JANUARY 1994

REMEDIAL INVESTIGATION/ FEASIBILITY STUDY

PREPARED FOR

U. S. ELECTROPLATING CORP.

REMEDIAL INVESTIGATION/

FEASIBILITY STUDY

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U. S. ELECTROPLATING CORP.

OVERALL CONTENTS

WORK PLAN FOR THE

REMEDIAL INVESTIGATION/FEASIBILITY STUDY

U. S. ELECTROPLATING CORP.

WEST BABYLON, NEW YORK

DRAFT REMEDIAL INVESTIGATION WORK PLAN

PREPARED FOR:

U. S. ELECTROPLATING CORP.

100 FIELD STREET

WEST BABYLON, NY 11704

NYSDEC SITE #152027

PREPARED BY:

DONNELLY ENGINEERING

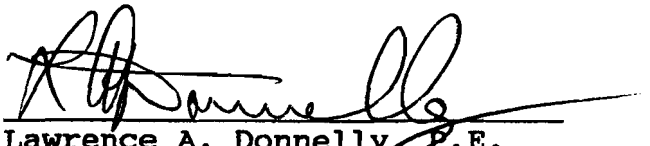
P.O. BOX 876

55 SOUTHERN BOULEVARD

NESCONSET, NY 11767

JANUARY 1994

PROJECT MANAGER



Lawrence A. Donnelly, P.E.
NYS 46645

DRAFT REMEDIAL INVESTIGATION WORKPLAN

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HISTORY OF THE NYSDEC PHASE I PRELIMINARY INVESTIGATION AND THE NYSDEC PHASE II INVESTIGATION AT U. S. ELECTROPLATING CORP. SITE #152027, TOWN OF BABYLON, SUFFOLK COUNTY, NY

The Phase I Preliminary Investigation was submitted to NYSDEC by Woodward-Clyde Consultants, Inc., on or about September 20, 1984. Based upon a review of State, County and local files, the Phase I Final Report recommended a Workplan to "address questions concerning the extent and direction of the contamination of the groundwater and contamination of soils underlying the Site area." The field investigation recommended included a geophysical study utilizing the terrain conductivity technique. The basis of this recommendation was to determine the presence and flow direction of any existing contaminated groundwater plume. Monitoring wells were proposed to obtain groundwater chemistry and characterization of the stratigraphy. Groundwater and soil were to be sampled and analyzed for heavy metals at each of the four monitoring well locations. The estimated cost of this investigation was $21,760, including subcontractor work, materials, engineering supervision and report preparation. A copy of the map locating the "proposed" monitoring wells at the Site is enclosed for reference (Figure 1). A Site Location Map is also included, identified as Figure 2.

The Phase II Investigation was submitted to the NYSDEC in Final Report on April 3, 1990. The Phase II Investigation was initiated in June 1988 and completed in August 1989. The initial Workplan was later revised based on actual field conditions encountered during the Site reconnaissance and geophysical survey. The Phase II Field Investigation was conducted by LeRoy Callender, PC, in order to define the extent of potential contamination at the U. S. Electroplating Site. The investigation included the installation, development and sampling of three groundwater monitoring wells and the sampling of sediments from two of the three storm drains and the leaching pit located on the north side of the facility. The geophysical survey was conducted using a flux-gate magnetometer around the locations proposed for the installation of groundwater monitoring wells. There was a very high magnetometer response observed along Field Street indicating the presence of underground ferromagnetic objects which might be encountered during drilling activities. Due to numerous sources of magnetometer interference on this Site, it was determined that any drilling activity should proceed with great caution and only after checking with local utilities. Figure 1 is enclosed to show the "final" monitoring well location plan for the Phase II Investigation.

Groundwater samples collected from the monitoring wells

were analyzed for TCL inorganics and organics, in accordance with NYSDEC. Sediment from the two storm drains and leaching pit were analyzed for the same TCL compounds in accordance with NYSDEC.

