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Golder Associates Inc.
CONSULTING ENGINEERS

SDMS DocID 000230843

PRE-DESIGN INVESTIGATION
TASK S-1
EXTENT OF HAZARDOUS SUBSTANCES IN SOILS
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

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APPENDIX A

Summary Of Remedial Investigation Data For Soil

Phase I

Remedial Investigation

B

TABLE 1.3 - SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM 3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Dom Tex	Sub Tex
	LLD	1	1	5	2	5	2	1	10	1	10	2	2	1	2					
T-1	736301 02			16	11	9	19			18	35		7			3.5	1	1	5	2
B-1	0108			22	17	13	27			38	64		4			7	1	1	5	2
B-2	0117			7	8	6	14			11	40		4			7.75	1	1	5	7
B-3	0114			8	7	8	10			15	36		2			5	1	1	5	5
B-4	0124			5	14	3	16			9	35		5			7	1	1	5	4
B-6	0133		3	280	634	4516	26	16	11	903	420	7	806	4		1	1	5	6	7
B-7	0213		2	68	35	225	12				54		39	6	10	3	1	1	3	7
B-8	0212				7	11	12			14			3			1	2	2	10	7
B-9	0207			637	27	86	15			216	29		118			1	2	1	5	7
"	0216			16	18		12			16			12			3	2	1	5	7
B-10	0209			2105	23	100	13		11	283	37		126	69		5.4	3	2	7	8
B-11	0201			977	78	188	15			182	220		104			1	3	2	7	8
B-12	0219		15	7	2137	8803	22	46	26	4530	1500	13	1026	2	3	1	2	5	3	4
"	0224			7	35	11	12			59	10					9	1	5	5	4
B-13	0225			409	95	525	27	3		229	81		194	43		.25	1	1	10	4
"	0230		4	161	1307	503	29	10	20	864	450		281	7	5	5	1	5	3	4
B-14	0233		4	112	466	1837	220	3	41	745	130		235	1	5	1	1	5	3	5
"	0302		3	16	435	212	20	10	21	1753	260		289		2	3	1	5	9	4
B-15	0307		2	20	602	2143	22	15	31	443	560		296	4	15	5	1	3	3	4
"	0306		2	19	670	2062	23	12	31	443	400		237	4	7	6.4	1	3	3	4
B-19	0310			89	105	765	21	2		231	130		192	79		1	2	1	3	4
B-20	0312			648	166	451	30			278	200		308	84		1	1	2	3	4

PHYSICAL CHARACTERISTICS CODE

Odor

1 None
2 Moderate
3 Strong

Color

1 Normal
2 Black
3 White
4 Grey
5 Red
6 Orange
7 Yellow
8 Green
9 Blue
10 Purple

Dom Tex (50%)

#	Description
1	Coarse Gravel
2	Fine Gravel
3	Artificial Components (brick, cement, traprock, etc.)
4	Coarse Sand
5	Medium Sand
6	Fine Sand
7	Silt
8	Clay
9	Poorly sorted mixture of clay, silt, sand and gravel.
10	Topsoil (Organic zone)

Sub Text (20%)

#	Description
1	Coarse Gravel
2	Fine Gravel
3	Coarse Sand
4	Fine Sand
5	Silt
6	Clay
7	Organic Matter (roots, grass, etc)
8	Hides, hair particles
9	Artificial components
10	Combination of numbers 8 & 9

A blank space indicates below LLD level.

SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM 3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Dom Tex	Sub Tex
B-21	73630316			11	21	13	11			11			1215			5.5	2	2	7	9
"	0317			31	40	13	29	3		34	70		210			9.5	2	2	8	3
B-22	0327		6	4956	81	196	18	2	18	3363	31	3	88	54		7	3	4	7	8
"	0322			216	21	8	21			61	45		5			8.9	3	2	5	2
"	0324			42	29	12	35			39	98		5			14.65	2	4	9	6
B-23	0332		2	1753	398	445	24	5	31	1237	124		237	1	4	1	2	3	3	6
"	0401		2	36	548	207	21	4	46	36	20		95	1		3	2	7	3	6
"	0330		2		3145	131	23	3	31	97	23		12			5	2	2	3	6
B-24	0406		13	6	1856	866	16	17	21	5979	640		11	16	3	1	1	5	3	3
"	0405		8	16	259	3800	33	7	45	3300	120	13	15	11	35	7	2	4	3	6
B-25	0412	3	13	135	29167	1875	59	11	31	7396	180		21	5		7	2	2	8	7
B-26	0419		2	202	281	2018	23	5	18	211	210	5	284	5	15	11	2	2	9	4
B-27	0432		3	4090	161	555	22	2	10	685	97		64			5	2	2	8	9
"	0502		4	51	84	45	24		11	2128	43		71		6	21	1	1	8	7
B-28	0506	4	86	124	3918	4124	47	6	46	6701	100	9	866	17		11	2	2	8	5
B-29	0525		3	117	409	5631	23	6	39	854	330	17	204	12	15	3	1	7	9	9
B-30	0523		1	33	26	55	23		10	107	50		5			.9	1	7	9	4
B-31	0530		2	830	90	126	16			230	45		9	40		3.5	3	2	6	8
"	0534		2	1170	34	149	18	4	21	216	48		8	43		9.85	3	4	8	7
B-32	0620		1	688	132	156	22		10	3229	110	2	6			5	2	4	8	8
"	0619		5	1619	258	385	30	2	29	5714	640	7	6			7	3	2	4	7
B-33	0702			12	17	70	11			33	45		11			3	2	2	5	4
"	0633	2		17	26	26	12			32	71		7			5.75	3	4	8	4
B-34	0714		1	23	26	108	32			43	67					1	1	1	7	4
"	0630			22	15	15	23			45	33		3			6.35	2	1	2	3
B-35	0707	2	7	42	340	2857	40	4	20	1735	300	10	1122	9	7	1	1	2	9	4
"	0711		9	36	367	1152	60	4	10	2020	190	3	133	4	3	2.35	2	4	5	7
B-36	0811		2	10	437	4660	10	16		359	490	21	1262	4	6	1	1	5	3	5
"	0808		8		1792	5849	8	32		4151	1700	10	1321	72	4	3	1	5	3	3
"	0807		9	5	1111	343	6	15	28	6944	1700	13	1944		2	5	1	4	3	3
"	0804			14	37	123	13		28	70	38		858			7	1	4	5	2
B-37	0733		5	30	964	540	25	3		1600	160	10	1500	1		3	2	1	3	5
"	0732	2	20	48	3241	1944	32	5		7685	300	19	204	5	2	9	2	6	8	4
B-39	0825			6	25	77	7			28	30		12			1	1	1	5	4

SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	Odor	Color	Dom Tex	Sub Tex
		HEAVY METAL CONCENTRATION - PPM															PHYSICAL CHARACTERISTIC			
B-40	73630834		1	10	262	1010	13	3		465	110	8	19	1	4	1	1	1	6	5
"	0833			7	8	5	11			89	30					3	1	1	5	4
"	0832			7	11	6	10			50	30					5	2	1	5	4
B-41	0901		2	25	127	465	20	4	30	525	160	3	101	4		1	1	5	3	4
"	0902	2	2	28	147	570	33	4	30	100	300		250	12		3	2	3	3	3
B-42	0909		2	131	247	1616	11	6	10	505	1000	19	93	3	5	1	1	5	3	5
"	0911		9		437	5243	9	8		2915	510	39	814	15	16	3	1	5	3	5
B-43	0914		1	63	30	94	19			280	45		20	47	3	1	1	2	6	4
"	0915		1	13	114	7476	15	4		214	290	37	1845	54	81	3	1	6	3	4
"	0917		2	7	270	52	11			140	25		190	40	3	5	2	4	5	4
B-44	0920		1	18	26	51	21			66	45		14			1	2	1	5	2
"	0921			11	6	10	11			18			6			7	2	4	5	4
B-45	1006			6	20	10	13		10	36			184			7	1	1	5	4
B-46	1001		5		316	21212	9	25	258	1414	1000	141	5960	545		1	2	5	3	4
B-47	1011		3	63	257	951	44	4	29	767	130		223	2	4	1	1	1	7	2
"	1009			37	6	10	12			14			5		8	7	2	4	5	3
B-48	1015			13	19	21	19		21	27	260		10	57		8.3	2	2	8	9
B-49	1018		12	6	1485	4950	17	16	20	6637	660	5	881	62		.3	1	5	7	4
"	1017		3	27	808	606	38	7	20	838	190		21			.5	1	7	8	5
B-50	1023		2	15	55	190	16		20		45		19			1	2	2	7	4
"	1022			21	42	10	32		10	51	25					2.65	1	1	3	2
B-51	1030		2	78	59	90	36		30	234	80		19	79		2.35	1	1	5	6
B-52	1101			6	5	5	13			12			9		3	5	2	4	5	3
"	1104			7	7	5	14		10	15			10			11	2	2	5	4
"	1102			9	8		13		10	15			10		3	15	3	2	7	4
B-53	1107		3	180	169	1160	26	5	45	333	130	5	410	5	9	1	3	4	9	9
"	1112			7	6	15			20	12						9	2	2	5	4
B-54	1121		2	110	41	140	19	3	40	137	50		9			1	3	3	6	6
"	1116			33	15	5	17		10	56	25		3			11	3	2	5	3
B-55	1127		4	12	12	8200	24	16	50	790	25	13	680	6	9	1	1	5	3	4
"	1130		4	22	554	871	31	6	20	762	200		782	4	5	5	2	5	3	6
"	1124		5	19	71	27	15		11	681	89		73			11	2	2	7	7
B-56	1210		19	68	29	36408	34	32	24	14563	126	78	8932	3		3	1	6	3	4
"	1202		35	5	2894	76	7	8		32993	132	5	1398			7	1	5	4	4
B-57	1208		3	187	1818	278	30		15	207	131	5	76			1	3	2	6	3
"	1205		3	8	94	67	5			1340		4	88			5	2	2	6	6

SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM 3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Dom Tex	Sub Tex
T-2	73631410		14	51	2143	4694	20	23	36	4490	673	61	2755	8	4	1.5	1	5	9	9
"	1412		20	22	27	7071	15	45	35	3162	1242	69	8081	4		5.5	1	5	8	7
T-3	1416		4	22	255	7041	10	7	56	342	265	61	1531	34	87	3	1	7	3	9
T-4	1417		12		2913	26699	17	82	29	11165	1282	61	1748	3		.5	2	4	3	1
"	1414		3	29	72	417	9		15	282	49	7	204	1		4.5	1	7	7	1
T-5	1419		5	366	733	4257	40	5	25	2178	337	33	1386	15	2	2	1	3	3	3
T-7	1509		2	25	5	20	5			30		3	7			4.5	2	4	5	5
T-8	1507		2	5	57	3				5		5	4			3	3	2	6	4
T-9	1504		4	28	59	165	20		10	113	50	8	23			3.5	3	6	6	2
"	1505			22	39	25	30		20	50	50	6	7			4.5	2	5	6	2
T-10	1501		5	44444	505	227	10	10	30	374	202	10	10	1	3	unk.	3	5	8	8
"	1503		4	15481	162	396	15	2	20	2840	132	9	8	1		10	3	2	9	8
T-11	1502		3	180	21	15	15			280	50	5	7			unk.	3	3	9	8
T-12	1508			248	1485	30	9			113		5	7			2	3	2	5	4
"	1506		4	15	12	30	10			40		5	10			4.5	2	1	5	2
T-13	1511			10	10		9			34		4	8			2.5	1	6	5	5
T-14	1512	2	6	145455	172	136	20	2	25	11111		9	3	1		4.0	2	2	-	8
"	1518		45	20	5	10			40	50	3	4	4			5	1	4	2	5
T-15	1514			248	32	59	15			198		7	5			3	3	2	-	8
T-16	1510		3	12121	44	253	15				5	32				1	1	3	9	5
"	1519			94	15		6	2		59			50			unk.	1	2	5	4
T-17	1525	3		15	158	1881	30	7	25	188		68	743	16	15	3	1	3	3	9
"	1526		4		840	10400	9	61	55	190	2200	60	1100	2	5	3.5	1	5	4	1
"	1528		5	104	302	1832	295	12	30	1733	337	62	238	2		unk.	2	7	9	6
T-18	1527		5	10	36	1959	21	5	62	2784	515	26	1856	1	2	7.5	1	3	3	9
T-19	1532		5	5	1100	10800	10	59	30	2300	2100	58	950	4	5	unk.	1	5	9	1
T-20	1531	3			157	618	2			70		7	25	4	16	unk.	1	6	8	9
T-22	1601		2	10	41	75	9			25		16	15		2	8.5	1	2	10	7
T-23	1611		5	10	26	290	18	5	55	1800	400	4	11000	1		3.5	1	3	8	9
T-24	1613		6	10	14	109	15	6	64	257	525		9			4.15	1	3	8	9
T-25	1617		199	186	2165	268	36	4	21	144330	103	10	24227			2.0	1	5	6	9
T-26	1622	3	5	179	142	2189	324	2	30	465	129	23	139			2	1	5	8	9
T-27	1624	7	5	260	59	1961	500		49	225	98	15	3			4	1	5	6	9
T-28	1626	3	4	149	26	186	24	3	52	134	103	62	186			2	1	7	8	9
T-29	1609		5	49	922	2353	15	10		3725	98	58	93	1	8	3	2	3	8	9
"	1615		5	29	294	98	9			2549			5882			4	3	2	6	7

Table 1.3

SOIL HEAVY METAL ANALYSIS

11-10-82

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM 3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Dom Tex	Sub Tex
T-30	73631606		16		990	89109	9	10	50	4554	10	11	16337	594	10	2	1	4	3	4
T-31	73631608	2	6	110	78	320	205	2	38	1700	280	6	175	1	7	2.5	1	5	5	9
"	1604		6	12	35	5100	35	5	60	2950	400	35	2050	1		4	1	3	8	9
T-32	1628		4	64	168	376	18	3	25	198	257	5	129	2	2	2	1	2	6	9
T-33	1631		4	20	647	3088	15	5	20	1520	98	50	67	2	4	2	1	4	8	9
T-35	1718		3	1111	45	93	13			359		5	21			1.5	3	2	6	8
T-36	1717		2	99	14	15	9	16		114		2	8			2	3	2	6	8
T-38	1632		20	8	2970	14851	18	79	30	8713	297	49	594	1	3	1.5	1	5	5	9
T-40	1625		26	105	2500	11000	35	50	35	7700	1700	45	5200	2		3	1	7	6	9
T-42	1721			5	37	176	3			29		4	157			3	2	6	6	5
T-43	1722		10	346	2424	4646	18	32	28	3838	1010	45	404	2	4	.5	1	5	3	4
T-45	1724		16	16000	830	2600	62	8	25	29500	720	23	8	6		5.2	2	2	6	9
"	1726		8	5	2062	5979	9	15	26	3814	742	26	928	1	4	9	1	5	7	9
T-46	1725		3	396	11	20	9	34		272		4	7			1.15	3	2	6	10
T-47	1727		4	65	310	3100	15		20	1520	330	35	250		3	3.6	3	2	6	9
T-48	1732		2	1010	121	30	9			435	101	5	13	1		4	2	2	6	7
T-50	1733		4		1485	12475	5	72	20	2495	2178	40	40	1	2	1	1	5	9	9
T-57	1810		2	13000	59	3100	15	5		430	100	17	1450	1	24	2.75	2	2	5	3
T-59	1813			1750	14	14	10			170		4	8			2	3	2	7	8
T-60	1812		4	4902	75	88	10		20	11275	490	9	59	1		.8	3	2	7	8
T-63	1815		2	37	28	888	27	4	28		67	41	1633	13	20	1	1	3	7	9
"	1818		13		1414	22222	12	96	34	8564	4444	91	5556	4		2.55	1	5	7	9
T-64	1820		13		1531	26531	14	101	28	6735	5612	102	7959			.4	1	5	7	9
T-65	1816		5		1287	23762	14	116	41	1089	3762	109	1485	2		.3	1	5	7	9
T-70	1827		10	97	1900	5100	26	22	41	1900	700	190	1400	6	9	2.5	1	5	7	9
T-73	1905			7	9		11			16	37	2	3			.7	1	3	6	4
"	1901				4		8		13	16		4	3			1	1	7	6	5
T-75	1903		2	58	82	5	55		15	129	65	8	5			2.0	1	4	9	1
T-79	1907		2	12	19		18		12	24		4	5			1.5	1	6	9	1
T-81	1909			21	18	10	29		15	51		5	7			.75	1	5	9	1
T-83	1911			41	41	10	46		20	51	37	8	11			1.5	1	5	9	1
T-84	1913		4	7	83	360	14	4	41	33	66	54	200			1	1	7	8	9
T-85	1915		3	75	314	1576	12	6	23	350	365	33	675	4	5	2	1	5	8	9
"	1916	2	4		653	158	16	2	41	9	37	40	594			5.5	2	3	9	8
T-86	1918		3	100	1300	2600	14	7	20	390	550	47	1100	5		1.5	1	5	6	9
T-87	1920		2		745	13725	16	10	54	529	3137	88	588	2		1.5	1	5	9	9
T-88	1919		6		444	11111	12	13	34	1212	1515	68	778	3		2.25	1	5	9	9
T-89	1923		4	198	28713	1980	24	7	20	1584	1287	27	941	5	5	2.7	3	2	9	9
"	1922		4	82	1364	7475	29	9	34	556	323	455	1414	192	5	7.2	3	2	3	8

SOIL HEAVY METAL ANALYSIS

LOCATION	Ref. #	HEAVY METAL CONCENTRATION - PPM 3/Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/TL	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	PHYSICAL CHARACTERISTIC Odor	Color	Dom Tex	Sub Tex
T-91	1924		4	14	599	1692	29	3	48	92	119	249	796	2	6	3	1	3	8	9
T-93	1930				108		9		13	30		4				2.5	1	6	5	4
T-94	1929		3	2178	1287	218	29		34	525	178	31	743			2	1	6	5	5
T-95	1928		2	303	93	1313	22	2	27	414	182	253	727	5	8	.85	1	3	5	3
"	1927		3	13	624	149	19	2	41	12	149	43	12			1.75	1	6	5	4
"	1926		3	949	152	424	19	6	27	1111	354	24	101		3	4.1	1	5	6	4
T-96	2016				131		12		13	11		5	6			1	1	7	5	3
T-98	2020				4		9			10		7	7			1.5	1	6	5	4
T-100	2024			12	17		19			28	23	11	7			1	1	7	5	2
T-101	2023																1	6	5	9
T-102	2022			10	11		14			20	23	9	8			1	1	6	5	2
T-103	2025			17	19		21			33	23	14	12			.1	1	6	5	4
T-104	2031			1560	8			7		45	51	11	3			3.05	3	2	5	8
T-105	2032		3	39	1000		16	7	13	620	150	15	190		4	3.5	2	2	9	7
T-106	73632033			17	22		20			35	37	8	11			2	1	1	9	3
T-107	2118		9		2500	1500	14	31	20	2200	870	27	290		4	1.8	2	5	6	9
"	2117				48	567	4			78		10	639		6	2.8	1	2	6	9
T-108	2116		8		1400	550	7	16		2400	170	16	120			2	1	5	4	9
T-110	2114			28	32	810	22			120		12	500		6	1	1	6	5	9
"	2112		5	18	11	110	36	5	52	14	200	14	5			unk.	1	3	3	9
T-111	2113			10	4		6			5	23	4				0	1	3	6	4
T-112	2110		5	347	109	412	8	12	10	703	1608	23	48		4	unk.	1	5	6	3
"	2111		2	2300	85	480	9		13	300	210	8	75			unk.	1	3	5	4
T-113	2108		3	4343	1313	8788	24	6	20	778	707	303	14141	111	14	1.5	1	6	5	7
"	2109		14	7	480	160	24		20	1300		32	17000			4.5	1	6	3	9
T-114	2107			7	48	55	17			46	23	7	12		7	1	1	2	3	9
"	2106		3	21	290	4200	36		34	89	120	11	2400	3	5	1.5	1	3	6	9

B

Table 1.4 SOIL HEAVY METAL CONCENTRATION (OLD DATA)

Heavy Metal Concentration - PPM

Location	Reference	3Be	4/d	5/Cr	6 /Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Na	1/Sb	2/As	8/Hg	10/Se	Depth. ft.	Physical Characteristics Odor	Color	DomTex	SubTex
J/GZ1	00100000			3		210							64			2	1	10	7	3
"	-100010			19		16							57							
J/GZ5	200000			11		14000							270				0			
"	200010			18	14000	1700				1300			2600							
"	200020			12		15							160							
"	200030			14		15							210							
J/C3	300000			450		2100							400			2	0	5	7	3
"	400000			810	830	3200				4300			100							
J/GZ2	500000			360	4200	1100				20000			75			6	0	10	7	8
"	500010			64		5800							160							
"	500020			6		15							13							
J/GZ4	600000			15		870							620			4	0	6	7	3
J/GZ1	700000			64	230	860				49			65			7	0	4	7	0
"	700010			2		120							25							
J/D	800000			650		440							100			0	0	5	10	3
J/E	900000			310		370							29			0	0	10	3	3
J/B-9A	1000000			2		55							8							
J/B-2	1100000			3		1600							69							
J/B-3	1200000			16		3000							55							
J/B-5	1300000			1		470							74							
J/B-6	1400000			12		470							42							
B-1-1	2400000			270	340								70			0.1				
B-1-2	2500000			270	1400								160			0.1				
B-2-1	2600000			340		610							230			0.1				
B-2-2	2700000			510	150								7			0.1				
B-3-1	2800000			0	0								10			0.1				
B-3-2	2900000			30	290								72			1.0				

It is assumed analytical data met basic laboratory quality assurance checks and is acceptable.

HEAVY METAL CONCENTRATION - PPM

Location	Reference #	3Be	4/Cd	5/Cr	6/Cu	7/Pb	9/Ni	11/Ag	12/Tl	13/Zn	16/Ba	1/Sb	2/As	8/Hg	10/Se	Depth Ft.	Physical Characteristics Odor	Color	DomTex	SubTex
BE 925	3100000		1	10		5		0			18		14		4	.3				
BE 925A	3200000		1	17		10					17		17		6	99.99				
BE 925A	3300000		2	38		16					45		15		10	1.5				
BE 926A	3400000		2	33		29					47		20		10	1.0				
BE 927	3500000		1	9		52					9		10		2	3.0				
BE 927A	3600000		1	7		92					28		12		3	99.99				
BE 928	3700000		2	605		353					59		104		10	3.0				
BE 928A	3800000		155	2917		2059		32			2		1608	8	112	3.0				
BE 928A	3900000		5	1429		1064					129		246		19	3.0				
BE 928A	4000000		15	2691		865					132		266		31	2.5				
BE 929	4100000		3	1477		79					79		283		17	99.99				
BE 929	4200000		2	552		136					30		47		9	1.0				
BE 929A	4300000		3	1853		625					63		194		19	1.5				
BE 929A	4400000		3	2466		272					134		164		27	2.0				
BE 929A	4500000		4	1586		1254					82		290		19	1.0				

Phase II

Remedial Investigation

Table 3 Soil Organic Analysis

Boring	Location	Sample Depth ft.	Organic Compounds - µg/g
OS-1	29411	1.0	Benzene 8.7 Toluene 3.7 Diethylene glycol - 156 phthalete - 8
		5.0	fluoromethoxy benzene -2
		7.0	Benzene 12.0 Napthalene - 12 Anthracene - 2 fluoroanthrene - 2 fluoromethoxy benzene - 4 diethylene glycol - 21
OS-2	25421	1.0	Diethylene glycol - 342
		11.0	Napthalene - 2 pyrene - 33 fluoroenthrene - 41 Anthracene - 47 phenanthrene - 7 benzy(a) anthracene - 6 chrysene - 6 diethylene glycol - 1580 phthalate - 21 alkene - 4
		2	Benzene 20.0 diethylene glycol - 283 phthalate - 69 pentatricontene - 37
OS-3	43542	1.0	Anthracene - 2 fluoromethoxy benzene - 4 diethylene glycol - 11 4 - chlorophenol - 2 phthalate - 4 unknown - 20
		5.0	Benzene 49 Napthalene - 3 diethylene glycol - 232 4-chlorophenol - 3 phenyl furan - 4

		11	Benzene 55/0 (duplicate samples) Decanoic acid - 13/0 Nonanoic acid - 20/0 Napthalene - 5/4 fluoroanthrene - 2/2 pyrene - 1/1 diethylene glycol - 357/0 methyl phenol - 25/8 methoxy ethoxy ethanol - 0/15 ethoxy ethoxy ethanol - 0/10
OS-4	37541	1.0	Benzene 8.8 Diethylene glycol - 85 phthalate - 12
		5.0	Benzene 17 Toluene 8.6 Diethylene glycol - 263
		11.0	Benzene 7.3 Diethylene glycol - 65 phthalate - 14
OS-5	43331	0.5	Benzene 8.0 fluoroanthene - 1 pyrene - 1 fluoromethoxy benzene - 4 diethylene glycol - 27
		5.0	Benzene 4.2 fluoroanthene - 7 pyrene - 6 anthracene - 5 benzy (a) anthracene - 3 chrysene - 3 benzy(b) fluoroanthene - 2 methoxy, ethoxy, ethanol - 20 diethylene glycol - 11 ethoxy ethoxy ethanol- 12 alkane - 2 alkene -3 butoxy ethoxy ethanol - 2
		7.0	diethylene glycol - 52
OS-6	26292	1.0	Anthracene - 5 fluoroanthene - 6 pyrene - 5 benzy(a) anthracene -2 chrysene-2 diethylene glycol - 64
		5.0	diethylene glycol - 141

		11.0	N.D.
OS-7	29222	1.0	Benzene 275 Toluene-13 nitrobenzene - 10 napthalene - 7 anthracene - 2 fluoroanthene - 10 pyrene - 8 benzy(a) anthracene - 3
		11.0	Benzene 62 diethylene glycol - 50
OS-8	43171	1.0	Benzene 43/0 (duplicate samples) diethylene glycol - 38/0
		5.0	Benzene 75 unknown - 29
		9.0	diethylene glycol - 112
OS-9	49151	1.0	diethylene glycol - 336
		5.0	Benzene 72 diethylene glycol - 523 phthalate - 10
		9.0	diethylene glycol - 293
OS-10	38242	1.0	Benzene 57 Methylene chloride 2.8 diethylene glycol - 513
		5.0	Benzene 47 diethylene glycol - 1100
		9.0	diethylene glycol - 10
			10/31/83

Table 3.1 Summary of Soil Organic Analysis

Borehole	Top Sample - (1 ft depth) Concentration-PPM				Middle Sample (5-11 ft depth) Concentration - PPM				Bottom Sample (7-21 ft depth) Concentration - PPM			
	1	2	3	4	1	2	3	4	1	2	3	4
OS-1	9	156	12	162	N.D.	N.D.	N.D.	2	12	21	28	25
OS-2	N.D.	342	N.D.	342	N.D.	1580	142	1605	20	283	20	389
OS-3	N.D.	11	2	41	49	232	52	239	27	180	33	235
OS-4	9	85	9	97	17	263	26	263	7	65	7	79
OS-5	8	27	10	31	4	11	30	50	N.D.	52	N.D.	52
OS-6	N.D.	64	20	64	N.D.	141	N.D.	141	N.D.	N.D.	N.D.	N.D.
OS-7	275	N.D.	378	N.D.	No Sample				62	50	62	50
OS-8	22	19	22	19	75	N.D.	75	29	N.D.	112	N.D.	112
OS-9	N.D.	336	N.D.	336	72	523	72	523	N.D.	293	N.D.	293
OS-10	57	513	60	513	47	1100	47	1100	N.D.	10	N.D.	10

1 = Benzene concentration
2 = Diethylene glycol concentration
3 = Total priority pollutant organic concentration
4 = Total non priority pollutant organic concentration

N.D. = Non detectable level usually 1 ppm except for 5 ppm for acid extractible compounds.

Table 4 Analyte Codes and Lower Limit of Detection (LLD) in Various Media

4.1 Heavy Metals

Compound	Analyte ID Code	LLD in Monitor Wells	LLD in Soil
		PPB (µg/l)	PPM (µg/g)
Antimony (Sb)	01	10	NA
Arsenic (As)	02	1	3
Beryllium (Be)	03	5	NA
Cadmium (Cd)	04	50	NA
Chromium (Cr)	05	20	0.3
Copper (Cu)	06	20	0.2
Lead (Pb)	07	100	3
Mercury (Hg)	08	1	0.05
Nickle (Ni)	09	40	NA
Selenium (Se)	10	2	NA
Silver (Ag)	11	10	NA
Thallium (Tl)	12	100	NA
Zinc (Zn)	13	5	0.1
Hexavalent Chromium (Cr^{+6})	14	16	NA

4.2 Organic Pollutants

4.2.1 Volatile Organics (VO)

Compound	Analyte ID Code	LLD in Monitor Wells PPB (µg/L)	LLD in Soil PPM (µg/g)	LLD in Air PPM (mg/m³)
Acrolein	01	100 ppb	10	0.5 (except
Acrylonitrile	02	100 ppb	10	as noted)
Benzene	03	Rest All	All others	
Bis (Chloromethyl) Ether	04	10 ppb	1	
Bromoform	05			
Carbon Tetrachloride	06			
Chlorobenzene	07			
Chlorodibromomethane	08			
Chloroethane	09			2.0
2-Chloroethylvinyl Ether	10			
Chloroform	11			
Dichlorobromomethane	12			
Dichlorodifluoromethane	13			
1,1 Dichloroethane	14			
1,2 Dichloroethane	15			
1,1 Dichloroethylene	16			
1,2 Dichloropropane	17			
1,3 Dichloropropylene	18			
Ethylbenzene	19			
Methyl Bromide	20			
Methyl Chloride	21			
Methylene Chloride	22			
1,1,2,2-Tetrachloroethane	23			
Tetrachloroethylene	24			
Toluene	25			
1,2 Trans-Dichloroethylene	26			
1,1,1-Trichloroethane	27			
1,1,2-Trichloroethane	28			
Trichloroethylene	29			
Trichlorofluoromethane	30			
Vinyl Chloride	31			2.0
*Hydrogen Sulfide		NA	NA	1
*Methyl Mercaptan		NA	NA	1
*Dimethyl Sulfide		NA	NA	1
*Dimethyl Disulfide		NA	NA	1

*Listed as volatile organic to simplify data reporting.

Air LLD from GCA data report sheets or D. Hackett memo of 7/29/83

4.2.2 Base/Neutral Extractibles (BE)

Compound	Analyte ID Code	LLD in Monitor Wells PPB (µg/l)	LLD in Soil PPM (µg/g)	LLD* in Air PPM (mg/m³)
Acenaphthene	01	All 10	All 10	
Acenaphthylene	02			
Anthracene	02			
Benzidine	04			
Benzo(a)Anthracene	05			
Benzo(a)Pyrene	06			
3,4-Benzofluoranthene	07			
Benzo(ghi)Perylene	08			
Benzo(k)Fluoranthene	09			
Bis(2-Chloroethoxy)Methane	10			
Bis(2-Chloroethyl)Ether	11			
Bis(2-Chloroisopropyl)Ether	12			
Bis(2-Ethylhexyl)Phthalate	13			
4-Bromophenyl Phenyl Ether	14			
Butyl Benzyl Phthalate	15			
2-Chloronaphthalene	16			
4-Chlorophenyl Phenyl Ether	17			
Chrysene	18			
Dibenzo(a,h)Anthracene	19			
1,2-Dichlorobenzene	20			
1,3-Dichlorobenzene	21			
1,4-Dichlorobenzene	22			1
3,3-Dichlorobenzidine	23			
Diethyl Phthalate	24			
Dimethyl Phthalate	25			
Di-N-Butyl Phthalate	26			
2,4-Dinitrotoluene	17			
2,6-Dinitrotoluene	28			
Di-N-Octyl Phthalate	29			
1,2-Diphenylhydrazine	30			
Fluoranthene	31			
Fluorene	32			
Hexachlorobenzene	33			
Hexachlorobutadiene	34			
Hexachlorocyclopentadiene	35			
Hexachloroethane	36			
Indeno(1,2,3-cd)Pyrene	37			
Isophorone	38			
Naphthalene	39			10
Nitrobenzene	40			
N-Nitrosodimethylamine	41			
N-Nitrosodi-n-Propylamine	42			
N-Nitrosodiphenylamine	43			
Phenanthrene	44			
Pyrene	45			
1,2,4-Trichlorobenzene	46			

*From D. Doster 4/26/84 memo

4.2.3 Acid Extractibles (AE)

Compound	Analyte ID Code	(SCC#)	LLD in Monitor Wells PPB (µg/l)	LLD in Soil PPM (µg/g)
2-Chlorophenol	01	(101)	25	5
2,4-Dichlorophenol	02	(102)	25	5
2,4-Dimethylphenol	03	(103)	25	5
2,6-Dinitro-o-Cresol	04	(104)	250	5
2,4-Dinitrophenol	05	(105)	250	25
2-Nitrophenol	06	(106)	25	5
4-Nitrophenol	07	(107)	25	5
P-Chloro-M-Cresol	08	(108)	25	5
Pentachlorophenol	09	(109)	25	5
Phenol	10	(110)	25	5
2,4,6-Trichlorophenol	11	(111)	25	5

4.2.4 Pesticide Extractibles (PE)

Compound	Analyte ID Code (SCC#)		LLD in Monitor Wells	LLD in Soil
			PPB (µg/l)	PPM (µg/g)
Aldrin	01	(201)	All 10	All 1
Alpha-BHC	02	(202)		
Beta-BHC	03	(203)		
Gamma-BHC	04	(204)		
Delta-BHC	05	(205)		
Chlordane	06	(206)		
4,4'-DDT	07	(207)		
4,4'-DDE	08	(208)		
4,4'-DDD	09	(209)		
Dieldrin	10	(210)		
Alpha-Endosulfan	11	(211)		
Beta-Endosulfan	12	(212)		
Endosulfan Sulfate	13	(213)		
Endrin	14	(214)		
Endrin Aldehyde	15	(215)		
Heptachlor	16	(216)		
Heptachlor Epoxide	17	(217)		
PCB-1242	18	(218)		
PCB-1254	19	(219)		
PCB-1221	20	(220)		
PCB-1232	21	(221)		
PCB-1248	22	(222)		
PCB-1260	23	(223)		
PCB-1016	24	(224)		
Toxaphene	25	(225)		

4.3 Standard Water/Miscellaneous Analysis

Compound	Test ID Code	Analyte Catagory	LLD in Monitor Wells
Ammonia as N	01	7	
Specific Conductance	02	8	
Dissolved Oxygen	03	8	
Temperature	04	8	
pH	01	8	
Total Suspended Solids	02	7	
Total Dissolved Solids	01	7	
Cyanide	4	01	----- 20 µg/l
Phenol	5	01	----- 50 µg/l

4.4 Metals on IH Filters

Compound	Test ID Code	Analyte Catagory	LLD on Filter
			ng/filter
Total Dust	9	01	-
Arsenic	9	02	50
Chromium	9	05	500
Lead	9	07	1000

Table 6

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REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73680108	16631	TP 152	2.3	0.0	8.00	5.00	10.50			11.30
73680109	16691	TP 158	2.0	0.0		23.20	14.10			21.90
73680106	17561	TP 135	6.0	3.5	6.00	4.00	12.00			7.50
73680107	19571	TP 137	3.0	0.0	3.00	7.40				4.90
73703117	21410	A	1.0	5.0	84.00	12.10	247.00	2110.00	0.51	599.00
73703118	21410	A	3.0	5.0	391.00		1040.00	9240.00	0.54	1740.00
73703119	21410	A	5.0	5.0	96.00	1.90	93.00			14.70
73680103	21501	TP 127	6.0	3.5	18.00	76.50	30.30		0.12	54.20
73703109	22420	A	1.0	13.5	118.00	855.00	98.00	710.00	2.30	426.00
73703111	22420	A	3.0	13.5	513.00	188.00	283.00	2380.00	4.80	620.00
73703112	22420	A	5.0	13.5	25.00	67.00	15.50	390.00	1.80	92.10
80291101	22440	A	1.0	10.0	493.00	1680.00	313.00	2400.00	7.00	748.00
80291102	22440	A	5.0	10.0	525.00	5630.00	389.00	1330.00	6.30	1570.00
80291103	22440	A	7.0	10.0	1490.00	6950.00	1440.00	2600.00	34.00	3120.00
80291105	22440	A	11.0	10.0		21.30	39.40			226.00
80290616	23350	A	1.0	2.0	167.00	1670.00	848.00	530.00	3.50	1210.00
80290601	23370	A	1.0	0.0	67.00	284.00	1040.00	230.00	0.56	458.00
73703105	23410	A	1.0	6.5	454.00	7710.00	596.00	1640.00	4.60	2590.00
73703106	23410	A	3.0	6.5	364.00	356.00	269.00	3100.00	3.50	359.00
73703107	23410	A	5.0	6.5	405.00	182.00	441.00	5400.00	3.70	1170.00
80291107	23430	A	1.0	99.0	188.00	3920.00	162.00	690.00	3.60	2130.00
80291108	23430	A	6.0	99.0		114.00	9.10			78.40
80291109	23450	A	1.0	4.5	151.00	2360.00	136.00	490.00	1.40	807.00
80291110	23450	A	3.0	4.5	166.00	1720.00	132.00	700.00	2.10	591.00
80291112	23470	A	1.0	4.0	6.00	99.00	6.10			30.40
80291113	23470	A	3.0	4.0	8.00	35.40	9.00			27.70
80290608	24320	A	1.0	0.0	876.00	5880.00	6960.00	690.00	7.00	1050.00
80290614	24340	A	0.0	99.0	4.00	96.00	83.50	230.00	0.35	103.00
80290610	24340	A	1.0	99.0		35.30	22.10			71.80
80290612	24340	A	5.0	99.0	15.00	214.00	113.00	160.00	0.30	354.00
80290329	24360	A	1.0	3.5	901.00	311.00	957.00	8420.00	3.30	1100.00
80290330	24360	A	3.0	3.5	318.00	102.00	499.00	2700.00	1.90	453.00
73703021	24400	A	1.0	8.0	929.00	414.00	233.00	3100.00	11.00	253.00
73703023	24400	A	5.0	8.0	1160.00	127.00	306.00	2130.00	11.00	500.00
73703025	24400	A	7.0	8.0	3300.00	17.90	488.00	2250.00	3.50	479.00
73703026	24400	A	9.0	8.0	372.00	23.30	490.00	210.00	0.20	115.00
73703027	24400	A	11.0	8.0	169.00	9.10	19.80			376.00
73630434	24411	B 27	0.0	0.0	21.00	115.00	40.40	60.00	0.20	111.00
73630509	24411	B 27	0.0	0.0	14.00	16.10	18.00			246.00
73703028	24420	A	1.0	6.0	18.00	57.20	9.40			27.50
73703101	24420	A	3.0	6.0	81.00	794.00	75.60	310.00	0.69	249.00
73703102	24420	A	5.0	6.0	394.00	1180.00	217.00	1700.00	3.60	511.00
73703127	24440	A	1.0	8.0	4.00	76.80	20.40			51.30
73703202	24440	A	5.0	8.0	32.00	4920.00	72.80	70.00	0.41	1170.00
73703204	24440	A	7.0	8.0	11.00	10.00	10.70			20.20
73702422	24460	A	1.0	8.5	30.00	351.00	21.90	140.00	0.55	125.00
73702424	24460	A	5.0	8.5		10.70	8.10		0.23	31.10
73702426	24460	A	9.0	8.5	14.00	9.60	12.50			17.10
73702501	24480	A	1.0	8.0	9.00	496.00	28.30	60.00	0.39	126.00
73702502	24480	A	5.0	8.0		14.30	7.30			15.10

