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1P/SW/05R/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1P/SW/05R/023/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1P/SW/04M/006/1/1</u>	<u>"</u>	<u>10:20</u>	<u>"</u>	
<u>1P/SW/04M/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1P/SW/04M/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1P/SW/04M/026/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1P/SW/04L/004/1/1</u>	<u>"</u>	<u>11:00</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS.

Seal # 02891
02894

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) [Signature] DATE SHIPPED 5/15/90 CARRIER Fed X
 PHONE (677) 938-1553 AIRBILL NO. 9708050730 COOLER NO. E-11

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY holder Assoc
 ADDRESS 20000 horizon way ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Uates</u>	RECEIVED BY (Signature)	DATE <u>5/15/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>09L</u> ✓ <u>IP/SW/042/012/1/1</u>	<u>SOIL</u>	<u>5/15/90 11:00</u>	<u>As Pb Cr</u>	
✓ <u>IP/LW/042/015/1/1</u>	"	"	"	
✓ <u>IP/SW/042/006/1/1</u>	"	<u>11:20</u>	"	
✓ <u>IP/SW/042/012/1/1</u>	"	"	"	
✓ <u>IP/SW/042/018/1/1</u>	"	"	"	
✓ <u>IP/SW/042/027/1/1</u>	"	"	"	
✓ <u>IP/SW/042/034/1/1</u>	"	"	"	
✓ <u>IP/SW/032/006/1/1</u>	"	<u>12:15</u>	"	
✓ <u>IP/SW/032/012/1/1</u>	"	"	"	
✓ <u>IP/SW/032/018/1/1</u>	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02891
02894

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) *[Signature]* DATE SHIPPED 5/15/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9708050730 COOLER NO. E-111

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc.
 ADDRESS 20000 Horizon Way Ste 500
 Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall
 PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <i>[Signature]</i>	RECEIVED BY (Signature)	DATE 5/15/90	TIME 16:00
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ <i>SP/SW/03R/027/4/1</i>	SOIL	5/15/90 13:15	As Pb Cr	
✓ <i>P/SW/03R/SUR/1/1</i>	"	"	"	
✓ <i>SP/SW/03R/006/4/1</i>	"	13:40	"	
✓ <i>TP/SW/03M/12/1/1</i>	"	"	"	
✓ <i>P/SW/03M/018/1/1</i>	"	"	"	
✓ <i>TP/SW/03M/027/1/1</i>	"	"	"	
✓ <i>P/SW/03M/SUR/1/1</i>	"	"	"	
✓ <i>TP/SW/03M/019/1/1</i>	"	"	"	
✓ <i>P/SW/03M/014/1/1</i>	"	"	"	
✓ <i>SP/SW/03M/012/1/1</i>	"	13:15	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02891
02894

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	Standard <input checked="" type="checkbox"/>
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) *[Signature]* DATE SHIPPED 5/15/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9708050730 COOLER NO. E-111

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazer
 COMPANY Golder
 ADDRESS 20000 Horizon Wdy Ste 500
 Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <i>[Signature]</i>	RECEIVED BY (Signature)	DATE 5/15/90	TIME 16:00
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW/034/006/4/1	Soil	5/15/90 14:00	As Pb Cr	
IP/SW/034/012/4/1	"	"		
IP/SW/034/018/4/1	"	"		
IP/SW/034/027/4/1	"	"		
IP/SW/034/029/4/1	"	"		
IP/SW/034/502/4/1	"	"		
IP/SW/002/006/4/1	"	14:30		
IP/SW/002/012/4/1	"	"		
IP/SW/002/018/4/1	"	"		
IP/SW/002/027/4/1	"	"		

SPECIAL INSTRUCTIONS / COMMENTS:

Serial # 02891
02894

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) [Signature] DATE SHIPPED 5/15/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9708050730 COOLER NO. E-111

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazer
 COMPANY holder
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>[Signature]</u>	RECEIVED BY (Signature) _____	DATE <u>5/15/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW1/002/030/4/1</u>	<u>Soil</u>	<u>5/15/90 14:30</u>	<u>As To Cr</u>	
<u>IP/SW1/002/030/4/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW1/EB21/002/2/1</u>	<u>Aqueous</u>	<u>10:05</u>	<u>"</u>	
<u>IP/SW1/EB32/002/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:
SLW # 02891
02894

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<u>Standard</u>
------------------------------	---	---------------------------------	-----------------

ENSECO EAST LOG NUMBER (lab use only) _____

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) <i>J. K...</i>		DATE SHIPPED 5/14/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 9907837376	COOLER NO. E-111	
SHIP TO Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME Bob Glazier	
		COMPANY Golder Assoc	
		ADDRESS 20000 Horizon Way Ste 500 Mt Laurel NJ 08054	
ATTENTION M. McCall		PHONE NO. (609) 273-1110	
PROJECT NAME Golder	PROJECT NO.	P.O. NO. n/a	
RELINQUISHED BY (Signature) <i>C. Gates</i>	RECEIVED BY (Signature)	DATE 5/14/90	TIME 16:00
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ IP/SW/17R/006/1/2/1	Soil	5/14/90 9:30	Pb, Ar, Cr	
✓ IP/SW/17R/012/1/2/1	"	"	"	
✓ IP/SW/17R/018/1/2/1	"	"	"	
✓ IP/SW/17R/023/1/2/1	"	"	"	
✓ IP/SW/17M/006/1/2/1	"	10:00	"	
✓ IP/SW/17M/012/1/2/1	"	"	"	
✓ IP/SW/17M/018/1/2/1	"	"	"	
✓ IP/SW/17M/023/1/2/1	"	"	"	
✓ IP/SW/17M/027/1/2/2	"	"	CLP VOC	
✓ IP/SW/17M/027/1/2/3	"	"	CLP Semivol	

SPECIAL INSTRUCTIONS/COMMENTS:

Seal #02893

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	Standard <input checked="" type="checkbox"/>
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Jim Kennedy DATE SHIPPED 5/14/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9907837376 COOLER NO. EE-732 + EE111

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Yates</u>	RECEIVED BY (Signature) _____	DATE <u>5/14/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ 1 SW/17M/027/4/4	Soil	5/14/90 18:00	CLP Pest/PCB	
✓ 1 SW/17M/027/4/5	"	"	CLP Metals (inorganics)	
✓ 1 SW/17L/006/1/1	"	10:45	Pb, Ar, Cr	
✓ 1 IP/20/174/017/1/1	"	"	"	
✓ 1 SW/174/018/1/1	"	"	"	
✓ 1 IP/20/174/025/1/1	"	"	"	
✓ 1 SW/ESS0/000/2/2	Aqueous	11:00	CLP VOC (3 40ml vials)	
✓ 1 IP/20/174/009/2/2	"	"	CLP Semi Volatile (2 Amber bottles)	
✓ 1 SW/EB30/000/2/4	"	"	CLP Pest/PCB (2 Amber bottles)	
✓ 1 SW/EB30/000/2/5	"	"	CLP Metals (inorganic) Poly bottle	

SPECIAL INSTRUCTIONS / COMMENTS:

SEAL # 02893 for cooler EE111
 02889 for cooler EE732

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



PAGE 1315 OF

SAMPLER: (Signature) [Signature] DATE SHIPPED 5/14/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9907837376 COOLER NO. EE 732

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1100

ATTENTION M. McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Yato</u>	RECEIVED BY (Signature)	DATE <u>5/14/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/SW/06L/006/1/1	Soil	5/14/90 12:45	Pb, Ar, Cr	
IP/SW/06L/012/1/1	"	"	"	
IP/SW/06L/018/1/1	"	"	"	
IP/SW/064/018/1/2	"	"	CLP VOC	
IP/SW/06L/018/1/3	"	"	CLP Semivolatiles	
IP/SW/06L/018/1/4	"	"	CLP Pest/PCB	
IP/SW/06L/018/1/5	"	"	CLP Metals (inorganics)	
IP/SW/064/018/1/2	"	"	CLP VOC	
IP/SW/064/018/1/3	"	"	CLP Semivolatiles	
IP/SW/06L/018/1/4	"	"	CLP Pest/PCB	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02889

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

ENS-1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

SAMPLER: (Signature) Jan Kennedy DATE SHIPPED 5/14/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 9907837376 COOLER NO. EE 132

SHIP TO: Enseco East
2200 Cottontail Lane
Somerset, NJ 08873
(201) 469-5800
(201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. 609 273-1110

ATTENTION M. McCall

PROJECT NAME Golder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Ueta</u>	RECEIVED BY (Signature)	DATE <u>5/14/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>1-IP/SW/06M/018/01/01/5</u>	<u>Soil</u>	<u>5/14/90 12:45</u>	<u>CLP Metals (inorganics)</u>	
<u>1-IP/SW/06M/006/1/2/1</u>	<u>"</u>	<u>13:15</u>	<u>Pb, Ar, Cr</u>	
<u>1-IP/SW/06M/012/4/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1-IP/SW/06M/018/4/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1-IP/SW/06M/023/4/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1-IP/SW/06M/023/4/1/2</u>	<u>"</u>	<u>"</u>	<u>CLP VOC</u>	
<u>1-IP/SW/06M/023/4/1/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1-IP/SW/06M/023/4/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP SemiSol</u>	
<u>1-IP/SW/06M/023/4/1/3</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>1-IP/SW/06M/023/4/1/3</u>	<u>"</u>	<u>"</u>	<u>CLP Pest/PCB</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02889

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Jan Kennedy DATE SHIPPED 5/14/90 CARRIER Fed X
 PHONE (607) 938-1553 AIRBILL NO. 9907837376 COOLER NO. EE 732

SHIP TO
 Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO
 CLIENT NAME Bob Glazier
 COMPANY Elder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall

PROJECT NAME Holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C. Uetas</u>	RECEIVED BY (Signature)	DATE <u>5/14/90</u>	TIME <u>16:00</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
✓ <u>IP/SW/06M/023/1/1</u>	<u>Soil</u>	<u>5/14/90 13:15</u>	<u>CLP Pest/PCB</u>	
✓ <u>IP/SW/06M/023/1/5</u>	<u>"</u>	<u>"</u>	<u>CLP Metals (inorganics)</u>	
✓ <u>IP/SW/06M/023/1/6</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>IP/SW/06R/006/4/2/1</u>	<u>"</u>	<u>13:50</u>	<u>Pb, Ar, Cr</u>	
✓ <u>IP/SW/06R/012/1/1/c</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>IP/SW/06R/018/1/1/c</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>IP/SW/06R/027/1/1/c</u>	<u>"</u>	<u>"</u>	<u>"</u>	
✓ <u>IP/SW/06R/030/1/1/c</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 02889

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<u>Standard</u>
------------------------------	---	---------------------------------	-----------------

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 4/25/90 CARRIER Fed X
 PHONE (609) 273-1110 AIRBILL NO. 9907837295 4870158995 ^{NOV 5/19/90} COOLER NO. E-110

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way, Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M. McCall

PROJECT NAME Golder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>4/25/90</u>	TIME <u>14:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/52R/006/1/1/1</u>	<u>soil</u>	<u>25 April 1990 12:10</u>	<u>Pb As Cr</u>	
<u>IP/SW/52R/006/1/1/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/52R/006/1/1/3</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/52R/018/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/52R/018/1/1/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/52R/018/1/1/3</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/52R/023/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/52R/006/1/1/1</u>	<u>"</u>	<u>25 April 1990 12:55</u>	<u>"</u>	
<u>IP/SW/52M/001/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/52M/001/1/1/2</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:
No VOC readings.
Seal # 00293
00294

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 4/25/90 CARRIER Fed X
 PHONE (609) 273-1110 AIRBILL NO. 9907837295 4370158995 5/8/90 COOLER NO. E-110

SHIP TO: **Enseco East**
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME holder PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>4/25/90</u>	TIME <u>14:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE/TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/52M/027/1/1</u>	<u>SOIL</u>	<u>4/25/90 12:55</u>	<u>Pb, Ar, Cr</u>	
<u>IP/SW/524/006/1/1</u>	<u>"</u>	<u>13:15</u>	<u>"</u>	
<u>IP/SW/524/022/1/2/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/524/018/1/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/524/027/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/EB23/001/1/1</u>	<u>Aqueous</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:
No VOC readings.
Seal # 00293
00294

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)



CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) Cindy Yates DATE SHIPPED 4/20/90 CARRIER Fed X
 PHONE (609) 273-1110 AIRBILL NO. 9907837354 ~~1370158995~~ ^{MA} 5/8/90 COOLER NO.

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Ht Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION M McCall

PROJECT NAME holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>4/20/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/18R/006/1/1</u>	<u>Soil</u>	<u>20 April 1990 8:55</u>	<u>Pb, Ar, Cr</u>	
<u>P/SW/18R/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/18R/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW/18R/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/18M/006/1/1</u>	<u>"</u>	<u>20 April 1990 9:15</u>	<u>"</u>	
<u>P/SW/18M/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/18M/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>P/SW/18L/006/1/1</u>	<u>"</u>	<u>20 April 1990 9:40</u>	<u>"</u>	
<u>P/SW/18L/012/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/18L/018/1/1</u>	<u>"</u>	<u>"</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:
see # 00144
00145

No VOC readings

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Cindy Uates DATE SHIPPED 4/20/90 CARRIER Fed X
 PHONE (609) 273-1110 AIRBILL NO. 450-7637354 LAB 5/4/90 COOLER NO.

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Holder Assoc
 ADDRESS 20000 Horizon Way Ste 500
Ht Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION H. McCall

PROJECT NAME Holder PROJECT NO. P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Uates</u>	RECEIVED BY (Signature)	DATE <u>4/20/90</u>	TIME <u>16:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/SW/184/027/V/L</u>	<u>Soil</u>	<u>20 April 1990</u> <u>9:40</u>	<u>Pb, Ar, Cr</u>	
<u>IP/SW/184/027/V/M/L</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/184/027/V/N/L</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/184/027/V/L</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/S-1/106/006/V/L</u>	<u>"</u>	<u>20 April 1990</u> <u>11:00</u>	<u>"</u>	
<u>IP/S-1/106/015/V/L</u>	<u>"</u>	<u>"</u>	<u>"</u>	
<u>IP/SW/ER22/000/2/V/L</u>	<u>Aqueous</u>	<u>20 April 1990</u> <u>10:20</u>	<u>"</u>	
<u>Trip Blank dated 4/4/90</u>	<u>Trip Blank</u>	<u>20 April 1990</u>		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 00144, 00145

No VOC readings

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<input checked="" type="checkbox"/> <u>Standard</u>
------------------------------	---	---------------------------------	---

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD

AMPLER: (Signature) <u>Cynthia Uates</u>	DATE SHIPPED <u>4/4/90</u>	CARRIER <u>Fed X</u>
PHONE <u>(617) 938-1553</u>	AIRBILL NO. <u>4370158995</u> <small>MAX 5/8/90</small>	COOLER NO. <u>E-129</u>

SHIP TO	Enseco East 2200 Cottontail Lane Somerset, NJ 08873 (201) 469-5800 (201) 469-7516 Fax #.	SEND RESULTS TO	CLIENT NAME <u>Bob Glazier</u>
			COMPANY <u>Goider Assoc.</u>
			ADDRESS <u>20,000 Horizon Way Ste 500</u> <u>Int Laurel NJ 08054</u>
			PHONE NO. <u>(609) 273-1110</u>
ATTENTION <u>Ms McCall</u>			

PROJECT NAME <u>Industri-Plex Site</u>	PROJECT NO.	P.O. NO. <u>n/a</u>
RELINQUISHED BY (Signature) <u>C. Uates</u>	RECEIVED BY (Signature)	DATE <u>4/4/90</u>
		TIME <u>17:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE
		TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE
		TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE
		TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE/TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/S-1/013/006/1/1</u>	<u>Soil</u>	<u>4/4/90 9:00</u>	<u>As, Cr, Pb</u>	
<u>P/S-1/093/08/1/1</u>	<u>"</u>	<u>4/4/90 9:00</u>	<u>"</u>	
<u>IP/S-1/093/032/1/1</u>	<u>"</u>	<u>4/4/90 9:00</u>	<u>"</u>	
<u>P/S-1/073/032/1/1</u>	<u>"</u>	<u>4/4/90 9:00</u>	<u>"</u>	
<u>IP/S-1/093/032/1/1</u>	<u>"</u>	<u>4/4/90 9:00</u>	<u>"</u>	
<u>IP/S-1/083/004/1/1</u>	<u>"</u>	<u>4/4/90 9:20</u>	<u>"</u>	
<u>P/S-1/083/016/1/1</u>	<u>"</u>	<u>4/4/90 9:20</u>	<u>"</u>	
<u>IP/S-1/018/1/1/1</u>	<u>"</u>	<u>4/4/90 9:20</u>	<u>"</u>	
<u>P/S-1/038/1/1/1</u>	<u>"</u>	<u>4/4/90 9:20</u>	<u>"</u>	
<u>IP/S-1/093/004/1/1</u>	<u>"</u>	<u>4/4/90 9:45</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

2 Seal # 9384
9381

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<input type="checkbox"/> Immediate Attention (200% Surcharge)	<input type="checkbox"/> RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	---	---	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Cynthia Yates DATE SHIPPED 4/4/90 CARRIER Fed X
 PHONE (67) 938-1553 AIRBILL NO. 4370158995 COOLER NO. E-129

SHIP TO: Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier
 COMPANY Golder Assoc Inc
 ADDRESS 20,000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION Ms McCall

PROJECT NAME Industri-Plex Site PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature)	DATE <u>4/4/90</u>	TIME <u>17:30</u>
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
RELINQUISHED FROM LAB BY (Signature)	RECEIVED BY (Signature)	DATE	TIME

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/S-1/092/018/1/1</u>	<u>SOIL</u>	<u>4/4/90 9:45</u>	<u>As Cr Pb</u>	
<u>IP/S-1/092/032/1/1</u>	<u>"</u>	<u>4/4/90 9:45</u>	<u>"</u>	
<u>IP/S-1/E62/002/1/1</u>	<u>"</u>	<u>4/4/90 9:30</u>	<u>"</u>	
<u>IP/S-1/082/006/1/1</u>	<u>"</u>	<u>4/4/90 9:55</u>	<u>"</u>	
<u>IP/S-1/082/018/1/1</u>	<u>"</u>	<u>4/4/90 9:55</u>	<u>"</u>	
<u>IP/S-1/082/034/1/1</u>	<u>"</u>	<u>4/4/90 9:55</u>	<u>"</u>	
<u>IP/S-1/091/006/1/1</u>	<u>"</u>	<u>4/4/90 10:50</u>	<u>"</u>	
<u>IP/S-1/091/018/1/1</u>	<u>"</u>	<u>4/4/90 10:50</u>	<u>"</u>	
<u>IP/S-1/091/032/1/1</u>	<u>"</u>	<u>4/4/90 10:50</u>	<u>"</u>	
<u>IP/S-1/124/006/1/1</u>	<u>"</u>	<u>4/4/90 11:10</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

2 sets # 9384
9381

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	<u>Immediate Attention (200% Surcharge)</u>	<u>RUSH (50-100% Surcharge)</u>	<u>Standard</u>
------------------------------	---	---------------------------------	-----------------

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) Cynthia Yates DATE SHIPPED 4/4/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4370158995 COOLER NO. E-129

Enseco East
 2200 Cottontail Lane
 Somerset, NJ 08873
 (201) 469-5800
 (201) 469-7516 Fax #.