In Monitoring Well 1, the only contaminant regulated by NYSDEC Water Quality criteria found in the sample was trichloroethene. The 6 ppb of TCE found exceeded the Maximum Contaminant Level (MCL) of 5 ppb for drinking water. Tetrachloroethane (PCA) was also found at 25 ppb which did not exceed the applicable NYCRR standard of 50 ppb. Tables 1 and 2 summarize the concentration of contaminants found in all three monitoring wells. Tables 1 and 2 are excerpted directly from the Phase II Final Report. Table 3 is included for reference purposes to show the standards in effect at the date of the Phase II Investigation.

WORKPLAN FOR REMEDIAL INVESTIGATION ACTIVITIES

AT U. S. ELECTROPLATING CORP.

SITE # 152-027, TOWN OF BABYLON

SUFFOLK COUNTY, NEW YORK

Pursuant to a letter from Louis P. Oliva, Senior Attorney, dated 9/22/93, the State of New York has asserted a CERCLA claim against U.S. Electroplating Corp., Site #1-52-027. The NYSDEC has classified this Site as a "2" pursuant to ECL 27-1305.4.6. This classification states that this Site is a "significant threat to the public health or environment--action required." As the alleged responsible party for the alleged release of "hazardous substances," U. S. Electroplating Corp. (Respondent) is required to execute an Order on Consent with NYSDEC as a prerequisite for Department review.

In a meeting on October 22, 1993, Donnelly Engineering, acting as Respondent's Authorized Agent, met with Thomas Gibbons and Chittibabu Vasudevan, NYSDEC, in their Albany office. In this meeting, the Respondent was directed to prepare a Remedial Investigation/Feasibility Study (RI/FS) and Interim Remedial Measure (IRM) activity for the subject Site.

A phased approach to the Remedial Investigation is proposed in the interests of time and economy.

Phase RI-A

This phase will consist of a preliminary sampling of the three existing monitoring wells (MW 1, 2 & 3), four storm drains (SD 1, 2, 3 & 5) and the sanitary leaching pool. See Site Plan, Figure 1, showing these locations. The groundwater samples will consist of the full Target Compound List (TCL) analyses, in addition to the 8 RCRA metals. Subsequent sampling of these and proposed monitoring wells will encompass only site specific indicator compounds.

An elevation survey of the three existing monitoring wells will be performed three times to determine a statistical range of vector parameters which we suspect are affected by the cooling tower activity of the neighboring waste incinerator.

We anticipate the information to be obtained from the above program will update the Phase II Investigation performed in 1990. It is conceivable that there is no lingering contamination resulting from the sources alleged in the Phase II Investigation. A preliminary evaluation will be performed and presented in the form of an "Interim RI Report," with the findings of the above activity. The

Interim Report will recommend, in a Phase RI-B Workplan, the locations of additional monitoring wells and/or soil borings if necessary to assess the impact of the alleged on-site contamination. The goal of that Workplan, which we shall identify as Phase RI-B, will be to determine the extent and magnitude of any contamination which may have migrated from a potential source. (See Figure 1A for reference.)

Phase RI-B

Phase RI-B will begin with the installation of the recommended monitoring wells and/or soil borings followed by a sampling program with analysis for the site-specific indicator compounds. Monitoring wells will be located down-gradient of potential sources of contamination such as storm drains and leaching pools. It is anticipated that the three storm drains identified as SD 2, 3 and 5 may contain heavy metals with the potential for groundwater contamination. If heavy metals are found in the bottom sludges of these storm drains, a soil boring will be installed at the perimeter of each designated storm drain.

Assuming that contamination is found, the above sequence will be performed for: evaluation of samples, recommendation of new monitoring wells and/or soil borings,

installation and sampling of the new wells and borings, followed by a step-wise evaluation of data in each cycle. These cycles will continue until the level of contaminant is found to be below the action levels set as the criteria for deciding to proceed with the investigation.

A final Engineering Report will be prepared to assess the results of the overall investigation and present the Workplan for an Interim Remedial Measure to accomplish any necessary remediation of the contaminants.

Figures 6 - 11 are the laboratory analysis sheets of bottom sludge from storm drains identified as SD 5, 2, & 3 respectively, in this RI Report. This data shows the concentration of metals in the sludge before and after pump-out of three storm drains, SD 2, SD 3, and SD 5.