SF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73702503	24480	A	7.0	8.0	30.00	58.80	44.70			110.00
73702416	24500	A	1.0	8.0	5.00	124.00	5.80			31.20
73702418	24500	A	5.0	8.0	5.00	16.90	2.90			12.40
73702420	24500	A	7.0	8.0	37.00	60.90	65.30	70.00	0.40	299.00
73683514	25290		1.0	99.0		4.80	37.30			44.60
73683516	25290		3.0	99.0		0.80	13.60			29.60
73680110	25301	TP 195	1.5	0.0	5710.00	2830.00	3350.00	2380.00	1900.00	827.00
73683513	25310		1.0	0.0	419.00	6720.00	8100.00	1100.00	8.60	13100.00
73683507	25330		1.0	0.8	682.00	5250.00	15100.00	990.00	51.00	7260.00
73683510	25350		1.0	0.8	115.00	631.00	139.00	480.00	2.90	273.00
73683511	25350		3.0	0.8	3.00	23.70	14.20	20.00	0.64	57.50
73703122	25390	A	1.0	99.0	680.00	136.00	1110.00	6420.00	8.40	891.00
73703123	25390	A	3.0	99.0	263.00		864.00	6800.00	0.79	220.00
73703124	25390	A	5.0	99.0	298.00	23.10	1930.00	8920.00	0.39	275.00
73703125	25390	A	7.0	99.0	344.00	10.00	2050.00			642.00
80290725	25410	A	1.0	2.0	9.00	137.00	60.80	140.00	0.40	71.90
80290801	25410	A	3.0	2.0		9.00	4.50			12.30
73702224	25430	A	1.0	10.0	26.00	218.00	30.70	70.00	0.75	165.00
73702225	25430	A	6.0	10.0	506.00	2200.00	505.00	2300.00	5.00	1320.00
73702226	25430	A	9.5	10.0	2340.00	195.00	4780.00	1170.00	1.70	940.00
73702505	25450	A	1.0	9.0	73.00	1240.00	80.00	310.00	0.99	212.00
73702507	25450	A	5.0	9.0	16.00	8.30	6.10		0.44	16.50
73702508	25450	A	9.0	9.0	33.00	6.40	9.80			29.70
73702517	25470	A	1.0	11.0	46.00	4920.00	237.00	290.00	1.10	558.00
73702518	25470	A	6.0	11.0	143.00	7520.00	464.00	750.00	2.10	892.00
73702520	25470	A	11.0	11.0	143.00	774.00	346.00			566.00
73702527	25490	A	1.0	11.0	105.00	4.20	83.50	60.00	0.20	72.60
73702528	25490	A	6.0	11.0	5.00	20.80	8.30			23.30
73702601	25490	A	11.0	11.0	46.00	11.10	26.30			39.30
73702603	25510	A	1.0	15.0	50.00	7630.00	163.00	360.00	2.20	1310.00
73702605	25510	A	6.0	15.0		25.60	1.90			15.40
73702607	25510	A	11.0	15.0		22.70	2.10			14.80
73683320	26280		1.0	2.0	4.00	9.60	17.70	20.00	0.30	34.00
73683603	26280		3.0	2.0		4.00	3.30			107.00
73683517	26300		1.0	99.0	34.00	13.00	187.00			334.00
73683506	26320		1.0	0.0	353.00	2330.00	1160.00	1100.00	7.00	12700.00
80290604	26340	A	1.0	6.0	179.00	1400.00	777.00	10300.00	3.50	2960.00
80290605	26340	A	5.0	6.0	464.00	6.90	7340.00	11500.00	0.37	1540.00
80290724	26400	A	0.5	99.0	302.00	25400.00	798.00	805.00	15.00	2140.00
73701803	26420	A	1.0	99.0	15.00	186.00	23.30			108.00
73701805	26420	A	3.0	99.0	17.00	345.00	17.50			122.00
73701806	26420	A	5.0	99.0		95.40	9.30			58.60
73630508	26421	B 28	0.0	0.0		19.50	12.80			20.90
73702304	26440	A	1.0	9.0	351.00	280.00	660.00	1930.00	3.90	387.00
73702305	26440	A	5.0	9.0	3500.00	63.00	1050.00	6500.00	7.70	3530.00
73702307	26440	A	8.5	9.0	2690.00	35.90	1250.00	4100.00	9.40	2760.00
73702509	26460	A	1.0	9.0	661.00	3690.00	469.00	3000.00	5.10	1100.00
73702511	26460	A	5.0	9.0	622.00	2630.00	930.00	1620.00	1.90	3450.00
73702514	26460	A	8.5	9.0	262.00	336.00	339.00	660.00	0.43	2630.00
73702521	26480	A	1.0	11.0	207.00	2180.00	314.00	500.00	1.30	492.00

	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
3702523	26480	A	6.0	11.0	111.00	15.70	61.50	1590.00	0.49	2860.00
3702525	26480	A	10.5	11.0	100.00	10.20	63.30	50.00	0.79	127.00
3702526	26480	A	16.0	11.0		3.30	2.30			14.30
3702614	26500	A	1.0	15.0	159.00	18300.00	399.00	1270.00	3.20	2230.00
3702616	26500	A	6.0	15.0	5.00	15.30	17.90			65.30
3702617	26500	A	11.0	15.0		92.10	13.70			66.00
0291021	26520	A	1.0	21.0	92.00	6780.00	198.00	460.00	1.10	715.00
0291023	26520	A	11.0	21.0	33.00	6900.00	166.00			1420.00
0291026	26520	A	20.5	21.0	13.00	642.00	47.00			143.00
0291027	26520	A	21.5	21.0		18.20	0.60			3.90
0290824	26540	A	1.0	21.0	126.00	101.50	15.50	30.00	0.23	46.00
0290826	26540	A	11.0	21.0	409.00	5.00	25.10	70.00	0.51	36.90
0291001	26540	A	20.5	21.0	168.00	0.80	20.30	90.00	0.46	25.80
0290820	26560	A	1.0	6.0	8.00	72.40	3.90			41.00
0290821	26560	A	5.0	6.0	20.00	2.90	2.00			7.60
3683405	27210		1.0	0.4		6.00	5.60			47.00
3683403	27230		1.0	0.4	2.00	4.70	1.80	40.00	0.30	60.00
3681902	27231	TP 369	5.0	0.0		6.20	4.50			9.40
3682411	27232	TP 416	0.0	0.0		4.40	1.80			6.50
3683426	27250		1.0	2.0	24.00	12.90	39.00			66.00
3683321	27270		1.0	5.8	1500.00	4.00	138.00	3570.00	4.80	210.00
0290618	27270		1.0	5.8	1060.00	7.80	159.00	1320.00	2.10	214.00
3683323	27270		3.0	5.8	11200.00	10.40	320.00	3000.00	20.00	1540.00
0290619	27270		3.0	5.8	1970.00	10.30	250.00	2900.00	1.40	729.00
83324	27270		5.0	5.8	930.00	20.00	148.00	210.00	1.40	1200.00
90620	27270		5.0	5.8	2760.00	20.00	512.00	8880.00	2.10	1620.00
3683423	27290		1.0	99.0	22.00	3.20	16.70	170.00	0.72	22.00
3683424	27290		3.0	99.0	55.00	5.30	104.00	270.00	0.38	124.00
3683502	27310		1.0	6.5	791.00	6.80	726.00	11000.00	31.00	1190.00
3683503	27310		3.0	6.5	671.00	5.90	100.00	100.00	1.60	398.00
3683505	27310		5.0	6.5	357.00	2350.00	1090.00	960.00	10.00	13000.00
0290101	27330	A	1.0	6.0	255.00	37.30	498.00	7050.00	21.00	353.00
0290102	27330	A	3.0	6.0	189.00	122.00	1110.00	8430.00	3.00	860.00
0290103	27330	A	5.0	6.0	726.00	637.00	23300.00	5000.00	3.70	12400.00
0290804	27370	A	1.0	10.0	148.00	31.30	805.00	1740.00	0.36	1650.00
0290805	27370	A	3.0	10.0	485.00		1170.00	15600.00	0.97	2620.00
0290806	27370	A	5.0	10.0	1070.00		2310.00	25100.00	1.60	3690.00
0290807	27370	A	7.0	10.0	910.00		1510.00	25800.00	1.80	2850.00
0290723	27390	A	1.0	99.0	200.00	21300.00	500.00	963.00	13.00	2500.00
3630517	27401	B 29	0.0	0.0	137.00	3050.00	124.00	827.00	4.80	1240.00
3630518	27401	B 29	0.0	0.0	3.00	49.80	20.40			3.90
3630519	27401	B 29	0.0	0.0	6040.00	2290.00	13300.00	1060.00	2.00	1630.00
3701723	27410	A	1.0	8.0	19.00	130.00	21.50	90.00	0.18	60.50
3701724	27410	A	3.0	8.0	7.00	33.30	22.40			29.10
3701802	27410	A	7.0	8.0	5660.00	69.10	2270.00	3900.00	7.20	5330.00
3702228	27430	A	1.0	10.0	418.00	141.00	737.00	4420.00	3.90	774.00
3702229	27430	A	5.0	10.0	2330.00	37.00	900.00	8920.00	100.00	1230.00
3702301	27430	A	9.0	10.0	221.00	10.40	458.00	440.00	0.30	157.00
3702302	27430	A	11.0	10.0	84.00	10.80	119.00			14.20
0290709	27450	A	1.0	6.0	345.00	131.00	260.00	5300.00	5.30	513.00

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
80290710	27450	A	5.0	6.0	82.00	67.70	344.00	380.00	2.40	306.00
80290711	27450	A	7.0	6.0	17.00	0.90	149.00			101.00
80290705	27470	A	1.0	0.8	65.00	950.00	178.00	400.00	0.27	312.00
80290706	27470	A	3.0	0.8		11.00	9.60			28.70
73702610	27490	A	1.0	15.0	123.00	12400.00	322.00	863.00	2.30	1410.00
73702611	27490	A	6.0	15.0	9.00	363.00	32.20	180.00	0.54	178.00
73702612	27490	A	11.0	15.0	7.00	247.20	22.60			154.00
73702613	27490	A	16.0	15.0	4.00	6.80	17.90			665.00
80291003	27510	A	1.0	31.0	45.00	1710.00	44.60	250.00	1.10	378.00
80291005	27510	A	16.0	31.0	74.00	4630.00	172.00	360.00	1.00	626.00
80291006	27510	A	21.0	31.0	65.00	7520.00	224.00	250.00	2.70	899.00
80291008	27510	A	30.5	31.0	155.00	4.20	19.80	60.00	0.65	34.50
80291009	27510	A	31.5	31.0	3.00	1.70	1.70			7.10
80291011	27530	A	1.0	26.0	43.00	134.00	44.00	350.00	0.89	94.20
80291015	27530	A	16.0	26.0	349.00	2.80	10.40	60.00	1.10	15.90
80291018	27530	A	25.5	26.0	71.00		18.10			13.30
80291019	27530	A	26.5	26.0		5.20	1.50			8.70
80290815	27550	A	1.0	5.0	12.00	78.20	5.30			25.50
80290816	27550	A	3.0	5.0	8.00	2.20	1.80			7.70
80290817	27550	A	4.5	5.0	6.00	11.50	2.90			11.40
73683407	28200		1.0	99.0		9.90	1.70		0.20	26.00
73683409	28200		3.0	99.0		14.80	7.40			21.00
73683413	28220		1.0	0.0	1.00	5.30	1.20			9.10
73702921	28220		1.0	0.0	3.00	1.00	2.50			9.30
73683416	28240		1.0	2.0	3.00	7.30	142.00	30.00	0.40	220.00
73683419	28280	A	1.0	6.0	230.00	30.00	350.00	21700.00	0.56	117.00
73705001	28280	A	1.0	6.0	219.00	13.80	167.00	1100.00	0.60	190.00
73683420	28280	A	3.0	6.0	127.00	15.60	680.00	332.00	0.73	210.00
73705002	28280	A	3.0	6.0	1160.00	4.20	118.00	4600.00	16.00	358.00
73705003	28280	A	5.0	6.0	2640.00	9.20	135.00	5200.00	740.00	590.00
73683422	28280	A	7.0	6.0	5000.00	114.00	800.00	13000.00	3.40	1640.00
73705016	28300	A	1.0	6.0	27.00	15.60	261.00	130.00	0.32	340.00
73705017	28300	A	3.0	6.0	23.00	2.60	312.00	20.00	0.25	231.00
73705018	28300	A	5.0	6.0	1600.00	7.80	168.00	1070.00	2.30	2720.00
73705020	28300	A	7.0	6.0	7.00	1.60	4.10			206.00
73705022	28320	A	1.0	6.0	98.00	33.90	230.00	749.00	1.30	496.00
73705023	28320	A	3.0	6.0	212.00	32.20	281.00	5600.00	42.00	734.00
73705024	28320	A	5.0	6.0	122.00	149.00	551.00	430.00	2.10	3790.00
73702218	28360	A	1.0	9.0	338.00	25.70	6210.00	4000.00	0.84	7080.00
73702220	28360	A	5.0	9.0	153.00		10700.00			54800.00
73702222	28360	A	9.0	9.0	603.00	23.80	67.20			899.00
73702212	28380	A	1.0	8.0	302.00	229.00	423.00	1650.00	1.50	358.00
73702214	28380	A	3.0	8.0	834.00	34.60	597.00	7470.00	1.40	575.00
73702216	28380	A	7.0	8.0	476.00	28.40	1120.00	360.00	2.80	940.00
73701718	28400	A	1.0	7.0	486.00	371.00	157.00	2080.00	2.50	214.00
73701719	28400	A	3.0	7.0	355.00	57.20	134.00	1840.00	3.40	155.00
73701720	28400	A	5.0	7.0	569.00	328.00	150.00	2700.00	3.60	217.00
80290713	28440	A	1.0	7.4	336.00	26.80	1200.00	9690.00	1.10	1140.00
80290716	28440	A	3.0	7.4	302.00	83.90	905.00	8850.00	1.40	502.00
80290714	28440	A	5.0	7.4	375.00	88.50	1220.00	2500.00	24.00	1700.00

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
80290715	28440	A	7.0	7.4	2080.00	31.50	930.00	12600.00	35.00	1420.00
80290626	28460	A	1.0	8.0	21.00	860.00	50.60	120.00	0.45	156.00
80290627	28460	A	3.0	8.0	18.00	1500.00	53.40	110.00	0.32	239.00
80290628	28460	A	5.0	8.0	20.00	1290.00	57.30	140.00	0.47	190.00
80290701	28460	A	7.0	8.0	151.00	2860.00	234.00	1510.00	2.00	588.00
80290702	28460	A	9.0	8.0	28.00	721.00	80.60	440.00	0.48	211.00
80290625	28480	A	1.0	0.0		21.10	7.50			12.60
80290810	28540	A	1.0	2.0		5.90	3.60			11.80
73683304	29170		1.0	4.2	18.00	5.10	71.00	130.00	0.62	210.00
73683305	29170		3.0	4.2	7.00	5.20	20.00	50.00	0.30	182.00
73683306	29170		5.0	4.2		6.50	3.60	10.00	0.20	45.00
73683308	29170		7.0	4.2		9.60	1.80			22.30
73683311	29190		1.0	99.0	4.00	8.10	11.30			85.00
73683312	29190		3.0	99.0	1.00	5.60	2.60		0.30	19.10
73683318	29210		1.0	2.0	14.00	6.10	57.00	150.00	0.44	183.00
73683401	29230		1.0	0.8	17.00	9.70	34.00	60.00	0.39	90.00
73705006	29290	A	1.0	6.0	116.00	150.00	249.00	590.00	2.50	125.00
73705007	29290	A	3.0	6.0	606.00	7.60	223.00	340.00	0.21	249.00
73705008	29290	A	5.0	6.0	561.00	20.10	516.00	941.00	1.20	908.00
73705009	29290	A	7.0	6.0	311.00	24.80	427.00	1060.00	11.00	3210.00
73705011	29310	A	1.0	6.0	162.00	79.70	570.00	3200.00	2.70	3620.00
73705012	29310	A	3.0	6.0	361.00	51.10	957.00	7000.00	3.50	1700.00
73705013	29310	A	5.0	6.0	990.00	25.40	2420.00	8740.00	1.10	6590.00
80290106	29330	A	1.0	6.2	219.00	194.00	456.00	1830.00	2.50	680.00
80290107	29330	A	3.0	6.2	221.00	63.20	1130.00	2220.00	18.00	927.00
80290109	29330	A	5.0	6.2	343.00	13.90	1390.00	4200.00	28.00	2670.00
80290110	29330	A	7.0	6.2	84.00	12.40	356.00	600.00	0.53	615.00
73701625	29350	A	1.0	8.5	465.00		1330.00	8100.00	1.10	2490.00
73701627	29350	A	5.0	8.5	716.00		1600.00	10500.00	1.50	2580.00
73701628	29350	A	7.0	8.5	923.00		1090.00	2260.00	0.40	6570.00
73701629	29350	A	9.0	8.5	283.00	23.00	3720.00			18500.00
73701619	29370	A	1.0	7.0	921.00	120.00	601.00	8700.00	5.70	888.00
73701621	29370	A	3.0	7.0	667.00	1.60	618.00	7800.00	2.60	891.00
73701623	29370	A	7.0	7.0	2800.00	176.00	3550.00	3300.00	2.50	9310.00
73630409	29381	B 25	0.0	0.0	790.00	41.70	542.00	1840.00	4.00	205.00
73701614	29390	A	1.0	7.0	595.00	24.10	419.00	820.00	0.83	213.00
73701616	29390	A	3.0	7.0	64.00		106.00	2100.00	23.00	11.90
73701617	29390	A	5.0	7.0	1690.00	186.00	547.00	6700.00	1.00	297.00
73701618	29390	A	7.0	7.0	385.00	28.00	4960.00	1910.00	0.67	295.00
73701607	29410	A	1.0	9.0	384.00	72.80	533.00	2700.00	6.80	778.00
73701609	29410	A	5.0	9.0	411.00	1170.00	1250.00	5600.00	5.20	2630.00
73701612	29410	A	8.5	9.0	668.00	2290.00	2090.00	440.00	2.80	381.00
73701613	29410	A	9.5	9.0	340.00	15.50	869.00			29.20
73630407	29421	B 24	0.0	0.0	78.00	5.40	48.40			80.30
73701529	29430	A	1.0	7.0	2320.00	236.00	312.00	33900.00	2.90	366.00
73701602	29430	A	5.0	7.0	260.00	11.60	591.00	1070.00	1.60	535.00
73701603	29430	A	7.0	7.0	6230.00	44.10	459.00	23800.00	3.40	1770.00
80290718	29450	A	1.0	6.0	57.00	224.00	100.00	390.00	3.10	213.00
80290719	29450	A	3.0	6.0	50.00	225.00	100.00	440.00	3.00	173.00
80290720	29450	A	5.0	6.0	384.00	58.60	352.00			193.00

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
80290623	29470	A	1.0	0.0		5.50	3.90			16.00
73683225	30140		1.0	2.0		36.00	37.00			32.00
73683222	30160	A	1.0	3.0	2.00	10.90	6.30			19.50
73683223	30160	A	3.0	3.0	4.00	9.90	5.90			16.10
73683224	30160	A	5.0	3.0	5.00	15.50	3.30			14.70
73683301	30180		1.0	2.2	21.00	14.60	240.00	200.00	0.20	320.00
73683303	30180		3.0	2.2	1.00	6.00	94.00			42.00
73683314	30200		1.0	4.0	5.00	7.60	26.00	680.00	0.76	620.00
73683315	30200		3.0	4.0	2.00	4.40	13.30	20.00	0.30	142.00
73702918	30220	A	1.0	2.0	12.00	13.50	56.10	150.00	0.20	134.00
73702914	30240	A	1.0	0.0	9.00	1.70	7.20			15.30
73702915	30240	A	3.0	0.0			2.50			7.50
80290113	30320	A	1.0	4.7	123.00	38.50	482.00	1310.00	1.40	588.00
80290114	30320	A	3.0	4.7	277.00	13.70	783.00	2600.00	8.70	1060.00
80290115	30320	A	5.0	4.7	197.00	8.20	1900.00	1210.00	0.76	1380.00
73704121	30340	A	1.0	8.2	363.00	14.90	980.00	7200.00	1.30	1430.00
73704122	30340	A	3.0	8.2	410.00	10.40	910.00	4800.00	1.40	1280.00
73704123	30340	A	5.0	8.2	477.00		722.00	6940.00	0.23	460.00
73704124	30340	A	7.0	8.2	1500.00		867.00	7660.00	0.44	2190.00
73701630	30360	A	1.0	8.3	194.00	393.00	253.00	1890.00	1.40	656.00
73701702	30360	A	5.0	8.3	339.00	20.30	274.00	530.00	2.30	324.00
73701703	30360	A	7.0	8.3	726.00	11.10	333.00	2900.00	4.10	830.00
73701705	30360	A	9.0	8.3	1110.00	61.00	7240.00	390.00	0.54	685.00
73630415	30361	B 26	0.0	0.0	292.00	185.00	771.00	5570.00	0.80	1140.00
73630424	30361	B 26	0.0	0.0	24.00	12.40	25.50			3.30
73701706	30380	A	1.0	7.5	97.00	233.00	123.00	966.00	2.10	184.00
73701707	30380	A	3.0	7.5	132.00	26.60	161.00	5300.00	5.30	832.00
73701710	30380	A	7.0	7.5	4630.00	38.00	817.00	26800.00	140.00	951.00
73701711	30400	A	1.0	6.0	231.00	155.00	473.00	2130.00	3.70	393.00
73701713	30400	A	3.0	6.0	269.00	18.70	616.00	5900.00	0.94	297.00
73701714	30400	A	5.0	6.0	105.00	13.70	776.00	3200.00	3.00	110.00
73701807	30420	A	1.0	6.2	63.00	127.00	90.40	240.00	3.00	108.00
73701809	30420	A	5.0	6.2	22.00	31.90	40.10			17.90
73701810	30420	A	6.5	6.2	543.00	58.40	2820.00	1400.00	3.20	466.00
73630331	30431	B 23	0.0	0.0	119.00	3.60	19.20			1.40
73701813	30440	A	1.0	6.0	157.00	79.50	586.00	190.00	1.20	474.00
73701814	30440	A	5.0	6.0	90.00	6.40	236.00	160.00	0.60	79.80
73701815	30440	A	7.0	6.0	35.00	8.20	1040.00	100.00	0.30	270.00
73702205	30460	A	1.0	5.5	746.00	64.70	197.00	1190.00	5.90	110.00
73702206	30460	A	3.0	5.5	18.00	103.00	55.80	90.00	0.26	65.10
73702208	30460	A	5.0	5.5	188.00	8.70	265.00	350.00	6.10	41.00
73683226	31110		1.0	99.0		47.00	26.00			37.00
73683227	31110		3.0	99.0		42.00	25.00			33.00
73683228	31130		1.0	99.0		35.00	59.00			36.00
73683219	31170	A	1.0	3.0		17.10	21.00			39.00
73702923	31210	A	1.0	4.0	195.00	28.30	140.00	3400.00	0.64	847.00
73702924	31210	A	3.0	4.0	333.00		319.00	6900.00	0.49	1230.00
73702925	31210	A	5.0	4.0	11.00	0.90	25.50			16.30
80290123	31270	A	1.0	3.3	1050.00	101.00	66.50	819.00	3.00	588.00
80290124	31270	A	3.0	3.3	1210.00	8.50	83.70	1120.00	0.54	1200.00

IF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
80290118	31290	A	1.0	6.0	12.00	67.70	104.00	540.00	2.40	298.00
80290119	31290	A	3.0	6.0	879.00	96.00	845.00	2700.00	6.70	1420.00
80290120	31290	A	5.0	6.0	990.00	34.10	2990.00	3900.00	14.00	2450.00
73704126	31330	A	1.0	8.0	2040.00	18.30	355.00	3800.00	0.49	289.00
73704127	31330	A	3.0	8.0	619.00		2220.00	270.00	0.27	7110.00
73704301	31330	A	5.0	8.0			1170.00	290.00	0.27	2730.00
73704302	31330	A	7.0	8.0	134.00		1300.00	300.00	1.00	5190.00
73704116	31350	A	1.0	7.7	1650.00	3.40	647.00	10000.00	1.70	627.00
73704117	31350	A	3.0	7.7	770.00	3.60	359.00	2160.00	0.59	249.00
73704119	31350	A	5.0	7.7	501.00	5.00	289.00	430.00	0.26	288.00
73704120	31350	A	7.0	7.7	970.00	34.20	693.00	1450.00	5.10	1250.00
73704108	31370	A	1.0	8.5	98.00	75.80	160.00	1250.00	1.70	472.00
73704112	31370	A	3.0	8.5	36.00	80.90	213.00	580.00	2.10	596.00
73704111	31370	A	5.0	8.5	12.00	149.00	65.20	210.00	0.66	524.00
73704113	31370	A	6.5	8.5	185.00	576.00	43.30	210.00	0.92	702.00
73701717	31390	A	1.0	1.0	292.00	96.00	247.00	1710.00	2.00	1710.00
73701816	31450	A	1.0	2.0	49.00	412.00	64.60	280.00	1.20	163.00
73702906	32040	A	1.0	0.0		62.60	17.50			35.30
73702908	32060	A	1.0	0.0		25.50	29.70			47.90
73702910	32100	A	1.0	4.0	3.00	18.40	10.20			41.80
73702911	32100	A	3.0	4.0		12.00	12.30			32.40
73702913	32120	A	1.0	99.0	4.00	11.00	12.20	80.00	0.43	31.20
73702722	32140	A	1.0	4.0		22.10	22.10			38.00
73702719	32160	A	0.5	99.0		18.40	14.60			68.90
73702716	32180	A	1.0	3.0		36.10	30.10			80.10
73630904	32251	B 41	0.0	0.0	52.00	6.30	8.00		0.20	23.40
73704624	32340	A	1.0	8.4	403.00	15.40	360.00	6880.00	1.80	494.00
73704625	32340	A	3.0	8.4	449.00	0.40	980.00	772.00	0.34	2170.00
73704627	32340	A	7.0	8.4	215.00		611.00			464.00
73704701	32340	A	9.0	8.4	135.00	19.40	3780.00			345.00
73704702	32360	A	1.0	9.5	11.00	115.00	30.60	140.00	0.39	162.00
73704705	32360	A	5.0	9.5	80.00	10.10	147.00	520.00	0.63	611.00
73704707	32360	A	7.0	9.5	331.00	2.20	649.00	660.00	3.20	3760.00
73704708	32360	A	9.0	9.5	24.00	4.50	301.00	110.00	0.90	13700.00
73704103	32380	A	1.0	6.0		13.50	14.40	40.00	0.24	49.60
73704104	32380	A	3.0	6.0	358.00	44.50	509.00	2090.00	7.50	770.00
73704106	32380	A	5.0	6.0	1630.00	1.00	2470.00	6960.00	0.75	1160.00
73704726	32400	A	1.0	2.0	103.00	51.30	229.00	893.00	1.20	221.00
73704727	32400	A	3.0	2.0	53.00	42.60	127.00	510.00	1.30	258.00
73704922	32420	A	1.0	2.0	11.00	49.50	38.10	110.00	1.00	51.00
73702801	33050	A	1.0	3.5	7.00	18.80	42.10	120.00	0.20	134.00
73702802	33050	A	3.0	3.5	4.00	7.50	4.50			14.30
73702725	33070	A	1.0	4.0		26.20	90.70			94.00
73702723	33090	A	1.0	4.0		52.60	20.00			41.50
73702721	33150	A	0.5	1.0		19.80	15.20			61.30
73704311	33330	A	1.0	7.0	258.00	11.20	534.00	2700.00	4.30	3370.00
73704312	33330	A	3.0	7.0	26.00		798.00	410.00	0.25	2790.00
73704313	33330	A	5.0	7.0	106.00		1390.00	410.00	0.46	4550.00
73704314	33330	A	7.0	7.0	61.00	35.50	1280.00	170.00	0.10	4550.00
73704305	33350	A	1.0	6.7	137.00	14.10	4090.00	4600.00	0.16	46300.00

TT NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73704307	33350	A	3.0	6.7	62.00		2780.00			16100.00
73704308	33350	A	5.0	6.7	133.00		859.00	180.00	0.37	805.00
73704309	33350	A	7.0	6.7	152.00	91.40	3840.00	712.00	2.80	723.00
73703818	33410	A	1.0	2.0	69.00	117.00	342.00	1360.00	1.90	720.00
73703819	33410	A	3.0	2.0	206.00	18.80	11.30	140.00	0.30	46.20
73704809	33430	A	0.2	0.3		66.80	37.60	30.00	0.25	74.50
73702804	34060	A	1.0	4.5	6.00	28.30	16.90			50.20
73704317	34320	A	1.0	8.0	52.00	28.90	134.00	170.00	1.10	277.00
73704319	34320	A	3.0	8.0	59.00		541.00	855.00	0.61	972.00
73704320	34320	A	5.0	8.0	118.00	1.80	1260.00	1070.00	0.43	4140.00
73704321	34320	A	7.0	8.0	534.00		1300.00	550.00	1.40	8150.00
73704619	34340	A	1.0	8.0	3160.00	21.00	1000.00	16100.00	2.40	3570.00
73704620	34340	A	3.0	8.0	886.00	3.90	970.00	7820.00	4.90	2310.00
73704621	34340	A	5.0	8.0	12.00		1650.00	310.00	0.36	8310.00
73704622	34340	A	7.0	8.0	3100.00	28.60	1750.00	3700.00	1.70	21300.00
73703813	34400	A	1.0	2.5	134.00	12.70	67.20	3400.00	10.00	90.70
73703814	34400	A	3.0	2.5	87.00	2.20	56.20	100.00	0.20	74.30
73703816	34400	A	5.0	2.5	21.00	21.00	19.00			21.50
73704728	34420	A	1.0	0.5	18.00	12.50	12.20	300.00	0.63	21.80
73702902	35110	A	0.2	3.0		18.00	20.00			49.40
73702903	35110	A	4.0	3.0	16.00	7.00	88.30			55.70
73702827	35130	A	1.0	3.2	6.00	28.20	15.90	1010.00	1.10	84.70
73702828	35130	A	4.0	3.2	202.00	4.80	34.60	730.00	11.00	64.00
73704323	35310	A	1.0	5.9	52.00	57.70	5760.00	817.00	0.33	24000.00
73704324	35310	A	3.0	5.9	15.00	4.40	236.00			126600.00
73704325	35310	A	5.0	5.9	8.00	6.60	12.80			5480.00
73704612	35330	A	1.0	8.0	44.00	37.40	47.90			167.00
73704614	35330	A	3.0	8.0	177.00	23.70	297.00	2110.00	1.30	661.00
73704615	35330	A	5.0	8.0	29.00	25.50	1900.00	4200.00	0.20	7390.00
73704616	35330	A	7.0	8.0	59.00	41.00	2830.00	2700.00	0.45	12500.00
73703724	35390	A	1.0	4.0	473.00	23.20	261.00	1080.00	3.10	623.00
73703801	35390	A	3.0	4.0	31.00	7.60	57.10			38.30
73703802	35390	A	5.0	4.0	226.00	7.10	159.00	620.00	0.67	761.00
73703804	35390	A	7.0	4.0	54.00	3.40	68.00			63.90
73703805	35390	A	9.0	4.0	50.00	18.40	54.40			107.00
73703810	35410	A	1.0	3.0	193.00	16.60	129.00	805.00	4.10	275.00
73703811	35410	A	3.0	3.0	79.00	15.60	120.00	220.00	0.22	72.00
73700103	35530		1.0	2.0	5.00	403.00	7.40			104.00
73702806	36100	A	1.0	99.0		19.80	21.70			53.10
73702808	36100	A	5.0	99.0		2.60	21.80			47.50
73702811	36100	A	10.5	99.0		13.00	11.00			27.70
73702819	36120	A	0.3	3.0	4.00	20.60	20.70	40.00	1.20	43.30
73702820	36120	A	5.0	3.0		2.50	29.40			17.40
73702823	36140	A	1.0	4.7	107.00	13.00	97.00	2900.00	2.90	134.00
73702824	36140	A	3.5	4.7	634.00		1280.00	13100.00	1.30	1480.00
73702825	36140	A	5.5	4.7	133.00		202.00	2040.00	0.36	170.00
73704327	36300	A	1.0	4.8	101.00	27.40	676.00	290.00	0.20	552.00
73704328	36300	A	3.0	4.8	220.00	1.90	1560.00	300.00	0.42	6940.00
73704601	36300	A	5.0	4.8	77.00	6.80	585.00	210.00	0.47	12400.00
73704608	36320	A	1.0	6.0		377.00	33.00	70.00	0.16	234.00

SF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73704609	36320	A	3.0	6.0	323.00	16.80	365.00			551.00
73703720	36380	A	1.0	5.0	33.00	31.30	56.50	190.00	0.47	216.00
73703721	36380	A	3.0	5.0	100.00	7.70	96.00	590.00	0.32	291.00
73703722	36380	A	5.0	5.0	700.00	91.60	739.00	1120.00	0.79	4670.00
73703807	36400	A	1.0	0.5	81.00	18.00	51.00	290.00	0.46	68.40
73702404	36420	A	0.5	0.0		57.50	18.20			75.00
73702310	36440	A	1.0	0.0		76.10				86.50
73683606	36520		1.0	0.5	18.00	732.00	90.10	100.00	0.98	221.00
73701116	36540	A	1.0	5.0	10.00	1070.00	12.00	10.00	0.34	170.00
73701118	36540	A	6.0	5.0	4.00	19.30	2.50			9.50
73701119	36540	A	11.0	5.0	6.00	3.70	1.80			3.10
73701120	36540	A	13.0	5.0	6.00	5.60	1.60			6.10
73701111	36560	A	1.0	1.5	3.00	453.00	8.40		0.34	201.00
73701114	36560	A	5.0	1.5	11.00	6.10	2.10			4.10
73701115	36560	A	7.0	1.5		5.60	1.40			8.10
73702814	37110	A	1.0	4.0	3.00	13.60	24.30			60.90
73702815	37110	A	3.0	4.0	29.00	21.20	61.20	1040.00	0.62	68.20
73704602	37290	A	1.0	4.0	226.00	9.70	1080.00	698.00	14.00	1950.00
73704604	37290	A	3.0	4.0		0.80	1410.00	190.00	0.20	3120.00
73704605	37290	A	5.0	4.0	5.00	4.70	581.00	30.00	0.34	1740.00
73704723	37310	A	1.0	4.0	51.00	48.10	59.00	200.00	0.25	90.00
73704725	37310	A	3.0	4.0	24.00	1.60	61.40	884.00	1.20	58.10
73703712	37370	A	1.0	4.5	192.00	35.90	178.00	550.00	0.41	319.00
73703713	37370	A	3.0	4.5	207.00	21.00	221.00	815.00	1.40	610.00
73703714	37370	A	5.0	4.5	65.00	31.80	1480.00	250.00	0.30	2160.00
73703717	37390	A	1.0	4.0	97.00	30.60	47.50	560.00	0.73	91.00
73703718	37390	A	3.0	4.0	2780.00	20.40	164.00	914.00	0.93	317.00
73703719	37390	A	5.0	4.0	653.00	10.70	139.00	1870.00	1.40	883.00
73704729	37410	A	1.0	0.0		56.90	21.90			36.40
73702312	37430	A	1.0	0.0		28.50				78.60
73702313	37450	A	1.0	0.0		54.10	64.30			76.10
73631031	37461	B 51	0.0	0.0		70.70	139.00		0.30	119.00
73702317	37470	A	1.0	2.0		22.10	92.40			33.70
73702319	37490	A	1.0	4.0		38.80	18.00			49.90
73700101	37510		1.0	3.5	7.00	1940.00	16.50			352.00
73700104	37510		3.0	3.5		88.10	4.00			34.40
73700105	37510		5.0	3.5	16.00	1860.00	26.50	110.00	0.47	427.00
73683607	37530	A	1.0	1.0	84.00	11000.00	84.70	810.00	5.60	394.00
73700217	37550		1.0	8.5	13.00	1140.00	25.00			164.00
73700219	37550		5.0	8.5		1620.00	37.10			2530.00
73700223	37550		11.0	8.5		72.90	4.40			61.20
73702927	38240	A	1.0	4.0	395.00	7.10	167.00	3200.00	0.79	290.00
73703001	38240	A	3.0	4.0	930.00		1420.00	6700.00	0.92	2310.00
73703002	38240	A	5.0	4.0	1300.00	1.70	22.00			19.80
73630730	38241	B 36	0.0	0.0	2070.00	5.90	22.20			14.10
73704917	38280	A	1.0	6.0	61.00	2.70	138.00	700.00	3.10	321.00
73704918	38280	A	3.0	6.0	165.00	10.50	672.00	6790.00	2.90	2310.00
73704919	38280	A	5.0	6.0	36.00		183.00			227.00
73704719	38320	A	1.0	4.0	9.00	25.00	41.60	210.00	0.26	200.00
73704720	38320	A	3.0	4.0	72.00	2.60	106.00	1510.00	0.68	32.50

IF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73704721	38320	A	5.0	4.0	13.00		3.40			7.90
73703619	38360	A	1.0	6.5	44.00	34.70	130.00	665.00	1.40	667.00
73703620	38360	A	2.5	6.5	59.00	19.10	123.00	1140.00	0.91	480.00
73703621	38360	A	5.0	6.5	136.00	16.70	428.00	5300.00	6.80	970.00
73703622	38360	A	7.0	6.5	102.00	42.80	5670.00	8210.00	1.10	2500.00
73631218	38371	B 57	0.0	0.0	13.30	7.30	5.20			44.90
73703613	38380	A	1.0	6.0	52.00	103.00	90.80	320.00	0.83	214.00
73703615	38380	A	3.0	6.0	141.00	15.00	122.00	320.00	0.41	286.00
73703616	38380	A	5.0	6.0	198.00	63.20	418.00	420.00	0.76	2380.00
73704804	38400	A	1.0	4.0	163.00	53.40	41.70	550.00	1.10	166.00
73704805	38400	A	3.0	4.0	132.00	28.40	25.10	450.00	0.84	60.20
73704807	38400	A	5.0	4.0	58.00	37.50	10.20	320.00	0.28	39.80
73702714	38420	A	0.3	0.0		43.70	15.70			48.50
73702715	38440	A	0.2	0.0		42.50	12.30			86.90
73702315	38460	A	1.0	4.0	6.00	377.00	41.40	130.00	0.45	530.00
73702316	38460	A	3.0	4.0		262.00	27.70			285.00
73702401	38480	A	1.0	4.0		144.00	48.30		0.25	67.70
73702402	38480	A	5.0	4.0		41.40	32.60	20.00	0.56	127.00
73702321	38500		1.0	6.0		291.00	30.70	30.00	0.30	85.70
73700303	38500*		1.0	6.0	9.00	80600.00	65.40	140.00	0.40	3080.00
73702322	38500		3.0	6.0	99.00	123.00	21.70	100.00	0.20	273.00
73702323	38500		5.0	6.0	47.00	8.30	11.80			71.90
73700201	38520		1.0	10.0	6.00	78.80	8.10			19.10
80291208	38520		1.0	10.0		48.10	2.60			19.60
73700203	38520		5.0	10.0	4.00	279.00	10.30			53.20
80291209	38520		5.0	10.0	7.00	6520.00	54.90			2240.00
73700205	38520		7.0	10.0		18.20	6.70			35.30
80291210	38520		9.0	10.0	5.00	6570.00	37.10	30.00	0.50	1050.00
73700225	38540		1.0	26.0	10.00	496.00	21.10			109.00
73700228	38540		16.0	26.0		59.70	10.60			30.70
73700302	38540		26.0	26.0		10.20	3.20			14.50
73682512	39130		1.0	5.0		25.20		70.00	0.06	37.90
73682513	39130		3.0	5.0		15.10	13.20			29.50
73682514	39130		6.0	5.0		11.20				32.50
73682510	39150		1.0	5.0		42.00	11.60	220.00	0.18	61.80
73682511	39150		3.0	5.0		24.90	65.80	40.00		34.30
73682608	39170		1.0	99.0		30.00	21.00	40.00	0.06	38.00
73682609	39170		3.0	99.0	1.00	18.80	15.80	60.00	0.08	37.00
73682610	39170		5.0	99.0		19.60	24.00	40.00		32.00
73682606	39190		1.0	99.0	19.00	79.00	66.00	210.00	1.10	250.00
73682607	39190		3.0	99.0		38.00	15.50	30.00	0.09	95.00
73630926	39201	B 43	0.0	0.0	18.00	4.40	70.00			38.60
73703016	39210	A	1.0	4.0	211.00	2190.00	400.00	750.00	2.40	503.00
73703018	39210	A	3.0	4.0	94.00	658.00	198.00	380.00	1.00	303.00
73703019	39210	A	5.0	4.0	418.00	130.00	252.00	1070.00	6.00	680.00
80291217	39230	A	1.0	4.0	436.00	16.70	103.00	715.00	0.34	124.00
80291218	39230	A	3.0	4.0	2990.00	7.90	98.30	190.00	1.40	212.00
73630708	39231	B 35	0.0	0.0	38.00	2.50	72.70			9.90
73703004	39250	A	1.0	2.0	502.00	16.10	276.00	2020.00	2.30	539.00
73703006	39250	A	3.0	2.0	9.00	4.70	9.10			14.30

*Sample 73700303 is a 0-2 foot sample at location 38500 collected by hand 8/31/83 from a wet area with wooden debris. The location 38500 sampling was repeated 9/14/83 with a drilling rig on dry ground 12 foot away i.e. sample 73702321, 73702322 and 73702323.