SEND RESULTS TO CLIENT NAME Bob Glazier
 COMPANY Golder Assoc Inc
 ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
 PHONE NO. (609) 273-1110

ATTENTION Ms McGill

PROJECT NAME Industri-Plex Site PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>Clyats</u>	RECEIVED BY (Signature) _____	DATE <u>4/4/90</u>	TIME <u>17:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE/TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/S-1/21/018/1/1</u>		<u>4/4/90 11:10</u>	<u>As Cr Pb</u>	
<u>IP/S-1/24/022/1/1</u>		<u>4/4/90 11:10</u>	<u>"</u>	
<u>IP/S-1/283/0072/1/1</u>		<u>4/4/90 11:10</u>	<u>"</u>	
<u>IP/SW/17L/006/1/1</u>		<u>4/4/90 12:10</u>	<u>"</u>	
<u>IP/SW/17M/006/1/1</u>		<u>4/4/90 12:25</u>	<u>"</u>	
<u>IP/SW/17W/012/1/1</u>		<u>4/4/90 12:25</u>	<u>"</u>	
<u>IP/SW/17R/005/1/1</u>		<u>4/4/90 12:40</u>	<u>"</u>	
<u>IP/S-1/030/006/1/1</u>		<u>4/4/90 15:10</u>	<u>"</u>	
<u>IP/S-1/030/018/1/1</u>		<u>4/4/90 15:10</u>	<u>"</u>	
<u>IP/S-1/030/027/1/1</u>		<u>4/4/90 15:10</u>	<u>"</u>	

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9384
9381

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	<input checked="" type="checkbox"/> Standard
------------------------------	--------------------------------------	--------------------------	--

ENSECO EAST LOG NUMBER (lab use only)

CHAIN-OF-CUSTODY RECORD



SAMPLER: (Signature) C Yates DATE SHIPPED 4/4/90 CARRIER Fed X
 PHONE (617) 938-1553 AIRBILL NO. 4376158995 COOLER NO. E-129

SHIP TO: Enseco East, 2200 Cottontail Lane, Somerset, NJ 08873, (201) 469-5800, (201) 469-7516 Fax #.

SEND RESULTS TO: CLIENT NAME Bob Glazier, COMPANY Golder Assoc Inc, ADDRESS 20,000 Horizon Way Ste 500, Mt Laurel NJ 08054, PHONE NO. (609) 273-1110

ATTENTION Ms McC211

PROJECT NAME Industri-Plex Site PROJECT NO. _____ P.O. NO. n/a

RELINQUISHED BY (Signature) <u>C Yates</u>	RECEIVED BY (Signature) _____	DATE <u>4/4/90</u>	TIME <u>17:30</u>
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____
RELINQUISHED FROM LAB BY (Signature) _____	RECEIVED BY (Signature) _____	DATE _____	TIME _____

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE/TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
<u>IP/S-1/032/06/1/1</u>		<u>4/4/90 8:30</u>	<u>As Cr Pb</u>	
<u>IP/S-1/032/01/1/1</u>		<u>4/4/90 15:30</u>	<u>11</u>	
<u>IP/S-1/EB4/002/1/1</u>		<u>4/4/90 16:00</u>	<u>11</u>	
<u>IP/S-1/037/006/1/1</u>		<u>4/4/90 15:50</u>	<u>11</u>	
<u>IP/S-1/037/006/1/0/1</u>		<u>4/4/90 15:50</u>		
<u>IP/S-1/033/006/1/1/1</u>		<u>4/4/90 16:35</u>		
<u>IP/S-1/033/018/1/1/1</u>		<u>4/4/90 16:35</u>		
<u>IP/S-1/033/021/1/1/1</u>		<u>4/4/90 16:35</u>		

SPECIAL INSTRUCTIONS / COMMENTS:
2 sets # 9384
9381

NOTE: UNUSED PORTIONS OF NON-AQUEOUS SAMPLES WILL BE RETURNED TO CLIENT.

EXPECTED ANALYTICAL T.A.T.'S: Immediate Attention (200% Surcharge) RUSH (50-100% Surcharge) Standard

ENSECO EAST LOG NUMBER (lab use only)

APPENDIX F
SW-846 Data Assessment

APPENDIX F

ASSESSMENT OF SW-846 DATA QUALITY

The discussion below presents the rationale for assigning data assessment codes to each analytical result for the SW-846 data. An assessment of the overall SW-846 data quality is given in this appendix, followed by assessments for each Enseco-East laboratory report.

SW-846 data assessment codes for individual analyses are given with the data in Table 2 (included in Volume 1 of this report). These include acceptable quantitative data (A), estimated (semiquantitative) data (J), acceptable and not detected (U-quantitative, UJ-semiquantitative), and unusable (R). The SW-846 assessment codes provide a guide as to the quality of the data with respect to PARCC parameters (precision, accuracy, representativeness, comparability, completeness) and other Data Quality Objectives outlined in the PDI Work Plan and Quality Assurance Project Plan (QAPjP).

Enseco-East assigns a separate project number to each set of SW-846 samples delivered from the Industri-Plex Site on a given day. The laboratory data reports present results by project number. Therefore, data quality was assessed in groups by Enseco-East project number in accordance with the guidelines provided in Section 12 of the QAPjP and documented on the attached forms.

SW-846 data are assessed as acceptable quantitative data (A) if all associated QC samples are within the specified control limits. They are also assessed as acceptable quantitative data if only a small fraction of the associated QC samples are not in control.

SW-846 data are estimated, or semiquantitative (J) if any one of the following occur:

1. The holding time specified in the QAPjP has been exceeded
2. Precision of the lab duplicate is outside the control limits
3. Precision of field duplicates are outside the control limits, or
4. MS/MSD percent recoveries or relative percent difference (RPD) are outside the control limits.

Whether or not the qualifier (J) is assigned to other samples collected along with the above QC samples depends upon the frequency of the out-of-control condition. For example, if over 70 percent of the lab and field duplicates are in control, then only the specific samples which are not in control would be assessed as semiquantitative (J). However, if less than 60 percent of the duplicate samples were in control, it is likely that precision for all associated samples are similar and they should be assessed as semiquantitative (J).

Samples are considered not detected and quantitative (U) if the precision and MS/MSD recoveries are in control. They are considered not detected and semiquantitative (UJ) if either precision or spike recoveries are poor.

None of the data were found to be unusable. The criteria chosen for data to be assessed as unusable (R) are:

1. Large concentrations of the analyte are detected in method or equipment rinsate blanks, or
2. The analyte is not detected but the matrix spike/matrix spike duplicate (MS/MSD) recovery is very low.

SW-846 data assessment is documented on the attached forms for each Enseco-East project number. The overall SW-846 data quality is assessed on the attached form and discussed in Section 6 of Volume 1 of this report.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF OVERALL DATA QUALITY
FOR TASK SW-1

PERFORMED BY: Bob Glazier

DATE: August 14, 1990

YES/NO/NA

1. Were the QAPjP, laboratory reports, and field documentation available to support data assessment procedures? yes

2. Precision:

Are DCS RPD within control limits? yes
Are lab duplicate RPD within control limits? yes (91%)
Are field duplicate RPD within control limits? yes (73%)*
Are MS/MSD RPD within control limits? yes (83%)**
Overall assessment of precision The overall precision is considered to be

sufficient to support remedial design. The relative percent difference of field duplicates is greater than was anticipated, indicating that the stream sediments are very inhomogeneous.

3. Accuracy:

Is absolute recovery within control limits for DCS? yes
Is relative recovery within control limits for MS/MSD? yes (83%)
Overall assessment of accuracy Although spike recoveries are not within

control limits for some specific MS/MSD samples, over 83% are in control. Those out of control are flagged as estimated. Overall accuracy is sufficient to support design.

4. Representativeness:

Were procedures in the FSP followed? yes
If not, were procedural variations approved and documented? NA
Were sample preservation procedures given in the FSP followed? yes
Were data reported in the proper units? yes
Was blank contamination not evident or well documented at low levels? yes
Were field duplicates within control limits? yes (73%)
Overall assessment of representativeness The data are considered

representative of site conditions.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF OVERALL DATA QUALITY
FOR TASK SW-1

(continued)

YES/NO/NA

5. Comparability:

Are data traceable to a standard method?

yes

Are methods approved/accepted as giving valid results?

yes

Are data reported in proper units?

yes

Overall assessment of comparability The data are comparable to the data

generated during the RI/FS.

6. Completeness:

Is the fraction of valid data within control limits?

yes

If not, are the data sufficient to meet the task objectives?

NA

Are critical (background) samples sufficient and valid?

NA

Overall assessment of completeness Sufficient useable data have been

collected to support Remedial Design.

7. Are the data useable and consistent with the objectives of the study?

yes

8. Comments: * Although 27% of the field duplicates were not within control limits, over

half of the field duplicates above background concentrations were not within control limits.

This indicates that the sediments are very inhomogeneous when they contain As, Pb, and Cr

above Action Levels.

** 24% of the MS/MSD results were not calculated because the initial sample concentration was

more than 4 times the spike. 63% were within control limits, and 13% were outside the control

limits. Neglecting the 24% not calculated, 83% were within the control limits.

C:6255:ODQFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 7816

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>yes</u>
sample location?	<u>yes</u>
name of sampler?	<u>yes</u>
field measurements?	<u>NA</u>
sampling method?	<u>yes</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>yes</u>
sample preservation procedures (see COC*)?	<u>yes</u>
Chain-of-Custody procedures?	<u>yes</u>
field quality control procedures?	<u>yes</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 227/036, RPD for As = 66.7%, Cr = 61.2%

* Chain-of-Custody Form

C:6255:FPPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

LABORATORY: Enseco-East

REPORT # 7816

VALIDATED BY: W. Herdel

DATE: 07-03-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes***
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? yes
no+
6. MS/MSD % recoveries within control limits (75-125%)? no^{oo}
7. MS/MSD RPDs within control limits (50%)? yes
8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? yes**
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with
signatures and dates? yes***
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? N/A
14. QC procedures given? yes

**INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1**

(continued)

*** The Client IDs for the Field Dup + ms/msd need to be corrected; change lower case to upper case. Note any violations to the assessment criteria listed above:

* For the aqueous sample IP/SWI/EB36/000/2/2/1, lead analysis was performed using EPA method 200.7(ICP) instead of 239.2 (GFAA) as specified in the OAP/P

* Field Duplicates RPDs > 50% (see below circled in green)

∞ ms/msd recoveries for As are 63% + 65% Sample concentrations are less than 4x the spike concentration

*** Left hand side of DCS are cropped by binding. Cannot read Ensecn Sample ID number

+ Field Duplicates 22m/036

	Result	1 ^o Rep Limit	Dup Result	Rep Limit	% RPD	
As	24.4	3.1	12.2	1.2	66.7%	As + Cr results are greater than 5x the Reporting Limit.
Cr	25.6	1.2	13.6	1.2	61.2%	
Pb	29.3	6.1	18.4	6.0	45.7%	For Pb Dup value should be ± 4x (Replimit). Dup result is ± 24 mg/kg of 1 ^o result.
% MOIS	18	-	17	-	5.7	

C: 6255:ALP1FORM

** DCS samples - While the average recovery of each DCS pair meets the 80-120% criteria, the following individual measurements do not:

QC lot 05 Jun 90 - B Arsenic for DCS1 has 122% recovery.

9000703

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK Sw-1

SAMPLER/ORGANIZATION: Cindy Yates/Soliker Associates

REPORT # 7795

VALIDATED BY: Bob Grazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>YES</u>
sample location?	<u>YES</u>
name of sampler?	<u>YES</u>
field measurements?	<u>NA</u>
sampling method?	<u>YES</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>YES</u>
sample preservation procedures (see COC*)?	<u>YES</u>
Chain-of-Custody procedures?	<u>YES</u>
field quality control procedures?	<u>YES</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? YES
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? YES NA ^{Aug 22 1990}

4. Are field duplicates within control limits? YES

5. Comments: _____

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Enseco-East
 VALIDATED BY: L. Hessel

REPORT # 7935
 DATE: 07-03-90

	YES/NO/NA
1. Release authorization with signature present?	<u>yes</u>
2. Sample identification summary/description present?	<u>yes</u> xxxx
3. Analytical results present, including:	
correct units?	<u>yes</u>
detection limits?	<u>yes</u>
method used?	<u>yes</u>
date sampled?	<u>yes</u>
date received?	<u>yes</u>
date prepared?	<u>yes</u>
date analyzed?	<u>yes</u>
dilutions noted?	<u>no</u>
4. Holding times met?	<u>yes</u>
5. Lab duplicate RPDs within control limits (35%)?	<u>N/A</u>
Field duplicate RPDs within control limits (50%)?	<u>yes</u>
6. MS/MSD % recoveries within control limits (75-125%)?	<u>no</u>
7. MS/MSD RPDs within control limits (50%)?	<u>yes</u>
8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)?	<u>no</u>
9. DCS precision within given control limits (20%)?	<u>yes</u>
10. Method blanks "clean"?	<u>yes</u>
11. Chain-of-Custody present and complete with signatures and dates?	<u>yes</u>
12. Name of analyst/supervisor given?	<u>yes</u>
13. Procedural deviations noted?	<u>NA</u>
14. QC procedures given?	<u>yes</u>

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

- *** Client IDs for Field Dup + H5/H5D need correction; change lower case to upper case
- # For the aqueous sample IP/SW1/ER341/0000/2/1/1, Lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the QAPP.
- # For sample IP/SW1/058/0000/1/1/1 (7935-1), it appears Arsenic was diluted 1:10 (reporting limit is 11.2), but there is no note about a dilution on the report page.
- ∞ mslmsd recoveries for As in 7935-116 are 72% and 48%, respectively.
- ~ DCS for QC Lot 18 JUN 90-D avg As recovery is 125%

↓
DCS1 As recovery is 120%
DCS2 As recovery is 129%

Field Duplicate 056/027

	Field Duplicate 1 ^o		Dup		%
	Result	Rep Limit	Result	Rep Limit	RPD
As	4.2	0.62	3.9	0.66	7.4
Cr	5.6	1.2	5.9	1.3	5.2
Pb	7.5	6.2	9.8	6.6	26.6
%Moist	19	-	24	-	23.3

Pb results are less than 5x the reporting limit. The Dup result is within ± 4x the reporting limit of 6.2.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Jan Kennedy/Golder Associates REPORT # 7750
VALIDATED BY: Bob Glazier DATE: 6-24-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected? yes
sample location? yes
name of sampler? yes
field measurements? NA
sampling method? yes
instruments/methods for field measurements? NA
calibration/maintenance of field instruments? NA
sampling containers used (COC*)? yes
sample preservation procedures (see COC*)? yes
Chain-of-Custody procedures? yes
field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? NA