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73704018	39270	A	1.0	6.0	64.00	24.20	72.90	1620.00	5.70	218.00
73704020	39270	A	3.0	6.0	77.00	25.80	111.00	2050.00	2.80	341.00
73704021	39270	A	5.0	6.0	63.00	42.60	72.30	1210.00	2.40	109.00
73704022	39270	A	7.0	6.0	35.00	0.30	8.10	60.00	0.19	13.90
73703820	39290	A	1.0	4.0	50.00	10.30	320.00	350.00	4.50	5290.00
73703821	39290	A	3.0	4.0	13.00	3.30	6.70	110.00	0.87	115.00
73703822	39290	A	5.0	4.0	3.00		8.10	330.00	0.19	37.40
73704709	39310	A	1.0	14.0	36.00	194.00	41.40	470.00	1.20	234.00
73704710	39310	A	3.0	14.0	91.00	3.10	171.00	2130.00	1.60	582.00
73704711	39310	A	5.0	14.0	89.00	12.80	55.00	1280.00	0.36	128.00
73704712	39310	A	7.0	14.0	95.00	17.40	58.80	991.00	3.00	124.00
73704714	39310	A	9.0	14.0	139.00	14.50	75.30	3200.00	1.20	140.00
73704715	39310	A	11.0	14.0	274.00	4.20	59.50	1670.00	3.90	1380.00
73703624	39350	A	1.0	4.0	811.00	35.30	808.00	520.00	1.80	7090.00
73703701	39350	A	3.0	4.0	11200.00	3.40	2760.00	1120.00	0.86	31500.00
73703702	39350	A	5.0	4.0	3.00	4.50	100.00	170.00	8.30	62.70
73703605	39370	A	1.0	4.0	103.00	41.70	2110.00	1200.00	0.64	19000.00
73703606	39370	A	3.0	4.0	59.00	6.30	2470.00	490.00	0.44	32600.00
73703607	39370	A	5.0	4.0	28.00	6.20	188.00			144.00
73703610	39390	A	1.0	4.5	33.00	26.10	55.80	160.00	1.30	159.00
73703611	39390	A	3.0	4.5	165.00	10.70	125.00	370.00	1.40	303.00
73703612	39390	A	5.0	4.5	261.00	31.10	186.00	200.00	0.43	2410.00
73702702	39410	A	0.2	99.0		55.40	18.10			142.00
73702627	39430	A	1.0	4.0	100.00	194.00	80.00	350.00	0.84	215.00
73702628	39430	A	3.0	4.0	205.00	89.90	96.00	660.00	1.10	436.00
73702624	39450	A	1.0	4.0	146.00	241.00	116.00	1720.00	1.30	401.00
73702625	39450	A	3.0	4.0	8.00	6.80	10.50			19.30
73702325	39490	A	1.0	99.0		121.00	51.60	10.00	200.00	149.00
73630313	39501	B 21	0.0	0.0	6.00	2130.00	24.20		0.10	92.70
73700304	39510		1.0	13.0		712.00	8.40			72.50
73700305	39510		6.0	13.0		5880.00	55.20	30.00	0.40	467.00
73700306	39510		10.0	13.0		2800.00	43.80			589.00
73700206	39530		1.0	6.5	11.00	12400.00	26.70	110.00	0.33	361.00
73700213	39530		5.0	6.5	6.00	20300.00	34.10			513.00
73700215	39530		8.5	6.5		151.00	14.30			37.00
73700916	39550	A	1.0	11.5	25.00	2900.00	44.30	530.00	0.22	212.00
73701001	39550	A	7.0	11.5		534.00	19.50			215.00
73701002	39550	A	11.0	11.5	93.00	6100.00	152.00	1920.00	1.10	520.00
73682515	40120		1.0	4.0		24.60				40.60
73682516	40120		3.0	4.0		27.00	22.00			38.00
73682507	40140		1.0	99.0		23.50				33.70
73682508	40140		3.0	99.0		20.70	11.00			38.90
73682509	40140		5.0	99.0		31.20	2.00			39.50
73682611	40160		1.0	6.1	5.00	14.50	11.30			41.00
73682612	40160		3.0	6.1		16.40	19.10			35.00
73682613	40160		7.0	6.1	113.00	220.00	780.00			1550.00
73682614	40180		0.6	4.2	4.00	45.00	17.20			56.00
73682615	40180		5.0	4.2	150.00	11700.00	460.00	1100.00	5.10	850.00
73682604	40200		1.0	4.0	52.00	150.00	175.00	306.00	0.73	420.00
73682605	40200		3.0	4.0	85.00	190.00	240.00	1100.00	0.85	580.00

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73704904	40260	A	1.0	4.0	144.00	9.60	233.00	841.00	1.30	730.00
73704905	40260	A	3.0	4.0	39.00		58.80	350.00	0.47	429.00
73704906	40260	A	5.0	4.0	11.00	1.80	57.50			188.00
73703824	40280	A	1.0	6.0	141.00	34.50	201.00	2060.00	1.10	467.00
73703825	40280	A	3.0	6.0	72.00	3.20	5.10			24.70
73703901	40280	A	5.0	6.0	69.00	8.90	17.20	200.00	0.28	45.40
73703902	40280	A	7.0	6.0	106.00	25.00	25.30	110.00	0.20	80.70
73703922	40300	A	1.0	6.0	67.00	142.00	149.00	520.00	0.48	135.00
73703923	40300	A	3.0	6.0	54.00	0.80	54.00	3000.00	1.80	147.00
73703924	40300	A	5.0	6.0	40.00	0.90	261.00	2600.00	2.90	164.00
73703925	40300	A	7.0	6.0			2.30		0.14	
73703526	40340	A	1.0	6.0	16.00	219.00	162.00	120.00	2.40	357.00
73703601	40340	A	3.0	6.0	126.00	26.80	1370.00	460.00	0.87	4970.00
73703602	40340	A	5.0	6.0	224.00	21.70	766.00	390.00	0.70	5070.00
73703705	40360	A	1.0	6.0		53.00	32.40	70.00	0.10	120.00
73703707	40360	A	3.0	6.0	72.00		5930.00	340.00	2.20	46900.00
73703709	40360	A	5.0	6.0	129.00	4.80	2840.00			21000.00
73704023	40380	A	1.0	4.0	88.00	16.80	3880.00	340.00	2.70	215.00
73704024	40380	A	3.0	4.0	387.00	5.10	317.00	1200.00	6.20	580.00
73704101	40380	A	5.0	4.0	222.00	17.20	583.00	60.00	0.23	805.00
73704102	40380	A	7.0	4.0	4.00		4.50			2.90
73702703	40400	A	1.5	99.0	89.00	42.80	805.00	1910.00	110.00	906.00
73702705	40400	A	5.5	99.0		5.30	8.50		0.20	74.50
73702707	40400	A	10.5	99.0		10.10	99.00			741.00
80291205	40420	A	1.0	3.0	227.00	6.50	130.00	2110.00	12.00	553.00
80291206	40420	A	3.0	3.0	234.00		53.70	1340.00	17.00	167.00
73701323	40440	A	1.0	2.0	118.00	357.00	157.00	390.00	0.48	353.00
73630311	40451	B 20	0.0	0.0		5.50	3.50			9.20
73701322	40460	A	1.0	4.0	13.00	70.60	22.90	140.00	0.65	66.90
73701319	40460	A	3.0	4.0		10.10	7.90			13.40
73700317	40480		1.0	6.0	18.00	988.00	28.20	130.00	0.30	119.00
73700319	40480		3.0	6.0	18.00	29.10	18.30	30.00	0.33	29.90
73700320	40480		5.0	6.0		8.10	8.00			23.10
73700321	40480		7.0	6.0		11.50	4.00			5.30
73700313	40500		1.0	5.0	29.00	21500.00	67.50	1090.00	0.89	1640.00
73700314	40500		6.0	5.0		40.80	27.80			28.90
73700316	40500		11.0	5.0		19.20	0.20			16.00
73700309	40520		1.0	99.0	16.00	1780.00	36.50			1280.00
73700310	40520		6.0	99.0	4.00	3120.00	38.20			1350.00
73700311	40520		10.0	99.0		1890.00	14.90			454.00
73701004	40560	A	1.0	6.0	13.00	1570.00	21.10	140.00	0.31	110.00
73701005	40560	A	3.0	6.0	6.00	732.00	15.50	90.00	0.10	86.00
73701007	40560	A	5.0	6.0	22.00	161.00	29.50	90.00	0.58	182.00
73701020	40580	A	1.0	16.0	7.00	435.00	17.00	160.00	0.10	150.00
73701022	40580	A	9.0	16.0		29.90	3.80			17.00
73701101	40580	A	14.5	16.0		570.00	6.00			29.40
73701104	40600	A	1.0	16.0	20.00	515.00	28.20			171.00
73701106	40600	A	11.0	16.0	5.00	190.00	3.50			29.80
73701110	40600	A	15.5	16.0		232.00	3.80			35.90
73683207	41110		1.0	99.0	2.00	17.60	15.00			74.00

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73683208	41110		3.0	99.0	8.00	16.90	30.00	120.00	0.40	390.00
73682505	41130		0.5	4.0		20.70		100.00	0.25	34.60
73682506	41130		1.7	4.0		70.10	108.00	40.00	0.25	64.50
73682805	41150		0.6	99.0	26.00	32.00	84.00	200.00	0.60	220.00
73631008	41161	B 47	0.0	0.0	91.00	61.80	107.00	645.00	2.00	291.00
73682806	41170		1.0	4.0	43.00	1150.00	200.00	1200.00	3.20	110.00
73682601	41170		3.0	4.0	177.00	7700.00	680.00	2970.00	45.00	330.00
73630912	41181	B 42	0.0	0.0	8.00	4.90	4.60		0.20	8.90
73682602	41190		1.0	2.2	188.00	101.00	157.00	372.00	4.00	430.00
73682603	41190		3.0	2.2	21.00	13.60	31.00	60.00	0.14	69.00
73704901	41250	A	1.0	0.0	64.00	20.50	64.40	300.00	0.44	108.00
73703906	41270	A	1.0	6.0	72.00	312.00	52.10	904.00	0.39	68.40
73703907	41270	A	3.0	6.0	28.00	132.00	14.40			24.60
73703909	41270	A	5.0	6.0	27.00	60.70	22.50			70.90
73703911	41270	A	7.0	6.0	25.00	41.10	18.90			61.60
73703420	41290	A	1.0	2.0	275.00	1030.00	405.00	1530.00	5.40	520.00
73703421	41290	A	3.0	2.0	17.00	181.00	7.70		1.10	30.20
73703310	41310	A	1.0	6.0		234.00	107.00			123.00
73703312	41310	A	3.0	6.0	473.00	20.80	1440.00	54400.00	3.20	866.00
73703314	41310	A	5.0	6.0	103.00	43.60	86.70	5600.00	0.15	67.40
73703304	41330	A	1.0	6.0	33.00	199.00	227.00	674.00	0.29	257.00
73703305	41330	A	3.0	6.0	63.00	162.00	560.00	946.00	1.30	1790.00
73703306	41330	A	5.0	6.0	1610.00	7.00	618.00	759.00	6.80	957.00
73704014	41350	A	1.0	7.0	48.00	202.00	133.00	640.00	0.26	332.00
73704015	41350	A	3.0	7.0	220.00	0.50	7940.00	723.00	0.32	19800.00
73704016	41350	A	5.0	7.0	338.00	2.40	1040.00	30200.00	1.00	2850.00
73702708	41390	A	1.0	8.0	13.00	73.00	56.50			55.50
73702709	41390	A	5.0	8.0	224.00	19.20	324.00	640.00	0.55	817.00
73702710	41390	A	7.0	8.0	33.00	4.70	64.10			806.00
73702713	41390	A	9.0	8.0	13.00	2.30	3.40			38.50
73701312	41410	A	1.0	6.0	123.00	129.00	152.00			212.00
73701315	41410	A	3.0	6.0	385.00	3.50	4300.00			1390.00
73701317	41410	A	5.0	6.0	806.00	15.20	20600.00	1420.00	0.68	834.00
73701308	41430	A	1.0	4.0	162.00	69.10	509.00	4100.00	0.91	337.00
73701309	41430	A	3.0	4.0	455.00	4.80	2440.00			2540.00
73701305	41450	A	1.0	3.5	44.00	1360.00	79.90	340.00	0.92	213.00
73701306	41450	A	3.0	3.5	220.00	11.60	331.00	4200.00	0.80	929.00
73700322	41470		1.0	3.0	23.00	8280.00	49.70	200.00	0.48	270.00
73700401	41470		3.0	3.0		125.00	5.00			12.90
73700403	41490		1.0	8.0	6.00	16500.00	32.70	200.00	0.81	339.00
73700404	41490		5.0	8.0		48.90	1.50			12.40
73702116	41510	A	1.0	21.0		10.50	4.50			10.40
73702119	41510	A	11.0	21.0	7.00	3840.00	33.70	400.00	0.20	1410.00
73702120	41510	A	16.0	21.0		2630.00	111.00			1290.00
73702122	41530	A	1.0	99.0	5.00	3470.00	37.60	30.00	0.35	675.00
73702123	41530	A	6.0	99.0		23.00	9.10		0.26	7.80
73701008	41550	A	1.0	2.0	12.00	932.00	19.10	120.00	0.31	204.00
73701013	41570	A	1.0	10.0	10.00	881.00	20.60	110.00	0.21	121.00
73701014	41570	A	5.0	10.0		45.80	6.60			20.60
73701015	41570	A	9.0	10.0		12.20	4.40			34.50

EF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73701016	41590	A	1.0	4.0	20.00	533.00	27.90	290.00	0.28	89.00
73701018	41590	A	5.0	4.0	145.00	149.00	59.90	864.00	2.20	64.30
73701017	41590	A	9.0	4.0	49.00	46.20	32.10	310.00	0.69	32.40
73683602	42100		1.0	99.0	5.00	31.70	81.30	180.00	0.49	750.00
73683202	42120		1.0	4.2	25.00	37.00	153.00	376.00	1.00	460.00
73683205	42120		3.0	4.2	29.00	27.00	88.00	150.00	0.30	123.00
73682802	42140		1.0	4.2	210.00	13.60	88.00	4480.00	25.00	230.00
73682803	42140		3.0	4.2	158.00	830.00	119.00	2700.00	11.00	300.00
73682804	42140		5.0	4.2	206.00	15100.00	980.00	1300.00	16.00	1180.00
73682714	42160		1.0	5.5	24.00	36.00	45.00	250.00	0.70	116.00
73682715	42160		3.0	5.5	62.00	50.00	138.00	600.00	1.80	400.00
73682801	42160		5.0	5.5	49.00	28.00	75.00	460.00	1.30	240.00
73682712	42180		1.0	3.2	340.00	6.10	380.00	1200.00	2.40	960.00
73682713	42180		4.0	3.2	74.00	8.80	69.00			71.00
73704825	42240	A	1.0	99.0	17.00	41.50	23.50			56.50
73703914	42260	A	1.0	6.0	34.00	178.00	54.90	110.00	0.25	165.00
73703915	42260	A	3.0	6.0		23.30	11.20			29.00
73703917	42260	A	5.0	6.0		38.10	19.20			64.00
73703416	42280	A	1.0	3.5	103.00	653.00	194.00	2110.00	1.40	276.00
73703417	42280	A	5.0	3.5		14.20	7.90			13.90
73703410	42300	A	1.0	6.0	45.00	175.00	202.00	642.00	0.17	122.00
73703411	42300	A	3.0	6.0	23.00	16.60	646.00	1230.00	0.35	1710.00
73703412	42300	A	5.0	6.0	24.00	8.50	408.00	1540.00	0.97	412.00
73703225	42320	A	1.0	4.0	50.00	198.00	50.30			138.00
73703301	42320	A	3.0	4.0	169.00	12.70	76.50	1360.00	1.90	8610.00
73703302	42320	A	5.0	4.0	87.00	8.30	44.50			154.00
73704813	42340	A	1.0	4.0	88.00	86.50	572.00	1010.00	0.43	1080.00
73704814	42340	A	3.0	4.0	78.00	13.60	661.00	520.00	0.63	2080.00
73704815	42340	A	5.0	4.0	20.00	16.40	165.00			35.10
73704008	42360	A	1.0	6.0	678.00	196.00	1820.00	2600.00	0.62	1540.00
73704010	42360	A	3.0	6.0	793.00	18.00	410.00	2100.00	1.50	210.00
73704011	42360	A	5.0	6.0	216.00	155.00	699.00	898.00	0.78	211.00
80291129	42380	A	1.0	5.5	485.00		1680.00	8480.00	0.56	3090.00
80291201	42380	A	3.0	5.5	362.00	41.20	2240.00	12000.00	0.33	1470.00
80291202	42380	A	4.5	5.5		210.00	328.00			45200.00
73701313	42420	A	1.0	2.0	317.00	138.00	846.00	5900.00	0.96	533.00
73701302	42440	A	1.0	4.0	17.00	90.90	137.00			369.00
73701303	42440	A	3.0	4.0		26.70	74.60			42.30
73700412	42460		1.0	0.0	17.00	151.00	32.90			76.00
73702107	42480	A	1.0	99.0	31.00	800.00	53.60	410.00	0.64	204.00
73702109	42480	A	3.0	99.0	20.00	291.00	21.00	70.00	0.19	81.70
73702110	42500	A	1.0	12.0	5.00	1660.00	16.30	40.00	0.41	141.00
73702113	42500	A	9.0	12.0		16200.00	4320.00	440.00	0.35	180.00
73702114	42500	A	13.0	12.0	8.00	2620.00	36.80			52.40
73700912	42520	A	1.0	25.0	10.00	433.00	8.00		0.20	71.10
73700913	42520	A	11.0	25.0		682.00	5.00			74.60
73700914	42520	A	21.0	25.0	3.00	544.00	16.80			34.20
73700915	42520	A	25.5	25.0		38.80	20.90			21.20
73700811	42540	A	1.0	15.0		31.30	8.10			19.40
73700823	42540	A	11.0	15.0		18.80	3.70			10.10

F NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73700820	42540	A	15.5	15.0		146.00	15.90			40.60
73700816	42540	A	16.5	15.0		32.10	13.60			38.00
73700822	42560	A	1.0	21.0		29.50	13.80			80.10
73700817	42560	A	11.0	21.0		1390.00	48.20	50.00	0.31	3270.00
73700814	42560	A	21.0	21.0		300.00	6.20			285.00
73683429	43090		1.0	99.0	1.00	11.90	7.40			24.00
73683601	43090		3.0	99.0		3.00	8.20			29.50
73683201	43110		1.0	5.0		56.00	158.00			540.00
73682503	43130		1.0	4.0		22.70	62.10			32.00
73682504	43130		3.0	4.0	4.00	7.60				13.40
73682501	43150		1.0	4.0	6.00	19.00				19.00
73682502	43150		3.0	4.0	8.00	169.00				18.40
73682710	43170		1.0	4.0	95.00	4.90	470.00	650.00	0.60	1690.00
73682711	43170		3.0	4.0	64.00	1.60	98.00	510.00	1.00	1010.00
73704821	43230	A	1.0	4.0	105.00	30.90	159.00	290.00	0.43	352.00
73704822	43230	A	3.0	4.0	3.00	15.10	160.00	30.00	0.28	105.00
73703927	43230	A	5.0	4.0	57.00	36.00	1150.00			4140.00
73704823	43230	A	5.0	4.0		8.40	35.50			26.30
73703918	43250	A	1.0	4.0	467.00	129.00	2120.00	2010.00	0.17	8730.00
73703919	43250	A	3.0	4.0	101.00	7.70	2940.00	2900.00	0.22	18300.00
73703920	43250	A	5.0	4.0	9.00	8.20	234.00	140.00	0.69	102.00
73703317	43270	A	1.0	6.0	450.00	521.00	1220.00	1170.00	1.20	5030.00
73703318	43270	A	3.0	6.0	312.00	22.00	3190.00	1940.00	1.70	8330.00
73703319	43270	A	5.0	6.0	252.00	56.70	4090.00	390.00	0.27	4810.00
3703205	43290	A	1.0	6.0	104.00	347.00	940.00	1050.00	0.20	2020.00
73703206	43290	A	3.0	6.0	117.00	2.20	2030.00	967.00	0.36	5970.00
73703208	43290	A	5.0	6.0	3.00		686.00	550.00	0.35	2020.00
73631213	43291	B 56	0.0	0.0	45.00	5.60	19.10			446.00
73703221	43310	A	1.0	4.0	701.00	197.00	293.00	7180.00	91.00	270.00
73703222	43310	A	3.0	4.0	368.00	72.10	105.00	6890.00	140.00	312.00
73703223	43310	A	5.0	4.0		8.50	47.10			14.90
73703926	43330	A	1.0	5.0	129.00	673.00	302.00	1030.00	0.97	227.00
73704002	43330	A	3.5	5.0	143.00	12.80	2170.00	340.00	0.30	8390.00
73702021	43350	A	1.0	6.0	82.00	351.00	103.00	330.00	0.74	319.00
73704003	43350	A	1.0	6.0	253.00	77.80	218.00	430.00	0.94	477.00
73702022	43350	A	3.0	6.0	614.00	47.60	168.00	480.00	0.53	373.00
73704005	43350	A	3.0	6.0	672.00	30.80	360.00	300.00	0.41	930.00
73702023	43350	A	5.0	6.0	2370.00	58.60	229.00			346.00
73704006	43350	A	5.0	6.0	42.00	18.40	93.30			107.00
73701205	43370	A	1.0	5.0	335.00	62.60	504.00	1870.00	3.50	1240.00
73701206	43370	A	3.0	5.0	625.00	73.90	740.00	3000.00	3.20	2130.00
73701207	43370	A	5.0	5.0		136.00	140.00	460.00	0.81	2920.00
73701210	43370	A	7.0	5.0		3.00	77.70			9.40
73701211	43390	A	1.0	4.0	732.00	4.20	735.00	5100.00	0.94	619.00
73701212	43390	A	3.0	4.0	1080.00	2.90	265.00	15100.00	44.00	117.00
73701213	43390	A	5.0	4.0	11.00	2.90	619.00			9.10
73701410	43410	A	1.0	4.0	280.00	29.30	641.00	2290.00	3.80	821.00
73701407	43410	A	3.0	4.0	90.00	19.40	410.00	961.00	3.50	833.00
73701404	43410	A	5.0	4.0		3.80	560.00			212.00
73701324	43430	A	1.0	2.5	314.00	19.20	754.00	7340.00	0.51	931.00

EF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73701411	43430	A	2.5	2.5	128.00	13.00	38.30		4.00	21.90
73701226	43450	A	1.0	2.0	9.00	45.00	32.00	170.00	0.32	328.00
73700406	43470		1.0	10.0	9.00	358.00	17.10			76.00
73700407	43470		5.0	10.0	82.00	548.00	179.00	650.00	0.75	429.00
73700410	43470		9.0	10.0	36.00	232.00	111.00	350.00	0.29	183.00
73700908	43510	A	1.0	21.0	9.00	134.00	5.10		0.30	53.20
73700909	43510	A	11.0	21.0		2430.00	8.80			161.00
73700910	43510	A	20.5	21.0		267.00	2.90			42.00
73700901	43530	A	1.0	21.0	20.00	706.00	26.60	40.00	0.16	192.00
73700902	43530	A	11.0	21.0		102.00	2.70			24.70
73700904	43530	A	21.0	21.0	7.00	247.00	7.30			16.80
73630616	43541	B 32	0.0	0.0	14.00	394.00	12.30		0.20	72.80
73630623	43541	B 32	0.0	0.0		39.80	55.90			43.60
73700808	43550	A	1.0	21.0		7.60	8.40			14.40
73700809	43550	A	11.0	21.0	71.00	709.00	244.00	600.00	0.84	943.00
73700810	43550	A	21.0	21.0		24.70	5.50			22.10
73700801	43570	A	1.0	26.0		27.80	6.80			23.90
73700804	43570	A	16.0	26.0	54.00	2190.00	138.00			1090.00
73700807	43570	A	25.5	26.0	14.00	332.00	26.40	40.00	0.77	97.00
73702619	43590	A	1.0	2.0	3.00	183.00	16.70	20.00	0.30	149.00
73683428	44080		1.0	0.5	2.00	52.00	11.40			42.00
73682901	44100		1.0	2.0		11.30	2.50			35.00
73682517	44120		1.0	5.8	5.00	16.10	13.00	200.00		58.00
73682518	44120		3.0	5.8		12.30	29.00	60.00		27.00
73682519	44120		5.0	5.8	16.00	7.80	7.10	40.00	0.06	26.00
73682522	44140		1.0	4.0	2.00	11.70	6.70			15.20
73682523	44140		3.0	4.0	3.00	10.30	6.10			16.60
73631007	44141	B 45	0.0	0.0		8.90	6.60			14.70
73682524	44160		1.0	2.2	114.00	48.00	122.00	1400.00	1.00	182.00
73682525	44160		3.0	2.2	60.00	11.40	102.00	610.00	0.72	230.00
73704818	44240	A	1.0	4.0	173.00	13.40	150.00	710.00	0.27	130.00
73704819	44240	A	3.0	4.0	8.00	8.50	81.90			74.30
73703321	44260	A	1.0	4.0	87.00	87.10	357.00			365.00
73703322	44260	A	3.0	4.0	255.00	15.70	157.00	1590.00	0.57	307.00
73703323	44260	A	5.0	4.0		61.80	41.90			46.00
73703402	44280	A	1.0	4.0	364.00	43.30	414.00	4200.00	0.43	1410.00
73703403	44280	A	3.0	4.0	5130.00	11.60	689.00	8930.00	1.20	1710.00
73703405	44280	A	5.0	4.0	615.00	2.30	29.20			108.00
73703210	44300	A	1.0	6.0		36.60	13.20			42.50
73703212	44300	A	3.0	6.0	1110.00	15.90	2640.00	8460.00	0.53	14600.00
73703213	44300	A	5.0	6.0	4260.00	14.20	895.00	18300.00	0.37	2630.00
73702016	44320	A	1.0	4.0	159.00	1080.00	167.00	610.00	0.38	430.00
73702018	44320	A	3.0	4.0	6.00	22.40	115.00			942.00
80291225	44340	A	0.4	99.0	532.00	23.40	1400.00	1900.00	3.00	12600.00
73701216	44380	A	1.0	7.0	303.00	21.20	168.00	620.00	2.70	177.00
73701217	44380	A	3.0	7.0	1600.00	47.90	169.00	1290.00	11.00	176.00
73701219	44380	A	6.5	7.0	727.00	27.50	45.00	330.00	9.00	537.00
73701222	44400	A	1.0	6.5	84.00	42.00	143.00	630.00	0.76	57.20
73701223	44400	A	3.0	6.5	333.00	61.40	629.00			561.00
73701225	44400	A	7.0	6.5	110.00	13.80	780.00	240.00	1.80	34.60

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73630305	44411	B 15	0.0	0.0		28.30	32.50			45.30
73701121	44420	A	1.0	4.0	84.00	126.00	124.00	60.00	0.40	175.00
73701122	44420	A	3.0	4.0	193.00	95.50	271.00	100.00	1.00	408.00
73701123	44420	A	5.0	4.0	3.00	5.30	27.50			14.20
73702101	44440	A	1.0	1.0	29.00	98.20	49.60	240.00	0.30	143.00
73702103	44480	A	1.0	4.0	63.00	4790.00	74.40	200.00	0.86	545.00
73702104	44480	A	3.0	4.0	18.00	2650.00	44.80	290.00	0.43	285.00
73702106	44480	A	5.0	4.0	60.00	152.00	48.30	637.00	0.61	213.00
73701525	44500	A	1.0	30.0	15.00	151.00	9.60			49.00
73701526	44500	A	16.0	30.0	11.00	756.00	17.20	10.00	0.53	143.00
73701528	44500	A	31.0	30.0	7.00	13.20	22.00			45.30
73701519	44520	A	1.0	26.5		62.10	6.70			18.90
73701522	44520	A	16.0	26.5		1500.00	9.90			198.00
73701524	44520	A	26.0	26.5	341.00	3290.00	264.00	1160.00	42.00	2950.00
73700821	44540	A	1.0	15.5	37.00	70.80	4.00			15.10
73700813	44540	A	11.0	15.5	11.00	2970.00	41.70	130.00	0.20	654.00
73700812	44540	A	15.0	15.5		64.20	8.90			41.10
73700713	44560		1.0	12.0	9.00	114.00	15.10			44.80
73700715	44560		6.0	12.0	10.00	2040.00	74.10			5840.00
73700716	44560		11.0	12.0	7.00	699.00	20.00			1970.00
73700718	44560		16.0	12.0		631.00	15.30			878.00
80291116	44580	A	1.0	18.5	24.00	259.00	38.40	110.00	0.25	107.00
80291118	44580	A	11.0	18.5	73.00	823.00	142.00	530.00	0.88	2110.00
80291121	44580	A	21.0	18.5	3.00	40.70	14.20	60.00	0.33	285.00
73683212	45070		1.0	2.4		14.70	5.00			26.00
73683213	45070		3.0	2.4		5.10	2.50			10.00
73683209	45090		1.0	2.1	3.00	87.00	22.00			41.00
73683211	45090		3.0	2.1		11.50	2.20			17.00
73682616	45120		0.1	99.0	7.00	46.00	15.30			56.00
73682701	45120		3.0	99.0	2.00	13.70	1.80			19.50
73682702	45120		5.0	99.0	4.00	230.00	4.50			9.50
73682705	45130		1.0	4.4	13.00	16.70	7.70			49.00
73682706	45130		3.0	4.4	1.00	66.00	3.70			29.00
73682707	45130		5.0	4.4	7.00	4000.00	10.10			29.00
73682520	45150		1.0	4.0	3800.00	20.00	190.00	4210.00	6.00	172.00
73682521	45150		3.0	4.0	1690.00	1.80	210.00	5760.00	18.00	230.00
73631004	45151	B 46	0.0	0.0	535.00	3.50	4.90			4.40
73704820	45230	A	0.3	0.0	19.00	20.50	29.40	190.00	0.28	105.00
73703324	45250	A	1.0	0.0	3.00	14.60	5.50			21.60
73703408	45270	A	1.0	4.0	24.00	14.80	24.10			72.40
73703409	45270	A	5.0	4.0	46.00	22.90	19.50			36.00
73703215	45290	A	1.0	4.0	258.00	2.60	10.90			327.00
73703217	45290	A	3.0	4.0	4230.00	12.80	755.00	6000.00	1.10	1230.00
73703218	45290	A	5.0	4.0	5.00	22.50	7.00			19.60
73702011	45310	A	1.0	5.0		16.30	18.80			61.10
73702013	45310	A	3.0	5.0	391.00	29.00	19.10	110.00	0.30	89.40
73702014	45310	A	5.0	5.0	459.00	3.60	1690.00			8550.00
80291224	45350	A	0.4	99.0	190.00	27.70	271.00	550.00	1.10	871.00
80290126	45370	A	1.0	8.0	1470.00	30.60	56.40	1010.00	19.00	30.20
80290201	45370	A	3.0	8.0	1010.00	23.90	78.30	809.00	14.00	31.20

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
80290202	45370	A	5.0	8.0	636.00	32.50	91.30	710.00	23.00	24.80
80290203	45370	A	7.0	8.0	703.00	169.00	351.00	580.00	25.00	573.00
80290206	45390	A	1.0	5.8	980.00	16.70	95.30	1730.00	8.10	16.70
80290207	45390	A	3.0	5.8	806.00	25.00	157.00	975.00	39.00	19.50
80290208	45390	A	5.0	5.8	378.00	45.40	540.00	360.00	6.30	18.10
73701125	45410	A	1.0	6.0		34.90	29.80			57.60
73701201	45410	A	3.0	6.0	80.00	83.10	154.00	150.00	0.58	194.00
73701202	45410	A	5.0	6.0	189.00	19.00	397.00	2100.00	0.81	186.00
73701203	45410	A	6.5	6.0		14.00	31.20			26.90
73702025	45430	A	0.2	0.5	49.00	507.00	382.00	570.00	0.36	114.00
73630303	45431	B 14	0.0	0.0		106.00	7.50			109.00
73700517	45470		1.0	6.0	32.00	306.00	30.20	140.00	0.50	166.00
73700518	45470		3.0	6.0	52.00	711.00	138.00	300.00	0.52	271.00
73700519	45470		5.0	6.0	226.00	511.00	1740.00	480.00	1.50	1340.00
80291125	45490	A	1.0	11.0	42.00	1090.00	46.70	1330.00	0.34	291.00
80291126	45490	A	6.0	11.0	67.00	7.50	348.00	1340.00	0.66	1590.00
80291127	45490	A	11.0	11.0	45.00	13.20	264.00	2330.00	0.69	955.00
73700612	45510		1.0	15.0	8.00	1020.00	20.50			309.00
73700615	45510		6.0	15.0	92.00	15000.00	172.00	1630.00	7.50	3820.00
73700616	45510		11.0	15.0	54.00	32200.00	126.00	700.00	14.00	3780.00
73700706	45550		1.0	12.0	26.00	575.00	43.40	100.00	0.51	184.00
73700709	45550		11.0	12.0	12.00	2460.00	442.00			462.00
73700711	45550		20.5	12.0		258.00	10.10			65.30
73700712	45550		21.5	12.0		45.10	23.50			78.40
73702406	45570	A	1.0	5.0	21.00	2760.00	52.00	170.00	0.95	689.00
73702407	45570	A	3.0	5.0	45.00	3120.00	84.20	400.00	0.93	589.00
73702409	45570	A	4.5	5.0	97.00	46.50	56.50	310.00	0.33	92.40
73702410	45570	A	5.5	5.0	4.00	6.90	9.10			11.80
73682902	46060		1.0	5.2	3.00	12.80	5.60			18.50
73682903	46060		3.0	5.2		16.90	42.00			34.00
73682905	46060		5.0	5.2		15.00	11.60			21.00
73683322	46080		1.0	1.5	4.00	7.70	3.00		0.30	11.50
73683604	46080		3.0	1.5		4.90	0.90			4.70
73682906	46100		1.0	2.1	4.00	10.00	2.10			12.80
73682907	46100		3.0	2.1	6.00	350.00	7.70	20.00	0.20	9.00
73682703	46120		1.0	4.0	2.00	18.90	4.50			17.30
73682704	46120		3.0	4.0	1.00	19.70	4.00			17.70
73682708	46140		1.0	4.2	560.00	66.00	86.00	900.00	2.00	170.00
73682709	46140		3.0	4.2	30800.00	48.00	256.00	9000.00	270.00	1880.00
73703013	46160	A	1.0	2.0	353.00	2.90	169.00	5400.00	1.60	257.00
73703014	46160	A	3.0	2.0	1140.00	4.40	159.00	2130.00	10.00	207.00
73704916	46220	A	0.3	0.5	14.00	134.00	55.30	160.00	0.20	124.00
73703521	46240	A	1.0	0.5	154.00	8.10	72.90	450.00	0.73	145.00
73703523	46260	A	0.3	0.0	54.00	141.00	35.60	150.00	0.28	104.00
73682106	46271	TP 383	3.3	2.0	7.00	21.60	15.00			26.60
73703524	46280	A	0.2	0.0	28.00	27.70	16.10			40.00
73701923	46300	A	1.0	6.0	63.00	171.00	13.00			168.00
73701924	46300	A	3.0	6.0		256.00				161.00
73701925	46300	A	5.0	6.0	59.00	10.80	21.40	20.00	0.60	38.90
73702005	46320	A	1.0	5.5	87.00	41.20	42.80			103.00

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
73702007	46320	A	3.0	5.5	55.00	46.20	43.70			270.00
73702008	46320	A	5.0	5.5		205.00	13.50			1750.00
80290210	46400	A	1.0	5.0	231.00	29.90	242.00	1620.00	6.60	73.90
80290211	46400	A	5.0	5.0	452.00	40.20	408.00	230.00	5.10	22.20
80290216	46420	A	1.0	4.0	72.00	82.70	941.00	3200.00	1.80	130.00
80290217	46420	A	3.0	4.0	1480.00	42.60	393.00	803.00	15.00	31.60
73701515	46440	A	1.0	5.0	133.00	513.00	464.00	2140.00	1.00	648.00
73701516	46440	A	3.0	5.0	264.00	8.20	919.00	4800.00	0.35	2040.00
73701517	46440	A	4.5	5.0	147.00	36.40	655.00	2900.00	0.55	1330.00
73701512	46460	A	1.0	4.0	37.00	615.00	282.00	260.00	0.30	88.60
73700522	46480		1.0	12.0	7.00	1180.00	33.50	30.00	0.39	310.00
73700525	46480		7.0	12.0	176.00	187.00	262.00	200.00	1.30	454.00
73700604	46480		12.5	12.0	63.00	6.70	118.00			163.00
73700603	46500		1.0	15.0	14.00	577.00	17.50			197.00
73700609	46500		11.0	15.0	152.00	315.00	386.00	10000.00	6.10	647.00
73700610	46500		15.5	15.0	51.00	63.80	235.00	330.00	1.50	116.00
73700701	46520	A	1.0	20.0		219.00	17.20			57.40
73700703	46520	A	11.0	20.0	15.00	1050.00	95.00	580.00	0.30	1560.00
73700705	46520	A	21.0	20.0	19.00	16.70	16.10			87.90
73630131	46531	B 6	0.0	0.0		26.30	26.20			48.10
73630132	46531	B 6	0.0	0.0		9.40	17.90			30.80
73701419	46560	A	1.0	2.5	16.00	25.20	20.70	230.00	3.90	56.90
73701421	46560	A	3.0	2.5		26.60	9.80		0.40	29.70
73681101	46661	TP 338	4.6	6.5		13.00	15.30			19.70
73683215	47070	A	1.0	1.0		16.90	15.00			22.00
73683217	47090		1.0	3.5	4.00	5.90	1.90			8.90
73683218	47110		1.0	3.5		11.90	7.70			15.90
73683425	47120		1.0	1.0	5.00	680.00	4.70			10.60
73682405	47121	TP 410	0.0	4.0		5.60	2.40			12.00
73703009	47150	A	1.0	4.0	637.00	15.70	268.00	2700.00	3.30	498.00
73703010	47150	A	3.0	4.0	588.00	7.70	47.10	2900.00	1.50	401.00
73704913	47210	A	1.0	1.5	39.00	9.10	40.50	70.00	0.25	109.00
73704914	47210	A	2.5	1.5		10.10	4.00			23.60
73703519	47230	A	1.0	1.5	38.00	17.20	22.70	100.00	0.18	41.70
73703517	47250	A	1.0	0.5	21.00	29.60	18.70			38.90
73703525	47270	A	0.2	0.0	125.00	81.50	38.30	510.00	0.43	164.00
73701906	47290	A	1.0	2.0		301.00			1.40	44.20
73701907	47290	A	3.0	2.0		524.00			0.30	43.90
73701927	47310	A	1.0	5.0		190.00		260.00	0.67	82.00
73702001	47310	A	3.0	5.0		137.00		2070.00	0.82	69.40
73702003	47310	A	4.5	5.0		125.00				66.00
73702004	47310	A	5.5	5.0	11.00	2.00	2.10			11.00
73702002	47330	A	1.0	99.0	21.00	81.90	6.10			71.50
80290213	47410	A	1.0	0.2	56.00	17.20	230.00	610.00	0.63	41.20
80290220	47430	A	1.0	2.0	249.00	4600.00	633.00	1820.00	1.10	1270.00
80290221	47430	A	3.0	2.0	60.00	45.20	1570.00			67.30
73701406	47450	A	1.0	3.8	1160.00	14.70	1540.00	1120.00	4.20	1020.00
73701325	47450	A	3.0	3.8	652.00	27.80	5940.00	8100.00	0.58	2930.00
73700514	47470		1.0	6.0	728.00	94.00	704.00	7800.00	1.30	1460.00
73700515	47470		5.0	6.0		31.90	635.00			712.00

REF NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS (PPM)	CR (PPM)	CU (PPM)	PB (PPM)	HG (PPM)	ZN (PPM)
80291124	47490	A	1.0	99.0	606.00	11.60	1700.00	5800.00	0.81	1250.00
73700506	47510		1.0	5.0	303.00	40.20	1110.00	3300.00	5.50	965.00
73700508	47510		3.0	5.0		11.80	82.00			25.90
73700501	47530		1.0	7.5	743.00	45.60	495.00	4200.00	0.88	760.00
73700502	47530		3.0	7.5	7.00	19.50	73.90			38.30
73700504	47530		5.0	7.5	4.00	24.50	38.40			47.90
73701417	47550	A	1.0	4.0		11.10	6.60		4.00	48.10
73701415	47570	A	1.0	2.5	10.00	16.10	20.10	80.00	4.00	39.50
73683427	48140		1.0	1.0	13.00	250.00	9.40			76.00
73704911	48200	A	1.0	0.5	14.00	5.30	71.30	300.00	0.21	139.00
73703518	48220	A	0.5	1.0	44.00	8.50	42.80	210.00	0.51	54.30
73703515	48240	A	1.0	2.0	12.00	33.00	8.90			35.80
73682105	48252	TP 381	4.7	0.0	5.00	10.30	7.70			16.30
73701903	48260	A	1.0	5.0		45.60	7.30	10.00	1.40	46.20
73701826	48280	A	1.0	5.0		14.70	10.50		0.66	28.20
73701901	48280	A	3.0	5.0		9.60	6.90			15.40
80291226	48320	A	0.4	99.0	64.00	94.70	6.90			103.00
80291227	48340	A	0.4	99.0	12.00	117.00	0.80			178.00
73701508	48460	A	1.0	3.0	49.00	4910.00	132.00	380.00	0.30	240.00
73701509	48460	A	5.0	3.0		129.00	31.10		0.40	685.00
73630208	48471	B 7	0.0	0.0	13.00	6.10	12.70			9.20
73630215	48471	B 7	0.0	0.0	124.00	6300.00	595.00	1010.00	0.30	931.00
73700511	48480		1.0	5.0	294.00	25300.00	508.00	3700.00	1.00	2690.00
73700512	48480		3.0	5.0	309.00	1720.00	1300.00	4400.00	0.96	2900.00
73700513	48480		5.0	5.0	4.00	7.00	6.90			9.00
73702124	48500	A	1.0	0.0		19.90	7.40			30.60
73702202	48520	A	0.5	0.0	1200.00		1040.00	20300.00	2.60	3100.00
73704908	49190	A	1.0	1.5	42.00	10.80	29.40	170.00	0.66	50.00
73704909	49190	A	3.0	1.5		10.20	18.40			36.40
73703506	49210	A	1.0	2.0	34.00	10.10	28.70	160.00	0.49	68.20
73703509	49210	A	3.0	2.0		3.80	2.20			19.70
73703512	49230	A	1.0	0.0		20.10	10.20			27.10
73701820	49250	A	1.0	1.0		43.70	18.30	20.00	0.41	46.30
73701819	49270	A	0.5	1.0		37.20	18.30		0.30	56.40
80291223	49430	A	0.3	0.0	44.00	25.90	30.30			56.50
80291221	49450	A	0.4	99.0	10.00	2.40	8.20		0.37	83.10
73701423	49470	A	1.0	2.0	20.00	129.00	79.00	320.00	3.80	190.00
73681103	49651	TP 340	5.2	3.2		6.00	9.40			12.90
73703503	50200	A	1.0	2.0	37.00	5.80	28.60			89.40
73703504	50200	A	3.0	2.0		5.00	3.40			11.90
73704907	50220	A	1.0	0.0		26.50	22.60			55.70
73701824	50240	A	1.0	0.5		44.70	40.50		1.10	57.20
73701822	50260	A	1.0	3.0	7.00	53.40	15.80		0.20	28.60
80291213	50280	A	1.0	10.3	19.00	4470.00	52.50	20.00	0.46	991.00
80291214	50280	A	6.0	10.3	32.00	444.00	19.00			278.00
80291215	50280	A	10.6	10.3	12.00	851.00	19.00	20.00	0.20	214.00
80290318	50300	A	1.0	26.6	53.00	1100.00	64.40	180.00	0.51	208.00
80290321	50300	A	16.0	26.6	27.00	1630.00	31.20	340.00	2.00	580.00
80290324	50300	A	26.0	26.6	8.00	628.00	11.50			347.00
80290222	50320	A	1.0	31.5	38.00	1390.00	106.00	300.00	0.65	267.00

NO.	LOC.	LABEL	SAMP DPTH	FILL DPTH	AS	CR	CU	PB	HG	ZN
					ppm					
80290223	50320	A	6.0	31.5	52.00	100.00	16.40			54.20
80290225	50320	A	21.0	31.5		1780.00	20.50	10.00	0.39	315.00
80290227	50320	A	31.0	31.5		641.00	9.00			161.00
73701425	50440	A	1.0	3.0	4.00	175.00	10.30	20.00	0.62	47.60
73701426	50440	A	3.0	3.0	9.00	12.80	10.20	60.00	4.00	15.40
73701427	50440	A	5.0	3.0		1.60	2.00		0.27	4.50
73701428	50460	A	1.0	2.0	65.00	642.00	103.00	933.00	4.00	250.00
73701429	50460	A	3.0	2.0		6.60	5.20		4.00	157.38
73701430	50460	A	5.0	2.0		2.40			4.00	6.50
73701505	50480	A	1.0	0.0		32.00	4.20			18.30
73682403	51091	TP 406	0.0	4.0		21.50	33.10		0.08	29.60
73703425	51190	A	1.0	2.0	14.00	124.00	33.80			68.00
73703501	51190	A	3.0	2.0	4.00	4.00	82.90			115.00
73703423	51210	A	1.0	0.0		19.30	13.90			26.90
73703424	51210	A	3.0	0.0		19.00	9.30			34.50
73701908	51270	A	1.0	0.0	10.00	224.00		20.00	0.67	104.00
73701909	51290	A	1.0	16.0	18.00	100.00	28.80	140.00	0.30	92.60
73701911	51290	A	6.0	16.0	13.00	412.00	30.20	20.00	0.38	267.00
73701912	51290	A	11.0	16.0	12.00	415.00	28.00	60.00	0.30	264.00
73701913	51290	A	16.0	16.0		17.70	7.50			27.30
73701916	51310	A	1.0	4.0	58.00	1560.00	98.00	320.00	0.69	299.00
73701919	51310	A	11.0	4.0	12.00	1680.00	53.40	140.00	1.80	471.00
73701922	51310	A	21.0	4.0		50.40	8.90		0.74	65.70
80290326	51330	A	1.0	2.4	211.00	1970.00	298.00	300.00	1.40	592.00
80290327	51330	A	3.0	2.4	76.00	1150.00	203.00	360.00	0.60	623.00
73701502	51470	A	1.0	2.0		16.50	1.90		0.42	30.80
80290301	52280	A	1.0	21.5	18.00	2140.00	43.50	110.00	0.54	304.00
80290302	52280	A	6.0	21.5	53.00	651.00	86.50	140.00	0.23	212.00
80290303	52280	A	11.0	21.5	24.00	1450.00	41.20			199.00
80290306	52280	A	21.0	21.5	4.00	273.00	8.80	10.00	0.20	57.60
80290309	52300	A	1.0	26.5	19.00	2640.00	78.10	280.00	0.65	358.00
80290310	52300	A	3.0	26.5	13.00	2290.00	84.60	220.00	0.42	294.00
80290311	52300	A	6.0	26.5	45.00	1760.00	101.00	460.00	0.45	397.00
80290312	52300	A	11.0	26.5	27.00	476.00	35.40	822.00	0.23	202.00
80290316	52300	A	26.0	26.5	5.00	201.00	7.50			64.50
80290325	52320	A	1.0	1.0	102.00	97.00	2060.00	340.00	0.68	980.00
80290328	52340	A	1.0	0.0		76.40	32.10			55.30
73631010	53051	B 48	0.0	0.0		39.80	29.80		0.20	65.70
73630617	53422	B 31	0.0	0.0	9.00	36.60	45.00			22.00
73682108	53541	TP 386	4.1	0.0		16.70	15.90			26.60
73681105	71001	TP 342	4.2	0.0	3.00	6.20	4.70			10.40
73681106	71002	TP 343	3.7	0.0		6.50	3.30			7.20
73681107	71003	TP 344	2.0	0.0	4.00	11.10	9.30			27.90
73681109	71005	TP 346	1.5	0.0		8.80	4.80			9.50
73681906	71007	TP 374	5.5	0.0	4.00	5.50	3.80			8.10

Table 6.1 - Twenty Visually Clean Soil Samples

Ref No.	Loc.	Label	Sample DPTH-ft	Fill DPTH-ft	PPM AS	CR	CU	PB	HG	ZN
7368 0108	16631	TP152	2.3		8	5	11			11
0109	16691	TP158	2.0			23	14			22
0106	17561	TP135	6.0	3.5	6	4	12			8
0107	19571	TP137	3.0		3	7				5
0103	21501	TP127	6.0	3.5	18	77	30		0.12	54
0110	25301	TP195	1.5		5710	2830	3350	2380	1900	827
1902	27231	TP369	5.0			6	5			9
2411	27232	TP416				4	2			7
2106	46271	TP383	3.3	2.0	7	22	15			27
1101	46661	TP338	4.6	6.5		13	15			20
2405	47121	TP410		4.0		6	2			12
2105	48252	TP381	4.7		5	10	8			16
1103	49651	TP340	5.2	3.2		6	9			13
2403	51091	TP406		4.0		22	33		0.08	30
2108	53541	TP386	4.1			17	16			27
1105	*	TP342	4.2		3	6	5			10
1106	*	TP343	3.7			7	3			7
1107	*	TP344	2.0		4	11	9			28
1109	*	TP346	1.5			9	5			10
1906	*	TP374	5.5		4	6	4			8

*East of Commerce Way

Table 6.2

Summary of Phase II Soil Heavy Metal Analysis

	1065 Samples Analyzed				Distribution of Samples >100 PPM				
Element	0-100 PPM	>100 PPM	>500 PPM	>1000 PPM	25 Perc. Concent.	50 Perc. Concent.	75% Perc. Concent.	Maximum	Average
Arsenic	705	360	127	56	188	344	700	30800	809
Chromium	744	321	283	117	195	533	1890	80600	2300
Copper	625	440	202	106	198	418	940	23300	1042
Lead	517	548	346	249	330	819	2380	54400	2426
Mercury	1058	7	2	1	-	-	-	1900	-
Zinc	437	628	310	191	214	496	1350	126600	2072

Table 6.4 EP Toxicity Tests of Soil Composites

Composite	Sample Location	Sample Depth-Ft	Heavy Metal	Heavy Metal Concentration: Soil Composite PPM (µg/g)	Heavy Metal Concentration: EP Extract PPB (µg/l)	Percent of Soil Metal Extracted
#1	29450	1	As	169	N.D.	N.D.
	29450	3	Cr(total)	229	11	0.1%
	29450	5	Cr^{+6}	Not Analyzed	N.D.	N.D.
	30360	1	Cu	200	50	0.5%
			Hg	1.8	N.D.	N.D.
			Pb	738	110	0.3%
			Zn	314	1630	10.4%
#2	30360	5	As	306	N.D.	N.D.
	30360	7	Cr(total)	798	N.D.	N.D.
	39210	1	Cr^{+6}	Not Analyzed	N.D.	N.D.
	39210	3	Cu	298	29	0.2%
			Hg	2.1	N.D.	N.D.
			Pb	991	N.D.	N.D.
			Zn	462	363	1.6%
#3	39210	5	As	621	N.D.	N.D.
	42360	1	Cr(total)	119	N.D.	N.D.
	42360	3	Cr^{+6}	Not Analyzed	N.D.	N.D.
	42360	5	Cu	881	226	0.5%
			Hg	1.7	N.D.	N.D.
			Pb	1943	20	0.02
			Zn	729	2920	8%
#4	43330	1	As	43	N.D.	N.D.
	52300	1	Cr(total)	943	11	0.02%
	52300	11	Cr^{+6}	Not Analyzed	N.D.	N.D.
	52300	26	Cu	101	N.D.	N.D.
			Hg	0.5	N.D.	N.D.
			Pb	533	N.D.	N.D.
			Zn	208	581	5.6%

N.D. - Indicates less than instrumental detection levels

As	<30 PPB
Cr(total)	<3 PPB
Cr^{+6}	<14 PPB
Cu	<2 PPB
Hg	<0.5 PPB
Pb	<20 PPB
Zn	<1 PPB

APPENDIX B

Technical Procedures

List of Procedures

Golder Associates Inc.

Drilling, Sampling, and Logging of Soils

Technical Procedure for Water Level Measurement

Field Identification of Soil

Monitor Well Installation Using Hollow Stem Auger Drilling Techniques

Monitor Well Drilling and Installation

Collection of Time Weighted Average Air Samples

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 Manger, drill samples shall be obtained at the surface and at 5 feet 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.

EXHIBIT A

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: _____

_____

_____

_____

EXHIBIT B

Golder Associates

HISTORY OF HOLE

Job # _____

Sheet ____ of ____

Geologist _____ Date _____ Boring # _____

Driller _____ Surface Elevation _____ Weather _____ Temperature _____ °F

Contractor _____ Drill Fluid _____ Depth _____ to _____

Location _____ Type of Barrel _____ Casing Size _____ Core Size _____

BEGINNING OF SHIFT	END OF SHIFT
Time _____ Depth of Hole _____	Time _____ Hrs. Productive _____ Hrs. Delayed _____
Depth to WL _____ Depth to Casing _____	Depth of Hole _____ Depth of Casing _____ Depth to WL _____

EXAMPLE

Checked by:

EXHIBIT C

RECORD OF BOREHOLE

SHEET OF

STA. OFFSET L R ELEVATION DATUM
PROJECT NO. 863-1504 SR-504 DRILLING DATE DRILL RIG
INCLINATION AZIMUTH

DEPTH SCALE (FEET)	BORING METHOD	SOIL PROFILE: SOIL PROFILE DESCRIPTION	GRAPHIC LOG	USCS	SAMPLES: NUMBER	TYPE	BLOWS/ 6 IN.	RECOVERY	SAMPLE DESCRIPTION	NOTES — PIEZOMETER — STANDPIPE INSTALLATION

EXAMPLE

DEPTH SCALE
DRILLING CONTRACTOR
DRILLER

Golder Associates

LOGGED BY
CHECKED

EXHIBIT D

Golder Associates

Sample I.D. No.

Date _____ Time _____

Station _____ Depth _____

Media _____

Preservative _____

Sampled by _____

HYDROLOGICAL SAMPLE LABEL

Golder Associates

Location _____

Job No _____ Date _____

Boring No _____ Sample No _____

Depth _____ Blows _____

Description _____

_____

_____

_____

Driller _____ Engr _____

GEOTECHNICAL SAMPLE LABEL

Golder Associates
Seal Number
2455

Sent By: _____

Date: _____

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

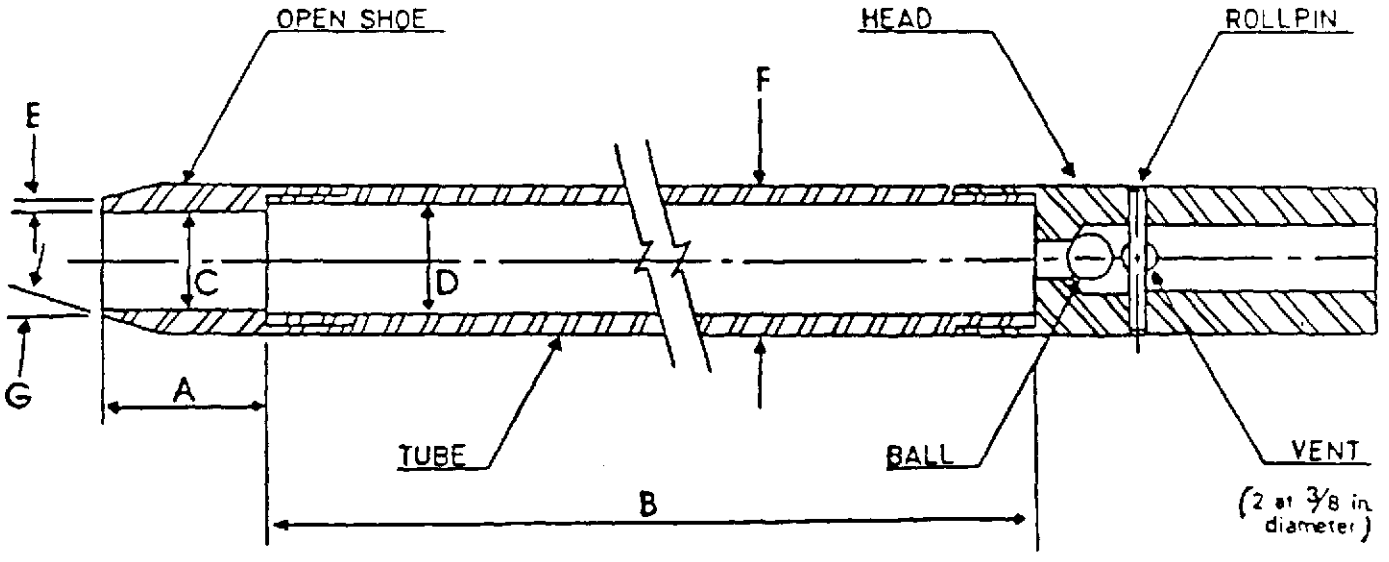
3.2 Method

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.

EXHIBIT B-1

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



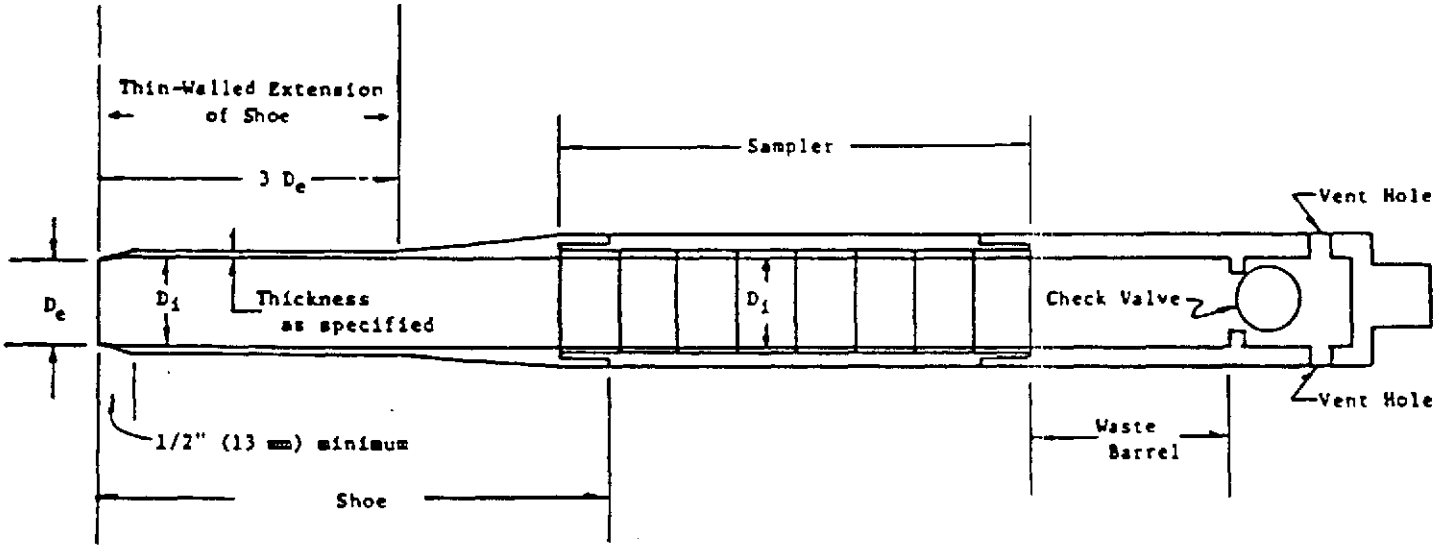
A = 1.0 to 2.0 in. (25 to 50 mm)
B = 18.0 to 30.0 in. (0.457 to 0.762 m)
C = 1.375 ± 0.005 in. (34.93 ± 0.13 mm)
D = 1.50 ± 0.05 − 0.00 in. (38.1 ± 1.3 − 0.0 mm)
E = 0.10 ± 0.02 in. (2.54 ± 0.25 mm)
F = 2.00 ± 0.05 − 0.00 in. (50.8 ± 1.3 − 0.0 mm)
G = 16.0° to 23.0°

The 1½ 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

EXHIBIT B-2

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



NOTE 1—Inside clearance ratio = $(D_i - D_e)/D_e$
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: 6

(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 tests 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 of cobbles. Blows are recorded for each six-inch interval. The relative density or 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. 6

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 varned. 6

8.4.4 Lenses

A particular soil type significantly different from the surrounding soils which thins out laterally is said 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:

Descriptive Term	Range of Proportion
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:

Thread Diameter	Descriptive Term
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 or organics in the soil. If the soil matrix is inorganic with occasional pieces or 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

Relative Density	N, Blows/Foot*	Field Identification
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

Consistency	N (blows/ft.) (unreliable)	Undrained Shear Strength* (psf)	Field Identification
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

Component	Size Range
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

Descriptive Term	Range of Proportion
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

Descriptive Term	Plastic Index*	Characteristics
SILT	Less than 2	Rapid pronounced response to shaking test, very low cry 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

Thread Diameter	Descriptive Term
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 (% by wt.)	Group Symbols (See Table 3)	Distinguishing Characteristics For Visual Identification	Range of Laboratory Test Values
ORGANIC MATTER	FIBROUS PEAT (woody, mats, 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 $C_c/(1+e_o)$=.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 500 γ--60 to 70 pcf G--1.2 to 1.8 $C_c/(1+e_o)$=.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 $C_c/(1+e_o)$=.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 $C_c/(1+e_o)$=.2 to .3
ORGANIC SOILS	Clayey ORGANIC SILT	5 to 30% Organics either visible or inferred	OH	Often has strong H_2S 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 $C_c/(1+e_o)$=.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 $C_c/(1+e_o)$=.1 to .25
SLIGHTLY ORGANIC SOILS	SOIL FRACTION add 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

Typical Name	Description
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 Fine SAND	No. 200 to No. 4 sieve sizes; all particles are visible to the naked eye

	Dilatancy Test	Test Tube Test	Plasticity	Dry Strength	Stickiness	Shine Test
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

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 5% fines	GW	Well-graded Gravels
			GP	Poorly-graded gravels
		GRAVELS WITH FINES More than 12% fines	GM	Gravel and Silt Mixtures
			GC	Gravel and Clay Mixtures
	SANDS 50% or more of coarse fraction passes No 4 Sieve	CLEAN SANDS Less than 5% fines	SW	Well-graded Sands
			SP	Poorly-graded Sands
		SANDS WITH FINES More than 12% fines	SM	Sand and Silt Mixtures
			SC	Sand and Clay 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
			ML	Non-plastic and Low-Plasticity Silts
		ORGANIC	OL	Non-plastic and Low-Plasticity Organic Clays Non-plastic and Low-Plasticity Organic Silts
	SILTS AND CLAYS Liquid limit greater than 50	INORGANIC	CH	High-plasticity Clays
			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 Definitions by Gradation

Component	Size Range
Boulders	Above 12 in.
Cobbles	3 in. to 12 in.
Gravel	3 in. to No. 4 (4.76mm)
Coarse gravel	3 in. to 3/4 in.
Fine gravel	3/4 in. to No 4 (4.76mm)
Sand	No. 4 (4.76mm) to No 200 (0.074mm)
Coarse sand	No 4 (4.76mm) to No 10 (2.0mm)
Medium sand	No 10 (2.0mm) to No 40 (0.42mm)
Fine sand	No 40 (0.42mm) to No 200 (0.074mm)
Silt and Clay	Smaller than No 200 (0.074mm)

Samples

SS	SPT Sampler (2.0" OD)
HD	Heavy Duty Split Spoon
SH	Shelby Tube
P	Pitcher Sampler
B	Bulk
C	Cored

Unless otherwise noted, drive samples 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 (d) (psf)
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)	12-30%
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 Soils	OL, OH, Pt

Golder Associates

FIGURE 1

SOIL CLASSIFICATION/LEGEND

773-1064/FORM 573

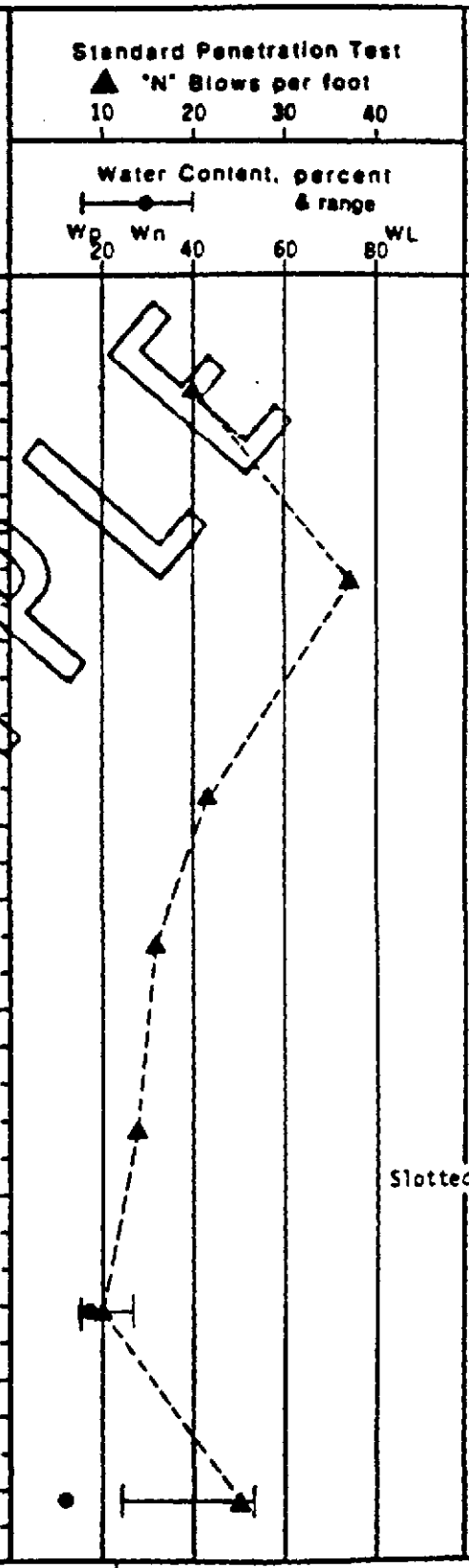
FIGURE 2

RECORD OF BOREHOLE BH-1

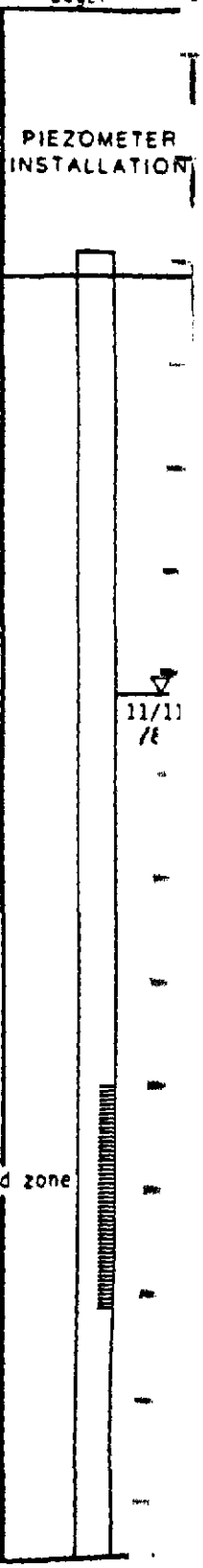
LOCATION: See Figure 2 DATUM: 146 (estimated) DATE: 10-30-86

SAMPLER HAMMER WEIGHT: 140 LB., DROP 30 IN. BORING METHOD: Hollow stem auger

ELEVN / DEPTH	DESCRIPTION	USCS CLASS	SAMPLE NUMBER	TYPE	BLOWS/6"
146 / 0.0	Dark brown, organic, Sandy SILT (Topsoil)				
143 / 3.0	Compact, very stiff, brown, fine SAND and SILT	SM	1	SPT	6 9 11
142 / 4.0	Dense, tan, fine Sandy SILT, little coarse Sand and Gravel (Weathered Till)		2	SPT	12 18 20
			3	SH	N/A
132 / 14.0	Loose to compact, gray, CLAYEY SILT, little fine to coarse Sand and Gravel (Till)	ML	4	SPT	8 10 12
			5	SPT	4 7 10
			6	SPT	5 6 8
			7	SPT	3 4 6
116 / 30.0	Very stiff, gray, SILTY CLAY, trace coarse Sand and Gravel	CH CL	8	SPT	15 15 10



PIEZOMETER INSTALLATION



EXAMPLE

REMARKS: SPT = Standard penetration test.
SH = Shelby tube sample

DISCLAIMER: Dotted lines connecting t results are intended for clarity only— do not imply any distribution.

VERTICAL SCALE: 1 IN. TO 5 FT.

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TP-1.2-6

ADDENDUM TO TP-1.2-6

FIELD IDENTIFICATION OF SOILS

pg 7 of 11	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.
Table 6	Descriptive tests for hides include their odor and the presence of hair or other recognizable hide materials.

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 thiefs 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 air-tight 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.

Exhibit A

GOLDER ASSOCIATES

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

TO _____

_____

_____

THE FOLLOWING WAS NOTED:

COPIES TO _____

FIELD REPORT

_____

SIGNED _____

Exhibit B

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 _____

Golder Associates Inc.

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:

- Direct supervision of personnel collecting samples;
- Ensuring that the proper equipment is available to accomplish the task;
- 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-earthen 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

Work Plan Addenda and Field Change Orders

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION I
J.F. KENNEDY FEDERAL BUILDING, BOSTON, MASSACHUSETTS 02203-2211

July 17, 1990

Warren Smull
Industri-Plex Site Remedial Trust
Monsanto Company
800 N. Lindbergh Blvd. G4WM
St. Louis, MO 63167

Re: Addenda 3 through 6 to the Industri-Plex PDI Work Plan.

Dear Warren:

This acknowledges receipt of the following proposed addenda to the Pre-Design Investigation (PDI) Work Plan:

- Addendum 3, contained in your letter dated May 7, 1990, proposing to relocate geotechnical borings 12 and 13;
- Addendum 4, contained in your letters dated May 9, 1990 and June 14, 1990, proposing to relocate observation wells OW-23 and OW-26;
- Addendum 5, contained in your letter dated May 15, 1990, proposing modification of the method for determining background concentrations of hazardous substances, and
- Addendum 6, contained in your letter dated June 27, 1990, proposing modification of the quality assurance plan.

Please be advised that EPA in consultation with the Commonwealth accepts and approves these four addenda as written. These addenda are incorporated into the PDI Work Plan effective immediately, and are enforceable under the terms of the consent decree.

Regards,

Marilyn M. Wade, P.E.
Remedial Project Manager

cc: J. Naparstek - MADEP
A. Ostrofsky - NUS

PRINTED ON RECYCLED PAPER

PROPOSED REVISION
INDUSTRI-PLEX SITE REMEDIAL TRUST
PRE-DESIGN INVESTIGATION
WOBURN, MASSACHUSETTS

This proposed revision to the Pre-Design Work Plan addresses modifications to Task S-1, Extent of Hazardous Substances in Soil. Specifically, this revision addresses establishment of background concentrations of Hazardous Substances. Background concentrations are needed to identify areas where the concentrations of Hazardous Substances are below established Consent Decree action levels, but above background levels, such that institutional controls can be designed for these areas. As stated on page 34 of the Pre-Design Work Plan,

> "Background levels must be established through either a literature review or off site sampling. To utilize literature data, they must be considered representative of the geologic materials of interest and representative of the Woburn area. Sufficient raw or statistical data must be available to calculate the concentration corresponding to the mean plus two standard deviations (which corresponds to the 95 percent confidence interval for the range in background). Most geologic data (especially metal concentration distributions) are lognormally distributed, such that the logarithm of the data are used for statistical evaluations of normally distributed populations of data. If the literature data are found to be inadequate, sample locations will be proposed for review and approval by USEPA and the Commonwealth prior to sampling and analysis. These locations will be imported fill in the Woburn Mall area, peat and glacial outwash materials from the development north of the site, and at least one other area considered to be representative of the industrial/commercial areas of Woburn."

Although the literature review is not yet complete, it is unlikely that background concentrations of certain synthetic Target Compound List organic compounds and Target Analyte List metals would be found in the literature for the Woburn area. It may be possible that a data base could be developed based upon the results of environmental audits for real estate transactions in the Woburn Area. However, these data might be biased (i.e., samples from these sites were analyzed for substances that were handled at the facility) and hence are not considered to be representative of background.

If the literature data are found to be sufficient, they will be used to establish background. However, in case they are found to be insufficient, it is prudent to have background locations approved, sampled, and analyzed at this time such that the design is not delayed. Therefore, this proposed revision suggests such locations.

The attached map shows proposed locations for collection of background samples. Permission is currently available from the landowners of these properties to collect samples. Following are more precise descriptions of the sample locations and how they satisfy the data quality objectives for background samples.

1. Boston Edison Right of Way No. 9 southeast of the site. The specific location is just east of Commerce Way under the power lines where tall reeds are indicative of swampy conditions (possibly peat) similar to that encountered in several areas on site. Samples would be collected using a hand auger to minimize any potential damage to the wetland vegetation in this area. The same decontamination procedures as those used on site would be used for the sampling equipment. One sample would be analyzed for the full Target Compound List/Target Analyte List (TCL/TAL), and five samples would be analyzed for arsenic, lead, and chromium.

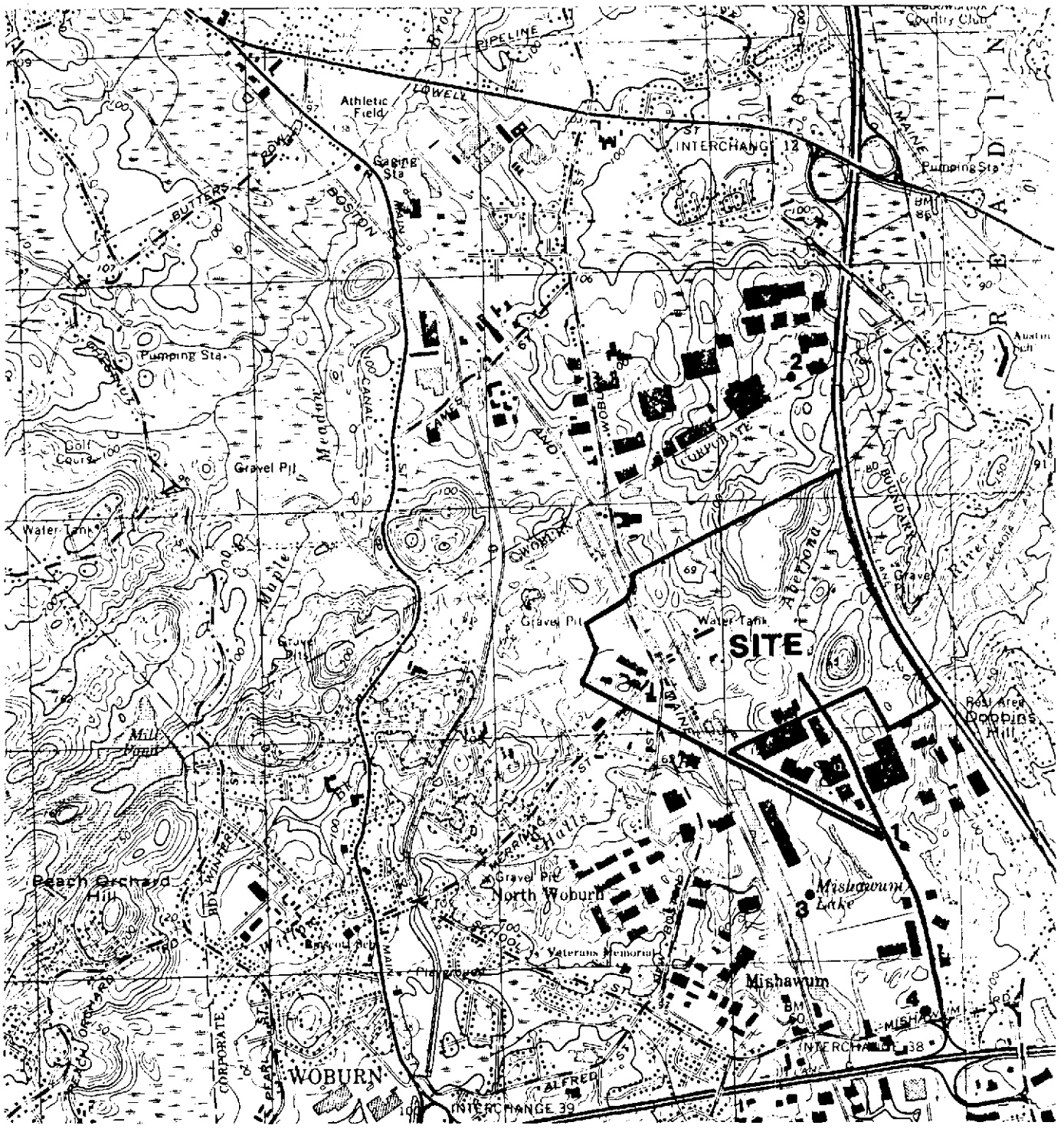
2. Boston Edison Right of Way north of the site at a point near the end of Progress Way (a side street off Industrial Way near I-93). Glacial till is expected in this area because of numerous nearby bedrock outcrops. Five samples in this area would be analyzed for arsenic, lead, and chromium. No TCL/TAL samples would be collected at this location because none were collected from glacial till on the site.

3. The area between Cabot Road and Halls Brook Holding Area. This area contains the same glacial outwash sands which have been sampled at various locations around the site for both TCL/TAL substances and arsenic, lead, and chromium. One TCL/TAL sample and five arsenic, lead, and chromium samples will be collected in this area. Although the Pre-Design Work Plan states that glacial outwash sands would be collected from the industrial park north of the site, the landowner has denied permission to sample this property. Access is available for the Cabot Road location, and it contains the same materials in the same industrial/commercial setting as that north of the site.

4. The Woburn Mall in the grass shoulder adjacent to the intersection of Commerce Way and Mishawum Road. This area probably contains imported fill material and will

be used for comparison to fill areas on site. One TCL/TAL sample and five arsenic, lead, and chromium samples will be collected at this location.

Collectively, these four locations will provide three TCL/TAL samples and twenty arsenic, lead, and chromium samples representative of swampy (peat) soils, glacial outwash sand, glacial till, and fill materials in industrial/commercial areas of Woburn. If the literature data prove inadequate, these samples will be available to provide sufficient data to establish background concentrations for any Hazardous Substances which might be detected in samples from the site. Statistical analysis will be performed for the arsenic, lead, and chromium data (logarithms of concentrations) to establish background as the mean plus two standard deviations. The largest concentrations of any TCL/TAL substance from the three soil types will be used as background. Different background concentrations will not be established for each of these materials because all of the materials occur at various locations on the site.



REFERENCE

BASE MAP : U.S.G.S. WILMINGTON MASS. 7 1/2 MINUTE (1979)

QUADRANGLE LOCATION

JOB NO. 893-6255.3	SCALE 1"=2000'	PROPOSED LOCATIONS FOR BACKGROUND SOIL SAMPLING	
DRAWN RDT	DATE 05/11/90		
CHECKED	DWG. NO. MAO1-095		
Golder Associates		INDUSTRI – PLEX	FIGURE

152978

FIELD CHANGE DOCUMENTATION

DATE: 5/29/91 FIELD CHANGE #:

PERSON REQUESTING CHANGE: Bob Glazier

COMPANY/TITLE: Golder Associates/Field Manager

FIELD CHANGE: Relocate Task S-1 soil borings 8,9,25

REASON FOR FIELD CHANGE: Borings 8 and 9 located over asphalt. Moved to unpaved strip of land between parking lots and garden adjacent to building, respectively. Boring 25 inaccessible because pond abuts fence along railroad tracks in spots, large rubble piles block access in other areas, unsafe to hand carry sampling equipment. CLP sample adjacent to chromium lagoons is purpose of boring, moved to an accessible area on south edge of lagoon.

ACKNOWLEDGEMENT

ISRT: [illegible]

NUS/USEPA/MDEP: M. McAuley

WORK PLAN ADDENDUM REQUIRED (Y/N):

ADDENDUM SUBMITTED TO ISRT (Y/N):

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

FIELD CHANGE DOCUMENTATION

DATE: 6/4/90

FIELD CHANGE #:

PERSON REQUESTING CHANGE: Bob Glazier

COMPANY/TITLE: Golder Associates/Field Manager

FIELD CHANGE: Collect additional soil samples under Task 5-1 along eastern shoreline of ~~East~~ West Hide Pile.