4. Are field duplicates within control limits? NA

5. Comments: no field duplicates or equipment rinseate
blanks analyzed with this batch.

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Enseco East

REPORT # 7750

VALIDATED BY: Mary Bourcier / Bob Glazier

DATE: 6-13-90 / 6-24-90

YES/NO/NA

- | | |
|---|-----------------|
| 1. Release authorization with signature present? | <u>yes</u> |
| 2. Sample identification summary/description present? | <u>yes</u> |
| 3. Analytical results present, including: | |
| correct units? | <u>yes</u> |
| detection limits? | <u>yes</u> |
| method used? | <u>yes</u> |
| date sampled? | <u>yes</u> |
| date received? | <u>yes</u> |
| date prepared? | <u>yes</u> |
| date analyzed? | <u>yes</u> |
| dilutions noted? | <u>yes</u> |
| 4. Holding times met? | <u>yes</u> |
| 5. Lab duplicate RPDs within control limits (35%)? | <u>yes</u> |
| Field duplicate RPDs within control limits (50%)? | <u>NA</u> |
| 6. MS/MSD % recoveries within control limits (75-125%)? | <u>NA</u> |
| 7. MS/MSD RPDs within control limits (50%)? | <u>NA</u> |
| 8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? | <u>yes</u> |
| 9. DCS precision within given control limits (20%)? | <u>yes</u> |
| 10. Method blanks "clean"? | <u>yes</u> |
| 11. Chain-of-Custody present and complete with signatures and dates? | <u>yes</u> |
| 12. Name of analyst/supervisor given? | <u>yes</u> |
| 13. Procedural deviations noted? | <u>yes (NA)</u> |
| 14. QC procedures given? | <u>yes</u> |

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

- No field duplicates, MS/MSDs, or equipment rinse blanks analyzed with this batch.
-
-
-
-
-
-
-
-

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 7857

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

- date/time samples collected? yes
- sample location? yes
- name of sampler? yes
- field measurements? NA
- sampling method? yes
- instruments/methods for field measurements? NA
- calibration/maintenance of field instruments? NA
- sampling containers used (COC*)? yes
- sample preservation procedures (see COC*)? yes
- Chain-of-Custody procedures? yes
- field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of ^{25L/018} ~~24A/199~~ RPD for As = 108% Pb = 98.9%

* Chain-of-Custody Form

C:6255:FPPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

LABORATORY: Enseco - East

REPORT # 7857

VALIDATED BY: LAHerdal

DATE: 07-03-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes***
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? no †
no ††
6. MS/MSD % recoveries within control limits (75-125%)? no^o
7. MS/MSD RPDs within control limits (50%)? yes
8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? yes**
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with
signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? no
14. QC procedures given? yes

**INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1**

(continued)

Note any violations to the assessment criteria listed above:

- **** The client MS for Field Dups + MS/MSDs need to be corrected; change lower case to upper case.
Samples 7851-10 to 15 should be location 25L not 24L; 7857-26 to 30 should be location 26L not 25L
- Aqueous samples 7857-42 to 44 need matrix changed from 1 to 2
- * For aqueous samples, lead analysis was performed using EPA method 200.7 instead of 239.2 as specified in the RALP
- + Lab Duplicates RPD > 35% 7857-25 Pb = 49% (7857-41 Pb = NC ^{10 result} _{15 ND})
- ++ Field Duplicates RPD > 50% (see below circled in green)

Field Duplicate		24M/CP2		Dup Result	Rep Limit	% RPD	Minimum RPD calculated because duplicate result is NO. Reporting limit used in the calculation. Pb result is less than 5x the reporting limit. Result of Dup is within $\pm 4.5 \times 5.5$ even if ND result is 0.
Result	Rep Limit	Result	Rep Limit				
As	18.9	2.7	17.2	11	6.2		
Cr	9.3	1.1	9.5	1.1	2.1		
Pb	6.0	5.5	ND	5.5	8.9		
% MOIS	9.0	-	9.4	-	4.3		

C:6255:ALP1FORM

Field Duplicate		254/018		Dup Result	Rep Limit	% RPD	All results are greater than 5x the reporting limit
Result	Rep Limit	Result	Rep Limit				
As	496	35.2	149	13.5	108		
Cr	134	1.4	219	1.4	48.2		
Pb	1940	7.0	656	6.8	98.9		
% MOIS	29	-	26	-	10.9		

Field Duplicate		26R/0006		Dup Result	Rep Limit	% RPD	Lead results are less than 5x the rep. limit. Result of Dup is within $\pm 4 \times$ rep limit of 7.0.
Result	Rep Limit	Result	Rep Limit				
As	10.1	0.7	12.2	0.75	18.8		
Cr	10.7	1.4	17.0	1.5	45.5		
Pb	25.4	7.0	31.2	7.5	20.5		
% MOIS	29	-	33	-	12.9		

While the average recoveries of the DCS pairs meet 80-120% recovery, the following individual measurements do not.
 QC Lot 06 Jun 90-C As recovery is 122%.
 LAH 900703

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK Su-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 8083

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

- date/time samples collected? yes
- sample location? yes
- name of sampler? yes
- field measurements? NA
- sampling method? yes
- instruments/methods for field measurements? NA
- calibration/maintenance of field instruments? NA
- sampling containers used (COC*)? yes
- sample preservation procedures (see COC*)? yes
- Chain-of-Custody procedures? yes
- field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 02-7/018, RFD for Cr = 72.4 %

* Chain-of-Custody Form

C: 6255: FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Enseed-East

REPORT # 8083

VALIDATED BY: LAHendel

DATE: 07-05-90

YES/NO/NA

- 1. Release authorization with signature present? yes
- 2. Sample identification summary/description present? yes***
- 3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
- 4. Holding times met? yes
- 5. Lab duplicate RPDs within control limits (35%)? N/A
 Field duplicate RPDs within control limits (50%)? no
- 6. MS/MSD % recoveries within control limits (75-125%)? no^{oo}
- 7. MS/MSD RPDs within control limits (50%)? yes
- 8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? yes**
- 9. DCS precision within given control limits (20%)? yes
- 10. Method blanks "clean"? yes
- 11. Chain-of-Custody present and complete with signatures and dates? yes
- 12. Name of analyst/supervisor given? yes
- 13. Procedural deviations noted? N/A
- 14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

- **** Client IDs for Field Dups & msl/msd need to be changed from ~~the~~ lowercase to upper case
 Client IDs for 8083-15 to 19 need to have location changed from 039 to 033.
 * For the aqueous samples, lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the OMLP.
 † Field Duplicate RPDs > 50% (see below circled in green)
 ∞ MS recoveries for 8083-3 exceed 120%: Cr = 127%

† Field Duplicate 039/021

	1 ^o	Dup	2 ^o	%	
	Result	Rep Limit	Result	RPD	
As	2.0	1.2	1.7	0.81	16.2
Cr	23.8	2.3	21.1	1.6	12.0
Pb	13.7	11.4	11.4	8.2	18.3
% mois	57	-	38	-	40

C: 6255:ALP1FORM

027/018

	1 ^o	Dup	2 ^o	%	
	Result	Rep Limit	Result	RPD	
As	1.7	0.65	1.8	0.74	5.7
Cr	5.2	1.3	11.1	1.5	72.4
Pb	7.7	6.6	9.1	7.3	16.7
% mois	23	-	32	-	32.7

Cr result of 1^o sample is less than 5x the reporting limit.
 Duplicate Cr result is not within ±4x the reporting limit of 1.3.

** Although the average recovery of the DCS pair meets 80-120% criteria the following individual recovery does not:

QC Lot 22 JUN 90-A DCS1- As recovery is 123%

LWA 9100705

INDUSTRI-FLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates REPORT # 8038

VALIDATED BY: Bob Glazier DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>yes</u>
sample location?	<u>yes</u>
name of sampler?	<u>yes</u>
field measurements?	<u>NA</u>
sampling method?	<u>yes</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>yes</u>
sample preservation procedures (see COC*)?	<u>yes</u>
Chain-of-Custody procedures?	<u>yes</u>
field quality control procedures?	<u>yes</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? NA

4. Are field duplicates within control limits? NA

5. Comments: _____

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Ensecc - East REPORT # 8U38
 VALIDATED BY: L. Attendi DATE: 07-05-92

	YES/NO/NA
1. Release authorization with signature present?	<u>YES</u>
2. Sample identification summary/description present?	<u>YES</u>
3. Analytical results present, including:	
correct units?	<u>YES</u>
detection limits?	<u>YES</u>
method used?	<u>YES</u>
date sampled?	<u>YES</u>
date received?	<u>YES</u>
date prepared?	<u>YES</u>
date analyzed?	<u>YES</u>
dilutions noted?	<u>YES</u>
4. Holding times met?	<u>YES</u>
5. Lab duplicate RPDs within control limits (35%)?	<u>N/A</u>
Field duplicate RPDs within control limits (50%)?	<u>N/A</u>
6. MS/MSD % recoveries within control limits (75-125%)?	<u>N/A</u>
7. MS/MSD RPDs within control limits (50%)?	<u>N/A</u>
8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)?	<u>YES</u>
9. DCS precision within given control limits (20%)?	<u>YES</u>
10. Method blanks "clean"?	<u>YES</u>
11. Chain-of-Custody present and complete with signatures and dates?	<u>YES</u>
12. Name of analyst/supervisor given?	<u>YES</u>
13. Procedural deviations noted?	<u>N/A</u>
14. QC procedures given?	<u>YES</u>

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

None

C:6255:ALP1FORM

LAD 900 705

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Cindy Gates/Golder Associates

REPORT # 7791

VALIDATED BY: Bob Glazier

DATE: 7-2-90

YES/NO/NA

1. Does field documentation include:

- date/time samples collected? YES
- sample location? YES
- name of sampler? YES
- field measurements? NA
- sampling method? YES
- instruments/methods for field measurements? NA
- calibration/maintenance of field instruments? NA
- sampling containers used (COC*)? YES
- sample preservation procedures (see COC*)? YES
- Chain-of-Custody procedures? YES
- field quality control procedures? YES

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? YES

3. Was contamination of field blank samples not evident, or well documented at low levels? YES

4. Are field duplicates within control limits? YES

5. Comments: _____

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SU-1

LABORATORY: Enseco - East

REPORT # 7791

VALIDATED BY: W. Herdel

DATE: 07-02-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)? no*
Field duplicate RPDs within control limits (50%)? yes
6. MS/MSD % recoveries within control limits (75-125%)? yes**
7. MS/MSD RPDs within control limits (50%)? yes
8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? yes
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? NA
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

- * For the aqueous samples IP/SW/EB34/000/z/z/1 and IP/SW/EB35/000/z/z/1, lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the QAPP.
- * Laboratory Duplicate RPD for Arsenic is 70%
- ** MS/MSD recoveries could not be calculated for As and Cr for sample 7191-24 due to high levels of target analytes present in the unspiked sample.

	Field Duplicates		184/006				
	Results	Rep Limit	Results	Rep Limit	% RPD		
As	64.1	8.0	55.7	8.5	14.0	Results are greater than 5x the Reporting Limits	
Cr	147	1.6	122	1.7	18.6		
Pb	107	8.0	87.5	8.5	20.0		
% MoIs	37	-	41	-	10.3		

C:6255:ALP1FORM

LAA 900702

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK Sw-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates REPORT # 7742
VALIDATED BY: Bob Glazier DATE: 6-24-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected? yes
sample location? yes
name of sampler? yes
field measurements? NA
sampling method? yes
instruments/methods for field measurements? NA
calibration/maintenance of field instruments? NA
sampling containers used (COC*)? yes
sample preservation procedures (see COC*)? yes
Chain-of-Custody procedures? yes
field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 3R/012 -- lead RPD = 144%
Field duplicate of 5M/026 -- lead RPD = 22%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

LABORATORY: Enseco East

REPORT # 7742

VALIDATED BY: Bob Glazier/Mary Bourcier

DATE: 6-24-90/6-13-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? no
6. MS/MSD % recoveries within control limits (75-125%)? no
7. MS/MSD RPDs within control limits (50%)? no
8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? yes
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with
signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? yes (NA)
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK Sw-1

(continued)

Note any violations to the assessment criteria listed above:

- Field duplicate of 3R/012 -- lead RPD = 144%
- Ms/msd of 5R/018 -- chromium RPD, % recovery not in control

?

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SLU-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 8000

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>YES</u>
sample location?	<u>YES</u>
name of sampler?	<u>YES</u>
field measurements?	<u>NA</u>
sampling method?	<u>YES</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>YES</u>
sample preservation procedures (see COC*)?	<u>YES</u>
Chain-of-Custody procedures?	<u>YES</u>
field quality control procedures?	<u>YES</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? YES
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? NA

4. Are field duplicates within control limits? NA

5. Comments: _____

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Enseco - East

REPORT # 80003

VALIDATED BY: L. H. Haddad

DATE: 07-05-90

YES/NO/NA

- | | |
|---|----------------|
| 1. Release authorization with signature present? | <u>yes</u> |
| 2. Sample identification summary/description present? | <u>yes****</u> |
| 3. Analytical results present, including: | |
| correct units? | <u>yes</u> |
| detection limits? | <u>yes</u> |
| method used? | <u>yes</u> |
| date sampled? | <u>yes</u> |
| date received? | <u>yes</u> |
| date prepared? | <u>yes</u> |
| date analyzed? | <u>yes</u> |
| dilutions noted? | <u>yes</u> |
| 4. Holding times met? | <u>yes</u> |
| 5. Lab duplicate RPDs within control limits (35%)? | <u>N/A</u> |
| Field duplicate RPDs within control limits (50%)? | <u>N/A</u> |
| 6. MS/MSD % recoveries within control limits (75-125%)? | <u>N/A</u> |
| 7. MS/MSD RPDs within control limits (50%)? | <u>N/A</u> |
| 8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? | <u>yes</u> |
| 9. DCS precision within given control limits (20%)? | <u>yes</u> |
| 10. Method blanks "clean"? | <u>yes</u> |
| 11. Chain-of-Custody present and complete with signatures and dates? | <u>yes</u> |
| 12. Name of analyst/supervisor given? | <u>yes</u> |
| 13. Procedural deviations noted? | <u>N/A</u> |
| 14. QC procedures given? | <u>yes</u> |

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

~~***~~ Client IDA for 8003-17 to 18 need task number changed
from SWI to SW1

C:6255:ALP1FORM

LHA 900705

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Cindy Yates / Golder Associates

REPORT # 8014

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

- date/time samples collected? yes
- sample location? yes
- name of sampler? yes
- field measurements? NA
- sampling method? yes
- instruments/methods for field measurements? NA
- calibration/maintenance of field instruments? NA
- sampling containers used (COC*)? yes
- sample preservation procedures (see COC*)? yes
- Chain-of-Custody procedures? yes
- field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 008/436, RPD for AS = 77.7%, H = 55.2%

* Chain-of-Custody Form

C:6255:FPPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Enseco - East

REPORT # 8014

VALIDATED BY: W. Herdel

DATE: 07-05-90

YES/NO/NA

- | | |
|---|----------------|
| 1. Release authorization with signature present? | <u>yes</u> |
| 2. Sample identification summary/description present? | <u>yes</u> *** |
| 3. Analytical results present, including: | |
| correct units? | <u>yes</u> |
| detection limits? | <u>yes</u> |
| method used? | <u>yes</u> * |
| date sampled? | <u>yes</u> |
| date received? | <u>yes</u> |
| date prepared? | <u>yes</u> |
| date analyzed? | <u>yes</u> |
| dilutions noted? | <u>yes</u> |
| 4. Holding times met? | <u>yes</u> |
| 5. Lab duplicate RPDs within control limits (35%)? | <u>N/A</u> |
| Field duplicate RPDs within control limits (50%)? | <u>no</u> ≠ |
| 6. MS/MSD % recoveries within control limits (75-125%)? | <u>N/A</u> ** |
| 7. MS/MSD RPDs within control limits (50%)? | <u>N/A</u> ** |
| 8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? | <u>yes</u> |
| 9. DCS precision within given control limits (20%)? | <u>yes</u> |
| 10. Method blanks "clean"? | <u>yes</u> |
| 11. Chain-of-Custody present and complete with signatures and dates? | <u>yes</u> *** |
| 12. Name of analyst/supervisor given? | <u>yes</u> |
| 13. Procedural deviations noted? | <u>N/A</u> |
| 14. QC procedures given? | <u>yes</u> |

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

- * Client IDs for 8014 1 to 2 need to have the task changed from SWI to SW1
- * For the aqueous sample, lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the ~~APP~~ APP
- * Field Duplicate RPDs > 50% (see below circled in green)
- ** ml/msd recoveries/PPDs not calculated. Sample concentration greater than 4x ppb conc.
- ** Left hand side of COC copies are cropped. Can't read Enasco Lab ID numbers
- Receive date on Custody reads 6/1/90 instead of 6/6/90. ~~Hand correction~~
- * Field Duplicate ~~008~~ / ~~036~~

Result	Rep limit	Dup Result	Rep limit	RPD %
2390	356	5430	1330	77.7
469	3.6	772	5.4	48.8
519	17.8	915	26.9	55.2
72	-	81	-	11.8

All results are greater than 5x the reporting limit

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK Sw-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates REPORT # 8182

VALIDATED BY: Bob Glazier DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected? yes
sample location? yes
name of sampler? yes
field measurements? NA
sampling method? yes
instruments/methods for field measurements? NA
calibration/maintenance of field instruments? NA
sampling containers used (COC*)? yes
sample preservation procedures (see COC*)? yes
Chain-of-Custody procedures? yes
field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 044/018, RPD for Cr = 87.6%

Field duplicate of 046/012, RPD for Cr = 88.7%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Enseco - East
 VALIDATED BY: L. Heidel

REPORT # 8182
 DATE: 07-06-90

YES/NO/NA

- | | |
|---|---------------------------|
| 1. Release authorization with signature present? | <u>yes</u> |
| 2. Sample identification summary/description present? | <u>yes***</u> |
| 3. Analytical results present, including: | |
| correct units? | <u>yes</u> |
| detection limits? | <u>yes</u> |
| method used? | <u>yes*</u> |
| date sampled? | <u>yes</u> |
| date received? | <u>yes</u> |
| date prepared? | <u>yes</u> |
| date analyzed? | <u>yes</u> |
| dilutions noted? | <u>yes</u> |
| 4. Holding times met? | <u>yes</u> |
| 5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? | <u>N/A</u>
<u>no +</u> |
| 6. MS/MSD % recoveries within control limits (75-125%)? | <u>yes</u> |
| 7. MS/MSD RPDs within control limits (50%)? | <u>yes</u> |
| 8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? | <u>yes</u> |
| 9. DCS precision within given control limits (20%)? | <u>yes</u> |
| 10. Method blanks "clean"? | <u>yes</u> |
| 11. Chain-of-Custody present and complete with signatures and dates? | <u>yes</u> |
| 12. Name of analyst/supervisor given? | <u>yes</u> |
| 13. Procedural deviations noted? | <u>N/A</u> |
| 14. QC procedures given? | <u>yes</u> |

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

- ~~*** Client IDs for Field Dups need correction; change lower case to uppercase~~
- ~~Client IDs for Field Blanks need analysis types "1" appended to the end~~
- * ~~for the aqueous samples, lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the QAPP.~~
- * ~~Field Duplicate RPDs > 50% (see below circled in green)~~

Field Duplicates 044/018

	Result	Rep Limit	Dup Result	Dup Rep Limit	% RPD
As	3.6	1.9	3.1	1.6	14.9
Cr	77.0	3.7	30.1	3.3	87.6
Pb	23.1	18.7	ND	16.4	33.9
% MOIS	73	-	69	-	9.9

Cr results are greater than 5x the reporting limit

Pb result of the duplicate is within ± 4x the reporting limit of 16.4 even if the dup result is 0.