REASON FOR FIELD CHANGE: ~~Area~~ Soil in this appears to have red color associated with high metal concentrations, no sampling has occurred, or is planned for this area

ACKNOWLEDGEMENT

ISRT: [illegible]

NUS/USEPA/MDEP: [illegible]

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 S-1/1

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: **72.2 feet** **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,267 E 694,959

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM)
1	4.0	
	6.0	Possible decayed hides at 13"
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Reddish brown fine to medium SAND (SP)
	20.0	
	22.0	
3	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: B. Glazier

BOREHOLE LOG S-1/2

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/13/90
SURFACE ELEV: 77.7 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,198 E 695,018

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown fine SAND and SILT, some Gravel (GM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	Brown f-m SAND, and SILT
	24.0	
	26.0	
3	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 S-1/3

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/13/90
SURFACE ELEV: 75.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,069 E 695,158

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown SAND and SILT, some Gravel, trace Silt (SM-SC)
	4.0	
	6.0	
	8.0	Hit refusal (bedrock) at just below 6"
	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 S-1/4

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 6/13/90
SURFACE ELEV: 73.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,914 E 695,229

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0, 4.0, 6.0	Brown C-M-F SAND and SILT, some Gravel (GM)
2	8.0, 10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0	Brown m-f SAND, and SILT, little clay, trace gravel (SM-SC)
3	28.0, 30.0, 32.0, 34.0, 36.0	Auger refusal at 27" (possibly bedrock)

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/5

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/13/90
SURFACE ELEV: 71.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,738 E 695,183

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown m-f SAND and SILT, some Gravel (SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
3	24.0	
	26.0	
	28.0	
	30.0	Auger refusal at 30"
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/6

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/17/90
SURFACE ELEV: 69.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,409 E 695,422

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
		0-1" Brown SILT and SAND (ML)
	2.0	1-5" Yellow-brown coarse SAND (SP)
1	4.0	
		5-26" Reddish brown coarse SAND (SP)
	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	No recovery
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/7

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 73.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,389 E 694,735

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown fine SAND, some Silt (SM)
	4.0	
	6.0	
2	8.0	9-18" Gray brown m-f SAND and Gravel (GP)
	10.0	
	12.0	
	14.0	
	16.0	
3	18.0	18-23" Dark brown m-f SAND, some broken glass fragment (SP)
	20.0	
	22.0	
	24.0	23-29" Reddish brown m-f SAND (SP)
	26.0	
	28.0	
	30.0	Spoon refusal 29" (Rubble)
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/8

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/17/90
SURFACE ELEV: 75.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,208 E 694,841

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Grey medium SAND and GRAVEL (GP)
1	4.0	
	6.0	
	8.0	
	10.0	9-12" Yellow medium SAND and GRAVEL (GP)
2	12.0	
	14.0	12-18" Red to purple coarse SAND
	16.0	
	18.0	
	20.0	
3	22.0	
	24.0	
	26.0	
	28.0	Spoon refusal 27" (Rubble)
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/9

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: 74.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,071 E 695,194

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
		0-2" Mulch
	2.0	2-6" Brown fine SAND and SILT (SM)
1	4.0	
	6.0	
	8.0	
	10.0	Gray-brown m-f GRAVEL and fine Sand (GP)
2	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	Spoon refusal 21" (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 S-1/10

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 70.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,337 E 695,325

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Mulch overlying Dark Red m-f SAND and Gravel (GP-SP)
	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	Brown medium SAND (SP)
3	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: B. Glazier

BOREHOLE LOG S-1/11

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 70.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,187 E 695,351

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-2" Mulch, not sampled (MS,MSD)
1	4.0	2-8" Brown medium to fine SAND (SP)
	6.0	
	8.0	
2		8-10" Red-brown medium to fine SAND (SP)
	10.0	10-13" Dark Red c-f SAND, some Gravel (SP)
3	12.0	
4	14.0	13-15" Purple SAND and GRAVEL (GP)
	16.0	15-20" Dark Red c-f SAND (SP)
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 S-1/12

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: 74.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** 552,904 E 695,081

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Gray-brown fine SAND and GRAVEL (GP)
	4.0	
	6.0	
	8.0	Spoon Refusal at 6"
	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. 893-6255A **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/13

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/17/90
SURFACE ELEV: 70.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,913 E 695,319

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
		0-2" Wood Chips
	2.0	2-4" Brown SAND and GRAVEL (GP)
1	4.0	
		4-9" Yellow brown SAND
	6.0	
	8.0	
	10.0	9-25" Brown SILT and fine SAND trace Gravel (GP)
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
3	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 S-1/14

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/7/90
SURFACE ELEV: 65.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,940 E 695,435

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown fine SAND and SILT, some Gravel (SP-SM)
1	4.0	
	6.0	
	8.0	Reddish to blackish med. SAND and GRAVEL (SP)
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Red medium SAND and GRAVEL, little Silt, wet (SP)
	20.0	
3	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: B. Glazier

BOREHOLE LOG S-1/15

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 64.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,667 E 695,344

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM) to 36".
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/16

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 64.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,697 E 695,255

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown m-f SAND and SILT (SM)
1	4.0	
	6.0	Light brown med. to fine SAND mottled, dark borwn, dark reddish brown (SP)
	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	No recovery
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/17

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 63.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,545 E 695,302

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
		0-3" Gray m-f SAND, some Clay (SC)
	2.0	
1		3-26" Brown m-f SAND (SW)
	4.0	Color change at 18" to Reddish Yellow
	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	No recovery
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/18

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 66.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,564 E 695,201

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown SAND. Black, shiny, hard substance at 3" (SP)
1	4.0	
	6.0	
	8.0	
	10.0	Reddish Yellow m-f SAND with ash-like substance, brick and stones, very dense (SP)
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	Brown layer from 22-24", very dense
	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 S-1/19

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/17/90
SURFACE ELEV: 70.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,292 E 695,412

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown SILT and fine SAND (ML)
	4.0	
	6.0	
2	8.0	7-18" Yellow to orange-brown fine SAND
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	Dark Brown Coarse SAND and SILT
	22.0	
	24.0	
	26.0	
	28.0	
	30.0	
	32.0	
	34.0	No recovery
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/20

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 68.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,113 E 695,388

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-12" Dark Brown SILT and fine SAND (SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	12-20" Light Brown SILT and m-f SAND (SM)
	14.0	
	16.0	
	18.0	
	20.0	20-28" Black ash-like substance
3	22.0	
	24.0	
	26.0	
	28.0	Reddish Brown medium SAND (SP)
4	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 S-1/21

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/13/90
SURFACE ELEV: 66.5 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 553,052 N 695,519

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown fine SAND and SILT, trace Gravel (SM)
	4.0	
	6.0	
2	8.0	Brown m-f SAND and GRAVEL, trace Silt
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	
	24.0	
	26.0	
	28.0	
	30.0	
	32.0	Auger refusal at 30"
	34.0	
	36.0	

Job No. 893-6255A **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/22

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/13/90
SURFACE ELEV: 66.1 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 552,932 E 695,514

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown m-f SAND and SILT, trace Gravel (SM)
1	4.0	
	6.0	Dark Brown coarse SAND and GRAVEL, some Silt trace yellowish red medium Sand
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Dark Brown medium SAND and GRAVEL (SP)
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/23

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/17/90
SURFACE ELEV: 64.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,831 E 695,637

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown medium SAND and SILT, some Gravel (SM)
1	4.0	
	6.0	Reddish coarse SAND (SP)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3	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 S-1/24

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 62.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,451 E 695,499

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-5" Brown to reddish brown fine SAND and SILT (SM)
1	4.0	
	6.0	5-16" Black medium SAND
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	16-18" Brownish grey fine SAND and SILT
	18.0	Spoon refusal at 18" (Rubble)
	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 S-1/25

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 62.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,334 E 696,242

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown SAND and SILT, some Gravel (SM)
	4.0	
	6.0	6-11" Gray SAND and GRAVEL (SP)
	8.0	
	10.0	
2	12.0	11-25" Gray SILT and fine SAND (ML)
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	
	24.0	
	26.0	Spoon refusal at 25" (Rubble)
	28.0	
	30.0	
	32.0	
	34.0	
	36.	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/26

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 62.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,250 E 696,489

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
		Brown fine SAND, some fine Gravel (SM)
	2.0	
1	4.0	Spoon refusal at 4", 2 attempts made
	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	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/27

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 62.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,255 E 696,639

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0 4.0 6.0	Brown fine SAND grading to coarse SAND with depth (SP)
2	8.0 10.0 12.0 14.0 16.0 18.0	Brown and Yellowish Red coarse SAND. Specks of Black ash-like material observed (5-12%) (SP)
3	20.0 22.0 24.0 26.0 28.0 30.0 32.0 34.0 36.0	spoon refusal at 22" (Rubble)

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/28

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: 63.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,630 E 696,528

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Yellow-brown medium SAND and SILT (SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3		Spoon refusal at 19" (Rubble)
	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 S-1/29

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/16/90
SURFACE ELEV: 68.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,832 E 696,364

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown Gravel and SILT, some Sand (GM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	White to yellow, CLAY and SILT (CL)
	20.0	
3	22.0	
	24.0	
	26.0	Coarse to medium SAND, possible hides (SP)
	28.0	
	30.0	
4	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/30

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/4/90
SURFACE ELEV: 68.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,865 E 696,420

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown medium SAND and organic matter (SP)
	4.0	
	6.0	Reddish brown medium SAND (SP)
2	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	
	24.0	
	26.0	
	28.0	Spoon refusal at 27" (possible bedrock)
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/31

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/16/90
SURFACE ELEV: 75.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,005 E 696,253

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	0-3" Black or dark brown medium SAND and SILT (SM)
	4.0	3-9" color lightens
	6.0	
	8.0	
2	10.0	Gray GRAVEL and SILT, some clay, little sand (GC)
	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	
	24.0	
	26.0	Spoon refusal at 25" (possible bedrock)
	28.0	
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255A **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/32

PROJECT: **Industri-Plex Site Pre-Design Investigation** **DATE:** 4/4/90
SURFACE ELEV: **69.4** **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,931 E 696,333

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown medium SAND with organic matter
1	4.0	light gray-brown clay layer (approx 1/2" thick at 6") (SP)
	6.0	Organics disappear below 6", color change to yellow and reddish brown
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	Spoon refusal at 32" (possible bedrock)
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/33

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/4/90
SURFACE ELEV: 71.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,006 E 696,634

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0 4.0 6.0	Reddish brown to brown SAND and SILT (SM)
2	8.0 10.0 12.0 14.0 16.0	Dark red-brown to tan GRAVEL and SAND (GP)
3	18.0 20.0 22.0 24.0	Color change, brown GRAVEL and SAND with slight purplish tint (GP)
	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 S-1/34

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/16/90
SURFACE ELEV: 70.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,985 E 696,760

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Grey-brown GRAVEL and medium SAND (GP)
	4.0	
	6.0	6-14" Black ash-like substance, smells like ashpalt
	8.0	
	10.0	
2	12.0	
	14.0	14-18" brown SAND and SILT, some Gravel (SM)
	16.0	
	18.0	
	20.0	
3	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: B. Glazier

BOREHOLE LOG S-1/35

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/16/90
SURFACE ELEV: 69.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,795 E 696,853

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0, 4.0, 6.0, 8.0	0-10" Brown medium SAND and SILT, some Gravel (SM)
2	10.0, 12.0, 14.0, 16.0, 18.0, 20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0	10-32" black substance, smells like asphalt grain size of fine sand
3	34.0, 36.0	No recovery

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/36

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 71.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,768 E 697,079

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown medium to fine SAND, some rounded gravel, mottled gray and yellowish red (SP)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	
		Gray medium SAND at 23" (SP)
	24.0	
		Spoon refusal at 24" (Rubble)
	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 S-1/37

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/4/90
SURFACE ELEV: 70.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,013 E 696,458

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0 4.0 6.0	0-6" Dark brown SAND and SILT, some Gravel
		Spoon refusal at 6" (Rubble or 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 S-1/38

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 72.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,120 E 696,856

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	2" layer high in organics - root zone
1	4.0	2-7" Brown medium SAND (SP)
	6.0	
	8.0	7-19" Black and gray fly ash
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	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 S-1/39

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 72.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,224 E 697,076

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Reddish brown to gray fine SAND, 1" darker horizon (root zone) on top (SP)
	4.0	
	6.0	
2	8.0	Gray fine SAND with yellowish red color mottles (SP)
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
3	24.0	Possible hides at 23"
	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 S-1/40

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 69.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,233 E 697,295

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown fine SAND, mottled red and gray (SP)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	1" thick coarse SAND layer at 12"
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	Reddish yellow mottles areas, 1" blackish zone at 22"
	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: B. Glazier

BOREHOLE LOG S-1/41

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/16/90
SURFACE ELEV: 69.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,078 E 697,025

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Light brown fine SAND and SILT (SM)
1	4.0	
	6.0	Yellow-brown m-f SAND and SILT (SM)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Yellow to reddish brown medium SAND, thin black laminae 29"
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/42

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 68.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,878 E697,126

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown (top) to brown fine SAND (saturated) (SP)
	4.0	
	6.0	Brown m-f SAND to 11", gray mottles (SP)
	8.0	
	10.0	11-18" Gray to black ash-like substance
2	12.0	
	14.0	
	16.0	
	18.0	Spoon refusal at 18" (Rubble)
	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 S-1/43

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 66.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,851 E 697,242

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown m-f SAND and SILT with wood in various stages of decay 0-4" (SM)
	4.0	
	6.0	Brown fine SAND with reddish yellow and gray mottling
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	Spoon Refusal at 22 inches (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 S-1/44

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/7/90
SURFACE ELEV: 67.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,702 E 697,441

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown m-f fine SAND and SILT (SM)
1	4.0	
	6.0	Gray-brown Gravel and fine SAND, some silt (GM)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3		Gray, black GRAVEL and coarse SAND an ash-like substance in trace amounts observed
	20.0	
	22.0	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 S-1/45

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 66.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,826 E 697,520

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0 4.0 6.0	Dark brown fine SAND with organic matter
		At 6" gray brown m-f SAND
2	8.0 10.0 12.0 14.0 16.0 18.0	At 11" black ash-like substance
3	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 S-1/46

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 68.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,957 E 697,427

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM)
1	4.0	
	6.0	Yellowish, reddish brown coarse to medium SAND (SP)
	8.0	
	10.0	
2	12.0	12-18" Ash-like substance
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	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 S-1/47

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 68.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,103 E 697,359

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black, fine SAND, organic rich (SP)
1	4.0	
	6.0	Brown fine SAND, dark red vertical laminae changes to black ash-like substance at 12"
	8.0	
	10.0	
2	12.0	Black ash-like substance
	14.0	
	16.0	
	18.0	
3	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: B. Glazier

BOREHOLE LOG S-1/48

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 71.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,356 E 697,161

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-5" Black organic rich layer
1	4.0	
	6.0	5-10" reddish brown fine SAND (SP)
	8.0	
	10.0	10" to 24" gray fine SAND with reddish mottles (SP)
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
3	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: B. Glazier

BOREHOLE LOG S-1/49

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/5/90
SURFACE ELEV: 73.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,199 E 696,727

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown SILT and fine SAND (ML)
	4.0	
	6.0	Gray to brown, m-f SAND and GRAVEL, some silt (SP-SM)
2	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	Black ash-like substance
3	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 S-1/50

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/16/90
SURFACE ELEV: 74.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,334 E 696,566

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown m-f SAND and GRAVEL, some silt (SP-SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
		Brown medium SAND (SP)
	20.0	
	22.0	
	24.0	
	26.0	
3	28.0	
	30.0	
	32.0	
	34.0	
		No recovery
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/51

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 73.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,535 E 696,516

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	0-6" Dark brown fine SAND and SILT (SM)
	4.0	
	6.0	6-10" light gray GRAVEL and SAND (GP)
	8.0	
	10.0	10-18" Dark brown CLAY and SILT (CL) possible hides
2	12.0	
	14.0	
	16.0	
	18.0	Dark brown fine SILT and SAND (ML)
3	20.0	Spoon refusal at 20" (Rubble or Rock)
	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 S-1/52

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 71.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,283 E 696,488

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown fine SAND and Silt (SM)
	4.0	
	6.0	6-9" asphalt-like gravel
	8.0	9-25" Brown fine SAND and SILT (SM)
2	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	
	24.0	Spoon refusal at 25" (Rubble or Rock)
	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 S-1/53

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/7/90
SURFACE ELEV: 69.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,493 E 696,202

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown SAND and SILT, some Gravel (SM)
	4.0	
	6.0	6-8" Black GRAVEL and SILT, some Sand (GM)
	8.0	8-24" gray-brown SAND and SILT, some Gravel (SM)
2	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	
	24.0	Spoon refusal at 24" (Rubble or Rock)
	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 S-1/54

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** NA

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-17" Wood chips - no sample
	4.0	(probably 24" before compaction during sampling) water at 6"
	6.0	
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
1	18.0	Gray medium SAND and GRAVEL (SP)
	20.0	
	22.0	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 S-1/55B

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 87.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,347 E 695,527

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown SAND and SILT, some Gravel trace clay (SM-SC)
	4.0	
	6.0	Spoon refusal at 6" (Rubble or 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 S-1/56

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 73.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,831 E 696,393

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown fine SAND and SILT (SM)
	4.0	
	6.0	
2	8.0	Brown medium GRAVEL and SAND (GP)
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	Light Brown medium GRAVEL and SAND with reddish brown mottles (GP)
	22.0	
	24.0	
	26.0	
	28.0	
	30.0	Spoon refusal at 29" (Bedrock)
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/57

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 79.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,968 E 606,485

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM)
1		GRAVEL observed at 12"
	4.0	
	6.0	
	8.0	
2	10.0	
	12.0	
		Spoon refusal at 12" (Bedrock)
	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 S-1/58

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 79.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,094 E 696,385

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Reddish brown CLAY and SILT, some Sand (CL)
1	4.0	
	6.0	
	8.0	
	10.0	Reddish brown CLAY and SILT (CL)
2	12.0	
	14.0	
	16.0	18-27" reddish brown CLAY and SILT, some Sand (CL)
	18.0	
	20.0	
	22.0	
3	24.0	
	26.0	
	28.0	27-31" yellow-brown SAND and GRAVEL
	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 S-1/59

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 82.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,241 E 696,976

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black fine SAND and SILT, some Gravel (SM)
1	4.0	
	6.0	Black GRAVEL and SAND (GP)
2	8.0	
	10.0	Spoon refusal at 10" (Rubble or Rock)
	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 S-1/60

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 85.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,331 E 696,871

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM)
1	4.0	
	6.0	Brown fine SAND and SILT at 6" (SM)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	24-36" GRAVEL and SILT, some Sand (GM)
	26.0	
3	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 S-1/61

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 103.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,441 E 696,786

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown SAND and SILT, some Gravel (SP-SM)
	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	10-18" gray SAND and SILT, some Gravel
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	
	24.0	Spoon refusal at 23" (Bedrock)
	26.0	
	28.0	
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255A **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/62

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 90.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N554,411 E 696,653

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	0-5" BLACK fine SAND and SILT (SM)
	4.0	
	6.0	Reddish yellow SAND and GRAVEL (SP)
	8.0	
	10.0	
2	12.0	Gray SAND and CLAY, some Gravel (SP-SC)
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	
	24.0	
	26.0	Spoon refusal at 25" (Bedrock)
	28.0	
	30.0	
	32.0	
	34.0	
	36.0	

Job No. **GOLDER ASSOCIATES INC.** **Logged:** **Checked:**

BOREHOLE LOG S-1/63

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/18/90
SURFACE ELEV: 74.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,454 E 696,458

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown medium SAND and SILT (SM)
1	4.0	
	6.0	6-8" Yellow-brown medium SAND
	8.0	8-9" Reddish SAND and CLAY (sc)
	10.0	9-18" Brown SAND and SILT (SM)
2	12.0	
	14.0	
	16.0	
	18.0	Gray-brown SAND and SILT at 18" (SM)
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/64

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 72.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N554,230 E 696,353

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-3" humus
1	4.0	3-6" red SAND and GRAVEL (SP)
	6.0	
	8.0	
	10.0	Yellow brown SAND, color change at 17" to black
2	12.0	
	14.0	
	16.0	
	18.0	black ash-like substance
	20.0	
3	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 S-1/65

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 77.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,191 E 696,281

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-2" Humus
1	4.0	2-6" Brown SAND and SILT, some Gravel (SP-SM)
	6.0	
	8.0	
2	10.0	6-14" very dark (almost black) plastic CLAY and SILT (OL)
	12.0	
	14.0	
3		Yellow CLAY and SILT
	16.0	
4		Red SAND and GRAVEL
	18.0	Yellow-brown medium SAND (SP)
	20.0	
5	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: B. Glazier

BOREHOLE LOG S-1/66

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/18/90
SURFACE ELEV: 71.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,484 E 696,247

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown coarse SAND and SILT to 4" (SP)
1	4.0	4-6" black fine SAND and SILT (SM)
	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	No recovery
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/67

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/22/90
SURFACE ELEV: 70.2 **DATUM:** MSL
DRILLING METHOD: Jar & Plastic Spoon **LOCATION:** N554,214 E 696,104

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown, poorly sorted SAND and SILT (SM)
	4.0	
	6.0	Not sampled
	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 S-1/68

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/22/90
SURFACE ELEV: 78.3 **DATUM:** MSL
DRILLING METHOD: Jar & Plastic Spoon **LOCATION:** N 554,113 E 696,030

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown, poorly sorted SAND, some Silt, little Gravel (SM)
	4.0	
	6.0	Not sampled
	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 S-1/69

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/11/90
SURFACE ELEV: 70.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N553,963 E 695,802

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	0-14" Dark brown fine SAND and SILT, some Gravel (SM)
	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	14-27" light brown medium to coarse SAND and GRAVEL (SP)
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	28.0	
	30.0	27-31" gray to reddish SAND and SILT, possible hides and a substance that looks like mold
	32.0	
	34.0	No recovery
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/70

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 71.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,054 E 695,867

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown, root zone SILT and SAND (ML)
	4.0	
	6.0	Gray brown SAND and SILT, some Gravel (SM)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Spoon refusal at 18"
	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 S-1/72

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 70.4 **DATUM:** MSL
DRILLING METHOD: Spilt Spoon **LOCATION:** N 554,186 E 695,860

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Black GRAVEL and SILT, some Sand (GM)
	4.0	
	6.0	Black changing to red-brown GRAVEL and SILT some Sand at 7" (GM)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Gray ash-like substance
3	20.0	
	22.0	No recovery
	24.0	
	26.0	
	28.0	
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255A **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/73

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 70.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,264 E 695,948

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	0-4" Black SAND and SILT. Purplish organic matter
	4.0	
	6.0	4-17" Bricks
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	Spoon refusal at 17" (Bricks)
	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 S-1/74

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/8/90
SURFACE ELEV: 71.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,259 E 695,792

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-2" Organic matter
1	4.0	2-36" Reddish-brown SAND and SILT, some clay, little Gravel (SM-SC)
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	Red color darkens after about 28"
	24.0	
	26.0	
3	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 S-1/75

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 69.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,296 E 695,859

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black SAND and SILT, some Gravel (S-SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	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 S-1/76

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/17/90
SURFACE ELEV: 70.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,387 E 695,872

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0 4.0 6.0	Brown fine SAND and SILT, some Gravel (SP-SM)
2	8.0 10.0 12.0 14.0 16.0 18.0	Gray SAND and SILT, some Gravel with broken concrete (GP-SM)
3	20.0 22.0 24.0 26.0 28.0 30.0 32.0 34.0 36.0	Spoon refusal at 22" (Bricks)

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/77

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 71.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N554,437 E 695,961

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	SAND and SILT, rocks after 3" (SM)
	4.0	Spoon refusal at 3" (Rubble, bricks)
	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	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/78

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 83.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,508 E 695,470

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Black, organic rich SAND and SILT, some Gravel (SM)
	4.0	
	6.0	Brown SAND and GRAVEL (SP)
2	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	
	22.0	Spoon refusal at 22" (Rubble or Bedrock)
	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 S-1/79

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 89.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,731 E 695,451

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown SAND and SILT, some Gravel (SP-SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Spoon refusal at 18" (Rubble/rocks)
	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 S-1/80

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 85.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N554,766 E 695,484

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown SILT and SAND (ML)
	4.0	
	6.0	
2	8.0	
	10.0	
	12.0	Spoon refusal at 12" (Rocks) Wood and charred wood at 12"
	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 S-1/81

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 83.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,772 E 695,596

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown SILT and GRAVEL, some Sand (ML)
	4.0	
	6.0	
2	8.0	Brown, yellow-brown, black and gray mottles in SAND and GRAVEL, patches of red clay (SP-CL)
	10.0	
	12.0	
	14.0	
	16.0	possible hides at 18" to 25"
3	18.0	
	20.0	
	22.0	
	24.0	
	26.0	Spoon refusal at 25" (Rocks/rubble)
	28.0	
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255A **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/82

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/4/90
SURFACE ELEV: 69.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,926 E 696,633

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black SAND and SILT with plant matter (SM)
1	4.0	
	6.0	Yellow brown SAND and SILT, some Gravel (SM)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	28.0	
	30.0	
	32.0	
	34.0	No recovery
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/83

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/4/90
SURFACE ELEV: 67.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,823 E 696,891

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black fine SAND with wood (SP)
1	4.0	
	6.0	Gray fine SAND and SILT, color change to black at 8" (SM)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Greenish gray fine SAND (SP)
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/84

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 66.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,756 E 697,048

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Yellowish brown SAND, 1" black horizon on top (SP)
	4.0	
	6.0	
	8.0	
2	10.0	Yellowish brown to grayish brown SAND (SP)
	12.0	
	14.0	
	16.0	
3	18.0	Yellowish brown SAND 1" black, organic (SP) layer at 27"
	20.0	
	22.0	
	24.0	
	26.0	
	28.0	
	30.0	
	32.0	
	34.0	No recovery
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/85

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 64.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,628 E 697,319

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown SAND (SP)
1	4.0	
	6.0	Black SAND
	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	No recovery
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/86

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 73.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,507 E 697,545

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown SAND and SILT (SM)
	4.0	
	6.0	Black SILT and SAND (ML)
2	8.0	
	10.0	
	12.0	
	14.0	
	16.0	No recovery (See log for May 29, 1990)
	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 S-1/86A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 73.3 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,507 E 697,545

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	See log for April 3, 1990
	6.0	
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	very dark brown fine SAND and SILT (SM)
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/87

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 69.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,380 E 697,781

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	0-5" black SAND and SILT with roots
	4.0	
2	6.0	5-10" tan SAND and SILT
	8.0	
	10.0	
	12.0	No recovery (See log for May 29, 1990)
	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 S-1/87A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 69.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,380 E 697,781

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 3, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	dark brown SILT and SAND (ML)
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/88

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 65.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,264 E 698,035

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brownish SILT and SAND (SP)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	Black organic SILT and SAND, changing to grayish Sand at 18" (SP)
	14.0	
	16.0	
	18.0	
	20.0	No recovery (See log for May 29, 1990)
	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 S-1/88A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 65.7 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,264 E 698,035

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 3, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	Dark brown fine SAND and SILT
	20.0	Yellow-brown medium SAND and SILT observed at 35" to 36"
	22.0	
	24.0	
	26.0	
3	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 S-1/89

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/2/90
SURFACE ELEV: 64.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,202 E 698,205

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown SILT and SAND (ML)
1		Changing to humus at 18"
	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	No recovery (See log for May 29, 1990)
	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 S-1/89A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 64.8 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,202 E 698,205

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 2, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
3		Brown fine SAND and GRAVEL, some Silt to 24"
	20.0	
	22.0	
4	24.0	At 24" black fine SAND and SILT, possible hides after 24" (SM)
	26.0	
	28.0	
	30.0	Refusal at 30" saturated at 28" to 30"
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/90

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/2/90
SURFACE ELEV: 61.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,082 E 698,410

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown SILT and SAND
1		Changing to humus at 19"
	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3		Humus at 19"
	20.0	No recovery (See log for May 29, 1990)
	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 S-1/91

PROJECT: **Industri-Plex Site Pre-Design Investigation** **DATE:** 4/4/90
SURFACE ELEV: **66.3** **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,052 E 696,365

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown SAND and SILT (SM) dark red vertical layer observed
1	4.0	Dark brown SAND and SILT with brick fragment
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	18-27" dark brown SAND and SILT (SM)
	18.0	
	20.0	
	22.0	
3	24.0	
	26.0	
	28.0	27-30" coarse to medium gray-brown SAND (SP)
	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 S-1/90A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 61.7 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,082 E 698,410

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 2, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	Fine SAND and SILT, possible hides 18" - 36" (SM)
	20.0	
	22.0	
	24.0	
	26.0	
4	28.0	
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255A **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/92

PROJECT: Industri-Plex Site Pre-Design Investigaiton **DATE:** 4/4/90
SURFACE ELEV: 74.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,844 E 696,724

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark reddish brown SAND and SILT (SM)
1		Undecayed organic matter to 18"
	4.0	
	6.0	
2		
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3		
	28.0	
	30.0	
	32.0	
	34.0	No recovery
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/93

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/4/90
SURFACE ELEV: 67.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,708 E 696,959

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black SAND and SILT (SM)
1	4.0	
	6.0	
	8.0	
	10.0	Lighter, yellow brown SAND from 10" to 12" (SP)
2	12.0	
	14.0	Brownish SILT and SAND to 32"
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/94

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 65.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,642 E 697,106

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black SILT and SAND (SP)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	Spoon refusal at 16" (Rocks)
	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 S-1/95

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 71.6 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,456 E 697,503

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown SILT and SAND (SP)
1	4.0	
	6.0	
	8.0	Black, organic rich SILT and SAND (SP)
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3		
	20.0	No recovery (See log for May 29, 1990)
	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 S-1/95A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 71.6 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,456 E 697,503

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 3, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
	20.0	Brown fine SILT and SAND, high in organic matter (ML)
	22.0	
	24.0	
	26.0	
4	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 S-1/96

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/3/90
SURFACE ELEV: 72.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,414 E 697,598

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown SAND and SILT (SM)
	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	No recovery (See log for May 29, 1990)
	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 S-1/96A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 72.1 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,414 E 697,598

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 3, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	Dark brown SILT and SAND (ML)
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/97

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/2/90
SURFACE ELEV: 70.2 **DATUM:** MSL
DRILLING METHOD: Split Spoo **LOCATION:** N 551,289 E 697,803

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Organic rich SILT and SAND (ML)
	4.0	
	6.0	
	8.0	See log for May 29, 1990
	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 S-1/97A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 70.2 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,289 E 697,803

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	See log for April 2, 1990
	4.0	
	6.0	
	8.0	No recovery
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	Brown well-graded SAND and SILT, little gravel (SW-SM)
	20.0	
	22.0	
	24.0	
	26.0	
2	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 S-1/98

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/2/90
SURFACE ELEV: 64.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,151 E 698,069

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0, 4.0, 6.0, 8.0	Yellowish brown SILT and fine SAND (SP)
2	10.0, 12.0, 14.0, 16.0, 18.0	Organic rich SILT and fine SAND (ML)
3	20.0, 22.0, 24.0, 26.0, 28.0, 30.0, 32.0, 34.0, 36.0	No recovery (See log for May 29, 1990)

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/98A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: 64.9 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,151 E 698,069

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 2, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	
	20.0	Black SAND and SILT. Strong hides odor possible hides present (SM)
	22.0	
	24.0	
	26.0	
4	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 S-1/99

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/2/90
SURFACE ELEV: 64.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,044 E 698,318

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Yellowish-brown SAND and SILT (SM)
	4.0	
	6.0	
	8.0	
2	10.0	9"-15" Black, fine SANND and SILT with humus (SM)
	12.0	
	14.0	
	16.0	No recovery (See log for May 29, 1990
	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 S-1/99A

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/29/90
SURFACE ELEV: **64.8** **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,044 E 698,318

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
	4.0	
	6.0	See log for April 2, 1990
	8.0	
	10.0	
	12.0	
	14.0	
	16.0	
	18.0	Fine SAND and SILT. Possibly hides present (SM)
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/100

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 5/22/90
SURFACE ELEV: 54.3 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 550,976 E 698,454

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	
1	4.0	
	6.0	Dark brown to black peat (Pt)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/101

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 70.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,862 E 697,336

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-4" Humus
1	4.0	
		4-6" Dark brown medium SAND
	6.0	Dark brown medium SAND fading to yellow-brown medium SAND by 10" (SP)
	8.0	
	10.0	
2	12.0	Yellow-brown medium SAND (SP)
	14.0	
	16.0	
	18.0	
	20.0	
3	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: B. Glazier

BOREHOLE LOG S-1/102

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/1/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** NA

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM)
1	4.0	
	6.0	dark brown fine SAND and SILT grading to medium SAND
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Brown medium SAND
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/103

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/8/90
SURFACE ELEV: 68.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,751 E 697,505

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	0-4" Humus
1	4.0	
		4-6" Dark brown medium SAND
	6.0	Brown medium fading to yellow-brown medium SAND (SP)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3	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: B. Glazier

BOREHOLE LOG S-1/104

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 72.1 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 555,003 E 697,844

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM)
1	4.0	
	6.0	
	8.0	Golden brown fine to medium SAND
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/105

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: 66.2 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,473 E 697,449

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown SAND and SILT, some Gravel (SM)
1	4.0	
	6.0	
	8.0	Fine SAND and SILT, some Gravel (SM)
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Fine SAND and SILT, some Gravel (SM)
	20.0	
3	22.0	
	24.0	Spoon refusal at 24" (Rock or Bedrock)
	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 S-1/106

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/20/90
SURFACE ELEV: 73.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,327 E 697,964

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
		0-1" gray GRAVEL and fine SAND
	2.0	
1	4.0	1-6" yellow-brown medium SAND and GRAVEL
	6.0	
	8.0	
	10.0	6-15" gray GRAVEL and SAND
2	12.0	
	14.0	
	16.0	Spoon refusal at 15" (Bedrock)
	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 S-1/107

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: 74.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,779 E 698,352

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown fine SAND and SILT, some Gravel (SP-SM)
1	4.0	
	6.0	
	8.0	
		8-9" GRAVEL (GP)
2	10.0	9-13" yellow brown fine SAND and SILT (SM)
	12.0	
	14.0	Spoon refusal at 13" (Bedrock)
	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 S-1/108

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: 71.0 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,927 E 698,509

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT to 3" (SM)
1	4.0	3-24" Gray brown fine SAND and SILT, some Gravel (SP-SM)
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	
	24.0	Spoon refusal at 24" (Rock or bedrock)
	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 S-1/109

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/7/90
SURFACE ELEV: **64.0** **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,469 E 698,564

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Yellow brown fine SAND and SILT, some Gravel (SP-SM)
1	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	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 S-1/110

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/9/90
SURFACE ELEV: 73.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,952 E 696,025

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown fine SAND and SILT (SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	12-36" GRAVEL and SILT, some Sand (GM)
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/111

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 74.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,971 E 696,147

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Black fine SAND and SILT, some Gravel (SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	16-34" gray-brown medium to fine SAND (SP)
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	28.0	
	30.0	
	32.0	
	34.0	No recovery
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/112

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 79.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,952 E 696,299

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Gray-brown, sandy, clayey silt, flaky gravel (ML)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	14-16" black fine SAND and SILT (SM)
	18.0	16-30" rust color medium to fine SAND (SP)
	20.0	
	22.0	
3	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 S-1/113

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/10/90
SURFACE ELEV: 86.3 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 554,921 E 696,384

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Gray-brown GRAVEL and SAND (GP) to 17"
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	Spoon refusal at 17" (Bedrock)
	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 S-1/114

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 69.5 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,498 E 694,700

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Dark brown muddy SAND, some rocks (SP)
	4.0	
	6.0	Spoon refusal at 6" (Rubble/rocks)
	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 S-1/115

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 69.7 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 553,474 E 694,602

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Grayish brown fine to coarse SAND possible hides from 5-7" (SW)
	4.0	
	6.0	Brown (top) to gray to black fine SAND and ash (SP)
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3		Reddish brown fine SAND (SP)
	20.0	
	22.0	Spoon refusal at 20" (Rocks/rock fragments or 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 S-1/116

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 63.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,260 E 695,622

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Grayish brown medium SAND, some Gravel (SP)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
3	22.0	3/4" dark brown layer medium SAND , some Gravel at 20"
	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: B. Glazier

BOREHOLE LOG S-1/117

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 63.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,162 E 696,661

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Brown fine SAND and SILT (SM)
1	4.0	
	6.0	
	8.0	Brown, to reddish brown medium SAND (SP)
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3	20.0	Brown to gray brown medium to coarse SAND (SP)
	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: B. Glazier

BOREHOLE LOG S-1/118

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 60.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,786 E 695,845

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown medium to fine SAND and SILT (SM)
1	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	Poor recovery
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/119

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 60.8 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,107 E 696,012

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0 4.0 6.0	Dark brown changing to black medium SAND (SP)
2	8.0 10.0 12.0 14.0 16.0 18.0	Black changing to gray-brown changing to brown medium SAND (SP)
3	20.0 22.0 24.0	Brown medium SAND (SP)
	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 S-1/120

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/6/90
SURFACE ELEV: 63.4 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 551,781 E 696,024

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Fine SAND and SILT, some Clay (SM-SC)
1	4.0	Orange and red laminae 1" thick 5" to 6"
2	6.0	
	8.0	
	10.0	Brown medium SAND with reddish tint, possible hides (SP)
3	12.0	
	14.0	
	16.0	Spoon refusal at 16" (Rocks/rubble)
	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 S-1/121

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 4/4/90
SURFACE ELEV: 66.9 **DATUM:** MSL
DRILLING METHOD: Split Spoon **LOCATION:** N 552,072 E 696,237

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark brown SAND and SILT, some pebbles (SM)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
3	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 S-1/141

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/9/90
SURFACE ELEV: 70.2 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,827 E 695,721

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Reddish brown CLAY and SILT (CL)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/142

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/9/90
SURFACE ELEV: 70.5 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 554,775 E 695,751

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
	2.0	Dark reddish brown CLAY and fine SAND some Silt. Solvent odor present (CL)
1	4.0	
	6.0	
	8.0	
	10.0	
2	12.0	
	14.0	
	16.0	
	18.0	
	20.0	
	22.0	
	24.0	
	26.0	
3	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 S-1/143

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/14/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** NA

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown fine to medium SAND and SILT, some Gravel (SP-SM)
2	4.0	
3	6.0	
	8.0	
	10.0	End of Borehole
	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 S-1/144

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/14/90
SURFACE ELEV: 61.5 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 548,434 E 699,395

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Brown fine to medium SAND, some Gravel (SM)
	4.0	
	6.0	
2	8.0	
	10.0	
	12.0	Brown medium SAND and GRAVEL, some Silt (SP)
3	14.0	
	16.0	
	18.0	
	20.0	
4	22.0	
	24.0	
	26.0	
	28.0	Auger refusal at 27"
	30.0	
	32.0	
	34.0	
	36.0	

Job No. 893-6255 **GOLDER ASSOCIATES INC.** **Logged:** I. Kennedy
Checked: B. Glazier

BOREHOLE LOG S-1/145

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/14/90
SURFACE ELEV: NA **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** NA

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Gray-brown fine to medium SAND and SILT (SM)
	4.0	
	6.0	
2	8.0	
	10.0	
	12.0	Light yellowish brown medium SAND (SP)
3	14.0	
	16.0	
	18.0	
4	20.0	
	22.0	
	24.0	
	26.0	
5	28.0	Gray-brown m-c SAND (SP)
	30.0	
	32.0	
	34.0	
	36.0	

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

BOREHOLE LOG S-1/146

PROJECT: Industri-Plex Site Pre-Design Investigation **DATE:** 6/14/90
SURFACE ELEV: 56.0 **DATUM:** MSL
DRILLING METHOD: Hand Auger **LOCATION:** N 551,687 E 697,734

SAMPLE LOCATION	DEPTH INCHES	SOIL DESCRIPTION
1	2.0	Very dark brown fine SAND and SILT with organic matter (SM)
	4.0	
	6.0	
2	8.0	
	10.0	
	12.0	
3	14.0	
	16.0	
	18.0	Black CLAY and SILT with organic matter (CL)
4	20.0	
	22.0	
	24.0	Light brown medium SAND below 25" (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

APPENDIX E

Chain-of-Custody Forms

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature): C Yates	DATE SHIPPED: 4/3/90	CARRIER: Fed X
PHONE: (617) 938-1553	AIRBILL NO.: 4370158995	COOLER NO.: E-127

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

ATTENTION: MS McCall

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Industri-Plex Site		n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/3/90	17:00
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/S-1/089/006/1/1/1	Soil	4/2/90 17:15	As, Cr, Pb	
IP/S-1/089/018/1/1/1	"	4/2/90 17:15	"	
IP/S-1/089/019/1/1/1	"	4/2/90 17:15	"	
IP/S-1/090/006/1/1/1	"	4/2/90 16:25	"	
IP/S-1/090/018/1/1/1	"	4/2/90 16:25	"	
IP/S-1/090/019/1/1/1	"	4/2/90 16:25	"	
IP/S-1/097/006/1/1/1	"	4/2/90 16:25	"	
IP/S-1/098/006/1/1/1	"	4/2/90 15:20	"	
IP/S-1/098/018/1/1/1	"	4/2/90 15:20	"	
IP/S-1/098/020/1/1/1	"	4/2/90 15:20	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9416
9417

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature): Cynthia Yates		DATE SHIPPED: 4/3/90	CARRIER: Fed Ex
PHONE: (609) 273-1110	AIRBILL NO.: 4370158995		COOLER NO.: ~~[illegible]~~ E-127

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

ATTENTION: Ms. McGill

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Industri-Plex Site	~~[illegible]~~	n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/3/90	17:00

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/S-1/099/006/1/1/1	SOIL	4/2/90 14:50	As, Cr, Pb	✓
IP/S-1/099/015/1/1/1	"	4/2/90 14:50	"	✓
IP/S-1/088/006/1/1/1	"	4/3/90 8:45	"	
IP/S-1/088/006/1/m/1	"	4/3/90 8:45	"	
IP/S-1/088/018/1/1/1	"	4/3/90 8:45	"	
IP/S-1/087/006/1/1/1	"	4/3/90 8:25	"	✓
IP/S-1/087/006/1/m/1	"	4/3/90 8:25	"	
IP/S-1/087/010/1/1/1	"	4/3/90 9:25	"	
IP/S-1/096/006/1/1/1	"	4/3/90 9:40	"	✓
IP/S-1/096/018/1/1/1	"	4/3/90 9:40	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9416
9417

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Ian Kennedy	DATE SHIPPED 5 April 1990	CARRIER Fed Ex
PHONE 609-273-1110	AIRBILL NO. 4370158995	COOLER NO. E-127

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

ATTENTION Ms McCall

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

PROJECT NAME Industri-Plex	PROJECT NO.	P.O. NO. N/A

RELINQUISHED BY (Signature) Ian Kennedy	RECEIVED BY (Signature)	DATE 4/3/90	TIME 17:00
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/S-1/086/006/1/1/1	Soil	4/3/90 10:15	As, Cr, Pb	✓
IP/S-1/086/012/1/1/1	"	4/3/90 10:15	"	✓
IP/S-1/095/006/1/1/1	"	4/3/90 11:00	"	✓
IP/S-1/095/018/1/1/1	"	4/3/90 11:00	"	✓
IP/S-1/095/020/1/1/1	"	4/3/90 11:00	"	✓
IP/S-1/085/006/1/1/1	"	4/3/90 11:20	"	✓
IP/S-1/085/018/1/1/1	"	4/3/90 11:20	"	✓
IP/S-1/085/024/1/1/1	"	4/3/90 11:20	"	✓
IP/S-1/084/006/1/1/1	"	4/3/90 13:40	"	✓
IP/S-1/084/018/1/1/1	"	4/3/90 13:40	"	✓

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9416
9417

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Jan Kennedy		DATE SHIPPED 5 April 1990	CARRIER Fed Ex
PHONE (609)273-1110	AIRBILL NO. 4370158995		COOLER NO. E-127

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

ATTENTION Ms. McCall

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

PROJECT NAME Industri-Plex	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature) C Walter Jan Kennedy	RECEIVED BY (Signature)	DATE 4/3/90	TIME 17:00
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/S-1/084/033/1/1/1	Soil	4/3/90 13:40	As, Cr, Pb	
IP/S-1/094/006/1/1/1	"	4/3/90 14:00	"	
IP/S-1/094/016/1/1/1	"	4/3/90 14:00	"	
IP/S-1/EB1/000/2/1/1	aqueous	4/3/90 8:45	"	
IP/S-1/087/006/1/N/1	Soil	4/3/90 9:25	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9416
9417

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)

ENS—1046

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 4

SAMPLER (Signature): Cynthia Yates	DATE SHIPPED: 4/4/90	CARRIER: Fed X	
PHONE: (617) 938-1553	AIRBILL NO.: ~~4370158993~~ 4370158995 5/8/90	COOLER NO.: E-129	

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

ATTENTION: Ms McCall

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

PROJECT NAME: Industri-Plex Site	PROJECT NO.:	P.O. NO.: n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		4/4/90	17:30
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/S-1/093/006/1/1	Soil	4/4/90 9:00	As, Cr, Pb	
IP/S-1/093/018/1/1	"	4/4/90 9:00	"	
IP/S-1/093/032/1/1	"	4/4/90 9:00	"	
IP/S-1/072/032/1/1	"	4/4/90 9:00	"	
IP/S-1/093/032/1/1/1	"	4/4/90 9:00	"	
IP/S-1/083/006/1/1	"	4/4/90 9:20	"	
IP/S-1/083/018/1/1	"	4/4/90 9:20	"	
IP/S-1/083/018/1/1/1	"	4/4/90 9:20	"	
IP/S-1/032/1/1/1	"	4/4/90 9:20	"	
IP/S-1/092/006/1/1	"	4/4/90 9:45	"	

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)	✓ Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cynthia Yates	DATE SHIPPED 4/4/90	CARRIER Fed X
PHONE (617) 939-1553	AIRBILL NO. ~~4370158995~~	COOLER NO. E-129

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

ATTENTION Ms McCall

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

PROJECT NAME Industri-Plex Site	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/4/90	17:30
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/S-1/092/018/1/1/1	Soil	4/4/90 9:45	As Cr Pb	
IP/S-1/092/032/1/1/1	"	4/4/90 9:45	"	
IP/S-1/EB2/002/1/1/1	"	4/4/90 9:30	"	
IP/S-1/082/006/1/1/1	"	4/4/90 9:55	"	
IP/S-1/082/018/1/1/1	"	4/4/90 9:55	"	
IP/S-1/082/034/1/1/1	"	4/4/90 9:55	"	
IP/S-1/091/006/1/1/1	"	4/4/90 10:50	"	
IP/S-1/091/018/1/1/1	"	4/4/90 10:50	"	
IP/S-1/091/034/1/1/1	"	4/4/90 10:50	"	
IP/S-1/12/006/1/1/1	"	4/4/90 11:10	"	

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)	✓ Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cynthia Yates	DATE SHIPPED 4/4/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. ~~4370158995~~ 4370158973 NOS 5/8/90	COOLER NO. E-129

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

ATTENTION Ms McGill

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Industri-Plex Site		n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/4/90	17:30
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/S-1/121/018/1/1/1		4/4/90 11:10	As Cr Pb	
✓ IP/S-1/124/022/1/1/1		4/4/90 11:10	"	
✓ P/S-1/EB3/000/2/1/1		4/4/90 12:10	"	
✓ IP/SW1/17L/006/1/1/1		4/4/90 12:10	"	
✓ P/SW1/17M/006/1/1/1		4/4/90 12:25	"	
✓ IP/SW1/17M/012/1/1/1		4/4/90 12:25	"	
✓ P/SW1/17R/005/1/1/1		4/4/90 12:40	"	
✓ P/S-1/030/006/1/1/1		4/4/90 15:10	"	
✓ IP/S-1/030/018/1/1/1		4/4/90 15:10	"	
✓ P/S-1/030/027/1/1/1		4/4/90 15:10	"	

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)	✓ Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) C Yates		DATE SHIPPED 4/4/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. ~~4376158195~~ 4370154973 5/8/90		COOLER NO. E-129

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

ATTENTION Ms McCall

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

PROJECT NAME Industri-Plex Site	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/4/90	17:30
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/S-1/032/006/1/1		4/4/90 15:30	As Cr Pb	
IP/S-1/032/011/1/1		4/4/90 15:30	"	
IP/S-1/E84/001/2/1/1		4/4/90 16:00	"	
IP/S-1/039/006/1/1		4/4/90 15:50	"	
IP/S-1/037/006/1/0/1		4/4/90 15:50		
IP/S-1/033/006/1/1/1		4/4/90 16:35		
IP/S-1/032/018/1/1/1		4/4/90 16:35		
IP/S-1/033/028/1/1/1		4/4/90 1635		

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)	✓ Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 5

SAMPLER (Signature): Cindy Yates		DATE SHIPPED: 4/5/90	CARRIER: Fed X
PHONE: (617) 938-1553	AIRBILL NO. 4370158962 ~~4370158995~~ RDJ 5/8/90		COOLER NO. 713

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

ATTENTION: Ms McCall

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Industri-Plex Site		n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/5/90	17:00
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/S-1/026/004/1/1	Soil	4/5/90 15:30	As Cr Pb	
✓ IP/S-1/038/006/1/1/1	"	4/5/90 8:40	"	
✓ IP/S-1/038/018/1/1	"	4/5/90 8:40	"	
✓ IP/S-1/038/006/1/N/1	"	4/5/90 8:40	"	
✓ IP/S-1/038/006/1/M/1	"	4/5/90 8:40	"	
✓ IP/S-1/038/019/1/1/1	"	4/5/90 8:40	"	
✓ IP/S-1/039/006/1/1/1	"	4/5/90 9:10	"	
✓ IP/S-1/039/018/1/1/1	"	4/5/90 9:10	"	
✓ IP/S-1/039/018/1/N/1	"	4/5/90 9:10	"	
✓ IP/S-1/039/018/1/M/1	"	4/5/90 9:10	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9380
9383

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 2 OF 5

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/5/90	CARRIER Fed X
PHONE (609) 938-1553	AIRBILL NO. 4370158962 ~~4370158995~~ 5/8/90		COOLER NO. 713

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

ATTENTION Ms McCall

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

PROJECT NAME Industri Plex	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 4/5/90	TIME 17:00
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/S-1/039/030/1/1	SOIL	4/5/90 9:10	As Cr Pb	
IP/S-1/048/006/1/1	"	4/5/90 9:30	"	
IP/S-1/048/018/1/1	"	4/5/90 9:30	"	
IP/S-1/048/018/1/2/1	"	4/5/90 9:30	"	
IP/S-1/048/024/1/1/1	"	4/5/90 9:30	"	
IP/S-1/040/006/1/1/1	"	4/5/90 10:05	"	
IP/S-1/040/018/1/1/1	"	4/5/90 10:05	"	
IP/S-1/040/024/1/1/1	"	4/5/90 10:05	"	
IP/S-1/047/006/1/1/1	"	4/5/90 10:30	"	
IP/S-1/047/018/1/1/1	"	4/5/90 10:30	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9380
9383

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/5/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 4370158962 ~~4370158995~~ 5/8/90		COOLER NO. 713

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

ATTENTION: Ms McCall

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

PROJECT NAME: Industri-Plex Site	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature): Cindy Yates	RECEIVED BY (Signature)	DATE 4/5/90	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/S-1/047/023/1/1/1	SOIL	4/5/90 10:30	As Cr Pb	
IP/S-1/046/006/1/1/1	"	4/5/90 10:55	"	
IP/S-1/046/018/1/1/1	"	4/5/90 10:55	"	
~~IP/S-1/046/022/1/1/1~~	"	4/5/90	"	JAK
IP/S-1/043/006/1/1/1	"	4/5/90 11:10	"	
IP/S-1/043/018/1/1/1	"	4/5/90 11:10	"	
IP/S-1/043/022/1/1/1	"	4/5/90 11:10	"	
IP/S-1/042/006/1/1/1	"	4/5/90 11:42	"	
IP/S-1/042/018/1/1/1	"	4/5/90 1142	"	
~~IP/S-1/042/022/1/1/1~~	"	~~4/5/90~~	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 SE21 # 9380
9383

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 4 OF 5

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/5/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. ~~4370158995~~ 4370158962 5/8/90	COOLER NO. 713

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

ATTENTION Ms McCall

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Industri-Plex Site		n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/5/90	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/S-1/036/006/1/1/1	Soil	4/5/90 13:50	As Cr Pb	
IP/S-1/036/018/1/1/1	"	4/5/90 13:50	"	
IP/S-1/036/024/1/1/1	"	4/5/90 13:50	"	
IP/S-1/036/024/1/1/1	"	4/5/90 13:50	"	
IP/S-1/036/024/1/1/1	"	4/5/90 13:50	"	
IP/S-1/045/006/1/1/1	"	4/5/90 14:20	"	
IP/S-1/045/006/1/1/1	"	4/5/90 14:20	"	
IP/S-1/045/018/1/1/1	"	4/5/90 14:20	"	
IP/S-1/045/027/1/1/1	"	4/5/90 14:20	"	
IP/S-1/EB5/000/2/1/1	aqueous	4/5/90 10:00	"	

SPECIAL INSTRUCTIONS/COMMENTS:

2 seal # 9380
9383

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 5 OF 5

SAMPLER (Signature): Cindy Yates	DATE SHIPPED: 4/5/90	CARRIER: Fed X
PHONE: (619) 938-1353	AIRBILL NO. 4370158962 ~~4370158995~~ NEF 5/8/90	COOLER NO. 713

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

ATTENTION: Ms McGall

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Industri-Plex Site		n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/5/90	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/S-1/027/006/1/1/1	Soil	4/5/90 15:15	As Cr Pb	
IP/S-1/027/018/1/1/1	"	4/5/90 15:15	"	
IP/S-1/027/022/1/1/1	"	4/5/90 15:15	"	
IP/S-1/EB6/000/2/1/1	Aqueous	4/5/90 14:20		

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9380
9383

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 7

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/6/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158995	COOLER NO. EE556

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

ATTENTION: Ms McCall

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Industri-Plex Site		n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/6/90	17:30
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/S-1/024/006/1/1/1	soil	4/6/90 16:25	As Cr Pb	
✓ IP/S-1/024/018/1/1/1	"	4/6/90 16:25	"	
✓ IP/S-1/116/006/1/1/1	"	4/6/90 16:05	"	
✓ IP/S-1/116/018/1/1/1	"	4/6/90 16:05	"	
✓ IP/S-1/116/026/1/1/1	"	4/6/90 16:05	"	
✓ IP/S-1/119/006/1/1/1	"	4/6/90 15:35	"	
✓ IP/S-1/119/006/1/1/1	"	4/6/90 15:35	"	
✓ IP/S-1/119/018/1/1/1	"	4/6/90 15:35	"	
✓ IP/S-1/119/024/1/1/1	"	4/6/90 15:35	"	
✓ IP/S-1/117/006/1/1/1	"	4/6/90 15:05	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # ~~949~~ cur
9447
9448

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/6/90	CARRIER Fed X
PHONE (617) 938-9553	AIRBILL NO. 4370158995		COOLER NO. EE 556

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

ATTENTION Ms McCall

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

PROJECT NAME Industri-Plex Site	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 4/6/90	TIME 17:30
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/S-1/117/018/1/1	Soil	4/6/90 15:05	As Cr Pb	
✓ IP/S-1/117/018/1/1	"	4/6/90 15:05	"	
✓ IP/S-1/117/018/1/1	"	4/6/90 15:05	"	
✓ IP/S-1/117/022/1/1	"	4/6/90 15:05	"	
✓ IP/S-1/120/005/1/1	"	4/6/90 14:55 ~~15:05~~ DK	"	
✓ IP/S-1/120/006/1/1	"	4/6/90 14:55	"	
✓ IP/S-1/120/006/1/1	"	4/6/90 14:55	"	
✓ IP/S-1/118/006/1/1	"	4/6/90 14:30	"	
✓ IP/S-1/118/018/1/1	"	4/6/90 14:30	"	
✓ IP/S-1/118/024/1/1	"	4/6/90 14:30	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9447
9448

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/6/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158995	COOLER NO. EE556

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

ATTENTION Ms McCall

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

PROJECT NAME Industri-Plex Site	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/6/90	17:30
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/S-1/001/006/1/1/1	Soil	4/6/90 13:55	As Cr Pb	
✓ IP/S-1/001/018/1/1/1	"	"	"	
✓ IP/S-1/001/030/1/1/1	"	"	"	
✓ IP/S-1/010/006/1/1/1	"	11:40	"	
✓ IP/S-1/010/018/1/1/1	"	"	"	
✓ IP/S-1/010/024/1/1/1	"	"	"	
✓ IP/S-1/020/006/1/1/1	"	11:15	"	
✓ IP/S-1/020/018/1/1/1	"	"	"	
✓ IP/S-1/020/028/1/1/1	"	"	"	
✓ IP/S-1/020/030/1/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 Seal # ~~944~~ cy ~~949~~ cy
9447
9448

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/6/90	CARRIER Fed X
PHONE (617) 938-1558	AIRBILL NO. 4370158995		COOLER NO. E-74

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

ATTENTION Ms McCall

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 200000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

PROJECT NAME Industri-Plex Site	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 4/6/90	TIME 17:30
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/S-1/011/008/1/1/1	Soil	4/6/90 10:55	As Cr Pb	
P/S-1/011/008/1/M/1	"	"	"	
P/S-1/011/008/1/M/1	"	"	"	
P/S-1/011/010/1/1/1	"	"	"	
P/S-1/011/013/1/1/1	"	"	"	
P/S-1/011/013/1/d/1	"	"	"	
P/S-1/011/020/1/1/1	"	"	"	
P/S-1/115/006/1/1/1	"	10:30	"	
P/S-1/115/018/1/1/1	"	"	"	
P/S-1/115/020/1/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 Seal #s 9445
9446

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/6/90	CARRIER Fed X
PHONE (609) 938-1553	AIRBILL NO. 4370158995	COOLER NO. E-74

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

ATTENTION Ms McGill

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

PROJECT NAME Industri-Plex Site	PROJECT NO.	P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/6/90	17:30
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/S-1/016/006/1/1/1	Soil	4/6/90 8:25	As Cr Pb	
IP/S-1/016/018/1/1/1	"	"	"	
IP/S-1/016/024/1/1/1	"	"	"	
IP/S-1/016/024/1/2/1	"	"	"	
IP/S-1/015/006/1/1/1	"	8:20	"	
IP/S-1/015/018/1/1/1	"	"	"	
IP/S-1/015/036/1/1/1	"	"	"	
IP/S-1/015/036/1/N/1	"	"	"	
IP/S-1/015/036/1/M/1	"	"	"	
IP/S-1/EB7/000/2/1/1	Aqueous	9:20	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 Seal # 9445
9446

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature): Cindy Yates		DATE SHIPPED: 4/6/90	CARRIER: Fed X
PHONE: (617) 938-1553	AIRBILL NO.: 4370158995		COOLER NO.: E-74

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

ATTENTION: Ms McCall

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

PROJECT NAME: Industri-Plex Site	PROJECT NO.:	P.O. NO.: n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/6/90	17:30
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/S-1/114/006/1/1		4/6/90 10:15	As Cr Pb	
IP/S-1/007/006/1/1		9:45	"	
IP/S-1/007/018/1/1		"	"	
IP/S-1/007/029/1/1		9:~~45~~ 8:45 IK		
IP/S-1/018/006/1/1		8:45		
IP/S-1/018/018/1/1		"		
IP/S-1/018/026/1/1		"		
IP/S-1/017/006/1/1		8:30		
IP/S-1/017/018/1/1		"		
IP/S-1/017/026/1/1		"		

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9445
9446

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 7 OF 7

SAMPLER (Signature): Cindy Yates	DATE SHIPPED: 4/6/90	CARRIER: Fed X
PHONE: (617) 938-1553	AIRBILL NO.: 4370158995	COOLER NO.: E-74

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

ATTENTION: MS McGill

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

PROJECT NAME: Industri-Plex Site
PROJECT NO.:
P.O. NO.: n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/6/90	17:30
RELINQUISHED FROM LAB BY (Signature)			

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/S-1/EB8/000/2/1/1	Aqueous	4/6/90 11:45	As Cr Pb	
IP/S-1/EB9/000/2/1/1	Aqueous	16:00		
IP/S-1/011/015/1/1/1	Soil	10:55		

SPECIAL INSTRUCTIONS / COMMENTS:
2 Seal # 9445
9446

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 4

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/9/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. ~~437-0158995~~ 5/8/90		COOLER NO. E702

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. 7224	P.O. NO. n/a

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 4/7/90	TIME 15:30
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/S-1/109/006/1/1/1	Soil	4/7/90 14:00	As Pb Cr	
P/S-1/109/006/1/2/1	"	"	"	
IP/S-1/109/018/1/1/1	"	"	"	
P/S-1/109/025/1/1/1	"	"	"	
P/S-1/028/006/1/1/1	"	13:30	"	
IP/S-1/028/014/1/1/1	"	"	"	
P/S-1/028/019/1/1/1	"	"	"	
IP/S-1/028/018/1/M/1	"	"	"	
IP/S-1/028/018/1/N/1	"	"	"	
IP/S-1/108/006/1/1/1	"	12:25	"	

SPECIAL INSTRUCTIONS/COMMENTS:

2 Seal # 9089
9090

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 2 OF 4

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/9/90	CARRIER Fed X	
PHONE (617) 938-1553	AIRBILL NO. ~~4370158995~~ 5/5/90	COOLER NO. E702	

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

ATTENTION H McCall

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

PROJECT NAME Golder	PROJECT NO. 7224	P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/7/90	15:30
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/S-1/108/018/1/1/1	SOIL	4/7/90 12:25	As Pb Cr	
IP/S-1/108/025/1/1/1	"	"	"	
IP/S-1/107/006/1/1/1	"	12:20	"	
IP/S-1/107/013/1/1/1	"	"	"	
IP/S-1/105/006/1/1/1	"	11:40	"	
IP/S-1/105/018/1/1/1	"	"	"	
IP/S-1/105/024/1/1/1	"	"	"	
IP/S-1/054/018/1/1/1	"	11:15	"	
IP/S-1/044/006/1/1/1	"	10:10	"	
IP/S-1/044/008/1/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 Seal 9089
9090

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) C Yates	DATE SHIPPED 4/9/90	CARRIER Fed X	
PHONE (617) 938-1553	AIRBILL NO. 990 753 7472 4370158995	COOLER NO. E702	

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

ATTENTION M. McGill

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

PROJECT NAME Golder	PROJECT NO. 7224	P.O. NO. n/a

RELINQUISHED BY (Signature) Andy Yates	RECEIVED BY (Signature)	DATE 4/9/90	TIME 15:30
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/S-1/044/020/1/1	Soil	4/7/90 10:10	As Pb Cr	
IP/S-1/044/016/1/M/1	"	"	"	
IP/S-1/044/014/1/N/1	"	"	"	
IP/S-1/009/006/1/1/1	"	9:20	"	
IP/S-1/009/018/1/1/1	"	"	"	
IP/S-1/009/016/1/2/1	"	"	"	
IP/S-1/009/025/1/1	"	"	"	
IP/S-1/012/006/1/1/1	"	9:00	"	
IP/S-1/014/006/1/1/1	"	8:30	"	
IP/S-1/014/018/1/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 Seal # 9089
9090

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/9/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. ~~4870158995~~ 990 7837472 5/4/90		COOLER NO. E702

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

ATTENTION H. McCall

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 800000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

PROJECT NAME Golder	PROJECT NO. ~~7324~~	P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/9/90	15:30
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/S-1/014/026/1/V1	Soil	4/9/90 8:30	As Pb Cr	
IP/S-1/EB11/000/2/1/1	aqueous	11:30 ~~10~~ IK	"	
IP/S-1/EB10/000/2/1/1	aqueous	10:10	"	
			"	
			"	
			"	
			"	
			"	
			"	
			"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 5221 # 9089
9090

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 4

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/9/90	CARRIER Fed X	
PHONE (617) 938-1553	AIRBILL NO. 4370158995 5/8/90	COOLER NO. E-103	

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

ATTENTION M. McCall

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

PROJECT NAME Golder	PROJECT NO. 7224	P.O. NO. n/a

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 4/8/90	TIME 15:30
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/S-1/101/006/1/1	Soil	4/8/90 8:30	As Cr Pb	
P/S-1/101/018/1/1	"	"	"	
P/S-1/101/027/1/1	"	"	"	
TP/S-1/103/006/1/1	"	8:40	"	
P/S-1/103/013/1/1	"	"	"	
IP/S-1/103/023/1/1	"	"	"	
P/S-1/064/006/1/1	"	9:10	"	
IP/S-1/064/013/1/1	"	"	"	
P/S-1/064/024/1/1	"	"	"	
IP/S-1/065/006/1/1	"	9:30	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9087
9088

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/9/90	CARRIER Fed X	
PHONE (617) 938-1553	AIRBILL NO. 4370158995	COOLER NO. E-103	

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

ATTENTION Ms. McCall

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

PROJECT NAME Golder	PROJECT NO. 7224	P.O. NO. n/a

RELINQUISHED BY (Signature) Cindy Yates	RECEIVED BY (Signature)	DATE 4/8/90	TIME 15:30
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/S-1/065/006/1/N/1	Soil	4/8/90 9:30	As Cr Pb	
IP/S-1/065/004/1/N/1	"	"	"	
IP/S-1/065/015/1/1/1	"	"	"	
IP/S-1/065/014/1/1/1	"	"	"	
IP/S-1/065/018/1/1/1	"	"	"	
IP/S-1/065/025/1/1/1	"	"	"	
IP/S-1/074/004/1/1/1	"	10:20	"	
IP/S-1/074/008/1/1/1	"	"	"	
IP/S-1/074/036/1/1/1	"	"	"	
IP/S-1/074/036/1/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9087
9088

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 3 OF 4

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/9/90	CARRIER Fed X	
PHONE (617) 938-1553	AIRBILL NO. 4370158936 4370158995 5/8/90	COOLER NO. E-03	

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

ATTENTION: Ms. McCall

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

PROJECT NAME: Golder	PROJECT NO. 7224	P.O. NO. n/a

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/8/90	15:30
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/S-1/075/022/1/1	Soil	4/8/90 10:30	As Pb Cr	
IP/S-1/075/015/1/1	"	"	"	
IP/S-1/072/006/1/1	"	11:20	"	
IP/S-1/072/018/1/1/1	"	"	"	
IP/S-1/072/020/1/1/1	"	"	"	
IP/S-1/073/006/1/1	"	11:50	"	
IP/S-1/077/006/1/1	"	12:15	"	
IP/S-1/558/006/1/1	"	13:40	"	
IP/S-1/558/006/1/1	"	"	"	
IP/S-1/078/006/1/1	"	14:00	"	

SPECIAL INSTRUCTIONS/COMMENTS:

Seal # 9087
9088

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/9/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. ~~4370158995~~ 4370158926 5/8/90		COOLER NO. E-103

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

ATTENTION M. McCall

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

PROJECT NAME Golder	PROJECT NO. 7224	P.O. NO. n/a

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 4/7/90	TIME 15:30
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/S-1/078/015/1/N	Soil	4/8/90 14:00	As Cr Pb	
IP/S-1/078/018/1/N	"	"		
IP/S-1/078/018/1/MS	"	"		
IP/S-1/078/022/1/N	"	"		
IP/S-1/EB12/000/1/N	Aqueous	11:20		
IP/S-1/EB13/000/2/N	"	14:15		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9087
9088

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 4

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/9/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 990783 7461 ~~4370158995~~ 5/8/90	COOLER NO. E-141

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

ATTENTION M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/9/90	15:30
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/S-1/070/006/1/1/1	Soil	4/9/90 8:30	As Cr Pb	
IP/S-1/070/018/1/1/1	"	"	"	
IP/S-1/080/006/1/1/1	"	9:10	"	
IP/S-1/080/012/1/1/1	"	"	"	
IP/S-1/079/006/1/1/1	"	9:25	"	
IP/S-1/079/018/1/1/1	"	"	"	
IP/S-1/081/006/1/1/1	"	9:45	"	
IP/S-1/081/018/1/1/1	"	"	"	
IP/S-1/081/025/1/1/1	"	"	"	
IP/S-1/051/006/1/1/1	"	10:50	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9127
9124

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/9/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. ~~4370158995~~ 5/2/90		COOLER NO. E-141

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		4/9/90	15:30
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/S-1/051/018/1/1A	Soil	4/9/90 10:50	As Cr Pb	
IP/S-1/051/018/1/1A	"	"	"	
IP/S-1/051/020/1/1A	"	"	"	
IP/S-1/052/006/1/1/1	"	11:10	"	
IP/S-1/052/006/1/1A/1	"	"	"	
IP/S-1/052/006/1/1A/1	"	"	"	
IP/S-1/052/018/1/1A/1	"	"	"	
IP/S-1/052/025/1/1	"	"	"	
IP/S-1/052/006/1/1/1	"	11:55	"	
IP/S-1/052/018/1/1/1	"	11:55	"	

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal #9127
9124

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/9/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 9907837461 ~~4370158995~~ 5/8/90		COOLER NO. E-141

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

ATTENTION M. McCall

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

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

RELINQUISHED BY (Signature) Cindy Yates	RECEIVED BY (Signature)	DATE 4/9/90	TIME 13:30
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/S-1/058/024/1/1/1	SOIL	4/9/90 11:35	As Pb Cr	
IP/S-1/056/006/1/1/1	"	12:00	"	
IP/S-1/056/018/1/1/1	"	"	"	
IP/S-1/056/029/1/1/1	"	"	"	
IP/S-1/057/006/1/1/1	"	12:30	"	
IP/S-1/057/012/1/1/1	"	"	"	
IP/S-1/058/006/1/1/1	"	13:10	"	
IP/S-1/058/018/1/1/1	"	"	"	
IP/S-1/058/021/1/1/1	"	"	"	
IP/S-1/058/021/1/1/1	"	"	"	

SPECIAL INSTRUCTIONS/COMMENTS:

2 seal # 9127
9124

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 4 OF 4

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/9/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 990783-7461 ~~4370158995~~ RAI 5/8/90	COOLER NO. E-141

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/9/90	15:30
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/S-1/110/006/1/1/1	Soil	4/9/90 14:10	As Pb Cr	
IP/S-1/110/018/1/1/1	"	"		
IP/S-1/110/036/1/1/1	"	"		
IP/S-1/110/036/1/M/1	"	"		
IP/S-1/110/036/1/M/1	"	"		
IP/S-1/EB14/000/2/1/1		11:10 ~~14:3~~ 2/1		
IP/S-1/EB15/000/2/1/1		14:30		

SPECIAL INSTRUCTIONS / COMMENTS:

2 seal # 9127
9124

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 2 OF 4

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/10/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 4370158402 ~~4370158995~~ 5/4/90		COOLER NO. EE-39

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/10/90	15:30
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/S-1/111/006/1/1/1	SOIL	4/10/90 8:30	As Pb Cr	
IP/S-1/111/018/1/1/1	"	"	"	
IP/S-1/111/034/1/1/1	"	"	"	
IP/S-1/113/006/1/1/1	"	8:55	"	
IP/S-1/113/017/1/1/1	"	"	"	
IP/S-1/112/006/1/1/1	"	9:25	"	
IP/S-1/112/018/1/1/1	"	"	"	
IP/S-1/112/030/1/1/1	"	"	"	
IP/S-1/062/006/1/1/1	"	10:50	"	
IP/S-1/062/018/1/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9125
9126

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature): Cindy Yates		DATE SHIPPED: 4/10/90	CARRIER: Fed X
PHONE: (609) 938-1553	AIRBILL NO. 4370158902 ~~4370158995~~ 5/8/90		COOLER NO. EE-39

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

ATTENTION: M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/10/90	15:30
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/S-1/062/025/1/1	Soil	4/10/90 10:50	As Cr Pb	
IP/S-1/061/006/1/1	"	11:50	"	
IP/S-1/061/018/1/1	"	"	"	
IP/S-1/061/023/1/1	"	"	"	
✓ IP/S-1/060/006/1/1	"	11:50	"	
✓ IP/S-1/060/018/1/1	"	"	"	
✓ IP/S-1/060/036/1/1	"	"	"	
IP/S-1/059/006/1/1	"	12:45	"	
IP/S-1/059/009/1/1	"	"	"	
IP/S-1/059/010/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9125
9126

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/10/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 4370158402 ~~4370158995~~ 5/8/90		COOLER NO. EE-39

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

ATTENTION: H. McGill

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/10/90	15:30
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
TP/S-1/104/006/Y/1	Soil	4/10/90 13:45	As Pb Cr	
TP/S-1/104/018/Y/1	"	"	"	
TP/S-1/104/036/Y/1	"	"	"	
TP/S-1/104/036/Y/1	"	"	"	
TP/S-1/104/036/Y/1	"	"	"	
TP/SW1/S1L/006/Y/1	"	14:15	"	
TP/SW1/S1L/018/Y/1	"	"	"	
TP/SW1/S1L/024/Y/1	"	"	"	
TP/SW1/S1R/006/Y/1	"	14:10	"	
TP/SW1/S1R/018/Y/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS.

Seal # 9125
9126

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature): Cindy Yates		DATE SHIPPED: 4/10/90	CARRIER: Fed X
PHONE: (619) 938-1553	AIRBILL NO.: 4370158403 ~~4370158995~~ 5/8/90		COOLER NO.: EE-39

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

ATTENTION: H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/10/90	15:30
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/SW1/51M/023/1/1	Soil	4/10/90 14:10	As Pb Cr	
IP/SW1/51M/006/1/1	"	14:03		
IP/SW1/51M/017/1/1		"		

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9125
9126

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/11/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. ~~4370158995~~ 5/8/90		COOLER NO. EE-708

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: H McCall

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/11/90	14:30
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/S-1/069/006/1/1	Soil	4/11/90 9:30	As Cr Pb	
IP/S-1/069/018/1/1	"	"	"	
IP/S-1/069/031/1/1	"	"	"	
IP/SW1/SOL/006/1/1	"	11:10	"	
IP/SW1/SOL/016/1/1	"	"	"	
IP/SW1/SOM/006/1/1	"	11:20	"	
IP/SW1/SOM/018/1/1	"	"	"	
IP/SW1/SOR/006/1/1	"	11:50	"	
IP/SW1/SOR/018/1/1	"	"	"	
IP/SW1/SOR/020/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9238
9237

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/11/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 9907837350 ~~4370158995~~ 5/8/90		COOLER NO. EE-708

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

ATTENTION: M McCall

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

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

RELINQUISHED BY (Signature): Cindy Yates	RECEIVED BY (Signature)	DATE 4/11/90	TIME 14:30
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/SW1/22L/006/1/1	soil	4/11/90 12:35	As Pb Cr	
IP/SW1/22L/012/1/1	"	"	"	
IP/SW1/23M/006/1/1	"	12:45	"	
IP/SW1/23M/010/1/1	"	"	"	
IP/SW1/23M/010/1/1	"	"	"	
IP/SW1/23R/006/1/1	"	12:55	"	
IP/SW1/23R/006/1/1	"	"	"	
IP/SW1/23R/006/1/1	"	"	"	
IP/SW1/23R/009/1/1	"	"	"	
IP/SW1/23R/006/1/1	aqueous	13:15	"	

SPECIAL INSTRUCTIONS / COMMENTS:

seal # 9238
9237

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/11/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 9907835780 ~~#3370158995~~ 5/8/90		COOLER NO. EE-708

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

ATTENTION M McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
Cindy Yates		4/11/90	14:30
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
1/5-YES16/0001/U	aqueous	4/11/90 10:00	As Pb Cr	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 9238
9237

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 7

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/16/90	CARRIER Fed X
PHONE (609) 938-1553	AIRBILL NO. 4370158995	COOLER NO. E-69

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/16/90	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/S-1/029/006/1/1	Soil	4/16/90 11:30	Pb, As, Cr	
IP/S-1/029/018/1/1	"	"	"	
IP/S-1/029/035/1/1	"	"	"	
IP/S-1/029/035/1/2	"	"	CLP VOC (2 jars)	
IP/S-1/029/035/1/3	"	"	CLP ABN	
IP/S-1/029/035/1/4	"	"	CLP Pest / PCB	
IP/S-1/029/035/1/5	"	"	CLP TAL Metals	
IP/S-1/029/035/1/6/2	"	"	CLP VOC (2 jars)	
IP/S-1/029/035/1/6/3	"	"	CLP ABN	
IP/S-1/029/035/1/6/4	"	"	CLP Pest. / PCB	
SPECIAL INSTRUCTIONS/COMMENTS: IP/S-1/029/025/1/1/1	Soil	4/16/90 11:30	Pb, As, Cr	

No VOC readings.

Seal # 9418
9450

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 2 OF 7

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/16/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 4370158995		COOLER NO. E-69

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

ATTENTION M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/16/90	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/S-1/029/035/1/1/5	Soil	4/16/90 11:30	CLP Metals	
✓ IP/S-1/031/006/1/1/1	"	12:20	Pb, Ar, Cr	
✓ IP/S-1/031/018/1/1/1	"	"	"	
✓ IP/S-1/031/025/1/1/1	"	"	"	
✓ IP/S-1/031/025/1/1/2	"	"	CLP VOC (2 jars)	
✓ IP/S-1/031/025/1/M/2	"	"	"	
✓ IP/S-1/031/025/1/N/2	"	"	"	
✓ IP/S-1/031/025/1/1/3	"	"	CLP ABN	
✓ IP/S-1/031/025/1/M/3	"	"	"	
✓ IP/S-1/031/025/1/N/3	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9418
9450

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/16/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 4370158995		COOLER NO. E-69

SHIP TO	SEND RESULTS 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
ATTENTION H. McCall	PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		4/16/90	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/S-1/031/025/1/1/4	SOIL	4/16/90 12:20	2P Pest. /PCB	
✓ IP/S-1/031/025/1/M/4	"	"	"	
✓ IP/S-1/031/025/1/N/4	"	"	"	
✓ IP/S-1/031/025/1/1/5	"	"	CLP Metals	
✓ IP/S-1/031/025/1/M/5	"	"	"	
✓ IP/S-1/031/025/1/N/5	"	"	"	
✓ IP/S-1/035/006/1/1	"	13:15	Pb, As, Cr	
✓ IP/S-1/035/008/1/1	"	"	"	
✓ IP/S-1/035/032/1/1	"	"	"	
✓ IP/S-1/035/032/1/1/2	"	"	CLP VOC (2 jars)	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9418
9450

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/16/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 4370158995		COOLER NO. EE-25

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature) C. Yates	RECEIVED BY (Signature)	DATE 4/16/90	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/S-1/035/032/1/1/5	Soil	4/16/90 13:15	CLP ABN	
✓ IP/S-1/035/032/1/1/4	"	"	CLP Pest/PCB	
✓ IP/S-1/035/032/1/1/5	"	"	CLP Metals	
✓ IP/S-1/034/006/1/1/1	"	13:50	Pb, As, Cr	
✓ IP/S-1/034/015/1/1/1	"	"	"	
✓ IP/S-1/034/024/1/1/1	"	"	"	
✓ IP/S-1/034/024/1/1/2	"	"	CLP VOC (2 jars)	
✓ IP/S-1/034/024/1/1/3	"	"	CLP ABN	
✓ IP/S-1/034/024/1/1/4	"	"	CLP Pest/PCB	
✓ IP/S-1/034/024/1/1/5	"	"	CLP Metals	

SPECIAL INSTRUCTIONS/COMMENTS:

No VOC readings.

Seal # 9419
9338

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/16/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370150995		COOLER NO. EE-25

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		4/16/90	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/S-1/049/006/1/1/1		4/16/90 14:15	Ar, Pb, Cr	
✓ IP/S-1/049/018/1/1/1		"	"	
✓ IP/S-1/049/032/1/1/1		"	"	
✓ IP/S-1/049/032/1/1/2		"	CLP VOC (2 jars)	
✓ IP/S-1/049/032/1/1/3		"	CLP ABN	
✓ IP/S-1/049/032/1/1/4		"	CLP Pest/PCB	
✓ IP/S-1/049/032/1/1/5		"	CLP Metals	
✓ IP/S-1/041/006/1/1/1		15:15	Pb, Ar, Cr	
✓ IP/S-1/041/018/1/1/1		"	"	
✓ IP/S-1/041/032/1/1/1		"	"	

SPECIAL INSTRUCTIONS/COMMENTS:

No VOC readings.

Seal # 9419
9338

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Uyato	DATE SHIPPED 4/16/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158995	COOLER NO. EE-25

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature) C Uyato	RECEIVED BY (Signature)	DATE 4/16/90	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/S-1/041/033/1/1/2	Soil	4/16/90 15:15	CLP VOC (2 jars)	
✓ IP/S-1/041/033/1/1/3	"	"	CLP ABN	
✓ IP/S-1/041/033/1/1/4	"	"	CLP Pest/PCB	
✓ IP/S-1/041/033/1/1/5	"	"	CLP Metals	
✓ IP/S-1/050/006/1/1/1	"	14:40	Pb, As, Cr	
✓ IP/S-1/050/018/1/1/1	"	"	"	
✓ IP/S-1/050/034/1/1/1	"	"	"	
✓ IP/S-1/050/034/1/1/2	"	"	CLP VOC (2 jars)	
✓ IP/S-1/050/034/1/1/3	"	"	CLP ABN	
✓ IP/S-1/050/034/1/1/4	"	"	CLP Pest/PCB	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9419
9338

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 7 OF 7

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/16/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158995	COOLER NO. EE-25

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

ATTENTION M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		4/16/90	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/S-1/E820/034/1/5	Soil	16 April 1990 14:40	CLP Metals	
IP/S-1/E820/006/1/2	Ag	13:30	CLP VOC (3 vials)	
IP/S-1/E820/006/2/1/5	"	"	CLP ABN (2 glass bottles)	
IP/S-1/E820/006/2/1/2	"	"	CLP Pest./PCB (2 bottles)	
IP/S-1/E820/006/2/1/5	"	"	CLP Metals	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings

Seal # 9419
9338

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/17/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. 4370158429 ~~4370158995~~		COOLER NO. E-96

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/17/90	
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-1/019/006/1/1	SOIL	4/17/90 8:45	Pb, Ar, Cr	
IP/S-1/019/018/1/1	"	"	"	
IP/S-1/019/032/1/1	"	"	"	
IP/S-1/019/032/1/2	"	"	CLP VOC (2 jars)	
IP/S-1/019/032/1/3	"	"	CLP ABN	
IP/S-1/019/032/1/4	"	"	CLP Pest/PCB	
IP/S-1/019/032/1/5	"	"	CLP Metals	
IP/S-1/006/~~1~~006/1/1	"	8:15	Pb, Ar, Cr	
P/S-1/006/018/1/1	"	"	"	
IP/S-1/006/026/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9253
8025

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/17/90	CARRIER Fed X	
PHONE (619) 938-1553	AIRBILL NO. 4370158424 ~~4370158995~~ 5/8/90	COOLER NO. E-96	

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

ATTENTION M. McCall

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 200000 Horizon Way Ste 300
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/17/90	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/S-1/006/026/1/1/2	Soil	4/17/90 8:15	CLP VOC (2 jars)	
IP/S-1/006/026/1/1/3	"	"	CLP ABN	
IP/S-1/006/026/1/1/4	"	"	CLP Pest/PCB	
✓ IP/S-1/006/026/1/1/5	"	"	CLP Metals	
✓ IP/S-1/013/006/1/1/1	"	9:20	Pb, Ar, Cr	
✓ IP/S-1/013/018/1/1/1	"	"	"	
✓ IP/S-1/013/025/1/1/1	"	"	"	
✓ IP/S-1/013/025/1/1/2	"	"	CLP VOC (2 jars)	
✓ IP/S-1/013/025/1/1/3	"	"	CLP ABN	
✓ IP/S-1/013/025/1/1/4	"	"	CLP Pest/PCB	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings. Seal # 9253
8025

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates	DATE SHIPPED 4/17/90	CARRIER Fed X	
PHONE (619) 938-1553	AIRBILL NO. 4870158424 ~~4370158995~~ 5/5/90	COOLER NO. E-96	

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

ATTENTION M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/17/90	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/S-1/013/025/1/5	Soil	4/17/90 9:20	CLP Metals	
IP/S-1/008/006/1/1		9:55	Pb, Ar, Cr	
IP/S-1/008/018/1/1/1		"	"	
IP/S-1/008/027/1/1/1		"	"	
✓ IP/S-1/008/027/1/1/2		"	CLP VOC (2 jars)	
✓ IP/S-1/008/027/1/1/3		"	CLP ABN	
✓ IP/S-1/008/027/1/1/4		"	CLP Pest/PCB	
✓ IP/S-1/008/027/1/1/5		"	CLP Metals	
✓ IP/S-1/022/009/1/1/1		10:30	Pb, Ar, Cr	
✓ IP/S-1/022/018/1/1/1		"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9253
8025

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 4 OF 5

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/17/90	CARRIER Fed X	
PHONE (619) 938-1553	AIRBILL NO. ~~4370158995~~ 4370158424 RAF 5/8/90	COOLER NO. E-96	

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

ATTENTION M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/17/90	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/S-1/023/022/1/1/1	Soil	4/17/90 10:30	Pb, Ar, Cr	
IP/S-1/025/018/1/1/1	"	12:00	"	
IP/S-1/025/006/1/1/1	"	"	"	
IP/S-1/025/020/1/1/1	"	"	"	
IP/S-1/025/020/1/1/2	"	"	CLP VOC (2 jars)	
IP/S-1/025/020/1/1/3	"	"	CLP ABN	
IP/S-1/025/020/1/1/4	"	"	CLP Pest/PCB	
IP/S-1/025/020/1/1/5	"	"	CLP Metals	
IP/S-1/076/006/1/1/1	"	14:30	Pb, Ar, Cr	
~~IP/S-1/076/006/1/1/1~~	~~"~~ IAK	"		

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

seal # 9253
8025

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature): Cindy Yates	DATE SHIPPED: 4/17/90	CARRIER: Fed X
PHONE: (619) 938-1553	AIRBILL NO.: ~~4370158995~~ 4370158424 5/8/90	COOLER NO.: E-96

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

ATTENTION: M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/17/90	16:30

ANALYSIS REQUEST

SAMPLE ID NO.	SAMPLE DESCRIPTION	DATE / TIME SAMPLED	ANALYSIS REQUESTED	SAMPLE CONDITION UPON RECEIPT
IP/s-1/076/018/1/1	Soil	4/17/90 14:30	Pb, Ar, Cr	
IP/s-1/076/022/1/1	"	"	"	
IP/s-1/019/018/1/d/1	"	8:45	"	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9253
8025

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 3

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/18/90	CARRIER Fed X
PHONE (619) 938-1553	AIRBILL NO. ~~4370153995~~ 4370153974 5/8/90		COOLER NO. E-96

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

ATTENTION H McCall

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

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 4/18/90	TIME 16:30
RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE cyg	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-1/063/006/1/1	Soil	18 April 1990 8:20	Pb, Ar, Cr	
✓ IP/S-1/063/018/1/1	"		"	
✓ IP/S-1/063/026/1/1	"		"	
✓ IP/S-1/063/026/1/2	"		CLP VOC (2 jars)	
✓ IP/S-1/063/026/1/3	"		CLP ABN	
✓ IP/S-1/063/026/1/4	"		CLP Pest PCB	
✓ IP/S-1/063/026/1/5	"		CLP Metals	
✓ IP/S-1/066/006/1/1	"	18 April 1990 9:05	Pb, Ar, Cr	
✓ IP/S-1/066/018/1/1	"	"	"	
✓ IP/S-1/066/026/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9240
9241

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates	DATE SHIPPED 4/18/90	CARRIER Fed X	
PHONE (609) 938-1553	AIRBILL NO. 4370158914 ~~4370158995~~ 5/8/90	COOLER NO. E-95	

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

ATTENTION: M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		4/18/90	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/s-1/066/026/1/1/2	Soil	18 April 1990 9:05	CLP VOC (2 jars)	
P/s-1/066/026/1/1/3	"	"	CLP ABN	
P/s-1/066/026/1/1/4	"	"	CLP Pest/PCB	
IP/s-1/066/026/1/1/5	"	"	CLP Metals	
P/SW1/26R/012/1/1	"	18 April 1990 10:50	Pb, As, Cr	
IP/SW1/26R/02/1/1	"	"	"	
P/SW1/26R/08/1/1	"	"	"	
IP/SW1/26M/006/1/1	"	18 April 1990 11:05	"	
P/SW1/26M/018/1/1	"	"	"	
IP/SW1/26M/016/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9240
9241

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature) Cindy Yates		DATE SHIPPED 4/18/90	CARRIER Fed X
PHONE (609) 938-1553	AIRBILL NO. ~~4370158995~~ 4370158914 5/8/90		COOLER NO. E-95

SHIP TO	SEND RESULTS 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
ATTENTION M. McCall	PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/18/90	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
JP/SW1/26M/018/1/N/1	Soil	18 April 1990 10:05	Pb, As, Cr	
JP/SW1/26L/006/1/N/1	"	18 April 1990 11:25	"	
JP/SW1/26L/012/1/N/1	"	"	"	
JP/SW1/26L/018/1/N/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

No VOC readings.