C: 6255:ALP1FORM

⊕ minimum RPD

046/012

	Result	Rep Limit	Dup Result	Dup Rep Limit	% RPD
As	ND	0.64	ND	0.62	NC
Cr	2.7	1.3	7.0	1.2	88.7
Pb	ND	6.4	ND	6.1	NC
% MOIS	22	-	19	-	14.6

Primary Cr result is less than 5x the reporting limit. Res of Pb duplicate is within ± 4x the reporting limit of 6.1

NC = not calculated

LAT 900706

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Jan Kennedy/Golder Associates REPORT # 7483

VALIDATED BY: Bob Glazier DATE: 6-24-90

YES/NO/NA

1. Does field documentation include:

- date/time samples collected? yes
- sample location? yes
- name of sampler? yes
- field measurements? NA
- sampling method? yes
- instruments/methods for field measurements? NA
- calibration/maintenance of field instruments? NA
- sampling containers used (COC*)? yes
- sample preservation procedures (see COC*)? yes
- Chain-of-Custody procedures? yes
- field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 52R/006 -- arsenic RPD=61%, chromium RPD=36%, lead RPD=84%

* Chain-of-Custody Form

C:6255:FPPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

LABORATORY: Enseco East

REPORT # 7483

VALIDATED BY: Mary Bourcier / Bob Glazier

DATE: 6-13-90 / 6-24-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? no
6. MS/MSD % recoveries within control limits (75-125%)? yes
7. MS/MSD RPDs within control limits (50%)? yes
8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? NA
9. DCS precision within given control limits (20%)? NA
10. Method blanks "clean"? NA
11. Chain-of-Custody present and complete with
signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? yes(NA)
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE

FOR TASK SW-1

(continued)

Note any violations to the assessment criteria listed above:

- Field duplicate of 52R/006 -- arsenic RPD=61%
- Wrong QC information provided for DCS and method
blank samples.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 7751

VALIDATED BY: Bob Glazier

DATE: 6-24-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>yes</u>
sample location?	<u>yes</u>
name of sampler?	<u>yes</u>
field measurements?	<u>NA</u>
sampling method?	<u>yes</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>yes</u>
sample preservation procedures (see COC*)?	<u>yes</u>
Chain-of-Custody procedures?	<u>yes</u>
field quality control procedures?	<u>yes</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? NA

4. Are field duplicates within control limits? NA

5. Comments: No field duplicates or equipment rinse blanks analyzed with this batch.

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1

LABORATORY: Enseco East

REPORT # 7751

VALIDATED BY: Mary Bourcier / Bob Glazier

DATE: 6-13-90 / 6-24-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? yes
NA
6. MS/MSD % recoveries within control limits (75-125%)? NA
7. MS/MSD RPDs within control limits (50%)? NA
8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? yes
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with
signatures and dates? no
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? yes (NA)
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK sw-1

(continued)

Note any violations to the assessment criteria listed above:

- No field duplicates, MS/MSDS, equipment rinse blanks analyzed with this batch
- Page 3 of chain of custody form missing. However, page 3 contains CLP samples which were assigned to a different Enserco East Project Number which will be reported separately.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1

SAMPLER/ORGANIZATION: Gidy Yates/Golder Associates

REPORT # 7788

VALIDATED BY: Bob Glazier

DATE: 8-1-90

YES/NO/NA

1. Does field documentation include:

- date/time samples collected? yes
- sample location? yes
- name of sampler? yes
- field measurements? NA
- sampling method? yes
- instruments/methods for field measurements? NA
- calibration/maintenance of field instruments? NA
- sampling containers used (COC*)? yes
- sample preservation procedures (see COC*)? yes
- Chain-of-Custody procedures? yes
- field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: ^{RPD of} Field duplicate of 16M/012 for Cr = 93%, Pb = 104%
RPD of field duplicate for 15M/027 for Cr = 112%, Pb = 88%

* Chain-of-Custody Form

C:6255:FPPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF LABORATORY PERFORMANCE
 FOR TASK SW-1

LABORATORY: Ensero-East

REPORT # 7788

VALIDATED BY: LAHeidel

DATE: 07-02-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)? yes
 Field duplicate RPDs within control limits (50%)? no#
6. MS/MSD % recoveries within control limits (75-125%)? yes**
7. MS/MSD RPDs within control limits (50%)? yes
8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? yes
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? N/A
14. QC procedures given? yes

**INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1**

(continued)

Note any violations to the assessment criteria listed above:

* For the aqueous sample IP/SW/EB33/000/2/2/1, Lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the OAP, P.

† Field Duplicates RPDs > 50% (see below circled in green)

** msl/msd recoveries could not be calculated for As, Cr, and Pb for sample 7788-11 due to high levels of target analytes present in the unspiked sample. Recoveries for 7788-20 are acceptable.

† Field Duplicates

16M/012

	1 ^o	Rep limit	Dup	Rep limit	% RPD	Results are greater than 5x the Reporting Limit
As	2190	283	3640	618	49.7	
Cr	19.6	2.8	53.7	2.5	93.0	
Pb	963	14.2	3030	12.4	104	
% Moiss	65	-	60	-	8	

C:6255:ALP1FORM

15M/027

	1 ^o	Rep limit	Dup	Rep limit	% RPD	Results are greater than 5x the Reporting Limits
As	20.7	3.2	20.7	3.8	0	
Cr	192	1.3	54.5	1.5	112	
Pb	100	6.3	38.9	7.6	88.0	
% Moiss	21	-	34	-	47.3	

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
 ASSESSMENT OF FIELD PERFORMANCE
 FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 8222

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

- date/time samples collected? yes
- sample location? yes
- name of sampler? yes
- field measurements? NA
- sampling method? yes
- instruments/methods for field measurements? NP
- calibration/maintenance of field instruments? NA
- sampling containers used (COC*)? yes
- sample preservation procedures (see COC*)? yes
- Chain-of-Custody procedures? yes
- field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
 If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 004/018, RPD for Cr=60%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1/Su-1

LABORATORY: ENSECO East

REPORT # 8222

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? yes ^{AMB} ₈₋₁₄₋₉₀
no
6. MS/MSD % recoveries within control limits (75-125%)? no
7. MS/MSD RPDs within control limits (50%)? no
8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? yes ^{*}
9. DCS precision within given control limits (20%)? yes ^{**}
10. Method blanks "clean"? yes ^{*}
11. Chain-of-Custody present and complete with signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? yes (NA)
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1/SW-1

(continued)

Note any violations to the assessment criteria listed above:

Field duplicate of 004/018, RPD for Cr = 60%

MSD of 005/006 for Pb = 73%

MS/MSD for Cr on 021/030 out of control

* didn't report method blank for Pb, Cr for Lot 29 JUN 90-A

** didn't report DCS data for lots 29 JUN 90-A (except AS); 09 JUL 90-B
for AS

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Cindy Yates / Golder Associates

REPORT # 7954

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>YES</u>
sample location?	<u>YES</u>
name of sampler?	<u>YES</u>
field measurements?	<u>NA</u>
sampling method?	<u>YES</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>YES</u>
sample preservation procedures (see COC*)?	<u>YES</u>
Chain-of-Custody procedures?	<u>YES</u>
field quality control procedures?	<u>YES</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented?

YES
NA

3. Was contamination of field blank samples not evident, or well documented at low levels?

YES

4. Are field duplicates within control limits?

NO

5. Comments: Field duplicate of 53/012, RPD for Pb = 53.1%

Field duplicate of 49/018, RPD for Pb = 72.1%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1/S-1

LABORATORY: Enseco - East

REPORT # 7954

VALIDATED BY: U. Heidel

DATE: 07-05-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes****
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)? no*
Field duplicate RPDs within control limits (50%)? no**
6. MS/MSD % recoveries within control limits (75-125%)? yes
7. MS/MSD RPDs within control limits (50%)? yes
8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? yes**
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? N/A
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1/S-1

(continued)

Note any violations to the assessment criteria listed above:

*** Client IDs for 7954-12 to 14 ^{need} task changed from S1 to S-1; 7954 17 to 22 need task changed from SW1 to SW1

* For the aqueous samples, lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the OIRP

* Lab Duplicate RPDs > 35% 7954-15 As RPD = 31.0%

** Field Duplicate RPDs > 50% (see below circled in green)

** While the average recovery of the DCS pair meets 80-120%, the following individual recoveries do not: QC Lot 20 Jun 90-A As recovery is 122%

** FIELD DUPLICATE 053/012

	1 ^o		Dup		%
	Result	Report Limit	Result	Rep Limit	RPD
As	20.2	2.1	20.1	2.3	0.5
Cr	25.1	4.3	33.1	4.5	27.5
Pb	184	21.3	317	22.5	53.1
MOIS	77	-	78	-	1.3

All results are greater than 5x reporting limit.

C:6255:ALP1FORM

049/018

	1 ^o		Dup		%
	Result	Rep. Limit	Result	Rep Limit	RPD
As	4.0	1.7	5.1	0.9	24.2
Cr	13.9	1.7	11.4	1.8	19.8
Pb	84.4	8.5	40.6	9.0	70.1
MOIS	41	-	45	-	9.3

Duplicate Lead result is less than 5x the reporting limit. Duplicate Lead result is NOT within ± 4 x the reporting limit of ~~8.5~~ 8.5

LAH 900705

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/sw-1

SAMPLER/ORGANIZATION: Jan Kennedy/Golder Associates

REPORT # 7217

VALIDATED BY: Bob Glazier

DATE: 6-22-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>yes</u>
sample location?	<u>yes</u>
name of sampler?	<u>yes</u>
field measurements?	<u>NA</u>
sampling method?	<u>yes</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>yes</u>
sample preservation procedures (see COC*)?	<u>yes</u>
Chain-of-Custody procedures?	<u>yes</u>
field quality control procedures?	<u>yes</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? yes/no

5. Comments: Page 3 and 4 of chain of custody record do not describe sample type (soil or aqueous). However, this is documented in the sample ID number.

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1/sw-1

LABORATORY: Enseco EastREPORT # 7217VALIDATED BY: Mary Bourcier/Bob GlazierDATE: 6-12-90/6-22-90

YES/NO/NA

- | | |
|---|-----------------|
| 1. Release authorization with signature present? | <u>yes</u> |
| 2. Sample identification summary/description present? | <u>yes</u> |
| 3. Analytical results present, including: | |
| correct units? | <u>yes</u> |
| detection limits? | <u>yes</u> |
| method used? | <u>yes</u> |
| date sampled? | <u>yes</u> |
| date received? | <u>yes</u> |
| date prepared? | <u>yes</u> |
| date analyzed? | <u>yes</u> |
| dilutions noted? | <u>yes</u> |
| 4. Holding times met? | <u>yes</u> |
| 5. Lab duplicate RPDs within control limits (35%)? | <u>yes</u> |
| Field duplicate RPDs within control limits (50%)? | <u>yes</u> |
| 6. MS/MSD % recoveries within control limits (75-125%)? | <u>yes</u> |
| 7. MS/MSD RPDs within control limits (50%)? | <u>yes</u> |
| 8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? | <u>yes</u> |
| 9. DCS precision within given control limits (20%)? | <u>yes</u> |
| 10. Method blanks "clean"? | <u>yes</u> |
| 11. Chain-of-Custody present and complete with signatures and dates? | <u>no</u> |
| 12. Name of analyst/supervisor given? | <u>yes</u> |
| 13. Procedural deviations noted? | <u>yes (NA)</u> |
| 14. QC procedures given? | <u>yes</u> |

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1/sw-1

(continued)

Note any violations to the assessment criteria listed above:

Page 3 and 4 of chain of custody form do not describe sample type (soil or aqueous). However, this information is documented in the sample ID number. Date and time of sample receipt is not given on page 4 of the chain of custody form. This is not critical because the other three pages do document the date/time of receipt by lab.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK 3-1/SW-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 7919

VALIDATED BY: Bob Flazio

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>YES</u>
sample location?	<u>YES</u>
name of sampler?	<u>YES</u>
field measurements?	<u>NA</u>
sampling method?	<u>YES</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>YES</u>
sample preservation procedures (see COC*)?	<u>YES</u>
Chain-of-Custody procedures?	<u>YES</u>
field quality control procedures?	<u>YES</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? YES
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? YES

4. Are field duplicates within control limits? YES NA

5. Comments: _____

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK Stand SW-1

LABORATORY: Enseco - East

REPORT # 1919

VALIDATED BY: V. Heidel

DATE: 07-03-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes***
3. Analytical results present, including: *
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? yes
6. MS/MSD % recoveries within control limits (75-125%)? yes**
7. MS/MSD RPDs within control limits (50%)? yes
8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? no~
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with
signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? no
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK St and SW-1

(continued)

Note any violations to the assessment criteria listed above:

- *** Client IDs for Field Dups + HS/HSDs need to be corrected; change lower case to upper case.
- Samples 7919-13 through 22 need Task changed from S-1 to SW-1
- * Results for IP/SW1/055/018/11/11 are not reported. Sample lost at lab. See cover letter.
- * For aqueous sample IP/S-1/EB40/000/21/11, Lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the OACIP
- ** HS/HSD recoveries for Cr in 7919-7 were not calculated because the sample concentration exceeds the spike concentration by 4x or more.

Field Duplicate 089/030

	Result	Rep limit	Dup Result	Rep Limit	% RPD
As	53.4	12.4	34.8	6.2	42.2
Cr	1040	1.2	765	1.2	30.5
Pb	145	6.2	183	6.2	23.2
015	19	-	19	-	0

All results are greater than 5x reporting limit

C:6255:ALP1FORM

~ DCS for QCLot 22 JUN 90 - B



Avg As recovery 122%
 DCS1 As recovery 121%
 DCS2 As recovery 123%

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 8108

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?

yes

sample location?

yes

name of sampler?

yes

field measurements?

NA

sampling method?

yes

instruments/methods for field measurements?

NA

calibration/maintenance of field instruments?

NA

sampling containers used (COC*)?

yes

sample preservation procedures (see COC*)?

yes

Chain-of-Custody procedures?

yes

field quality control procedures?

yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented?

yes

NA

3. Was contamination of field blank samples not evident, or well documented at low levels?

yes

4. Are field duplicates within control limits?

yes

5. Comments:

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1/S-1

LABORATORY: Enseco-East

REPORT # 8108

VALIDATED BY: LA Heidel

DATE: 07-06-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes***
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? N/A
yes
6. MS/MSD % recoveries within control limits (75-125%)? yes**
7. MS/MSD RPDs within control limits (50%)? yes**
8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? yes
9. DCS precision within given control limits (20%)? yes
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with signatures and dates? yes***
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? N/A
14. QC procedures given? yes

**INDUSTRI-FLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1/S-1**

(continued)

Note any violations to the assessment criteria listed above:

- *** Client IDs for Field Dups + mslmsd and correction; change lower case to upper case
- * For the aqueous samples, lead analysis was performed using EPA method 200.7 (ICP), instead of 239.2 (GFAA) as specified in the OAR.
- * mslmsd recoveries/EPDs not calculated for As in 8108-4 + 8108-15 and Cr + Pb in 8108-4; sample conc. exceeds spike conc. by more than 4x
- *** Coes need to be copied darker. Too light to be read.