Seal # 9240
9241

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/20/90	CARRIER Fed X
PHONE (609) 273-1110	AIRBILL NO. 9907537354 ~~4370158995~~		COOLER NO.

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

ATTENTION M McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/20/90	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/SW1/18R/006/1/1	Soil	20 April 1990 8:55	Pb, As, Cr	
P/SW1/18R/012/1/1	"	"	"	
P/SW1/18R/018/1/1	"	"	"	
IP/SW1/18R/018/1/1	"	"	"	
P/SW1/18M/006/1/1	"	20 April 1990 9:15	"	
IP/SW1/18M/012/1/1	"	"	"	
P/SW1/18M/018/1/1	"	"	"	
IP/SW1/18L/006/1/1	"	20 April 1990 9:40	"	
P/SW1/18L/012/1/1	"	"	"	
P/SW1/18L/018/1/1	"	"	"	

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	___ Immediate Attention (200% Surcharge)	___ RUSH (50-100% Surcharge)	✓ Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) Cindy Yates		DATE SHIPPED 4/20/90	CARRIER Fed X
PHONE (609) 273-1110	AIRBILL NO. 9407637354 ~~4370158995~~ 5/8/90		COOLER NO.

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

ATTENTION H. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		4/20/90	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/SW1/184/027/V/1	Soil	20 April 1990 9:40	Pb, As, Cr	
IP/SW1/184/027/V/M/1	"	"	"	
IP/SW1/184/027/V/N/1	"	"	"	
IP/SW1/184/030/V/V/1	"	"	"	
IP/S-1/106/006/V/V/1	"	20 April 1990 11:00	"	
IP/S-1/106/015/V/V/1	"	"	"	
IP/SW1/E822/000/2/V/1	Aqueous	20 April 1990 10:20	"	
Trip Blank dated 4/20/90	Trip Blank	20 April 1990		

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	Immediate Attention (200% Surcharge)	RUSH (50-100% Surcharge)	✓ Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 3

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 06873
(201) 469-5800
(201) 469-7516 Fax #.

ATTENTION M McCall

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

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 5/23/90	TIME 15:00
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
TP/SW1/23R/006/1/2/1	Soil	5/23/90 9:00	Ar Pb Cr	
TP/SW1/23R/012/1/2/1		"	"	
TP/SW1/23R/012/1/N/1		"	"	
TP/SW1/23R/012/1/N/1		"	"	
TP/SW1/23R/008/1/2/1		"	"	
TP/SW1/50R/006/1/2/1		9:40	"	
TP/SW1/50R/012/1/2/1		"	"	
TP/SW1/50R/008/1/2/1		"	"	
TP/SW1/50R/027/N/2/1		"	"	
TP/SW1/50R/036/N/2/1		"	"	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 2 OF 3

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 #.

ATTENTION M. McCall

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		5/23/90	15:00
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/SW1/50M/006/1/2/1	Soil	5/23/90 11:40	As Pb Cr	
✓ IP/SW1/50M/012/1/2/1	↓	"	↓	
✓ IP/SW1/50M/018/1/2/1	↓	"	↓	
✓ IP/SW1/50M/018/1/2/1	↓	"	↓	
✓ IP/SW1/50M/022/1/2/1	↓	"	↓	
✓ IP/SW1/50M/036/1/2/1	↓	"	↓	
✓ IP/SW1/50L/006/1/2/1	↓	12:20	↓	
✓ IP/SW1/50L/012/1/2/1	↓	"	↓	
✓ IP/SW1/50L/018/1/2/1	↓	"	↓	
✓ IP/SW1/50L/018/1/M/1	↓	"	↓	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 3 OF 3

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 #.

ATTENTION M. McCall

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 10000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

PROJECT NAME	PROJECT NO.	P.O. NO.
Golder		

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		5/23/90	15:00
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/SW1/50L/018/1/4/1	Soil	5/23/90 12:20	Pb, As, Cr	
✓ P/SW1/50L/027/1/2/1	"	"	"	
✓ P/SW1/50L/036/1/6/1	"	"	"	
✓ IP/SW/EE37/00/1/2/1	Aqueous	11:40	"	
✓ P/S-1/100/006/1/1/1	Soil	5/22/90 8:00	"	
✓ IP/S-1/100/018/1/1/1	"	"	"	
✓ P/S-1/100/036/1/1/1	"	"	"	
✓ IP/S-1/015/006/1/1/1	"	9:00	"	
✓ P/S-1/067/006/1/1/1	"	9:10	"	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER (Signature): C Yates	DATE SHIPPED: 5/30/90	CARRIER: Fed X
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 #.

ATTENTION: M McCall

SEND RESULTS TO:
CLIENT NAME: Bob Glazer
COMPANY: Golder Assoc
ADDRESS: 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO.: (609) 973-1110

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

RELINQUISHED BY (Signature): C Yates	RECEIVED BY (Signature)	DATE: 5/30/90	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/S-1/090/036/AA/	Soil	29 May 90 9:30	Pb, As, Cr	
✓ IP/S-1/099/036/AA/	"	9:50	"	
✓ IP/S-1/087/036/JJ/	"	10:15	"	
✓ IP/S-1/089/036/AB/	"	"	"	
✓ IP/S-1/E840/000/AA/	Aqueous	10:55	"	
✓ IP/S-1/098/036/AA/	Soil	11:00	"	
✓ IP/S-1/088/036/JJ/	"	11:30	"	
✓ IP/S-1/088/036/AM/	"	"	"	
✓ IP/S-1/088/036/JN/	"	"	"	
✓ IP/S-1/097/036/JJ/	"	12:00	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Doc # ~~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

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) C Yates		DATE SHIPPED 5/29/90	CARRIER Fed X
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 #.

ATTENTION M McCall

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

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 5/30/90	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
TP/S-1/087/036/NN	Soil	5/29/90 12:30	As Pb Cr	
TP/S-1/096/036/NN		12:50		
TP/S-1/086/036/NN		13:15		
TP/S-1/095/036/NN		13:35		
TP/SW1/055/006/NN		5/30/90 9:40		
TP/SW1/055/012/NN		"		
TP/SW1/055/018/NN		"		
TP/SW1/055/027/NN		"		
TP/SW1/055/036/NN		"		
TP/SW1/059/006/NN		12:20		

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

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION M McCall

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

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

RELINQUISHED BY (Signature) C. Yates	RECEIVED BY (Signature)	DATE 5/30/90	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/SW1/059/012/N1	Soil	30 May 1990, 2120	Pb, As, Cr	
IP/SW1/059/018/N1	"	"	"	
IP/SW1/059/027/N1	"	"	"	
IP/SW1/059/036/N1	"	"	"	
IP/SW1/059/036/N2	"	"	CLP VOC (2 jars)	
IP/SW1/059/036/N3	"	"	CLP Semivolatile	
IP/SW1/059/036/N4	"	"	CLP Pest./PCB	
IP/SW1/059/036/N5	"	"	CLP TAL Metals (TAL Inorganics)	
Trip blank	aqueous	5/25/90 - 5/30/90		

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

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 4 OF 4

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 #.

ATTENTION M McCall

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

PROJECT NAME	PROJECT NO.	P.O. NO.
Golder		N/C

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		6/1/90	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
P/SW1/049/036/1/4	Soil	1 June 1990 13:30	CLP Pest./PCB	
P/SW1/049/036/1/5	"	"	CLP TAL Metals	
P/SW1/EB41/0[illegible]/2/1	Aqueous	13:00	Pb, As, Cr	
P/SW1/EB42/0[illegible]/2/1	"	14:00	"	

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)

ENS--1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) C Yates		DATE SHIPPED 6/1/90	CARRIER Fed X
PHONE (617) 935-1553	AIRBILL NO 4370158505		COOLER NO. EE-151

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

ATTENTION M McCall

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

PROJECT NAME Golder	PROJECT NO.	P.O. NO. n/a	
RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/1/90	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/SW1/049/006/J/1/1	Soil	1 June 1990 13:30	Pb, As, Cr	
IP/SW1/049/012/J/1				
IP/SW1/049/012/J/M/1				
IP/SW1/049/012/J/N/1				
IP/SW1/049/018/J/1/1				
IP/SW1/049/018/J/2/1				
IP/SW1/049/028/J/1/1				
IP/SW1/049/036/J/1/1				
IP/SW1/049/036/J/1/2			CLP VOA (2 jars)	
IP/SW1/049/036/J/3			CLP Semivolatile	

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)

ENS—1045

Client Retains White Copy Only

HAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION M McCall

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

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

RELINQUISHED BY (Signature) C. Yates	RECEIVED BY (Signature)	DATE 6/1/90	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/SW1/053/027/-/1	Soil	1 June 1990 11:30	Pb, As, Cr	
IP/SW1/053/012/-/1	↓	↓	↓	
IP/SW1/053/018/-/1				
IP/SW1/053/027/-/1				
IP/SW1/053/027/-/1				
IP/SW1/053/027/-/1				
IP/SW1/053/036/-/1				
IP/SW1/102/006/-/1		13:10		
IP/S-1/102/018/-/1				
IP/S-1/102/036/-/1	↓	↓	↓	

SPECIAL INSTRUCTIONS / COMMENTS

Jcal # 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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 4

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 #.

ATTENTION: M McCall

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

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

RELINQUISHED BY (Signature): C Yates	RECEIVED BY (Signature)	DATE: 6/1/90	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/SW1/054/006/-/1	Soil	1 June 1990 8:50	Pb, As, Cr	
IP/SW1/054/012/-/1				
IP/SW1/054/018/-/1				
IP/SW1/054/027/-/1				
IP/SW1/054/036/-/1				
IP/SW1/054/036/-/2			CLP VOA (2 jars)	
IP/SW1/054/036/-/3			CLP Semivolatile	
IP/SW1/054/036/-/4			CLP Pest/PCB	
IP/SW1/054/036/-/5			CLP TAL Metals	
IP/SW1/053/006/-/1		11:30	Pb, As, Cr	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION L. Galizia

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

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/8/90	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
TP/SW1/020/006/JJ1	Soil	8 June 90 9:00	Pb, As, Cr	
TP/SW1/020/012/JJ1	"	"	"	
TP/SW1/030/018/JJ1	"	"	"	
TP/SW1/030/027/JJ1	"	"	"	
TP/SW1/030/027/JJ1	"	"	"	
TP/SW1/030/027/JJ1	"	"	"	
TP/SW1/028/006/JJ1	"	10:30	"	
TP/SW1/028/012/JJ1	"	"	"	
TP/SW1/028/006/JJ1	"	"	"	
TP/SW1/028/018/JJ1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS

Seal #
02575
02578 > cooler # 165

02563
02561 > cooler # 76

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 2 OF 5

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 #.

ATTENTION L. Galizia

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		6/8/90	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/SW1/028/027/1/1	Soil	6/8/90 10:30	As Pb Cr	
~~IP/SW1/028/026/1/1~~		"		
IP/SW1/032/004/1/1		15:12		
IP/SW1/032/012/1/1		"		
IP/SW1/032/012/1/1		"		
IP/SW1/032/018/1/1		"		
IP/SW1/032/018/1/1		"		
IP/SW1/032/018/1/1		"		
IP/SW1/032/027/1/1		"		
IP/SW1/032/031/1/1		"		

SPECIAL INSTRUCTIONS / COMMENTS.

Seal # 02575, 02578 > cooler #165

02563, 02561 > cooler #76

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION L. Galizia

SEND RESULTS TO:
CLIENT NAME Bob Glazier
COMPANY Golder Assoc.
ADDRESS 20000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 873-1110

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/8/90	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/SW1/028/036/1/12	Soil	8 June 90 12:00	CLP VOA (2 jars)	
IP/SW1/028/036/1/13	"	"	CLP Semivolatile	
IP/SW1/028/036/1/14	"	"	CLP Pest/PCB	
IP/SW1/028/036/1/15	"	"	CLP TAL Metals	
IP/SW1/038/006/1/1	"	14:00	Pb, As, Cr	
IP/SW1/038/012/1/1	"	"	"	
IP/SW1/038/018/1/1	"	"	"	
IP/SW1/038/027/1/1	"	"	"	
IP/SW1/038/036/1/2	"	14:50	CLP VOA (2 jars)	
IP/SW1/038/036/1/3	"	"	CLP Semivolatiles	

SPECIAL INSTRUCTIONS/COMMENTS:

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

OVA head-space readings on CLP hole IP/SW1/028 > 1000 ppm

" " " IP/SW1/038 = 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)	✓ Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION: L Galizia

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

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

RELINQUISHED BY (Signature): C Yates	RECEIVED BY (Signature)	DATE 6/8/90	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/SW1/038/036/1/4	Soil	8 June 90 14:50	CLP Pest/PCB	
IP/SW1/038/036/1/5	"		CLP TAL Metals	
IP/SW1/EB50/000/2/1	Aqueous	13:20	Pb, As, Cr	
IP/SW1/EB51/000/2/1	"	10:45	"	
IP/S-1/054/006/1/1	Soil	8:45	"	
IP/S-1/054/018/1/1	"	"	"	
IP/S-1/055/036/1/6	"	9:10	CLP VOA (2 jars)	
IP/S-1/055/036/1/3	"	"	CLP Semivolatiles	
IP/S-1/055/036/1/4	"	"	CLP Pest/PCB	
IP/S-1/055/036/1/5	"	"	CLP TAL Metals	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 02575, 02578 > cooler #165

02563, 02561 > cooler #76

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION L Galizia

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 200000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/8/90	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/S-1/055/000/1/1/1	Soil	8 June 90 9:10	Pb, As, Cr	
IP/S-1/055/018/1/1/1	"	9:10	"	
IP/S-1/076/000/1/1/2	"	12:00	CLP VOA (2 jars)	
IP/S-1/076/000/1/1/3	"	"	CLP Semivolatiles	
IP/S-1/076/000/1/1/4	"	"	CLP Pest/PCB	
IP/S-1/076/000/1/1/5	"	"	CLP TAL Metals	
IP/S-1/054/076/1/1/1	"	8:45	Pb, As, Cr	
IP/S-1/055/036/1/1/1	"	9:10	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal #
02575
02578 > cooler #165

02563
02561 > cooler #76

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 4

SAMPLER: (Signature) C. Yates		DATE SHIPPED 6/11/90	CARRIER Fed X
PHONE (617) 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 #.

ATTENTION L. Galizia

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

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

RELINQUISHED BY (Signature) C. Yates	RECEIVED BY (Signature)	DATE 6/11/90	TIME 15:30
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/034/[illegible]	Soil	11 June 1990 9:40	Pb, As, Cr	
IP/SW/034/[illegible]	"	"	"	
IP/SW/034/[illegible]	"	"	"	
IP/SW/034/012/1/1	"	"	"	
IP/SW/034/018/1/1	"		"	
IP/SW/034/027/1/1	"	"	"	
IP/SW/034/036/1/1	"	"	"	
IP/SW/034/026/1/1	"	"	"	
IP/SW/036/006/1/1	"	1035	"	
IP/SW/036/012/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS
SCAL # 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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (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 #.

ATTENTION L. Galizia

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C. Yates		6/11/90	15:30
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/SW1/036/018/4/1	Soil	11 June 1990 10:30	Pb, As, Cr	
P/SW1/036/023/4/1	"	"	"	
P/SW1/036/036/4/1	"	"	"	
P/SW1/037/006/4/1	"	11:10	"	
P/SW1/037/012/1/1	"	"	"	
P/SW1/037/018/4/1	"	"	"	
P/SW1/037/023/1/1	"	"	"	
P/SW1/037/036/4/1	"	"	"	
P/SW1/037/018/1/4/1	"	"	"	
P/SW1/037/027/1/M/1	"	"	"	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (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 #.

ATTENTION L Galizia

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 70000 Horizon Way Ste 300
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/11/90	TIME 15:36
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/037/022/1/1	Soil	11 June 1990 11:10	Pb, As, Cr	
IP/SW/037/004/1/1	"	12:10	"	
IP/SW/104/002/1/1	"	"	"	
IP/SW/104/005/1/1	"	"	"	
IP/SW/047/027/1/1	"	"	"	
IP/SW/104/036/1/1	"	"	"	
IP/SW/048/001/1/1	"	13:00	"	
IP/SW/048/012/1/1	"	"	"	
IP/SW/048/018/1/1	"	"	"	
IP/SW/048/027/1/1	"	"	"	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (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 #.

ATTENTION L. Galizia

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder Assoc
ADDRESS 20000 Horizon Way Ste 900
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature) C. Yates	RECEIVED BY (Signature)	DATE 6/11/90	TIME 15:30
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/SW1/048/036/1.1	Soil	9 June 1990 12:00	Pb, As, Cr	
P/SW1/EB52/002/2/1	Aqueous	10:00	"	
P/SW1/EB53/002/2/1	"	12:30	"	
P/S-1/41/036/1.1	Soil	9 June 90 11:00	"	
P/S-1/41/048/1.1	"	"	"	
P/S-1/41/036/1.1	"	"	"	
P/S-1/42/000/1.1	"	11:30	"	
P/S-1/42/018/1.1	"	"	"	
P/S-1/42/036/1.1	"	"	"	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 7

SAMPLER: (Signature) C Yates	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 #.

ATTENTION L Gulizia

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

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

RELINQUISHED BY (Signature) C Yates	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
~~IP/SW1/042/006/1/1~~	Soil	13 June Mtr 8:20	—	
IP/SW1/042/006/1/2	"	"	CLP VOA (2 jars)	
IP/SW1/042/006/1/3	"	"	CLP Semivolatiles	
IP/SW1/042/006/1/4	"	"	CLP Pest / PCBs	
IP/SW1/042/006/1/5	"	"	CLP TAL Metals	
IP/SW1/042/012/1/1	"	"	Pb, As, Cr	
IP/SW1/042/018/1/1	"	"	"	
IP/SW1/042/027/1/1	"	"	"	
IP/SW1/042/036/1/1	"	"	"	
IP/SW1/047/006/1/1	"	9:00	"	

SPECIAL INSTRUCTIONS / COMMENTS:

02573
02571 > E261

Seal # 03607
03608 > E160 cooler

~~03609~~ cy 03609
~~03606~~ cy 03606 > E721 cooler

OVA head-space reading for IP/SW1/42... = 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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION L. Gulizia

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		6/13/90	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
TP/SW/047/012/H/	Soil	13 June 1990 9:00	Pb, As, Cr	
TP/SW/047/018/H/	"	"	"	
TP/SW/047/027/H/	"	"	"	
TP/SW/047/036/H/	"	"	"	
TP/SW/047/008/H/	"	"	"	
TP/SW/047/018/M/	"	"	"	
TP/SW/047/027/H/	"	"	"	
TP/S-1/004/006/H/	"	10:30	"	
TP/S-1/004/006/H/	"	11:20	"	
TP/S-1/004/008/H/	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal #
03607
03608 > E160

03609
03606 > E721

02573
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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION L. Gulizia

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

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

RELINQUISHED BY (Signature) C Yates	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
IP/S-1/004/018/1/d/1	Soil	13 June 1990 11:20	Pb, As, Cr	
IP/S-1/004/027/1/1/1	"	"	"	
IP/S-1/004/027/1/1/2	"	"	CLP VOA (2 jars)	
IP/S-1/004/027/1/1/3 IP/S-1/004/027/1/1/4	"	"	CLP Semivolatiles 2 samples Pest/PCB 3 in jar	
IP/S-1/004/027/1/1/5	"	"	CLP TAL Metals	
IP/S-1/005/006/1/1/1	"	12:10	Pb, As, Cr	
IP/S-1/005/018/1/1/1	"	"	"	
IP/S-1/005/006/1/N/1	"	"	"	
IP/S-1/005/006/MV/1	"	"	"	
IP/S-1/005/030/1/1/1	"	"	"	

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 4 OF 7

SAMPLER: (Signature) C Yates		DATE SHIPPED 6/13/90	CARRIER FRCl 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 #.

ATTENTION L Giulizia

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

PROJECT NAME Golder	PROJECT NO.	P.O. NO. n/a	
RELINQUISHED BY (Signature) C Yates	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
IP/S-1/005/030/1/1/2	Soil	13 June 1990 12:10	~~Pb, As, Cr~~ CLP VOA (2 jars)	
IP/S-1/005/030/1/1/3	"	"	CLP Semivolatile } 2 samples	
IP/S-1/005/030/1/1/4	"	"	Pest/PCB } in 1 jar	
IP/S-1/005/032/1/1/5	"	"	CLP TAL Metals	
IP/S-1/002/006/1/1	"	13:00	Pb, As, Cr	
IP/S-1/002/018/1/1	"	"	"	
IP/S-1/002/036/1/1	"	"	"	
IP/S-1/002/036/1/1/2	"	"	CLP VOA (2 jars)	
IP/S-1/002/036/1/1/2	"	"	"	
IP/S-1/002/036/1/M/2	"	"	"	
IP/S-1/002/036/1/N/2	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03607
03608 > E160

03609 > E721

03606
02573
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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) C Gates	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 #.

ATTENTION L. Gulizia

SEND RESULTS TO
CLIENT NAME Bob Glazier
COMPANY Golder
ADDRESS 200000 Horizon Way Ste 300
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature) C Gates	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
IP/S-1/002/036/Y/3 IP/S-1/002/036/Y/4	Soil	13 June 1990 13:00	CLP Semivolatile	
IP/S-1/002/036/N/3 IP/S-1/002/036/N/4	"	"	and Pest/PCB	
IP/S-1/002/036/Y/N/3 IP/S-1/002/036/Y/N/4	"	"		
IP/S-1/002/036/Y/N/3 IP/S-1/002/036/Y/N/4	"	"		
IP/S-1/002/036/Y/5	"	"	CLP TAL Metals	
IP/S-1/002/036/N/5	"	"		
IP/S-1/002/036/Y/N/5	"	"		
IP/S-1/002/036/Y/N/5	"	"		
IP/S-1/021/006/Y/1		14:00	Pb, As, Cr	
IP/S-1/021/018/Y/1				

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 03607, 03608 > E160

03609, 03606 > E721

02573, 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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

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 #.

ATTENTION L. Giulizia

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

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

RELINQUISHED BY (Signature) C Yates	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
TPS-1/021/018/1/1	Soil	13 June 1990 14:00	Pb, As, Cr	
TPS-1/021/054/1/1	"	"	"	
TPS-1/021/030/1/M1	"	"	"	
TPS-1/021/032/1/1	"	"	"	
TPS-1/022/006/1/1	"	14:30	"	
TPS-1/022/018/1/1	"	"	"	
TPS-1/022/050/1/1	"	"	"	
TPS-1/EB56/001/1/1	Aqueous	9:10	"	
TPS-1/EB58/001/1/1	"	12:30	"	
TPS-1/EB59/001/1/1	"	14:15	"	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 03607, 03608 > E160

03609, 03606 > E721

02573, 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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (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) 469-5800
(201) 469-7516 Fax #.

ATTENTION L Gulizia

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

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

RELINQUISHED BY (Signature)	RECEIVED BY (Signature)	DATE	TIME
C Yates		6/13/90	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/S-1/EB57/000/2/1/2	Aqueous	13 June 1990 11:45	CLP VOA (2 vials)	
- IP/S-1/EB57/000/2/1/3	"	"	CLP Semivolatile (2 jars)	
- IP/S-1/EB57/000/2/1/4	"	"	CLP Pest/PCBs (2 jars)	
- IP/S-1/EB57/000/2/1/5	"	"	CLP TAL Metals	
- TRIP BLANK	"	6/8/90		

SPECIAL INSTRUCTIONS / COMMENTS

Seal #03607 03608 > E160

03609 03606 > E721

02573 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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 4

SAMPLER: (Signature) C Yates	DATE SHIPPED 6/14/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158634	COOLER NO. EE20

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

ATTENTION L Gulizia

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

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/14/90	TIME 14.00
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
p/s-1/143/006/1/1	Soil	14 June 1990 7:10	Pb, As, Cr	
p/s-1/143/012/1/1	"	"	"	
p/s-1/143/018/1/1	"	"	"	
Ip/s-1/143/027/1/1	"	"	"	
p/s-1/143/022/1/1	"	"	"	
Ip/s-1/144/006/1/1	"	8:00	"	
p/s-1/144/012/1/1	"	"	"	
Ip/s-1/144/018/1/1	"	"	"	
p/s-1/144/027/1/1	"	"	"	
p/s-1/144/022/1/1	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 08052
08051

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) C Yates	DATE SHIPPED 6/14/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158634	COOLER NO. EE 70

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

ATTENTION L Giulizia

SEND RESULTS TO
CLIENT NAME Bob Glatzer
COMPANY Golder
ADDRESS 20000 Horizon Way Ste 900
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/14/90	TIME 14:00
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
IPS-1/44027/[illegible]	Soil	14 June 1990 8:00	CLP VOA (2 jars)	
IPS-1/44027/[illegible]	"	"	CLP Semi VOA	
IPS-1/44027/[illegible]	"	"	CLP Pest/PCB	
IPS-1/44027/[illegible]	"	"	CLP TAL Metals	
IPS-1/45006/[illegible]	"	9:00	Pb, As, Cr	
IPS-1/45013/[illegible]	"	"	"	
IPS-1/45058/[illegible]	"	"	"	
IPS-1/45027/[illegible]	"	"	"	
IPS-1/45027/[illegible]M	"	"	"	
IPS-1/45027/[illegible]N	"	"	"	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 08052
08051

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 3 OF 1

SAMPLER: (Signature) C Yates		DATE SHIPPED 6/14/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158634		COOLER NO. EE 20

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

ATTENTION L. Guliria

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

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/14/90	TIME 14:00
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/S-1/145/026/[illegible]	Soil	14 June 1990 9:00	Pb, As, Cr	
P/S-1/145/026/[illegible]	"	"	"	
P/S-1/145/026/[illegible]	"	"	CLP VOA (2 jars)	
P/S-1/145/026/[illegible]	"	"	CLP Semi VOA	
P/S-1/145/026/[illegible]		"	CLP Pest/PCB	
IP/S-1/145/026/[illegible]	"	"	CLP TAL Metals	
P/S-1/146/025/[illegible]	"	10:00	"	
IP/S-1/146/025/[illegible]	"	"	CLP VOA (2 jars)	
P/S-1/146/025/[illegible]	"	"	CLP Semi VOA	
P/S-1/146/025/[illegible]	"	"	CLP Pest/PCB	

SPECIAL INSTRUCTIONS / COMMENTS

Seal # 08052
08051

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

SAMPLER: (Signature) C Yates	DATE SHIPPED 6/14/90	CARRIER Fed X
PHONE (617) 938-1553	AIRBILL NO. 4370158634	COOLER NO. EE 20

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

ATTENTION L Galizia

SEND RESULTS TO
CLIENT NAME Bob Glazer
COMPANY Golder
ADDRESS 200000 Horizon Way Ste 500
Mt Laurel NJ 08054
PHONE NO. (609) 273-1110

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

RELINQUISHED BY (Signature) C Yates	RECEIVED BY (Signature)	DATE 6/14/90	TIME 14:00
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/S-1/146'022/LL	Soil	14 June 1990 10:00	Pb, As, Cr	
IP/S-1/146'012/LL	"	"	"	
IP/S-1/146'018/LL	"	"	"	
IP/S-1/146'025/LL	"	"	"	
IP/S-1/146'032/LL	"	"	"	
IP/S-1/EB(1)/001/LL	Aqueous	9:30	"	

SPECIAL INSTRUCTIONS / COMMENTS:

Seal # 08052
08051

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)

ENS—1045

Client Retains White Copy Only

CHAIN-OF-CUSTODY RECORD

Enseco
A CORNING Company

PAGE 1 OF 1

SAMPLER: (Signature) Robert M Blazier	DATE SHIPPED 8-7-90	CARRIER Federal Express
PHONE 609-273-1110	AIRBILL NO. 9708053342	COOLER NO. 287

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

ATTENTION: Lidya Gulizia

SEND RESULTS TO:
CLIENT NAME: Elizabeth Ruda
COMPANY: Golder Associates
ADDRESS: 20,000 Horizon Way Suite 500
Mt. Laurel NJ 08054
PHONE NO. 609-273-1110

PROJECT NAME: Industri-Plex	PROJECT NO.	P.O. NO.

RELINQUISHED BY (Signature): Robert M Blazier	RECEIVED BY (Signature)	DATE 8-7-90	TIME 1700
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
TP/S-1/002/018/1/2/2	soil (2 jars)	8-6-90/1730	CLP VOC	
P/S-1/002/018/1/2/2	soil (2 jars)			
TP/S-1/EBR/000/2/2/2	aqueous			
trip blank	aqueous			
P/S-1/002/018/1/2/5	soil		total Hg by CLP	
P/S-1/002/018/1/2/5	soil			
P/S-1/EBR/000/2/2/5	aqueous			

SPECIAL INSTRUCTIONS / COMMENTS:

RMG 8-7-90

COC Seal No.s ~~08621, 08622~~ 03487, 03488

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)	X Standard

ENSECO EAST LOG NUMBER (lab use only)

ENS—1045

Client Retains White Copy Only

APPENDIX F

SW-846 Data Assessment

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF OVERALL DATA QUALITY
FOR TASK S-1

PERFORMED BY: Bob Glazier DATE: 8-14-90

	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 (87%)
Are field duplicate RPD within control limits?	yes (88%)
Are MS/MSD RPD within control limits?	yes (87%)*
Overall assessment of precision	Although some specific duplicates are not within control limits, over 87% of the duplicates are in control. Those out of control are flagged as estimated. Precision is acceptalbe to support design.
3. Accuracy:	
Is absolute recovery within control limits for DCS?	yes
Is relative recovery within control limits for MS/MSD?	yes (87%)*
Overall assessment of accuracy	Although spike recoveries are not within control limits for some specific MS/MSD samples, over 92% 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 (88%)
Overall assessment of representativeness	The data are considered representative of site conditions.

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF OVERALL DATA QUALITY
FOR TASK S-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 that collected 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? yes
Overall assessment of completeness Sufficient usable data have collected to support design.

7. Are the data useable and consistent with the objectives of the study? yes

8. Comments: * 39% of the MS/MSD results were not calculated by the lab because the initial sample concentration was more than 4 times the spike. 53% of the MS/MSD results are within control limits, and 8% are not within control limits. Neglecting the 39% not calculated, 85% were within the control limits, and overall accuracy is acceptable.

C:6255:ODQFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7249

VALIDATED BY: Bob Glazier DATE: 6-22-90

	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?	yes
If not, were procedural variances approved and documented?	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 rinsate blanks analyzed with this batch.

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7249

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%)?	yes
	Field duplicate RPDs within control limits (50%)?	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?	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 5-1

(continued)

Note any violations to the assessment criteria listed above:

- No MS/MSDs analyzed with this batch
- Page 7 of chain of custody form (not included in this report) lists CLP samples which were assigned to a differenct Enseco East Project Number
- No field duplicates or equipment rinsate blanks analyzed with this batch.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK 5-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7248

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?	yes
If not, were procedural variances approved and documented?	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 rinsate blanks analyzed with this batch

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7248

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%)?	NA
	Field duplicate RPDs within control limits (50%)?	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?	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 5-1

(continued)

Note any violations to the assessment criteria listed above:

- No lab duplicate, field duplicate, MS/MSD, or equipment rinsate blank samples analyzed with this batch

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Enseco East REPORT # 7240

VALIDATED BY: Bob Glazier DATE: 6-22-90

	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?	yes
If not, were procedural variances approved and documented?	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: Field duplicate of 109/006-lead RPD=34% but concentration is low (~15 ppm). Field duplicate of 009/[illegible] arsenic RPD=38% but concentration is low (~5 ppm)

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7240

VALIDATED BY: Mary Bourcier/Bob Glazier DATE: 6-12-90/6-22-90

		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%)?	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?	yes (NA)
14.	QC procedures given?	yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

(continued)

Note any violations to the assessment criteria listed above:

- lab duplicate of 009/018 -- arsenic RPD=41%. However, the field duplicate of the same sample was within control limits and arsenic is low concentration (~5 ppm)
- Two jars were mislabelled, but the correct sample ID was determined by reference to the jars labels, chain of custody form, borehole log, and sample integrity data sheet.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7242

VALIDATED BY: Bob Glazier DATE: 6-22-90

	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?	yes
If not, were procedural variances approved and documented?	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 74/036-- arsenic RPD=43%
chromium RPD=78%
Field duplicate of 55B/006-- lead RPD= [illegible]%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7242

VALIDATED BY: Mary Bourcier / Bob Glazier DATE: 6-12-90 / 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%)?	no
	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 S-1

(continued)

Note any violations to the assessment criteria listed above:

- field duplicate of 074/036 -- chromium RPD = 78%
- lab duplicate of 074/036 -- arsenic RPD = 103%
- MSD of 078/018 -- arsenic recovery = 34%, arsenic RPD = 110%
- MS of 078/018 -- chromium recovery = 127%, RPD = 39%

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK 5-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7246

VALIDATED BY: Bob Glazier DATE: 6-22-90

	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?	yes
If not, were procedural variances approved and documented?	NA
3. Was contamination of field blank samples not evident, or well documented at low levels?	yes
4. Are field duplicates within control limits?	NA

5. Comments: No field duplicates were analyzed with this batch.

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7246

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%)?	no
	Field duplicate RPDs within control limits (50%)?	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 S-1

(continued)

Note any violations to the assessment criteria listed above:

- lab duplicate for 069/031 -- chromium RPD=58%, lead RPD=85%
- no field duplicates or MS/MSDs analyzed with this batch
- no signature, date, time of lab receipt on page 3 of chain of custody form (contains rinsate blank sample). However, first two pages were signed, and notations about seals written on page 3.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7244

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?	yes
If not, were procedural variances approved and documented?	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 51/018 -- chromium RPD = 97%, lead RPD = 103%, arsenic RPD = 40%

Field duplicate of 58/031 -- chromium RPD = 78%, lead RPD = 34%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7244

VALIDATED BY: Mary Bourcier/Bob Glazier DATE: 6-12-90/6-24-90

		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%)?	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?	yes (NA)
14.	QC procedures given?	yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

(continued)

Note any violations to the assessment criteria listed above:

- lab duplicate of 51/018 -- arsenic RPD=51%, lead RPD=88%
- lab duplicate of 58/031 -- chromium RPD=67%
- field duplicate of 51/018 -- chromium RPD=97%, lead RPD=103%
- field duplicate of 58/031 -- chromium RPD=78%

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Cindy Yates / Golder Associates REPORT # 795

VALIDATED BY: Kate 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?	YES
If not, were procedural variances approved and documented?	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 = 53.9%

Field duplicate of 49/012, 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: [illegible] 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

7954

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 and task changed from S1 to S-1; 7954 17 to 22 and task changed from SWI 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 QAPP.

+ Lab Duplicate RPDs > 35% 7954-15 As RPD = 36%

++ 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 Ø53/Ø12

	1° Result	1° Report Limit	Dup Result	Dup Rep limit	% RPD
As	20.2	2.1	20.1	2.3	Ø.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 Ø49/Ø18

	1° Result	1° Rep. Limit	Dup Result	Dup Rep limit	% RPD
As	4.Ø	1.7	5.1	Ø.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

KAH 90Ø7Ø5

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Ian Kennedy/Golder Associates REPORT # 7224

VALIDATED BY: Bob Glazier DATE: 6/22/90

	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?	yes
If not, were procedural variances approved and documented?	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 016/024, arsenic RPD = 51%
Field duplicate of 119/006 -- arsenic RPD = 47% chromium RPD = [illegible]

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7224

VALIDATED BY: Mary Bourcier/Bob Glazier DATE: 6/2/90 / 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%)?	yes
	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?	yes (N/A)
14.	QC procedures given?	yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

(continued)

Note any violations to the assessment criteria listed above:

~~lab duplicate of 016/029 arsenic RPD=67%~~ N/A, < 4 times CRDL

~~Field duplicate of 016/024 - arsenic RPD=51%~~ N/A, < 4 times CRDL

There is a calculation error in percent recovery for MS/MSD samples from 117/018. Recoveries of 65 and 62 percent should read 85 and 82 percent.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7238

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?	yes
If not, were procedural variances approved and documented?	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: Field duplicate of 4[illegible]/01[illegible] -- arsenic RPD = 42%, chromium RPD = 36%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7238

VALIDATED BY: Mary Bourcier/Bob Glazier DATE: 6-12-90/6-24-90

		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%)?	yes
	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

(continued)

Note any violations to the assessment criteria listed above:

- MS/MSD for 38/006 -- percent recovery for lead is low (MS = 49%, MSD = 70%, RPD = 35%). Lead Percent recovery and %RPD in control for MS/MSD sample for 39/018 and 36/024.
- 2 jars were mislabelled. Correct ID for sample determined using chain-of-custody, borehole log, and sample integrity data sheet.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK 5-1

SAMPLER/ORGANIZATION: Dan Kennedy / Golder Associates REPORT # 7245

VALIDATED BY: Bob Glazier DATE: 6-22-90

	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?	yes
If not, were procedural variances approved and documented?	NA
3. Was contamination of field blank samples not evident, or well documented at low levels?	NA
4. Are field duplicates within control limits?	

5. Comments: Field duplicate of 059/006 -- lead RPD = 52%
No equipment rinsate blanks were analyzed with this batch

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK 5-1

LABORATORY: Enseco East REPORT # 7245

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%)?	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?	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 S-1

(continued)

Note any violations to the assessment criteria listed above:

- field duplicate of 059/006--lead RPD = 52%
- pages 3 and 4 of the chain of custody form were not signed and dated by Enseco upon receipt, but notations were made regarding intact custody seals.

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Cindy Yates / Golder Associates REPORT # 8247

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?	yes
If not, were procedural variances approved and documented?	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: NA

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK 5-1

LABORATORY: ENSECO East REPORT # 8247

VALIDATED BY: Bob Glaser DATE: 8-7-90

		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%)?	NA
	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

8247

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-4

(continued)

Note any violations to the assessment criteria listed above:

N/A

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7247

VALIDATED BY: Bob Glazier DATE: ~~6-13-~~ 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?	yes
If not, were procedural variances approved and documented?	NA
3. Was contamination of field blank samples not evident, or well documented at low levels?	NA
4. Are field duplicates within control limits?	yes/no

5. Comments: No equipment rinsate blanks analyzed with this batch
Field duplicate of 19/018 -- lead RPD = 47%

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7247

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%)?	no
	Field duplicate RPDs within control limits (50%)?	yes
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?	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

(continued)

Note any violations to the assessment criteria listed above:

- lab duplicate of 76/018 -- arsenic RPD = 40%

no MS/MSDS, equipment rinsate blanks analyzed with this batch

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1

SAMPLER/ORGANIZATION: Ian Kennedy / Golder Associates REPORT # 7206

VALIDATED BY: Bob Glazier DATE: 6-22-90

	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?	yes
If not, were procedural variances approved and documented?	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 088/006, arsenic RPD = 89%, however concentration is low (~9 ppm)

* Chain-of-Custody Form

C:6255:FPFORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

LABORATORY: Enseco East REPORT # 7206

VALIDATED BY: Mary Bourcier/Bob Glazier DATE: 6-12-90/6-22-90

		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%)?	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?	yes (NA)
14.	QC procedures given?	yes

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S-1

(continued)

Note any violations to the assessment criteria listed above:

- field duplicate of 088/006, arsenic RPD = 89%, however concentration is low (~9 ppm) and is nearly less than 4 times the reporting limit

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Cindy Yates / Golder Associates REPORT # 7919

VALIDATED BY: Ben 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?	yes
If not, were procedural variances approved and documented?	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 SI and SW-1

LABORATORY: Enseco - East REPORT # 1919

VALIDATED BY: L 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%)?	yes
	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?	N/A
14.	QC procedures given?	yes

7919

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF LABORATORY PERFORMANCE
FOR TASK S1 and SW-1

(continued)

Note any violations to the assessment criteria listed above:

**** Client IDs for Field Dups + MS/MSDs need to be corrected; change lower case to upper case.
Samples 7919-13 through 22 need Task changed from S-1 to SW1

(*) Results for IP/SW1/055/018/1/1/1 are not reported. Sample lost at lab. See cover letter.

* for aqueous sample IP/S-1/EB40/000/2/1/1, Lead analysis was performed using EPA method 200.7 (ICP) instead of E239.2 (GFAA) as specified in the QAPjP

** MS/MSD 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	10 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
% MOIS	19	—	19	—	0

all results are greater than 5x reporting limit

C:6255:ALP1FORM

~ DCS for QC Lot 22 JUN 90-B avg As recovery 122%
DCS1 As recovery 121%
DCS2 As recovery 123%

LAA 900703

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 Shuzier 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?	yes
If not, were procedural variances approved and documented?	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: LAHeidel 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%)?	NM
	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?	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 Field Dups + MS/MSD and correction; change lower case to upper c
* for the aqueous samples, lead analysis was performed using EPA method 200.7 (ICP), instead of 239.2 (GFAA) as specified in the QAPP.
** ms/msd recoveries/RPDs not calculated for As in 8108-4 + 8108-15 and Cr + Pb in 8108-4; sample conc. exceeds spike conc. by more than 4x
*** COCs need to be copied darker. Too light to be read.

Field Duplicate 028/006
PMG 8-15-90

	Result	1° Rep Limit	Dup Result	Rep Limit	% RPD
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
% Mois	81	—	81	—	0

All results greater than 5x the reporting limit.

C:6255:ALP1FORM

032/012

	Result	1° Rep Limit	Dup Result	Rep Limit	% RPD
As	272	42.3	225	16.2	18.9
Cr	38.4	1.7	32.5	1.6	16.6
Pb	277	8.5	331	8.0	17.8
% Mois	41	—	38	—	7.6

All results greater than 5x the reporting limit

900706

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?	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?	yes
If not, were procedural variances approved and documented?	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/Sw-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%)?	~~NA~~ yes RMG 8-14-90
	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 *1
9.	DCS precision within given control limits (20%)?	yes *1
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

8222

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

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Ian 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?	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?	yes
If not, were procedural variances approved and documented?	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: Field dupl. 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:FPFORM

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%)?	yes
	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%)

C:6255:ALP1FORM

INDUSTRI-PLEX PRE-DESIGN INVESTIGATION

ASSESSMENT OF FIELD PERFORMANCE
FOR TASK S-1/SW-1

SAMPLER/ORGANIZATION: Ian 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?	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?	yes
If not, were procedural variances approved and documented?	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 East REPORT # 7217

VALIDATED BY: Mary Bourcier/Bob Glazier DATE: 6-12-90/6-22-90

		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%)?	yes
	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?	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 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 S-1/SW-1

SAMPLER/ORGANIZATION: Cindy Sains / Geoder Associates REPORT # [illegible]

VALIDATED BY: Rob Glazier DATE: [illegible]

	YES/NO/NA
1. Does field documentation include:	
date/time samples collected?	yes
sample location?	yes
name of sampler?	yes
field measurements?	[illegible]
sampling method?	yes
instruments/methods for field measurements?	[illegible]
calibration/maintenance of field instruments?	[illegible]
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?	yes
If not, were procedural variances approved and documented?	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: LAHendel DATE: 07-03-92

		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 ∞
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%)?	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

7848

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/EB37/000/2/2/1, Lead analysis was performed using EPA method 200.7 (ICP) instead of 239.2 (GFAA) as specified in the QAP, P.

** Lab Duplicates RPDs could not be calculated because results were ND

∞ MS/MSD recoveries had not been calculated for As and Cr in 7248-2 MS+2:
Recoveries are as follows: Recoveries outside control limits circled in green

As	MS = 117%	MSD = 129%	RPD = 10%
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 7248-2 53%

*** Left hand side of COCs cropped; Cannot read Enseco sample IDs.

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 ~~Blank~~ duplicate SOM/018

	1° Result	1° Rep Limit	Dup Result	Dup 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
% mois	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 1° result was 0.

LAH 90070

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?	yes
If not, were procedural variances approved and documented?	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:FPFORM

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%)?	NA
	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%)?	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%

~~(Note: Sample ID for duplicate might be incorrect on chain of custody).~~

~~MS/MSD~~ Sample 034/006 As % recovery = 62, % RPD = 68; Cr % recovery = 343; ~~% RPD~~ % RPD = 170 Pb % recovery = 15; % RPD = 102; Sample 037/027 As MS % recovery = 73

~~MSD of 034/006 As % recovery = 68%, RPD = 68%~~

DCS data not provided for lots 29 Jun 90-A, 02 JUL 90-D

Method Blank not provided for 08 JUL 90-A for Cr, Pb; 02 JUL 90-D for As, 29 JUN 90-A for As, Pb, Cr

C:6255:ALP1FORM

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 soil boring samples collected from April 16, 1990 through June 14, 1990 at the Industri-Plex Site in Woburn, Massachusetts. These samples were part of the Pre-Design Investigation (PDI) Task S-1 (Extent of Hazardous Substances in Soils) 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 twenty-two (22) 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 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 six (6) days and the Laboratory produced seven 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 seven 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 except IP/S-1/002/036/1/D were extracted and/or analyzed within the required holding time for the Volatile, Semi-volatile and Pesticide/PCB fractions.

Sample IP/S-1/002/036/1/D was incorrectly logged into the Laboratory's LIMS (Laboratory Information Management System) computer. Consequently, the sample was not analyzed for Volatile Organic Compounds within the required holding time. The Laboratory's Program Administrator for the ISRT Project contacted Golder on July 24, 1990, to inform the Laboratory Interface that the volatile analysis had not been performed for this sample. The Laboratory wanted to know if Golder wished to have the sample analyzed past the hold time for Volatile Organics. Golder's Laboratory Interface contacted the Laboratory on July 25, 1990 to inform the Program Administrator that this sample point would be re-sampled for the Volatile fraction and that it was not necessary to analyze the sample past the holding time. Consequently, Volatile data does not exist for the Field Duplicate for borehole 002. During this conversation, the Program Administrator assured the Laboratory Interface that the Semi-volatile and Pesticide/PCB analyses had been performed within the required holding time.

Sample point IP/S-1/002/036/1/1 was re-collected for Volatile Organics on August 6, 1990. The Volatile results for this sample location will follow in a supplemental report.

During review of the data for sample IP/S-1/002/036/1/D, the data validator noted that the sample had not been extracted within the required holding time for both the Semi-volatile and Pesticide/PCB fractions. The positive results for 2-Methylnaphthalene, Phenanthrene, Anthracene, Fluoranthene, Pyrene, Benzo(a)Anthracene, bis(2-Ethylhexyl)Phthalate, Chrysene, Benzo(b)Fluoranthene, Indeno(1,2,3-cd)Pyrene, Benzo(a)Pyrene, and Benzo(g,h,i)Perylene in the Semi-volatile fraction and 4,4'-DDE and Aroclor 1254 in the Pesticide fraction required qualification as estimated values. The non-detected results for the remainder of the Semi-volatile and Pesticide/PCB target compounds required qualification as estimated quantitation limits. In general, the same TCL analytes were detected in both the primary and duplicate samples, with concentrations agreeing within a factor of ten (10). Therefore, the sample point will not be re-sampled for these two 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 Percent Differences (%D) for 1,1,1-Trichloroethane, Chloromethane, Bromomethane, 1,2-Dichloroethane and Carbon Tetrachloride in the aqueous volatile calibration analyzed on April 19, 1990 were greater than 25%. The non-detected results for these compounds in the equipment blank IP/S-1/EB20/000/2/1 did not require qualification.

The Percent Difference (%D) for Vinyl Acetate in the volatile continuing calibration analyzed on April 18, 1990 was greater than 25%. The non-detected results for this compound in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/041/033/1/1, IP/S-1/049/032/1/1, IP/S-1/050/034/1/1, IP/S-1/019/032/1/1, IP/S-1/006/026/1/1, IP/S-1/013/025/1/1, IP/S-1/008/027/1/1, and IP/S-1/025/020/1/1 did not require qualification.

The Percent Relative Standard Deviation (%RSD) for Acetone in the volatile initial calibration analyzed on April 12, 1990 was greater than 30%. In addition, the Percent Difference for this compound in the volatile continuing calibration analyzed on April 20, 1990 was greater than 25%. The positive results for this compound in samples IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1 required qualification as estimated values.

The Percent Differences (%D) for Methylene Chloride, Chloromethane and 1,2-Dichloroethane in the volatile continuing calibration analyzed on April 20, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1 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 result for this compound in sample IP/S-1/055/036/1/1 required qualification as an estimated value. The non-detected result for this compound in sample IP/S-1/076/000/1/1 required qualification as an estimated quantitation limit.

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/S-1/055/036/1/1 and IP/S-1/076/000/1/1 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/S-1/144/027/1/1 required qualification as an estimated value. The non-detected results for these compounds in samples IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 did not require qualification.

The Percent Differences (%D) for Chloromethane and Bromomethane in the volatile continuing calibration analyzed on June 23, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 did not require qualification.

The Percent Differences (%D) for Chloromethane and Bromomethane in the volatile continuing calibration analyzed on June 23, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 did not require qualification.

The Percent Differences (%D) for Chloromethane and Bromomethane in the volatile continuing calibration analyzed on June 23, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 did not require qualification.

The Percent Differences (%D) for Bromomethane, Chloroethane and 2-Hexanone in the volatile continuing calibration analyzed on June 24, 1990 were greater than 25%. The non-detected results for these compounds in sample IP/S-1/004/027/1/1 did not require qualification.

The Percent Difference (%D) for Acetone in the volatile continuing calibration analyzed on June 24, 1990 was greater than 50%. The positive result for this compound in sample IP/S-1/004/027/1/1 required qualification as an estimated value.

2.4.2 Semi-Volatiles

The Percent Relative Standard Deviations (%RSD) for Benzoic Acid, 2,4-Dinitrophenol and 3,3'-Dichlorobenzidine in the semi-volatile initial calibration analyzed on April 13, 1990 were greater than 30%. The non-detected results for these compounds in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/041/033/1/1, IP/S-1/049/032/1/1, IP/S-1/050/034/1/1, IP/S-1/019/032/1/1, IP/S-1/006/026/1/1 and the equipment blank IP/S-1/EB20/000/2/1 did not require qualification.

The Percent Difference (%D) for Benzyl Alcohol in the semi-volatile continuing calibration analyzed on April 18, 1990 was greater than 50%. The non-detected results for this compound in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/041/033/1/1, IP/S-1/049/032/1/1, IP/S-1/050/034/1/1 and the equipment blank IP/S-1/EB20/000/2/1 required qualification as estimated quantitation limits.

The Percent Differences (%D) for 2-Methylnaphthalene and 4-Nitrophenol in the semi-volatile continuing calibration analyzed on April 18, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/041/033/1/1, IP/S-1/049/032/1/1, IP/S-1/050/034/1/1 and the equipment blank IP/S-1/EB20/000/2/1 did not require qualification.

The Percent Differences (%D) for Benzyl Alcohol, Benzoic Acid, 2-Methylnaphthalene, Hexachlorocyclopentadiene, 2-Nitroaniline, 4-Nitroaniline, 3,3'-Dichlorobenzidine, 2,4-Dinitrophenol and 4-Nitrophenol in the semi-volatile continuing calibration analyzed on April 19, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/S-1/019/032/1/1 and IP/S-1/006/026/1/1 did not require qualification.

The Percent Relative Standard Deviation (%RSD) for Benzoic Acid in the semi-volatile initial calibration analyzed on April 18, 1990 was greater than 30%. In addition, the Percent Difference for this compound in the semi-volatile continuing calibration analyzed on April 19, 1990 was greater than 25%. The positive result for this compound in sample IP/S-1/025/020/1/1 required qualification as an estimated value. The non-detected results for this compound in samples IP/S-1/013/025/1/1 and IP/S-1/008/027/1/1 did not require qualification.

The Percent Relative Standard Deviation (%RSD) for 2,4-Dinitrophenol in the semi-volatile initial calibration analyzed on April 18, 1990 was greater than 30%. In addition, the Percent Difference for this compound in the semi-volatile continuing calibration analyzed on April 19, 1990 was greater than 25%. The non-detected results for this compound in samples IP/S-1/013/025/1/1, IP/S-1/025/020/1/1 and IP/S-1/008/027/1/1 did not require qualification.

The Percent Differences (%D) for Indeno(1,2,3-cd)Pyrene, Dibenz(a,h)Anthracene and Benzo(g,h,i)Perylene in the semi-volatile continuing calibration analyzed on April 19, 1990 were greater than 25%. The positive results for Indeno(1,2,3-cd)Pyrene in samples IP/S-1/013/025/1/1, IP/S-1/025/020/1/1 and IP/S-1/008/027/1/1 and for Benzo(g,h,i)Perylene in sample IP/S-1/013/025/1/1 required qualification as estimated values. The non-detected results for Dibenz(a,h)Anthracene in samples IP/S-1/013/025/1/1, IP/S-1/025/020/1/1 and IP/S-1/008/027/1/1 and for Benzo(g,h,i)Perylene in samples IP/S-1/025/020/1/1 and IP/S-1/008/027/1/1 did not require qualification.

The Percent Differences (%D) for 2,4-Dinitrophenol and Benzoic Acid in the semi-volatile continuing calibration analyzed on April 20, 1990 were greater than 25%. The non-detected results for these compounds in samples IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1 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/S-1/055/036/1/1 and IP/S-1/076/000/1/1 did not require qualification.

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/S-1/055/036/1/1 and IP/S-1/076/000/1/1 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/S-1/055/036/1/1 and IP/S-1/076/000/1/1 required qualification as estimated quantitation limits.

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 samples IP/S-1/004/0276/1/1, IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1, IP/S-1/146/025/1/1 and the equipment blank IP/S-1/EB57/000/2/1 did not require qualification.

The Percent Relative Standard Deviations (%RSD) for Benzoic Acid, 4-Methylphenol, 4,6-Dinitro-2-Methylphenol, Isophorone, 2,4-Dinitrophenol and 3,3'Dichlorobenzidine in the semi-volatile initial calibration analyzed on July 5, 1990 were greater than 30%. The non-detected results for these compounds in sample IP/S-1/002/036/1/D did not require qualification.

The Percent Difference (%D) for bis(2-Chloroisopropyl)Ether in the semi-volatile continuing calibration analyzed on July 12, 1990 was greater than 50%. The non-detected result for this compound in sample IP/S-1/002/036/1/D required qualification as an estimated detection limit.

The Percent Differences(%D) for 4-Methylphenol, Isophorone, Indeno(1,2,3-cd)Pyrene, Dibenz(a,h)Anthracene, Benzoic Acid, 4-Nitroaniline and Benzo(g,h,i)Perylene in the semi-volatile continuing calibration analyzed on July 12, 1990 were greater than 25%. The positive results for Indeno(1,2,3-cd) Pyrene and Benzo(g,h,i)Perylene in sample IP/S-1/002/036/1/D required qualification as estimated values. The non-detected results for the remainder of these compounds in this sample did not require qualification.

2.4.3 Pesticides/PCBs

The Percent Difference (%D) for delta-BHC in the Pesticide continuing calibration standards analyzed on April 19, 1990 at 23:42 and April 21, 1990 at 05:53 was greater than 15% for the quantitation column (DB5). In addition the Percent Difference for this compound in the Pesticide continuing calibration standard analyzed on April 21, 1990 at 05:53 was greater than 20% for the confirmation column (DB608). The non-detected results for this compound in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/041/033/1/1, IP/S-1/049/032/1/1, IP/S-1/050/034/1/1, IP/S-1/019/032/1/1, IP/S-1/006/026/1/1, IP/S-1/013/025/1/1, IP/S-1/008/027/1/1, IP/S-1/025/020/1/1 and the equipment blank IP/S-1/EB20/000/2/1 did not require qualification.

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/S-1/055/036/1/1 and IP/S-1/076/000/1/1 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 column used for quantitation (RTX-35). The non-detected results for this compound in samples IP/S-1/004/0276/1/1, IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/002/036/1/D, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1, IP/S-1/146/025/1/1 and the equipment blank IP/S-1/EB57/000/2/1 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 samples IP/S-1/004/027/1/1, IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/002/036/1/D, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1, IP/S-1/146/025/1/1 and the equipment blank IP/S-1/EB57/000/2/1 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 samples IP/S-1/004/027/1/1, IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/002/036/1/D, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1, IP/S-1/146/025/1/1 and the equipment blank IP/S-1/EB57/000/2/1 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/S-1/EB20/000/2/1) to those samples collected with that sampling instrument (sample point locations 29, 31, 35, 34, 49, 41, 50, 19, 6, 13, 8, 25, 63 and 66). The data validator applied the results from the blank using the hand auger (IP/S-1/EB57/000/2/1) to those samples collected with that sampling instrument (sample point locations 4, 5, 2, 144, 145 and 146). Since the samples for sample point locations 55 and 76 were collected directly into the sample bottles, the data validator did not use the results of either equipment blank to evaluate the samples. 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 laboratory method blank (VBLK_19APR-A for Project 7218) 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. The non-detected results for this compound in samples IP/S-1/019/032/1/1, IP/S-1/006/026/1/1, IP/S-1/013/025/1/1, IP/S-1/008/027/1/1 and IP/S-1/025/020/1/1 did not require qualification.

Acetone was detected in the Volatile laboratory method blank (VBLK_20APR-A for Project 7253) 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/S-1/063/036/1/1 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. 65 B --> 65 U).

Acetone was detected in the Volatile laboratory method blank (VBLK_20APR-A for Project 7253) 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/S-1/066/026/1/1 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.

Acetone was detected in the Volatile analysis of the equipment blank IP/S-1/EB57/000/2/1 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. The non-detected results for this compound in samples IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 did not require qualification.

Acetone was detected in the Volatile analysis of the equipment blank IP/S-1/EB57/000/2/1 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/S-1/004/027/1/1 and IP/S-1/144/027/1/1 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. 4 J --> 11 U and 5 J --> 11 U, respectively).

2.5.2 Semi-Volatiles

The Semi-volatile laboratory method blanks did not contain any of the analytes from the Target Compound List (TCL).

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 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.

Sample IP/S-1/146/025/1/1 was initially analyzed for Volatile Organics on June 24, 1990; the surrogate recovery of Toluene-d8 was 136% (Quality Control Limits 81% to 117%). The sample was re-analyzed on the same day yielding 148% recovery of Toluene-d8 and 69% recovery of the surrogate Bromofluorobenzene (Quality Control limits 74% - 121%). The sample was analyzed for a third time on June 25, 1990, again, yielding a high recovery of Toluene-d8 (138%). The laboratory reported all three sets of data. Following the review and validation of all three sets of data, it was determined that the elevated recoveries may be attributed to the sample matrix. The data validator decided to use the data reported from the first analysis of this sample. The positive results for Carbon Disulfide and Trichloroethene in these samples required qualification as estimated values. The non-detected results for the remainder of the Volatile Target Compounds did not require qualification.

2.7 Matrix Spike/Matrix Spike Duplicate

Three primary samples (IP/S-1/031/025/1/1, IP/S-1/035/032/1/1 and IP/S-1/002/036/1/1) were used for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis. Sample IP/S-1/035/032/1/1 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/S-1/031/025/1/1 were within the Contract Required Recovery ranges specified in the Statement of Work and the Quality Assurance Project Plan.

Sample IP/S-1/035/032/1/1 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 and Semi-volatile analysis of spiked aliquots of sample IP/S-1/002/036/1/1 were within the Contract Required Recovery ranges specified in the Statement of Work and the Quality Assurance Project Plan.

The MS/MSD recoveries of gamma-BHC (Lindane), Dieldrin, Endrin and 4,4'-DDT for IP/S-1/002/036/1/1 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 Deviation (%RSD) of Acetone was greater than 75% for the Matrix Spike (MS), the Matrix Spike Duplicate (MSD) and the unspiked sample IP/S-1/002/036/1/1. The positive results for this compound in the MS and MSD required qualification as estimated values.

The Percent Relative Standard Deviation (%RSD) of bis(2-Ethylhexyl)Phthalate was greater than 75% for the Matrix Spike (MS), the Matrix Spike Duplicate (MSD) and the unspiked sample IP/S-1/002/036/1/1. The positive results for this compound in the MS and the unspiked sample required qualification as estimated values.

2.8 Field Duplicates

Two (2) field duplicate samples IP/S-1/029/035/1/D and IP/S-1/002/036/1/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%.

2.8.1 Volatiles

The Relative Percent Difference (%RPD) criterion of less than 50% for soil Field Duplicates was achieved for the analysis of IP/S-1/029/035/1/1 and IP/S-1/029/035/1/D.

The Field Duplicate IP/S-1/002/036/1/D was not analyzed for Volatile Organics due to a laboratory error which occurred during the sample log-in procedure. The error was not discovered until after the required holding time had been exceeded. As described in Section 2.2 of this Narrative, the sample point location was re-sampled. The sampler collected a primary sample, a field duplicate, a Matrix Spike, a Matrix Spike Duplicate, an equipment blank and a trip blank. The analytical results for these samples will be submitted in a supplemental report.

2.8.2 Semi-volatiles

The Relative Percent Differences (%RPD) of Pyrene, Indeno(1,2,3-cd)Pyrene, Phenanthrene, Benzo(g,h,i)Perylene, Fluoranthene, Acenaphthene, Benzo(b)Fluoranthene, Fluorene, Anthracene, bis(2-Ethylhexyl)Phthalate, Benzo(a)Anthracene, Naphthalene and Benzo(a)Pyrene were greater than 50% for the Semi-volatile analysis of the Field Duplicate samples IP/S-1/029/035/1/1 and IP/S-1/029/035/1/D. The positive results for these compounds in these samples required qualification as estimated values. The non-detected results for Naphthalene and Acenaphthene in sample IP/S-1/029/035/1/1 required qualification as estimated quantitation limits.

The Relative Percent Differences (%RPD) of Pyrene, Indeno(1,2,3-cd)Pyrene, Phenanthrene, Benzo(g,h,i)Perylene, Fluoranthene, Anthracene, bis(2-Ethylhexyl)Phthalate, Benzo(b)Fluoranthene, Benzo(a)Anthracene, Chrysene and Benzo(a)Pyrene were greater than 50% for the Semi-volatile analysis of the Field Duplicate samples IP/S-1/002/036/1/1 and IP/S-1/002/036/1/D. The positive results for these compounds in these samples required qualification as estimated values. The non-detected result for Anthracene in sample IP/S-1/002/036/1/1 required qualification as an estimated quantitation limit.

2.8.3 Pesticides/PCBs

The Relative Percent Difference (%RPD) criterion of less than 50% for soil Field Duplicates was achieved for the analysis of IP/S-1/029/035/1/1 and IP/S-1/029/035/1/D.

The Relative Percent Difference (%RPD) criterion of less than 50% for soil Field Duplicates was achieved for the analysis of IP/S-1/002/036/1/1 and IP/S-1/002/036/1/D.

2.9 Internal Standard Performance

The Internal Standard Performance criteria for Semi-volatile analysis were met for all of the samples.

The Internal Standard Performance criteria for Volatile analysis were met for all of the samples with the exception of IP/S-1/146/036/1/1. The internal standards 1,4-Difluorobenzene and Chlorobenzene-d5 were outside of the lower limit of the appropriate continuing calibration standard. The non-detected results for all of the target compounds quantified using these two internal standards required qualification as estimated quantitation limits. The positive result for Trichloroethene required qualification as an estimated value.

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 15, 1990 at 10:20 on the confirmation (RTX-5) column. Examination of the chromatograms for samples IP/S-1/004/0276/1/1, IP/S-1/005/030/1/1, IP/S-1/002/036/1/1, IP/S-1/002/036/1/D, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1, IP/S-1/146/025/1/1 and the equipment blank IP/S-1/EB57/000/2/1 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 these samples 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:

   - all ions present in the standard mass spectrum at a relative intensity greater than 10% <u>must</u> be present in the sample spectrum;
   - the relative intensities of these ions must agree within ±20% between the standard and sample spectra; and
   - 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 not to report target compounds at concentrations less than 10% of the CRQL.

The Semi-volatile extracts for samples IP/S-1/019/032/1/1, IP/S-1/055/036/1/1 and IP/S-1/004/027/1/1 were analyzed diluted due to matrix interference. Sample results were reported from the analysis of the diluted extracts.

The Pesticide/PCB extracts for samples IP/S-1/029/035/1/D, IP/S-1/034/024/1/1, IP/S-1/049/032/1/1, IP/S-1/019/032/1/1, IP/S-1/013/025/1/1, IP/S-1/025/020/1/1, IP/S-1/055/036/1/1, IP/S-1/004/027/1/1 and IP/S-1/005/030/1/1 were analyzed diluted due to matrix interference in the undiluted extract. Sample results were reported from the analysis of the diluted extracts. Because of an oversight by the Laboratory, sample IP/S-1/029/036/1/1 was not analyzed at a dilution although it should have been due to the matrix interference observed in the chromatogram.

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 six reports containing data from this task. It should be noted that while each data package is complete and contains 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/S-1/002/036/1/D were prepared and analyzed for Arsenic, Thallium, Selenium, Lead, Mercury and ICP metals within the required holding time.

Sample IP/S-1/002/036/1/D was incorrectly logged into the Laboratory's LIMS (Laboratory Information Management System) computer. Consequently, the sample was not analyzed for Mercury within the required holding time. The Laboratory's Program Administrator for the ISRT Project contacted Golder on July 24, 1990 to inform the Laboratory Interface that the Mercury analysis had not been performed for this sample. The Laboratory wanted to know if Golder wished to have the sample analyzed past the hold time for Mercury. Golder's Laboratory Interface contacted the Laboratory on July 25, 1990 to inform the Program Administrator that this sample point would be re-sampled for Mercury and that it was not necessary to analyze the sample past the holding time. Consequently, Mercury data does not exist for the Field Duplicate for borehole 002. Sample point IP/S-1/002/036/1/1 was re-collected for Mercury on August 6, 1990. The Mercury results for this sample location will follow in a supplemental report.

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/S-1/031/025/1/1, IP/S-1/049/032/1/1, IP/S-1/041/033/1/1, IP/S-1/050/034/1/1, IP/S-1/013/025/1/1 and IP/S-1/066/026/1/1 were less than five times the IDL and therefore, required qualification as estimated values. The non-detected results for Lead in samples IP/S-1/144/027/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 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 Lead, Cadmium, Chromium, Silver and Zinc in one of the CRDL standards for ICP metals were not within ±20%. The non-detected result for Lead in the equipment blank IP/S-1/EB20/000/2/1 required qualification as an estimated detection limit. The positive results greater than three times the Contract Required Detection Limit (CRDL) for Lead in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/049/032/1/1, IP/S-1/041/033/1/1, IP/S-1/050/034/1/1, IP/S-1/019/032/1/1, IP/S-1/006/026/1/1, IP/S-1/013/025/1/1, IP/S-1/008/027/1/1, IP/S-1/025/020/1/1, IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1 did not require qualification. The non-detected result for Chromium in the equipment blank required qualification as an estimated detection limit. The positive result less than three times the CRDL for Chromium in sample IP/S-1/006/026/1/1 required qualification as an estimated value. The positive results greater than three times the CRDL for Chromium in the remainder of these samples did not require qualification. The positive result less than three times the CRDL for Zinc in the equipment blank required qualification as an estimated value. The positive results greater than three times the CRDL for Zinc in these samples did not require

qualification. The positive results less than three times the CRDL for Cadmium in samples IP/S-1/029/035/1/1 and IP/S-1/029/035/1/D required qualification as estimated values. The positive results greater than three times the CRDL for Cadmium in samples IP/S-1/019/032/1/1, IP/S-1/006/026/1/1 and IP/S-1/008/027/1/1 did not require qualification. The non-detected results for Cadmium in the remainder of these samples required qualification as estimated detection limits. The positive results less than three times the CRDL for Silver in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/019/032/1/1 and the equipment blank required qualification as estimated values. The positive results greater than three times the CRDL for Silver in samples IP/S-1/006/026/1/1 and IP/S-1/008/027/1/1 did not require qualification. The non-detected results for Silver in the remainder of these samples required qualification as estimated detection limits.

The recoveries of Silver and Nickel in one of the CRDL standards for ICP metals were not within ±20%. The positive results less than three times the Contract Required Detection Limit (3xCRDL) for Silver in samples IP/S-1/055/036/1/1 and IP/S-1/144/027/1/1 required qualification as estimated values. The non-detected results for Silver in samples IP/S-1/076/000/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 required qualification as estimated detection limits. The positive results less than three times the Contract Required Detection Limit (3xCRDL) for Nickel in samples IP/S-1/144/027/1/1 and IP/S-1/145/036/1/1 required qualification as estimated values. The non-detected result for Nickel in sample IP/S-1/146/025/1/1 required qualification as an estimated detection limit. The positive results greater than three times the CRDL for Nickel in samples IP/S-1/055/036/1/1 and IP/S-1/076/00/1/1 did not require qualification.

The recovery of Chromium in one of the CRDL standards for ICP metals was not within ±20%. The positive results greater than three times the Contract Required Detection Limit (3xCRDL) for Chromium in samples IP/S-1/004/027/1/1, IP/S-1/005/030/1/1, IP/S-1/002/036/1/1 & IP/S-1/002/036/1/D 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/S-1/EB20/000/2/1) to those samples collected with that sampling instrument (sample point locations 29, 31,35,34,49, 41, 50, 19, 6, 13, 8, 25, 63 and 66). The data validator applied the results from the equipment blank using the hand auger (IP/S-1/EB57/000/2/1) to those samples collected with that sampling instrument (sample point locations 4, 5, 2, 144, 145 and 146). Since the samples for sample point locations 55 and 76 were collected directly into the sample bottles, the data validator did not use the results of either equipment blank to evaluate the samples. 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/S-1/EB20/000/2/1. The positive results for Barium, Calcium, Silver, 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 non-detected result for Arsenic in the equipment blank did not require qualification. Iron and Potassium were detected in the laboratory blanks at negative absorbances thereby causing sample results which may have been negatively influenced. The positive result for Iron required qualification as an estimated value and the positive result for Potassium required qualification as undetected at the concentration originally reported.

Various contaminants were determined to be present in the blanks analyzed with the equipment blank IP/S-1/EB57/000/2/1. The positive results for Barium, Iron 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 Calcium was greater than the action level and did not require qualification.

Various contaminants were determined to be present in the blanks analyzed with samples IP/S-1/004/027/1/1, IP/S-1/005/030/1/1, IP/S-1/002/036/1/1 and IP/S-1/002/036/1/D. The positive results for Barium, Iron, Magnesium, Manganese and Calcium in these samples were not affected by the concentrations in the blanks. The positive results for Selenium and Silver in samples IP/S-1/004/027/1/1 and IP/S-1/005/030/1/1 and Zinc in sample

IP/S-1/002/036/1/D were not affected by the concentrations in the blanks. The non-detected results for Selenium and Silver in sample IP/S-1/002/036/1/D were not affected by the concentrations in the blanks. Consequently, these positive and non-detected results did not require qualification. The concentrations of Selenium and Silver in sample IP/S-1/002/036/1/1 and of Beryllium in samples IP/S-1/004/027/1/1, IP/S-1/005/036/1/1, IP/S-1/002/036/1/1 and IP/S-1/002/036/1/D were less than the respective action levels. Consequently, these positive values were qualified as estimated detection limits at the concentrations originally reported.

Various contaminants were determined to be present in the blanks analyzed with samples IP/S-1/055/036/1/1, IP/S-1/076/000/1/1, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1. The positive results for Aluminum, Barium, Manganese and Calcium in these samples were not affected by the concentrations in the blanks. The positive results for Copper in samples IP/S-1/055/036/1/1, IP/S-1/076/000/1/1 and IP/S-1/144/027/1/1 and Beryllium in sample IP/S-1/144/027/1/1 were not affected by the concentrations in the blanks. The non-detected results for Silver in samples IP/S-1/076/000/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 were not affected by the concentrations in the blanks. Consequently, these positive and non-detected results did not require qualification. The concentrations of Copper in samples IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1, of Silver in samples IP/S-1/055/036/1/1 and IP/S-1/144/027/1/1 and of Beryllium in samples IP/S-1/055/036/1/1, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1 and IP/S-1/146/025/1/1 were less than the respective action levels. Consequently, these positive values were qualified as undetected at the concentrations originally reported. 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/S-1/055/036/1/1 required qualification as estimated detection limits. The positive result for Potassium in sample IP/S-1/055/036/1/1 required qualification as an estimated value.

Various contaminants were determined to be present in the blanks analyzed with samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/049/032/1/1, IP/S-1/041/033/1/1, IP/S-1/050/034/1/1, IP/S-1/019/032/1/1, IP/S-1/006/026/1/1, IP/S-1/013/025/1/1, IP/S-1/008/027/1/1, IP/S-1/025/020/1/1, IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1. The positive results for Aluminum, Barium, Calcium, Iron and Zinc in these samples were not affected by the concentrations in the blanks. The positive results for Copper in all the samples except IP/S-1/041/033/1/1, Silver in samples IP/S-1/006/026/1/1 and IP/S-1/008/027/1/1 and Manganese in

all the samples except IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/041/033/1/1, IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1 were not affected by the concentrations in the blanks. The non-detected results for Silver in samples IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/034/024/1/1, IP/S-1/049/032/1/1, IP/S-1/041/033/1/1, IP/S-1/050/034/1/1, IP/S-1/013/025/1/1, IP/S-1/025/020/1/1, IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1 were not affected by the concentrations in the blanks. Consequently, these positive and non-detected results did not require qualification. The concentrations of Copper in sample IP/S-1/041/033/1/1, Silver in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D and IP/S-1/019/032/1/1 and Manganese in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/041/033/1/1, IP/S-1/063/036/1/1 and IP/S-1/066/026/1/1 were less than the respective action levels. Consequently, these positive values were qualified as undetected at the concentrations originally reported. Potassium and Nickel were 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 samples IP/S-1/041/033/1/1, IP/S-1/019/032/1/1, IP/S-1/013/025/1/1 and IP/S-1/063/036/1/1 and Nickel in samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/049/032/1/1, IP/S-1/006/026/1/1 and IP/S-1/066/026/1/1 required qualification as estimated detection limits. The positive results for Potassium and Nickel in the remainder of the samples required qualification as estimated values.

3.5 ICP Interference Check Sample

The concentration of Iron in sample IP/S-1/076/000/1/1 was greater than 50% of the respective levels in the Interference Check Samples. This Iron concentration produced suspected interferences with Chromium, Manganese, Vanadium, Antimony and Cadmium. Consequently, the positive results for Chromium, Manganese, Vanadium and Antimony in this sample required qualification as estimated values. The non-detected result for Cadmium did not require qualification.

The concentration of Manganese in sample IP/S-1/076/000/1/1 was greater than 50% of the respective levels in the Interference Check Samples. This Manganese concentration produced a suspected interference with Zinc. Consequently, the positive result for Zinc in this sample required qualification as an estimated value.

The concentrations of Iron in samples IP/S-1/004/027/1/1 and IP/S-1/005/030/1/1 were greater than 50% of the respective levels in the Interference Check Samples. These Iron concentrations produced suspected interferences with Chromium and Manganese. Consequently, the positive results for Chromium and Manganese in sample IP/S-1/005/030/1/1 and Manganese in sample IP/S-1/004/027/1/1 required qualification as estimated values. The positive result for Chromium in sample IP/S-1/004/027/1/1 required qualification as an unusable value because it was less than the estimated interference produced from the Iron concentration present in the sample.

3.6 Matrix Spike Recoveries

Two primary samples (IP/S-1/031/025/1/1 and IP/S-1/002/036/1/1) were sampled for Matrix Spike/Matrix Spike Duplicate (MS/MSD) analysis. In addition, the Laboratory also used aliquots of sample IP/S-1/035/032/1/1 for 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 Arsenic 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 Manganese, Selenium and Antimony 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.

3.7 Laboratory and Field Duplicates

Two primary samples (IP/S-1/035/032/1/1 and IP/S-1/002/036/1/1) were used for Laboratory Duplicate Sample analysis. There were four 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 ±35% RPD criterion was not achieved for Calcium, Iron and Lead for sample IP/S-1/035/032/1/1. These analytes were present in the sample at concentrations greater than 5x the CRDL. All positive results for these analytes greater than the IDL in the samples required qualification as estimated values.

The ±35% RPD criterion was not achieved for Arsenic for sample IP/S-1/002/036/1/1. This analyte was present in the 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.

Two primary samples (IP/S-1/029/035/1/1 and IP/S-1/002/036/1/1) were collected in duplicate to be used as Field Duplicate samples. There were six 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 Field Duplicate data apply to all of the samples for this task.

The ±50% RPD criterion was not achieved for Arsenic, Copper, Iron, Lead, Manganese and Zinc for sample IP/S-1/002/036/1/1. These analytes were 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.

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

Analysis of Lead, Selenium and Thallium by Graphite Furnace Atomic Absorption (GFAA) was performed for the equipment blank IP/S-1/EB20/000/2/1. The post digestion spike recoveries did not meet the 85%-115% criterion. The non-detected results for these analytes required qualification as estimated detection limits.

Samples IP/S-1/029/035/1/1 and IP/S-1/035/032/1/1 were analyzed for Selenium 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.

Analysis of Selenium by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/S-1/041/033/1/1, IP/S-1/050/034/1/1, IP/S-1/013/025/1/1 and IP/S-1/063/036/1/1. The post digestion spike recoveries did not meet the 85%-115% criterion. The non-detected results for this analyte required qualification as estimated detection limits.

Analysis of Selenium by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/S-1/034/024/1/1 and IP/S-1/025/020/1/1. The post digestion spike recoveries did not meet the 85%-115% criterion. The positive results for this analyte required qualification as estimated values.

Analysis of Thallium by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/S-1/031/025/1/1, IP/S-1/035/032/1/1, IP/S-1/041/033/1/1, IP/S-1/063/036/1/1, IP/S-1/066/026/1/1, IP/S-1/055/036/1/1, IP/S-1/076/000/1/1, IP/S-1/144/027/1/1, IP/S-1/145/036/1/1, IP/S-1/146/025/1/1, IP/S-1/002/036/1/1, and IP/S-1/002/036/1/D. The post digestion spike recoveries did not meet the 85%-115% criterion. The non-detected results for this analyte required qualification as estimated detection limits.

Analysis of Thallium by Graphite Furnace Atomic Absorption (GFAA) was performed for samples IP/S-1/029/035/1/1, IP/S-1/029/035/1/D, IP/S-1/019/032/1/1 and IP/S-1/006/026/1/1. The post digestion spike recoveries did not meet the 85%-115% criterion. The positive results for this analyte required qualification as estimated values.

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 (50xIDL). The Region I Data Validation Guidelines specify that if the result of any analyte from the dilution analysis differs by more than 15% from the undiluted analysis, then the positive results for that analytes must be qualified as estimated values in all samples of the same matrix.

Serial dilution analysis was performed on sample IP/S-1/029/035/1/1. Three analytes (Aluminum, Calcium and Manganese) had percent differences in excess of 15%. Consequently, the positive results for these analytes in the samples required qualification as estimated values.

3.11 Detection Limit Results

For nine (9) of the samples, results for Lead by ICP analysis were not at least five times the Instrument Detection Limit (5xIDL). Consequently, the samples required qualification of the reported Lead results. These qualifications were 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/S-1/002/036/1/1/2

The first two characters (IP) indicate the Industri-Plex Site;

The third through fifth characters (S-1) indicate the Pre-Design Investigation (PDI) task number;

The sixth through eight characters (002) 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 (1) 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 S-1

The following sample points were collected using a split-spoon sampler:

Golder ID	Enseco-East ID
IP/S-1/029/035/1/1	7208-0001-SA
IP/S-1/029/035/1/D	7208-0002-SA
IP/S-1/031/025/1/1	7208-0003-SA
IP/S-1/031/025/1/M	7208-0003-MS
IP/S-1/031/025/1/N	7208-0003-SD
IP/S-1/035/032/1/1	7208-0004-SA
IP/S-1/035/032/1/M	7208-0004-MS
IP/S-1/035/032/1/N	7208-0004-SD
IP/S-1/034/024/1/1	7208-0005-SA
IP/S-1/049/032/1/1	7208-0006-SA
IP/S-1/041/033/1/1	7208-0007-SA
IP/S-1/050/034/1/1	7208-0008-SA
IP/S-1/EB20/000/2/1	7208-0009-SA
IP/S-1/019/032/1/1	7218-0001-SA
IP/S-1/006/026/1/1	7218-0002-SA
IP/S-1/013/025/1/1	7218-0003-SA
IP/S-1/008/027/1/1	7218-0004-SA
IP/S-1/025/020/1/1	7218-0005-SA
IP/S-1/063/036/1/1	7253-0001-SA
IP/S-1/066/026/1/1	7253-0002-SA
TRIP BLANK	7463-0001-SA

(Medium level MS/MSD analysis performed for Semi-volatiles and Pesticide/PCBs for 7208-0004.)

The following sample points were collected using a hand auger:

Golder ID	Enseco-East ID
IP/S-1/004/027/1/1	8223-0001-SA
IP/S-1/005/030/1/1	8223-0002-SA
IP/S-1/002/036/1/1	8223-0004-SA
IP/S-1/002/036/1/M	8223-0004-MS
IP/S-1/002/036/1/N	8223-0004-SD
IP/S-1/EB57/000/2/1	8223-0005-SA
TRIP BLANK	8223-0006-SA
IP/S-1/002/036/1/D	8223-0007-SA
IP/S-1/144/027/1/1	8246-0001-SA
IP/S-1/145/036/1/1	8246-0002-SA
IP/S-1/146/025/1/1	8246-0003-SA

TABLE G-2 (continued)

CLP Sample Point Identifications for Task S-1

The following sample points were collected directly into sample containers without using a sampling instrument:

Golder ID	Enseco-East ID
IP/S-1/055/036/1/1	8109-0003-SA
IP/S-1/076/000/1/1	8109-0004-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.