Field Duplicate 028/006
PMG 8-15-90

	Result	10 Rep Limit	Dup Result	Rep Limit	% EPD
As	301	258	271	25.9	10.5
Cr	765	5.2	1230	5.1	46.6
Pb	817	26.0	1050	25.7	25.0
% Moils	81		81	-	0

All results greater than 5x the reporting limit.

C:6255:ALP1FORM

032/012

	Result	10 Rep Limit	Dup Result	Rep Limit	% EPD
As	272	42.3	225	14.2	18.9
Cr	38.4	1.7	32.5	1.6	16.6
Pb	277	8.5	331	8.0	17.8
% Moils	41	-	38	-	7.6

All results greater than 5x the reporting limit.

1511 900706

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Cindy Yates / Golder Associates

REPORT # 7848

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?

YES

sample location?

YES

name of sampler?

YES

field measurements?

NO

sampling method?

YES

instruments/methods for field measurements?

NA

calibration/maintenance of field instruments?

NA

sampling containers used (COC*)?

YES

sample preservation procedures (see COC*)?

YES

Chain-of-Custody procedures?

YES

field quality control procedures?

YES

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented?

YES

NA

3. Was contamination of field blank samples not evident, or well documented at low levels?

YES

4. Are field duplicates within control limits?

YES

5. Comments:

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1/S-1

LABORATORY: Enseco - East

REPORT # 7848

VALIDATED BY: W. Adendel

DATE: 07-03-90

YES/NO/NA

- 1. Release authorization with signature present? yes
- 2. Sample identification summary/description present? yes***
- 3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes*
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
- 4. Holding times met? yes
- 5. Lab duplicate RPDs within control limits (35%)? yes**
Field duplicate RPDs within control limits (50%)? yes
- 6. MS/MSD % recoveries within control limits (75-125%)? no^{oo}
- 7. MS/MSD RPDs within control limits (50%)? no^{oo}
- 8. Duplicate control sample (DCS) accuracy within given control limits (80-120%)? noⁿ
- 9. DCS precision within given control limits (20%)? yes
- 10. Method blanks "clean"? yes
- 11. Chain-of-Custody present and complete with signatures and dates? yes***
- 12. Name of analyst/supervisor given? yes
- 13. Procedural deviations noted? NA
- 14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1/S-1

(continued)

Note any violations to the assessment criteria listed above:

*** The client IDs for the Field Dups + MS/MSDs need correction, change from lower case to upper case.
Sample 7848-20 needs matrix changed from 1 to 2
Samples 7848-21 through 25 need Task changed from SW1 to S-1

* For the aqueous sample IP/SW1/EB 37/000/2/2/1, Lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the OAP.

** Lab Duplicates RPDs could not be calculated because results were ND.

∞ MS/MSD recoveries had not been calculated for As and Cr in T248-2 MS+2 SD

Recoveries are as follows. Recoveries outside control limits circled in green

As MS = 117% MSD = 129% RPD = 100%
 Cr MS = 81% MSD = 140% RPD = 53%

The concentration of the unspiked sample does not exceed the spike concentration by 4x or more. Recoveries should have been reported.

∞ MS/MSD RPDs > 50% Cr is T248-2 53%

*** Left hand side of CoCs cropped; Cannot read Enesco sample ID's.
 C:6255:ALP1FORM

~ DCS QC Lot 06 JUN 90-B As is 121% (Avg, DCS1 + DCS2)
 06 JUN 90-A DCS1 recovery for As is 122%
 06 JUN 90-C DCS 2 recovery for As is 122%.

Field ^{duplicate, 2ml @ 9.2.00} ~~Blank~~ SOM/018

	Result	Rep Limit	Dup Result	Rep Limit	% RPD
As	1.7	0.63	2.5	0.70	N/A
Cr	17.0	1.3	21.6	1.4	23.8
Pb	ND	6.3	7.5	7.0	N/A
Mo	20	-	29	-	36.7

As result of Dup is within ±4x rep limit of 0.63

Pb result of Dup is within ±4x rep limit of 6.3 even if 10% result was 0.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Fan Kennedy / Golder Associates REPORT # 7442

VALIDATED BY: Bob Glazier DATE: 6-22-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected?	<u>yes</u>
sample location?	<u>yes</u>
name of sampler?	<u>yes</u>
field measurements?	<u>NA</u>
sampling method?	<u>yes</u>
instruments/methods for field measurements?	<u>NA</u>
calibration/maintenance of field instruments?	<u>NA</u>
sampling containers used (COC*)?	<u>yes</u>
sample preservation procedures (see COC*)?	<u>yes</u>
Chain-of-Custody procedures?	<u>yes</u>
field quality control procedures?	<u>yes</u>

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? yes/NA

5. Comments: Field duplicate of 18R/018 -- arsenic RPD=33%,
but concentration is low (~9 ppm) & chromium
RPD=48%, but concentration is low (~9 ppm)

* Chain-of-Custody Form

C:6255:FPPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1/SW-1

LABORATORY: Enseco East

REPORT # 7442

VALIDATED BY: Mary Bourcier / Bob Glazier

DATE: 6-13-90 / 6-22-90

YES/NO/NA

- 1. Release authorization with signature present? yes
- 2. Sample identification summary/description present? yes
- 3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
- 4. Holding times met? yes
- 5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? yes
- 6. MS/MSD % recoveries within control limits (75-125%)? no
- 7. MS/MSD RPDs within control limits (50%)? yes
- 8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? yes
- 9. DCS precision within given control limits (20%)? yes
- 10. Method blanks "clean"? yes
- 11. Chain-of-Custody present and complete with
signatures and dates? yes
- 12. Name of analyst/supervisor given? yes
- 13. Procedural deviations noted? yes(NA)
- 14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION
ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1/SW-1

(continued)

Note any violations to the assessment criteria listed above:

MS/MSD percent recovery for 18L/027 is high for arsenic
(MS = 314%, MSD = 308%)

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK SW-1 / S-1

SAMPLER/ORGANIZATION: Cindy Yates/Golder Associates

REPORT # 8159

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Does field documentation include:

date/time samples collected? yes

sample location? yes

name of sampler? yes

field measurements? NA

sampling method? yes

instruments/methods for field measurements? NA

calibration/maintenance of field instruments? NA

sampling containers used (COC*)? yes

sample preservation procedures (see COC*)? yes

Chain-of-Custody procedures? yes

field quality control procedures? yes

2. Were procedures in the Field Sampling Plan followed?
If not, were procedural variances approved and documented? yes
NA

3. Was contamination of field blank samples not evident, or well documented at low levels? yes

4. Are field duplicates within control limits? no

5. Comments: Field duplicate of 037/018, RPD for As = 120%
Pb = 103%, Cr = 109%

* Chain-of-Custody Form

C:6255:FPPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1 / S-1

LABORATORY: Enseco East

REPORT # 8159

VALIDATED BY: Bob Glazier

DATE: 8-2-90

YES/NO/NA

1. Release authorization with signature present? yes
2. Sample identification summary/description present? yes
3. Analytical results present, including:
 - correct units? yes
 - detection limits? yes
 - method used? yes
 - date sampled? yes
 - date received? yes
 - date prepared? yes
 - date analyzed? yes
 - dilutions noted? yes
4. Holding times met? yes
5. Lab duplicate RPDs within control limits (35%)?
Field duplicate RPDs within control limits (50%)? NA
no
6. MS/MSD % recoveries within control limits (75-125%)? no
7. MS/MSD RPDs within control limits (50%)? no
8. Duplicate control sample (DCS) accuracy within
given control limits (80-120%)? no
9. DCS precision within given control limits (20%)? no
10. Method blanks "clean"? yes
11. Chain-of-Custody present and complete with
signatures and dates? yes
12. Name of analyst/supervisor given? yes
13. Procedural deviations noted? yes (NA)
14. QC procedures given? yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK SW-1 / S-1

(continued)

Note any violations to the assessment criteria listed above:

Field duplicate of 037/018 RPD for As=120%, Pb=103%, Cr=109%

~~(Use sample ID for duplicate, might be incorrect on chain of custody)~~

~~Sample 034/006 As % recovery = 62, % RPD = 68; Cr % recovery = 343, Pb % recovery = 150,
on 02/23; Sample 037/027 As MS % recovery = 73, RPD = 120~~

~~MS of 034/006 As % recovery = 68, RPD = 103%~~

DCS data not provided for lots 29 JUN 90-A, 02 JUL 90-D

Method Blank not provided for 02 JUL 90-A for Cr, Pb; 02 JUL 90-D

for As, 29 JUN 90-A for As, Pb, Cr

APPENDIX G
CLP Data Validation Narrative

CLP Data Validation Narrative

1.0 INTRODUCTION

Golder Associates, Inc. (Golder) has performed a data validation of the Organic and Inorganic analytical data from the stream sediment samples collected from May 13, 1990 through June 13, 1990 at the Industri-Plex Site in Woburn, Massachusetts. These samples were part of the Pre-Design Investigation (PDI) Task SW-1 (Extent of Hazardous Substances in Wetlands and Surface Water Sediments) at the Site. The samples were analyzed for the Organic Target Compound List (TCL) and the Inorganic Target Analyte List (TAL) (metals only) in accordance with the Contract Laboratory Program (CLP) Statements of Work (SOW) dated 2/88 for Organic Analyses and 7/87 for Inorganic Analyses. The analyses were performed by Enseco-East (referred to as the Laboratory) of Somerset, New Jersey. Samples were collected from eighteen (18) primary locations. Two (2) locations were sampled in duplicate yielding two (2) Field Duplicate samples. Extra sample volume was collected from two (2) of the primary locations in order to obtain sufficient sample volumes to perform the analysis of the Matrix Spike/ Matrix Spike Duplicate (MS/MSD) pairs. The Sample Identification Numbers are explained in Table G-1. The sample points are summarized in Table G-2.

Data Validation was performed in accordance with the U.S. Environmental Protection Agency (USEPA) Region I Laboratory Data Validation Functional Guidelines for Evaluating Organic Analyses (February 1, 1988 and modified November 1, 1988) and Region I Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses (June 13, 1988 and modified February 1989). In addition, the Data Validation criteria from the Quality Assurance Project Plan (QAPjP) for Industri-Plex Pre-Design Investigation (PDI) were followed. When differing guidelines were encountered, the data validator used the more conservative (stricter) guideline. Data qualifiers are defined in Table G-3.

The data packages (reports) from the Laboratory were organized by Enseco Project numbers which were assigned to each set of samples received on any one day. The Laboratory performed their Quality Assurance/Quality Control procedures at the frequency specified by the appropriate SOW. The Laboratory considered each sampling day as a separate event and produced a data package for each of its Project numbers. The collection of samples for CLP analyses was performed on twelve (12) days and the Laboratory produced twelve reports containing data from this task. Golder considered all of the samples to be part of the same sampling event and the data validation procedure was performed with this in mind.

2.0 ORGANIC DATA

The data was evaluated based upon the following parameters:

- * data completeness
- * holding times
- * GC/MS tuning
- calibration
- blanks
- * surrogate recoveries
- matrix spike / matrix spike duplicate
- field duplicates
- * internal standard performance
- pesticide instrument performance
- * compound identification
- * compound quantitation

* - All criteria were met for this parameter.

2.1 Data Completeness

The Laboratory produced twelve reports containing data from this task. It should be noted that while each data package was complete and contained all necessary information to perform data validation, the format of the data packages deviated somewhat (with regard to package order) from the format specified by the appropriate SOW.

2.2 Holding Times

All samples were extracted and/or analyzed within the required holding time for the Volatile, Semi-volatile and Pesticide/PCB fractions.

2.3 GC/MS Tuning

The gas chromatograph/mass spectrometer (GC/MS) tuning performance results were all within USEPA Region I guidelines.

2.4 Calibration

The USEPA Region I guidelines specify that certain criteria must be achieved during the instrument calibration for Volatile and Semi-volatile compounds. These criteria stipulate that: 1) the average and daily response factors (RRF) for each volatile and semi-volatile target analyte must be equal to or greater than 0.05; 2) the percent relative standard deviation (%RSD) for each volatile and semi-volatile target analyte in the initial calibration must be less than or equal to 30%; and 3) the percent difference (%D) for each volatile and semi-volatile target analyte in the continuing (daily) calibration must be less than or equal to 25%.

2.4.1 Volatiles

The daily relative response factor (RRF) for 2-Butanone in the aqueous volatile calibration analyzed on May 18, 1990 was less than 0.05. Furthermore, the Percent Difference (%D) for 2-Butanone in this aqueous calibration was greater than 25%. The non-detected result for this compound in the equipment blank IP/SW1/EB30/000/2/2 required qualification as an unusable value.

The Percent Difference (%D) for 2-Butanone in the volatile continuing calibration analyzed on May 29, 1990 was greater than 25%. The non-detected result for this compound in sample IP/SW1/21R/027/1/2 did not require qualification.

The Percent Difference (%D) for Acetone in the volatile continuing calibration analyzed on May 29, 1990 was greater than 25%. The positive result for this compound in sample IP/SW1/21R/027/1/2 required qualification as an estimated value.

The Percent Differences (%D) for Chloroethane and Acetone in the aqueous volatile continuing calibration analyzed on May 29, 1990 were greater than 25%. The non-detected results for these compounds in the TRIP BLANK (received by the Laboratory on May 22, 1990) did not require qualification.

The Percent Differences (%D) for 2-Butanone, 2-Hexanone and Chloroethane in the volatile continuing calibration analyzed on June 9, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/059/036/1/1, IP/SW1/057/006/1/1, IP/SW1/054/036/1/1, IP/SW1/049/036/1/1, IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D did not require qualification.

The Percent Differences (%D) for 2-Butanone, 2-Hexanone and Chloroethane in the volatile continuing calibration analyzed on June 9, 1990 were greater than 25%. The non-detected results for 2-Hexanone and Chloroethane in sample IP/SW1/008/012/1/1 did not require qualification. The positive result for 2-Butanone in this sample required qualification as an estimated value.

The Percent Relative Standard Deviation (%RSD) for 2-Butanone in the aqueous volatile initial calibration analyzed on June 6, 1990 was greater than 30%. The non-detected results for this compound in the TRIP BLANK (received by the Laboratory on May 31, 1990), the equipment blank IP/SW1/EB48/000/2/1 and the TRIP BLANK (received by the Laboratory on June 8, 1990) did not require qualification.

The Percent Differences (%D) for Bromomethane, 2-Hexanone, 1,1,1-Trichloroethane, 1,2-Dichloroethane, Chloroethane and Carbon Tetrachloride in the aqueous volatile continuing calibration analyzed on June 14, 1990 were greater than 25%. The non-detected results for these compounds in the equipment blank IP/SW1/EB48/000/2/1 and the TRIP BLANK (received by the Laboratory on June 8, 1990) did not require qualification.

The Percent Difference (%D) for Acetone in the volatile continuing calibration analyzed on June 12, 1990 was greater than 25%. The positive results for this compound in samples IP/SW1/039/018/1/1DL, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 required qualification as estimated values.

The Percent Difference (%D) for 2-Butanone in the volatile continuing calibration analyzed on June 12, 1990 was greater than 25%. The non-detected results for this compound in samples IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 did not require qualification.

The Percent Difference (%D) for Acetone in the volatile continuing calibration analyzed on June 17, 1990 was greater than 50%. The positive results for this compound in samples IP/SW1/031/036/1/1 and IP/SW1/035/036/1/1 required qualification as estimated values.

The Percent Differences (%D) for Bromomethane and Chloromethane in the volatile continuing calibration analyzed on June 17, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/031/036/1/1 and IP/SW1/035/036/1/1 did not require qualification.

The Percent Differences (%D) for Bromomethane and Chloroethane in the volatile continuing calibration analyzed on June 11, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/039/018/1/1 and IP/SW1/027/036/1/2 did not require qualification.

The Percent Difference (%D) for Acetone in the volatile continuing calibration analyzed on June 23, 1990 was greater than 25%. The positive result for this compound in sample IP/SW1/042/006/1/1 required qualification as an estimated value.

The Percent Differences (%D) for Bromomethane and Chloromethane in the volatile continuing calibration analyzed on June 23, 1990 were greater than 25%. The non-detected results for these compounds in sample IP/SW1/042/006/1/1 did not require qualification.

2.4.2 Semi-Volatiles

The Percent Relative Standard Deviations (%RSD) for Benzoic Acid, N-Nitroso-Di-n-Propylamine, 4,6-Dinitro-2-Methylphenol and 2,4-Dinitrophenol in the semi-volatile initial calibration analyzed on May 10, 1990 were greater than 30%. The non-detected results for these compounds in samples IP/SW1/17M/027/1/2, IP/SW1/EB30/000/2/2, IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D, and IP/SW1/06M/023/1/2, did not require qualification.

The Percent Differences (%D) for 2-Methylphenol, Benzyl Alcohol, bis(2-Chloroisopropyl)Ether, 2,4-Dinitrophenol, Benzoic Acid, N-Nitroso-Di-n-Propylamine and 4-Methylphenol in the semi-volatile continuing calibration analyzed on May 17, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/17M/027/1/2, IP/SW1/EB30/000/2/2, IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D, and IP/SW1/06M/023/1/2 did not require qualification.

The average and daily relative response factors (RRF) for the surrogate 2,4,6-Tribromophenol in the semi-volatile calibrations analyzed on May 10 and 17, 1990 were less than 0.05. The recoveries reported for this compound in samples IP/SW1/17M/027/1/2, IP/SW1/EB30/000/2/2, IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D, and IP/SW1/06M/023/1/2 and all associated Quality Control samples did not require qualification. None of these recoveries were near the lower limit of the Contract Required Recovery (CRR) range so while the recoveries reported might be higher than actual, it was unlikely that any recovery which could have been less than the lower limit of the CRR range had been reported above this limit.

The Percent Relative Standard Deviations (%RSD) for 4,6-Dinitro-2-Methylphenol and 2,4-Dinitrophenol in the semi-volatile initial calibration analyzed on May 18, 1990 were greater than 30%. The non-detected results for these compounds in samples IP/SW1/001/036/1/2, IP/SW1/001/036/1/2DL, IP/SW1/06L/018/1/2DL, and IP/SW1/06L/018/1/DDL did not require qualification.

The Percent Differences (%D) for 3,3'-Dichlorobenzidine and Benzyl Alcohol in the semi-volatile continuing calibration analyzed on May 19, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/001/036/1/2, IP/SW1/06L/018/1/2DL, and IP/SW1/06L/018/1/DDL did not require qualification.

The Percent Differences (%D) for N-Nitroso-Di-n-Propylamine, Benzyl Alcohol and 2,4-Dinitrophenol in the semi-volatile continuing calibration analyzed on May 23, 1990 were greater than 25%. The non-detected results for these compounds in sample IP/SW1/001/036/1/2DL did not require qualification.

The average and daily relative response factors (RRF) for the surrogate 2,4,6-Tribromophenol in the semi-volatile calibrations analyzed on May 18 (initial and continuing calibrations) and May 19, 1990 were less than 0.05. The recoveries reported for this compound in samples IP/SW1/001/036/1/2, IP/SW1/001/036/1/2DL, IP/SW1/06L/018/1/2DL, and IP/SW1/06L/018/1/DDL and all associated Quality Control samples required qualification as estimated values. None of these recoveries were near the lower limit of the Contract Required Recovery (CRR) range so while the reported recoveries might be higher than actual recoveries, it is unlikely that any recovery which could have been less than the lower limit of the CRR range had been reported above this limit.

The Percent Relative Standard Deviation (%RSD) for Benzoic Acid in the semi-volatile initial calibration analyzed on May 5, 1990 was greater than 50%. The Percent Difference (%D) for Benzoic Acid in the semi-volatile continuing calibration analyzed on May 24, 1990 was greater than 25%. The non-detected result for this compound in sample IP/SW1/21R/027/1/2 required qualification as an estimated quantitation limit.

The Percent Relative Standard Deviation (%RSD) for 2,4-Dinitrophenol in the semi-volatile initial calibration analyzed on May 5, 1990 was greater than 30%. The non-detected result for this compound in sample IP/SW1/21R/027/1/2 did not require qualification.

The Percent Differences (%D) for 4,6-Dinitro-2-Methylphenol and Benzyl Alcohol in the semi-volatile continuing calibration analyzed on May 24, 1990 were greater than 25%. The non-detected results for these compounds in sample IP/SW1/21R/027/1/2 did not require qualification.

The Percent Difference (%D) for the surrogate 2,4,6-Tribromophenol in the semi-volatile continuing calibration analyzed on May 24, 1990 was greater than 25%. The recoveries reported for this compound in sample IP/SW1/21R/027/1/2 and all associated Quality Control samples required qualification as estimated values. None of these recoveries were near the lower limit of the Contract Required Recovery (CRR) range so while the reported recoveries might be higher than actual recoveries, it is unlikely that any recovery which could have been less than the lower limit of the CRR range had been reported above this limit.

The Percent Relative Standard Deviation (%RSD) for 3,3'-Dichlorobenzidine in the semi-volatile initial calibration analyzed on June 4, 1990 was greater than 30%. The non-detected result for this compound in sample IP/SW1/057/006/1/1 did not require qualification.

The Percent Difference (%D) for 2,4-Dinitrophenol in the semi-volatile continuing calibration analyzed on June 4, 1990 was greater than 25%. The non-detected result for this compound in sample IP/SW1/057/006/1/1 did not require qualification.

The Percent Relative Standard Deviations (%RSD) for Benzoic Acid, 3,3'-Dichlorobenzidine and 2,4-Dinitrophenol in the semi-volatile initial calibration analyzed on June 4, 1990 were greater than 30%. The non-detected results for these compounds in samples IP/SW1/054/036/1/1, IP/SW1/049/036/1/1, IP/SW1/008/012/1/1, IP/SW1/039/018/1/1, IP/SW1/027/036/1/2, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 did not require qualification.

The Percent Differences (%D) for 3,3'-Dichlorobenzidine, Benzoic Acid and Hexachlorocyclopentadiene in the semi-volatile continuing calibration analyzed on June 5, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/054/036/1/1 and IP/SW1/049/036/1/1 did not require qualification.

The Percent Difference (%D) for 2,4-Dinitrophenol in the semi-volatile continuing calibration analyzed on June 5, 1990 was greater than 50%. The non-detected results for this compound in samples IP/SW1/054/036/1/1 and IP/SW1/049/036/1/1 required qualification as estimated quantitation limits.

The Percent Differences (%D) for 3,3'-Dichlorobenzidine, Hexachlorocyclopentadiene and 2,4-Dinitrophenol in the semi-volatile continuing calibration analyzed on June 7, 1990 were greater than 50%. The non-detected results for these compounds in sample IP/SW1/008/012/1/1 required qualification as estimated quantitation limits.

The Percent Differences (%D) for Hexachlorocyclopentadiene, Benzoic Acid and 4-Nitrophenol in the semi-volatile continuing calibration analyzed on June 14, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/039/018/1/1, IP/SW1/027/036/1/2, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 did not require qualification.

The Percent Differences (%D) for 2,4-Dinitrophenol and Benzyl Alcohol in the semi-volatile continuing calibration analyzed on June 14, 1990 were greater than 50%. The non-detected results for these compounds in samples IP/SW1/039/018/1/1, IP/SW1/027/036/1/2, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 required qualification as estimated quantitation limits.

The Percent Relative Standard Deviations (%RSD) for Benzoic Acid, 2,4-Dinitrophenol and 4,6-Dinitro-2-Methylphenol in the semi-volatile initial calibration analyzed on June 4, 1990 were greater than 30%. The non-detected results for these compounds in samples IP/SW1/011/006/1/1, IP/SW1/011/006/1/D, IP/SW1/031/036/1/1 and IP/SW1/035/036/1/1 did not require qualification.

The Percent Differences (%D) for 2,4-Dinitrophenol and Benzoic Acid in the semi-volatile continuing calibration analyzed on June 6, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D did not require qualification.

The Percent Difference (%D) for 2-Methylnaphthalene in the semi-volatile continuing calibration analyzed on June 6, 1990 was greater than 50%. The non-detected results for this compound in samples IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D required qualification as estimated quantitation limits.

The Percent Differences (%D) for 3,3'-Dichlorobenzidine, Benzoic Acid and 4-Nitrophenol in the semi-volatile continuing calibration analyzed on June 8, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/SW1/031/036/1/1 and IP/SW1/035/036/1/1 did not require qualification.

The Percent Difference (%D) for 2-Methylnaphthalene in the semi-volatile continuing calibration analyzed on June 8, 1990 was greater than 50%. The non-detected results for this compound in samples IP/SW1/031/036/1/1 and IP/SW1/035/036/1/1 required qualification as estimated quantitation limits.

The average and daily relative response factors (RRF) for the surrogate 2,4,6-Tribromophenol in the semi-volatile calibrations analyzed on June 14 and 15, 1990 were less than 0.05. The recoveries reported for this compound in the equipment blank IP/SW1/EB48/000/2/1 and all associated Quality Control samples required qualification as estimated values. None of these recoveries were near the lower limit of the Contract Required Recovery (CRR) range so while the reported recoveries might be higher than actual recoveries, it was unlikely that any recovery which could have been less than the lower limit of the CRR range had been reported above this limit.

The Percent Difference (%D) for 3,3'-Dichlorobenzidine in the semi-volatile continuing calibration analyzed on June 15, 1990 was greater than 25%. The non-detected result for this compound in the equipment blank IP/SW1/EB48/000/2/1 did not require qualification.

The Percent Relative Standard Deviations (%RSD) for Benzoic Acid, 2,4-Dinitrophenol and 4,6-Dinitro-2-Methylphenol in the semi-volatile initial calibration analyzed on June 14, 1990 were greater than 30%. The non-detected results for these compounds in the equipment blank IP/SW1/EB48/000/2/1 did not require qualification.

The Percent Difference (%D) for 2,4-Dinitrophenol in the semi-volatile continuing calibration analyzed on June 15, 1990 was greater than 50%. The non-detected result for this compound in the sample IP/SW1/EB48/000/2/1 required qualification as an estimated quantitation limit.

The Percent Difference (%D) for 3,3'-Dichlorobenzidine in the semi-volatile continuing calibration analyzed on June 21, 1990 was greater than 25%. The non-detected result for this compound in the sample IP/SW1/042/006/1/1 did not require qualification.

2.4.3 Pesticides/PCBs

The Percent Difference (%D) for Methoxychlor in the Pesticide continuing calibration analyzed on June 22, 1990 was greater than 20% for the confirmation column (RTX-35). The non-detected results for this compound in the samples IP/SW1/057/006/1/1, IP/SW1/054/036/1/1, IP/SW1/049/036/1/1, IP/SW1/011/006/1/1, IP/SW1/011/006/1/D, IP/SW1/008/012/1/1, IP/SW1/031/036/1/1, IP/SW1/035/036/1/1, IP/SW1/039/018/1/1, IP/SW1/EB48/000/2/1, IP/SW1/027/036/1/2, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 did not require qualification.

The Percent Difference (%D) for Methoxychlor in the Pesticide continuing calibration standard analyzed on July 15, 1990 at 10:20 was greater than 15% for the quantitation column (RTX-35). The non-detected result for this compound in the sample IP/SW1/042/006/1/1 did not require qualification.

The Percent Differences (%D) for Endosulfan II and Heptachlor Epoxide in the Pesticide continuing calibration standard analyzed on July 15, 1990 at 10:20 were greater than 20% for the confirmation column (RTX-5). The non-detected results for these compounds in the sample IP/SW1/042/006/1/1 did not require qualification.

The Percent Differences (%D) for delta-BHC, Endosulfan Sulfate and Endrin Ketone in the Pesticide continuing calibration standard analyzed on July 15, 1990 at 11:14 were greater than 20% for the confirmation column (RTX-5). The non-detected results for these compounds in the sample IP/SW1/042/006/1/1 did not require qualification.

2.5 Blanks

In evaluating the contaminants in the laboratory method blanks, the data validator applied the appropriate action levels to only those samples to which a particular blank applied. In evaluating the contaminants in the equipment blanks, the data validator applied the results from the blank using the split-spoon sampler (IP/SW1/EB30/000/2/2) to those samples collected with that sampling instrument (sample point locations 1, 6 and 17). The data validator applied the results from the blank using the hand auger (IP/SW1/EB48/000/2/1) to those samples collected with that sampling instrument (all remaining sample point locations). In evaluating the contaminants in the trip blanks, the data validator applied the appropriate action levels for both trip blanks to all of the samples collected for this event. Action levels for method blanks were applied on an individual sample batch basis.

Please note that sample weights, volumes, dilution factors, units and percent moisture have been taken into consideration when applying the appropriate blank action levels to the samples.

2.5.1 Volatiles

Methylene Chloride was detected in the Volatile analysis of the equipment blank (IP/SW1/EB30/000/2/2) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was not detected in any of the associated samples and therefore, the non-detected results did not require qualification.

Acetone was detected in the Volatile laboratory method blank (VBLK061290 for Project 8109) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/038/036/1/1 at a concentration which was greater than the CRQL but less than the action level. The result for this compound required qualification as undetected at the concentration originally reported (i.e., 57 B --> 57 U).

Acetone was detected in the Volatile laboratory method blank (VBLK061290 for Project 8109) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/031/036/1/1 at a concentration which was greater than the CRQL and the action level. The result for this compound did not require qualification and remained as originally reported.

Methylene Chloride and Acetone were detected in the aqueous Volatile laboratory method blank (VBLK061490 for Project 8082) at concentrations which were less than the Contract Required Quantitation Limit (CRQL). These compounds are considered common laboratory contaminants; the action levels determined for these compounds were 10 times the highest concentration found in any of the associated blanks. Methylene Chloride was detected in the equipment blank IP/SW1/EB48/000/2/1 at a concentration which was less than the CRQL and the action level. The result for this compound required qualification as undetected at the CRQL (i.e., 4 BJ --> 5 U). Acetone was not detected in this equipment blank, and therefore, the non-detected result did not require qualification.

Methylene Chloride and Acetone were detected in the aqueous Volatile laboratory method blank (VBLK061490 for Project 8082) at concentrations which were less than the Contract Required Quantitation Limit (CRQL). These compounds are considered common laboratory contaminants; the action levels determined for these compounds were 10 times the highest concentration found in any of the associated blanks. Methylene Chloride was detected in the TRIP BLANK (received at the Laboratory on 6/8/90) at a concentration which was greater than the CRQL but less than the action level. The result for this compound required qualification as undetected at the concentration originally reported (i.e., 6 B --> 6 U). Acetone was not detected in this trip blank and therefore, the non-detected result did not require qualification.

Acetone was detected in the Volatile laboratory method blank (VBLK061290) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/039/018/1/1DL at a concentration which was less than the CRQL and the action level. The result for this compound required qualification as undetected at the CRQL (i.e., 160 BDJ --> 240 U).

Acetone was detected in the Volatile laboratory method blank (VBLK061290 for Project 8082) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in samples IP/SW1/039/018/1/1 and IP/SW1/027/036/1/2 at concentrations which were greater than the CRQL but less than the action level. The results for this compound required qualification as undetected at the concentration originally reported (i.e., 89 --> 89 U and 39 --> 39 U, respectively).

2.5.2 Semi-volatiles

Bis(2-Ethylhexyl) Phthalate was detected in the aqueous Semi-volatile laboratory method blank (SBLK01 for Project 7720) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in the equipment blank IP/SW1/EB30/000/2/2 at a concentration which was less than the CRQL and the action level. The result for this compound required qualification as undetected at the CRQL (i.e., 5 BJ --> 10 U).

Di-n-Butylphthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 7807) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/21R/027/1/2 at a concentration which was less than the CRQL and the action level. The result for this compound required qualification as undetected at the CRQL (i.e. 65 BJ --> 370 U).

Bis(2-Ethylhexyl) Phthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 7807) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/21R/027/1/2 at a concentration which was greater than the CRQL but less than the action level. The result for this compound required qualification as undetected at the concentration originally reported (i.e., 500 B --> 500 U).

Bis(2-Ethylhexyl) Phthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 7918) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/059/036/1/1 at a concentration which was less than the CRQL and the action level. The result for this compound required qualification as undetected at the CRQL (i.e. 340 BJ --> 410 U).

Bis(2-Ethylhexyl) Phthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 7936) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/057/006/1/1 at a concentration which was less than the CRQL and the action level. The result for this compound required qualification as undetected at the CRQL (i.e., 100 BJ --> 420 U).

Bis(2-Ethylhexyl) Phthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 7953) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in samples IP/SW1/054/036/1/1 and IP/SW1/049/036/1/1 at concentrations which were less than the CRQL and the action level. The results for this compound required qualification as undetected at the CRQL (i.e. 740 BJ --> 1100 U and 630 BJ --> 690 U, respectively).

Bis(2-Ethylhexyl) Phthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 8002) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in samples IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D at concentrations which were less than the CRQL and the action level. The results for this compound required qualification as undetected at the CRQL (i.e., 220 BJ --> 770 U and 270 BJ --> 920 U, respectively).

Bis(2-Ethylhexyl) Phthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 8015) at a concentration which was less than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in sample IP/SW1/008/012/1/1 at a concentration which was less than the CRQL and the action level. The result for this compound required qualification as undetected at the CRQL (i.e., 780 BJ --> 850 U).

Bis(2-Ethylhexyl) Phthalate was detected in the Semi-volatile laboratory method blank (SBLK01 for Project 8037) at a concentration which was greater than the Contract Required Quantitation Limit (CRQL). This compound is considered a common laboratory contaminant; the action level determined for this compound was 10 times the highest concentration found in any of the associated blanks. This compound was detected in samples IP/SW1/031/036/1/1 and IP/SW1/035/036/1/1 at concentrations which were greater than the CRQL but less than the action level. The results for this compound required qualification as undetected at the concentration originally reported (i.e., 610 B --> 610 U and 750 B --> 750 U, respectively).

2.5.3 Pesticides/PCBs

The Pesticide/PCB laboratory method blanks did not contain any of the analytes from the Target Compound List (TCL).

2.6 Surrogate Recoveries

The surrogate recoveries from the Volatile, Semi-volatile and Pesticide/PCB analyses of these samples were within the Contract Required Recovery ranges specified in the Statement of Work and the Quality Assurance Project Plan.

2.7 Matrix Spike/Matrix Spike Duplicate

Three primary samples (IP/SW1/06L/018/1/2, IP/SW1/001/036/1/2, and IP/SW1/039/018/1/1) were used for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis. Sample IP/SW1/001/036/1/2 was not designated for MS/MSD analysis by the sampler. It was determined by the Laboratory that medium level MS/MSD analysis was necessary for the Semi-volatile and Pesticide/PCB fractions.

The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries from the Volatile, Semi-volatile and Pesticide/PCB analyses of spiked aliquots of sample IP/SW1/06M/023/1/2 were within the Contract Required Recovery ranges specified in the Statement of Work and the Quality Assurance Project Plan. It should be noted that the sampler did not collect a primary sample for this sample point. The Laboratory took an aliquot of sample from the jars designated for MS/MSD use and analyzed that as the unspiked sample.

Sample IP/SW1/001/036/1/2 required Medium Level extraction and analysis of the Semi-volatile and Pesticide/PCB fractions. Consequently, the Laboratory used this sample for QC purposes. The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries from the Semi-volatile and Pesticide/PCB analyses of spiked aliquots of this sample were within the Contract Required Recovery ranges specified in the Statement of Work and the Quality Assurance Project Plan.

The Matrix Spike (MS) and Matrix Spike Duplicate (MSD) recoveries from the Volatile analysis of spiked aliquots of sample IP/SW1/039/018/1/1 were within the Contract Required Recovery ranges specified in the Statement of Work and the Quality Assurance Project Plan.

The MS/MSD recoveries of 4-Nitrophenol and gamma-BHC (Lindane) for IP/SW1/039/018/1/1 were greater than the Contract Required Recovery range (CRR) specified on the Form III for the analysis of the Semi-volatile and Pesticide/PCB Matrix Spike/Matrix Spike Duplicate (MS/MSD). The non-detected results for these compounds in the unspiked sample did not require qualification.

The Percent Relative Standard Deviations (%RSD) of Acetone and Methylene Chloride were greater than 75% for the Matrix Spike (MS), the Matrix Spike Duplicate (MSD) and the unspiked sample. The positive results for Acetone in the unspiked sample IP/SW1/039/018/1/1, the Matrix Spike and the Matrix Spike Duplicate required qualification as estimated values. The positive results for Methylene Chloride in the Matrix Spike and Matrix Spike Duplicate required qualification as estimated values.

2.8 Field Duplicates

Two (2) field duplicate samples IP/SW1/06L/018/1/D and IP/SW1/011/006/1/D were collected and analyzed with this set of samples. Region I guidelines specify that the Relative Percent Difference (RPD) for each compound detected in soil must be less than 50%.

The Relative Percent Differences (%RPD) of Toluene, Chlorobenzene and Acetone were greater than 50% for the Volatile analysis of the Field Duplicate samples IP/SW1/06L/018/1/2 and IP/SW1/06L/018/1/D. The positive results for these compounds in these samples required qualification as estimated values.

The Relative Percent Differences (%RPD) of Fluoranthene, Indeno(1,2,3-cd)Pyrene, Phenanthrene, Benzo(g,h,i)Perylene, Anthracene, Acenaphthylene and Dibenz(a,h)Anthracene were greater than 50% for the Semi-volatile analysis of the Field Duplicate samples IP/SW1/06L/018/1/2 and IP/SW1/06L/018/1/D. The positive results for these compounds in these samples required qualification as estimated values. The non-detected result for Acenaphthylene in sample IP/SW1/06L/018/1/2 required qualification as an estimated quantitation limit.

The Relative Percent Difference (%RPD) of Benzo(b)fluoranthene was greater than 50% for the Semi-volatile analysis of the Field Duplicate samples IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D. The positive results for this compound in these samples required qualification as estimated values.

The Relative Percent Differences (%RPD) of Naphthalene, Pentachlorophenol, Phenanthrene, Fluoranthene, Pyrene, Benzo(a)Anthracene, Chrysene and Benzo(a)Pyrene were greater than 50% for the Semi-volatile analysis of the Field Duplicate samples IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D. The positive results for these compounds in sample IP/SW1/011/006/1/D required qualification as estimated values. The non-detected results for these compounds in sample IP/SW1/011/006/1/1 required qualification as estimated quantitation limits.

The Relative Percent Difference (%RPD) of 4,4'-DDE was greater than 50% for the Pesticide/PCB analysis of the Field Duplicate samples IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D. The positive result for this compound in sample IP/SW1/011/006/1/D required qualification as an estimated value. The non-detected result for this compound in sample IP/SW1/011/006/1/1 required qualification as an estimated quantitation limit.

2.9 Internal Standard Performance

Internal Standard Performance criteria were met for the Volatile and Semi-volatile analyses for all of the samples.

2.10 Pesticide Instrument Performance

The retention time of Endosulfan I fell outside the retention time window of 23.78 - 23.88 minutes in the INDA standard analyzed on July 17, 1990 at 10:20 on the confirmation column (RTX-5). Examination of the chromatograms for sample IP/SW1/042/006/1/1 did not reveal the presence of this compound within the expanded window surrounding the expected retention time of the peak in question. The non-detected result for this compound in this sample did not require qualification.

2.11 Compound Identification

The USEPA Statement of Work and the Region I guidelines specify that certain criteria must be satisfied in order to positively identify a peak as a Target Compound. For the identification of Volatile and Semi-volatile target compounds, the criteria are:

- 1) the target compound peak in the sample chromatogram must elute within ± 0.06 Relative Retention Time (RRT) units of the RRT of that compound in the daily calibration standard; and
- 2) the mass spectrum of the compound in the sample must correlate with the mass spectrum of that compound in a current laboratory-generated standard such that:
 - o all ions present in the standard mass spectrum at a relative intensity greater than 10% must be present in the sample spectrum;
 - o the relative intensities of these ions must agree within $\pm 20\%$ between the standard and sample spectra; and
 - o ions greater than 10% in the sample spectrum but not present in the standard spectrum must be explained.

If all of the above criteria could not be satisfied, but in the technical judgement of the mass spectral interpretation specialist the identification of the compound is correct, the Laboratory is instructed to report the compound.

The identification of Volatile and Semi-volatile target compounds had been checked for all samples. Where there were questions concerning the identification of compounds because one or more criteria did not appear to be satisfied, the data validator contacted the Laboratory. The compounds in question were checked by a Senior GC/MS analyst and/or a QC Chemist. In most cases, the compound identification was verified. In a few cases, it was determined that a compound had been identified incorrectly; consequently, the Laboratory submitted corrected results for the sample.

The USEPA Statement of Work and the Region I guidelines specify that certain criteria must be satisfied in order to positively identify a peak as a Target Compound. For the identification of Pesticide and PCB target compounds, the criteria are:

- 1) positive presence of a TCL must be confirmed by analysis on a dissimilar chromatographic column;
- 2) the retention times of reported compounds must fall within the calculated retention time windows for both of the chromatographic columns;
- 3) the retention times and relative peak height ratios of major component peaks for the multi-response pesticides and PCBs in the sample must be compared to those in the calibration standard; and
- 4) confirmation by GC/MS must be performed if the concentration of an individual pesticide was present in the final sample extract in excess of 10 nanograms per microliter (ng/ul).

The identification of Pesticide and PCB target compounds had been checked for all samples. Where there were questions concerning the identification of compounds because one or more criteria did not appear to be satisfied, the data validator contacted the Laboratory. The compounds in question were checked by a Senior GC analyst and/or a QC Chemist. In most cases, the compound identification was verified. In a few cases, it was determined that a compound had been identified incorrectly; consequently, the Laboratory submitted corrected results for the sample.

2.12 Compound Quantitation

It is standard practice by the Laboratory to not report target compounds at concentrations less than 10% of the CRQL.

Sample IP/SW1/001/036/1/2 was analyzed at a 1:100 dilution for Volatile Organic Target Compounds due to the nature of the sample matrix. The Semi-volatile and Pesticide/PCB fractions were extracted and analyzed according to the procedures described for Medium Level analysis in the 2/88 Statement of Work.

Bis(2-Ethylhexyl) Phthalate was reported from the dilution analysis of the Semi-volatile extracts for samples IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D and IP/SW1/001/036/1/2. The concentration of this compound in the undiluted extracts exceeded the instrument linear/calibration range; the positive results for this compound in the undiluted samples required qualification as estimated values.

Toluene was reported from the Volatile dilution analysis for sample IP/SW1/039/018/1/1. The concentration of this compound in the undiluted sample exceeded the instrument linear/calibration range; the positive result for this compound in the undiluted sample required qualification as an estimated value.

The Pesticide/PCB extracts for samples IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 were analyzed diluted due to matrix interference. Sample results were reported from the analysis of the diluted extracts.

3.0 INORGANIC DATA

The data was evaluated based upon the following parameters:

- * data completeness
 - holding times
 - calibration verification
 - blanks
 - ICP interference check sample
 - matrix spike recoveries
 - laboratory and field duplicates
- * laboratory control sample
 - furnace atomic absorption results
- * serial dilution results
 - detection limit results
- * sample results.

* - All criteria were met for this parameter.

3.1 Data Completeness

The Laboratory produced twelve reports containing data from this task. It should be noted that while each data package was complete and contained all necessary information to perform data validation, the format of the data packages deviated somewhat (with regard to package order) from the format specified by the appropriate SOW.

3.2 Holding Times

All samples with the exception of IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D, IP/SW1/17M/027/1/2, IP/SW1/06M/023/1/2, IP/SW1/001/036/1/2 and the equipment blank IP/SW1/EB30/000/2/2 were prepared and analyzed for Arsenic, Thallium, Selenium, Lead, Mercury and ICP metals within the required holding time.

Samples IP/SW1/17M/027/1/2, IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D and IP/SW1/06M/023/1/2 were analyzed past the required holding time for Mercury. The positive results for Mercury in these samples required qualification as estimated values.

Sample IP/SW1/001/036/1/2 and the equipment blank IP/SW1/EB30/000/2/2 were analyzed past the required holding time for Mercury. The non-detected results (those below the Instrument Detection Limit (IDL)) for Mercury in these samples required qualification as estimated detection limits.

Boreholes 1, 6 and 17 were resampled and submitted to the Laboratory for Mercury analysis. These samples were analyzed past the required holding time; the positive results required qualification as estimated values.

3.3 Calibration Verification

The CRDL standard for ICP metals must be analyzed to ensure linearity at the Instrument Detection Limit (IDL) as described on page E-6 of the Inorganic Statement of Work (7/87 SOW). If the CRDL standard is not analyzed for an analyte, positive results less than or equal to two times the Contract Required Detection Limit (2xCRDL) and non-detected results require qualification as estimated values and detection limits. An additional criterion for Lead (as well as Selenium, Arsenic and Thallium) is that sample concentrations reported from analysis by ICP must be at least five times the IDL as determined by ICP for that analyte. If the sample contains one of these analytes at a concentration which is less than five times the IDL, then the positive results require qualification as estimated values and the non-detected results require qualification as unusable values. In this case, the samples are to be analyzed by Graphite Furnace Atomic Absorption Spectroscopy (GFAA).

The positive results for Lead in samples IP/SW1/17M/027/1/2, IP/SW1/001/036/1/2, IP/SW1/21R/027/1/2, IP/SW1/054/036/1/1 and IP/SW1/049/036/1/1 were less than five times the IDL and therefore, required qualification as estimated values. The non-detected results for Lead in samples IP/SW1/059/036/1/1, IP/SW1/057/006/1/1 and IP/SW1/038/036/1/1 required qualification as unusable values. These samples are being reanalyzed by GFAA and the results will be provided in a supplemental report.

The recoveries of Antimony, Cadmium and Zinc in one of the CRDL standards for ICP metals were not within $\pm 20\%$. The positive results less than three times the Contract Required Detection Limit (3xCRDL) for Cadmium in samples IP/SW1/06L/018/1/2 and IP/SW1/06L/018/1/D required qualification as estimated values. The non-detected results for Cadmium in samples IP/SW1/17M/027/1/2, IP/SW1/21R/027/1/2 and the equipment blank IP/SW1/EB30/000/2/2 required qualification as estimated detection limits. The non-detected result for Antimony in samples IP/SW1/06L/018/1/2, IP/SW1/06L/018/1/D, IP/SW1/17M/027/1/2, IP/SW1/21R/027/1/2 and the equipment blank IP/SW1/EB30/000/2/2 required qualification as estimated detection limits. The positive results greater than three times the CRDL for Zinc in the samples did not require qualification. The positive result less than three times the Contract Required Detection Limit (3xCRDL) for Zinc in the equipment blank IP/SW1/EB30/000/2/2 required qualification as an estimated value.

The recoveries of Cobalt, Nickel, Manganese and Zinc in one of the CRDL standards for ICP metals were not within $\pm 20\%$. The non-detected results for Cobalt and Nickel in sample IP/SW1/001/036/1/2 required qualification as estimated detection limits. The positive results greater than three times the CRDL for Manganese and Zinc in this sample did not require qualification.

The recoveries of Nickel and Zinc in one of the CRDL standards for ICP metals were not within $\pm 20\%$. The non-detected result for Nickel in sample IP/SW1/06M/023/1/2 required qualification as an estimated detection limit. The positive result greater than three times the CRDL for Zinc in this sample did not require qualification.

The recoveries of Silver and Nickel in one of the CRDL standards for ICP metals were not within $\pm 20\%$. The positive results less than three times the Contract Required Detection Limit ($3 \times \text{CRDL}$) for Silver in samples IP/SW1/059/036/1/1, IP/SW1/054/036/1/1, IP/SW1/011/006/1/1, IP/SW1/011/006/1/D, and IP/SW1/008/012/1/1 required qualification as estimated values. The non-detected results for Silver in samples IP/SW1/057/006/1/1, IP/SW1/049/036/1/1, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1 required qualification as estimated detection limits. The positive results less than three times the Contract Required Detection Limit ($3 \times \text{CRDL}$) for Nickel in samples IP/SW1/028/036/1/1, IP/SW1/038/036/1/1, IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D required qualification as estimated values. The non-detected results for Nickel in samples IP/SW1/059/036/1/1, IP/SW1/057/006/1/1, IP/SW1/054/036/1/1, IP/SW1/049/036/1/1 and IP/SW1/008/012/1/1 required qualification as estimated detection limits.

The recovery of Chromium in one of the CRDL standards for ICP metals was not within $\pm 20\%$. The positive results less than three times the Contract Required Detection Limit ($3 \times \text{CRDL}$) for Chromium in samples IP/SW1/027/036/1/2 and IP/SW1/035/036/1/1 required qualification as estimated values. The positive results greater than three times the CRDL for Chromium in samples IP/SW1/031/036/1/1, IP/SW1/039/018/1/1, and IP/SW1/042/006/1/1 did not require qualification.

The percent recovery (%R) of Antimony in the analysis of the ICV standard from June 22, 1990 was outside of the acceptance window of 90%-110% but within the expanded window of 75%-125%. The non-detected result (less than the IDL) for this analyte in sample IP/SW1/06M/023/1/2 did not require qualification.

3.4 Blanks

In evaluating the contaminants in the laboratory preparation blanks (PB), the Initial Calibration Blanks (ICB), and the Continuing Calibration Blanks (CCB), the data validator determined the appropriate action levels from the associated blank having the highest level of contamination and applied these action levels to all of the associated samples within the analytical sequence. In evaluating the contaminants in the equipment (field) blanks, the data validator applied the results from the blank using the split-spoon sampler (IP/SW1/EB30/2/2) to those samples collected with that sampling instrument (sample point locations 1, 6 and 17). The data validator applied the results from the equipment blank using the hand auger (IP/SW1/EB48/000/2/1) to those samples collected with that sampling instrument (sample point locations 8, 11, 21, 27, 28, 31, 35, 38, 39, 42, 49, 54, 57 and 59). When the same contaminant was present in the equipment blank as in the preparation and/or analysis blanks, the highest level of contamination was used to determine the action level.

Please note that sample weights, volumes, dilution factors, units and percent solids have been taken into consideration when applying the appropriate blank action levels to the samples.

Various contaminants were determined to be present in the blanks analyzed with the equipment blank IP/SW1/EB30/000/2/2. The positive results for Aluminum, Barium, Calcium, Copper, Lead, Magnesium and Zinc in the equipment blank were less than the action levels. Consequently, these positive results required qualification as undetected at the concentrations originally reported. The positive result for Manganese in the equipment blank was greater than the action level and did not require qualification. Cobalt and Vanadium were detected in the laboratory blanks at negative absorbances thereby causing sample results which may have been negatively influenced. Non-detected results for Cobalt and Vanadium in the equipment blank required qualification as estimated detection limits.

Various contaminants were determined to be present in the blanks analyzed with samples IP/SW1/001/036/1/2, IP/SW1/06M/023/1/2, IP/SW1/17M/027/1/2, IP/SW1/06L/018/1/2 and IP/SW1/06L/018/1/D. The positive and non-detected results for Aluminum, Arsenic, Chromium, Iron, Manganese, Beryllium, Barium, Calcium, Copper, Magnesium and Zinc in these samples were not affected by the concentrations in the blanks. Consequently, these positive and non-detected results did not require qualification. Cobalt and Vanadium were detected in the laboratory blanks at negative absorbances thereby causing sample results which may have

been negatively influenced. Cobalt was detected in samples IP/SW1/17M/027/1/2, IP/SW1/06L/018/1/2 and IP/SW1/06L/018/1/D at concentrations which were less than the respective action level. These positive results required qualification as estimated values. Cobalt was not detected in sample IP/SW1/001/036/1/2; this non-detected result required qualification as an estimated detection limit. Vanadium was detected in samples IP/SW1/001/036/1/2, IP/SW1/17M/027/1/2, IP/SW1/06L/018/1/2 and IP/SW1/06L/018/1/D at concentrations which were greater than the respective action level. These positive results did not require qualification.

Various contaminants were determined to be present in the blanks analyzed with sample IP/SW1/21R/027/1/2. The positive results for Aluminum, Iron, Calcium, Copper and Magnesium in this sample were not affected by the concentrations in the blanks. and did not require qualification. Cobalt and Vanadium were detected in the laboratory blanks at negative absorbances thereby causing sample results which may have been negatively influenced. The non-detected result for Cobalt in this sample required qualification as an estimated detection limit. Vanadium was detected in this sample at a concentration which was greater than the respective action level. This positive result did not require qualification.

Various contaminants were determined to be present in the blanks analyzed with the equipment blank IP/SW1/EB48/000/2/1. The positive results for Calcium, Silver, and Manganese in the equipment blank were less than the action levels. Consequently, these positive results required qualification as undetected at the concentrations originally reported.

Various contaminants were determined to be present in the blanks analyzed with samples IP/SW1/059/036/1/1, IP/SW1/057/006/1/1, IP/SW1/049/036/1/1, IP/SW1/054/036/1/1, IP/SW1/011/006/1/1, IP/SW1/011/006/1/D, IP/SW1/008/012/1/1, IP/SW1/028/036/1/1 and IP/SW1/038/036/1/1. Potassium was detected in the laboratory blanks at negative absorbances thereby causing sample results which may have been negatively influenced. The non-detected results for Potassium in all of the samples except IP/SW1/028/036/1/1 required qualification as estimated detection limits. The positive result for Potassium in sample IP/SW1/028/036/1/1 required qualification as an estimated value. Aluminum, Iron, Calcium, Manganese, Barium, Beryllium, Copper, Silver and Zinc were detected in the blanks analyzed with these samples. The concentrations of Beryllium in all of the samples except IP/SW1/054/036/1/1, Copper in samples IP/SW1/049/036/1/1, IP/SW1/054/036/1/1 and IP/SW1/038/036/1/1, Silver in all of the samples except IP/SW1/057/006/1/1 and IP/SW1/049/036/1/1 and Zinc in

samples IP/SW1/054/036/1/1 and IP/SW1/038/036/1/1 were less than the respective action levels. Consequently these positive results were qualified as undetected at the concentrations originally reported. The positive results greater than the action levels for Aluminum, Iron, Calcium, Manganese and Barium in all of these samples were not affected by the concentrations in the blanks. The positive results greater than the action levels for Beryllium in sample IP/SW1/054/036/1/1, Copper in samples IP/SW1/059/036/1/1, IP/SW1/011/006/1/1, IP/SW1/011/006/1/D, IP/SW1/008/012/1/1 and IP/SW1/028/036/1/1 and Zinc in all samples except IP/SW1/054/036/1/1 and IP/SW1/038/036/1/1 were not affected by the concentrations in the blanks. The non-detected results for Copper in sample IP/SW1/057/006/1/1 and Silver in samples IP/SW1/057/006/1/1 and IP/SW1/049/036/1/1 were not affected by the concentrations in the blanks. Consequently, these positive and non-detected results did not require qualification.

Various contaminants were determined to be present in the blanks analyzed with samples IP/SW1/031/036/1/1, IP/SW1/035/036/1/1, IP/SW1/039/018/1/1, IP/SW1/027/036/1/2 and IP/SW1/042/006/1/1. Beryllium, Selenium, Silver, Iron, Mercury, Barium, Calcium, Manganese, Magnesium, Vanadium and Zinc were detected in the blanks analyzed with these samples. The positive results greater than the action levels for Iron, Barium, Calcium and Manganese in all of the samples were not affected by the concentrations in the blanks. The positive values greater than the action levels for Zinc in samples IP/SW1/039/018/1/1, IP/SW1/031/036/1/1 and IP/SW1/042/006/1/1, Magnesium in all the samples except IP/SW1/035/036/1/1 and Vanadium in sample IP/SW1/031/036/1/1 were not affected by the concentrations in the blanks. The non-detected results of Mercury in all the samples were not affected by the concentrations in the blanks. The non-detected results of Beryllium in samples IP/SW1/035/036/1/1, IP/SW1/027/036/1/2 and IP/SW1/042/006/1/1, Selenium in samples IP/SW1/035/036/1/1, IP/SW1/031/036/1/1 and IP/SW1/027/036/1/2, and Silver in all the samples except IP/SW1/031/036/1/1 were not affected by the concentrations in the blanks. Consequently, these positive and non-detected results did not require qualification. The positive values less than the action levels for Vanadium in all the samples except IP/SW1/031/036/1/1, Magnesium in sample IP/SW1/035/036/1/1, Silver in sample IP/SW1/031/036/1/1, Selenium in samples IP/SW1/039/018/1/1 and IP/SW1/042/006/1/1, Beryllium in samples IP/SW1/039/018/1/1 and IP/SW1/031/036/1/1 and Zinc in samples IP/SW1/035/036/1/1 and IP/SW1/027/036/1/2 were less than the respective action levels. Consequently, these positive results were qualified as undetected at the concentrations originally reported.

3.5 ICP Interference Check Sample

The concentrations of Calcium in samples IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D were greater than 50% of the respective levels in the Interference Check Samples. These Calcium concentrations produced a suspected interference with Magnesium. Consequently, the positive results for Magnesium in these samples required qualification as estimated values.

The concentrations of Chromium in samples IP/SW1/011/006/1/1, IP/SW1/011/006/1/D and IP/SW1/008/012/1/1 were greater than 50% of the respective levels in the Interference Check Samples. These Chromium concentrations produced a suspected interference with Antimony. The positive results for Antimony in these samples required qualification as unusable values because they were less than the estimated interference produced from the Chromium concentration present in the sample.

3.6 Matrix Spike Recoveries

Two primary samples (IP/SW1/06M/023/1/2 and IP/SW1/039/018/1/1) were used for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis. There were several analytes which did not meet the Contract Required Recovery criteria as specified in the Statement of Work and the Quality Assurance Project Plan. The actions resulting from the assessment of the MS/MSD data apply to all of the samples for this task.

The Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) recoveries of Mercury were greater than 125%. The non-detected results for this analyte in the samples did not require qualification. The positive results for this analyte in the samples require qualification as estimated values.

The Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) recoveries of Silver, Zinc, Selenium and Arsenic were less than 75% but greater than 30%. The non-detected results for these analytes in the samples required qualification as estimated detection limits. The positive results for these analytes in the samples required qualification as estimated values.

The Matrix Spike (MS) and the Matrix Spike Duplicate (MSD) recoveries of Lead, Chromium, Copper and Manganese were less than 30%. The non-detected results for these analytes in the samples required qualification as unusable values. The positive results for these analytes in the samples required qualification as estimated values.

Sample point locations 1, 6 and 17 were resampled for Mercury on July 17, 1990. Additional sample was collected from sample point location 6 and designated for use as the Matrix Spike (MS) and Matrix Spike Duplicate (MSD). Though the Laboratory performed the Matrix Spike analysis on this sample, a Matrix Spike Duplicate was not performed. Instead, the Laboratory performed a Laboratory Duplicate analysis of this sample as specified in the Inorganic Statement of Work (dated 7/87).

3.7 Laboratory and Field Duplicates

Two primary samples (IP/SW1/06M/023/1/2 and IP/SW1/039/018/1/1) were used for Laboratory Duplicate Sample analysis. There were two analytes which did not meet the Relative Percent Difference (%RPD) criterion as specified in the Region I Guidelines. The actions resulting from the assessment of the Laboratory Duplicate data apply to all of the samples for this task.

The $\pm 35\%$ RPD criterion was not achieved for Chromium and Lead for sample IP/SW1/06M/023/1/2. These analytes were present in the sample at concentrations greater than five times the CRDL (5xCRDL). All positive results for these analytes greater than the IDL in the samples required qualification as estimated values. It should be noted however, that these two analytes were observed to have less than 30% recovery in the MS/MSD analysis. The data validator gave priority to the actions resulting from the MS/MSD assessment rather than the actions resulting from the Laboratory Duplicate assessment because the MS/MSD actions were stricter.

Two primary samples (IP/SW1/06L/018/1/2 and IP/SW1/011/006/1/1) were collected in duplicate to be used as Field Duplicate samples. There was one analyte which did not meet the Relative Percent Difference (%RPD) criterion as specified in the Region I Guidelines. The actions resulting from the assessment of the Field Duplicate data apply to all of the samples for this task.

The $\pm 50\%$ RPD criterion was not achieved for Mercury for sample IP/SW1/06L/018/1/2. This analyte was present in the primary sample at a concentration greater than 5x the CRDL. All positive results for this analyte greater than the IDL in the samples required qualification as estimated values. It should be noted that this analyte was observed to have greater than 125% recovery in the MS/MSD analysis. The actions resulting from the assessment of the MS/MSD data were the same actions resulting from the Field Duplicate assessment.

3.8 Laboratory Control Sample

The solid Laboratory Control Sample (LCS) was prepared and analyzed for the target analytes in each batch of samples. The recovery of each analyte was within the EPA control limits for the solid Laboratory Control Sample.

3.9 Furnace Atomic Absorption Results

Arsenic analysis by Graphite Furnace Atomic Absorption (GFAA) was performed for sample IP/SW1/EB30/000/2/2. The post digestion spike recovery did not meet the 85%-115% criteria. The positive result for this analyte required qualification as an estimated value.

Samples IP/SW1/06L/018/1/2 and IP/SW1/06L/018/1/D were analyzed for Arsenic by the Method of Standard Addition. The correlation coefficients were less than 0.995 for these samples. The positive results for this analyte in these samples required qualification as estimated values.

Sample IP/SW1/06M/023/1/2 was analyzed for Selenium by the Method of Standard Addition. The correlation coefficient was less than 0.995 for this sample. The positive result for this analyte in this sample required qualification as an estimated value.

Selenium analysis by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/SW1/059/036/1/1, IP/SW1/057/006/1/1, IP/SW1/049/036/1/1 and IP/SW1/038/036/1/1. The post digestion spike recoveries did not meet the 85%-115% criteria. The non-detected results for this analyte required qualification as estimated detection limits.

Thallium analysis by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/SW1/059/036/1/1, IP/SW1/057/006/1/1, IP/SW1/049/036/1/1, IP/SW1/054/036/1/1, IP/SW1/039/018/1/1, IP/SW1/042/006/1/1 and IP/SW1/038/036/1/1. The post digestion spike recoveries did not meet the 85%-115% criteria. The non-detected results for this analyte required qualification as estimated detection limits.

Selenium analysis by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/SW1/039/018/1/1 and IP/SW1/042/006/1/1. The post digestion spike recoveries did not meet the 85%-115% criteria. The positive results for this analyte required qualification as estimated values.

Thallium analysis by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/SW1/008/012/1/1, IP/SW1/011/006/1/1 and IP/SW1/011/006/1/D. The post digestion spike recoveries did not meet the 85%-115% criteria. The positive results for this analyte required qualification as estimated values.

Selenium analysis by Graphite Furnace Atomic Absorption (GFAA) was performed for sample IP/SW1/EB48/000/2/1. The post digestion spike recovery did not meet the 85%-115% criteria. The non-detected result for this analyte required qualification as an estimated detection limit.

3.10 Serial Dilution Results

Serial dilutions were performed on samples which had a minimum of one ICP analyte with a concentration greater than 50 times the Instrument Detection Limit (IDL). In all cases, the results from the dilution analysis were within 15% of the results from the undiluted analysis.

3.11 Detection Limit Results

Sample results for Lead by ICP analysis were not at least five times the Instrument Detection Limit for all samples. Consequently, the Lead results which were reported for some of the samples required qualification. The qualification for these samples was described earlier in this narrative in the Calibration Verification section (Section 3.3).

3.12 Sample Results

All sample results were within the linear range for ICP analysis and within the calibration range for Graphite Furnace Atomic Absorption analysis and Mercury analysis.

TABLE G-1

Sample Point Identification Numbers

The Sample Point Identification Number is designated as described for the example give below.

IP/SW1/001/036/1/2/2

The first two characters (IP) indicate the Industri-Plex Site;

The third through fifth characters (SW1) indicate the Pre-Design Investigation (PDI) task number;

The sixth through eight characters (001) indicate the sample location number within that task (EB = equipment rinsate blank);

The ninth through eleventh characters (036) indicate the depth of the bottom of the sample interval in inches below ground surface, where applicable;

The twelfth character (1) indicates the matrix type (1 = solid, 2 = liquid);

The thirteenth character (2) indicates the sampling round number (D = Field Duplicate sample, M = Matrix Spike sample, N = Matrix Spike Duplicate sample); and

The fourteenth character (2) indicates the analysis type (2 = TCL Volatiles, 3 = TCL Semi-volatiles, 4 = TCL Pesticide/PCBs, 5 = TAL Metals).

When the suffix -DL has been appended to the end of a sample point identification number, it indicates that the Laboratory has performed a dilution analysis of the sample and the data has been reported from that analysis.

When the suffix -RE has been appended to the end of a sample point identification number, it indicates that the Laboratory has performed a re-analysis of a diluted or undiluted sample and the data has been reported from the re-analysis.

TABLE G-2

CLP Sample Point Identifications for Task SW-1

The following sample points were collected using a split-spoon sampler:

<u>Golder ID</u>	<u>Enseco-East ID</u>
IP/SW1/17M/027/1/2	7720-0008-SA
IP/SW1/EB30/000/2/2	7720-0013-SA
IP/SW1/06L/018/1/2	7720-0016-SA
IP/SW1/06L/018/1/D	7720-0017-SA
IP/SW1/06M/023/1/2	7720-0021-SA
IP/SW1/06M/023/1/M	7720-0021-SD
IP/SW1/06M/023/1/N	7720-0021-MS
IP/SW1/001/036/1/2	7752-0001-SA

(Medium level MS/MSD analysis performed for Semi-volatiles and Pesticide/PCBs for 7752-0001.

The following sample points were collected using a hand auger:

<u>Golder ID</u>	<u>Enseco-East ID</u>
IP/SW1/21R/027/1/2	7807-0001-SA
TRIP BLANK	7807-0002-SA
IP/SW1/059/036/1/1	7918-0001-SA
TRIP BLANK	7918-0002-SA
IP/SW1/057/006/1/1	7936-0001-SA
IP/SW1/054/036/1/1	7953-0001-SA
IP/SW1/049/036/1/1	7953-0002-SA
IP/SW1/011/006/1/1	8002-0001-SA
IP/SW1/011/006/1/D	8002-0002-SA
IP/SW1/008/012/1/1	8015-0001-SA
IP/SW1/031/036/1/1	8037-0001-SA
IP/SW1/035/036/1/1	8037-0002-SA
IP/SW1/039/018/1/1	8082-0001-SA
IP/SW1/039/018/1/M	8082-0001-MS
IP/SW1/039/018/1/N	8082-0001-SD
IP/SW1/EB48/000/2/1	8082-0002-SA
IP/SW1/027/036/1/2	8082-0003-SA
TRIP BLANK	8082-0004-SA
IP/SW1/028/036/1/1	8109-0001-SA
IP/SW1/038/036/1/1	8109-0002-SA
IP/SW1/042/006/1/1	8223-0001-SA

TABLE G-2 (continued)

CLP Sample Point Identifications for Task SW-1

The following samples were recollected for Mercury analysis on July 17, 1990:

<u>Golder ID</u>	<u>Enseco-East ID</u>
IP/SW1/EB90/000/2/3	8671-0001-SA
IP/SW1/001/036/1/3	8671-0002-SA
IP/SW1/006/018/1/3	8671-0003-SA
IP/SW1/006/018/1/D	8671-0004-SA
IP/SW1/006/018/1/M	8671-0003-MS
IP/SW1/006/018/1/N	8671-0003-SD
IP/SW1/017/027/1/3	8671-0005-SA

TABLE G-3

Data Qualifiers

- A - The data is acceptable (quantitative).
- J - The associated numerical value was an estimated quantity (qualitative).
- R - Reject data due to quality control criteria. The data were unusable (compound may or may not be present). Resampling and/or re-analysis was necessary for verification.
- U - The compound was analyzed for but was not detected. The associated numerical value is the sample quantitation limit.
- UJ - The compound was analyzed for but was not detected. The sample quantitation limit was an estimated quantity.