The significance of the above information results from the fact that a fire occurred at this facility during the month of January 1993. Under supervision by NYSDEC, Region I, Stony Brook, the subject storm drains were remediated by pumping, scouring and vacuum removal of bottom sludges. The before and after samples and dates allow interpretation and evaluation of the potential for migration of these metals into local groundwater. Sampling of storm drain SD 5, in

the middle of Field Street, has been added to Phase RI-A with a subsequent placement of an additional monitoring well and soil boring alongside SD 5 during Phase RI-B, to provide definitive information regarding contamination of the adjacent soil and down-gradient groundwater. The Field Sampling Plan has been modified accordingly to account for this modification. (See Figure 1B for reference.)

TABLE 1

PHASE II SAMPLING RESULTS SUMMARY TABLE
Sediment Sampling

Parameter	SD-1	SD-2	LP-1	MW-1-SB
(A) Inorganics				
Aluminum	11,300 ppm	10,100 ppm	11,700 ppm	1,440 ppm
Antimony	24.8	30.1	43.5	4.7
Arsenic	5.1	11.8	ND	1.2
Barium	85.7	86.8	132	7.5
Beryllium	0.6	1.7	ND	0.21
Cadmium	913	615	1220	ND
Calcium	19,100	31,300	9290	136
Chromium	790	338	1660	12.8
Cobalt	8.7	12.7	6.5	1.5
Copper	306	286	1050	7.7
Iron	19,500	66,100	8830	5,706
Lead	628	508	88.2	3.8
Magnesium	9,870	9560	2450	267
Manganese	221	365	52.4	122
Mercury	0.41	ND	1.2	ND
Nickel	121	70.7	169	1.7
Potassium	538	254	706	213
Selenium	ND	ND	ND	ND
Silver	9.0	5.6	5.9	ND
Sodium	2,990	3010	6020	2,260
Thallium	ND	ND	ND	ND
Vanadium	53.8	16.9	ND	5.4
Zinc	1,430	841	1200	9.0
Cyanide	187	1202	650	ND
(B) Volatile Organics				
Methylene Chloride	130	87	83	27
Acetone	46	45	ND	25
2-Butanone	4	5	ND	9
1,1,1-Trichloroethane	7	6	9	4
Trichloroethene	23	11	17	ND
Tetrachloroethane	15	10	16	ND
1,1-Dichloroethene	8	5	11	ND
1,1-Dichloroethane	ND	ND	5	ND
Chloroform	3	10	10	ND
Benzene	4	2	ND	ND
Toluene	10	5	5	2
Chlorobenzene	3	ND	ND	ND
2-Hexanone	ND	10	ND	ND
4-Methyl-2-Pentanone	18	10	ND	ND
TIC	263	216	763	37

TABLE 1 - Continued

PHASE II **SAMPLING RESULTS SUMMARY TABLE**
Sediment Sampling

Parameter	SD-1	SD-2	LP-1	MW-1-SB
(C) Semivolatile Organics				
Bis(2-ethyl-hexyl)phthalate	5900	1100	5000	ND
Dimethylphthalate	69	ND	ND	ND
Phenanthrene	300	420	ND	ND
Di-n-butylphthalate	330	260	ND	ND
Fluoranthene	420	450	ND	ND
Pyrene	900	370	ND	ND
Butylbenzylphthalate	910	160	ND	ND
Chrysene	410	180	ND	ND
Phenol	880	390	ND	ND
Anthracene	ND	82	ND	ND
Di-n-octylphthalate	240	69	ND	ND
Benzo(b)fluoranthene	220	150	ND	ND
Benzo(k)fluoranthene	170	68	ND	ND
Benzo(a)anthracene	ND	120	ND	ND
TIC	41,940	46,560	126,490	ND
(D) Pesticides				
Aldrin	ND	ND	ND	ND
Endosulfan II	24	ND	ND	ND
Heptachlor epoxide	ND	30	62	ND
Endosulfan sulfate	ND	25	ND	ND
4,4'-DDT	ND	25	38	ND
Dieldrin	ND	ND	13	ND

Notes:

ND = Not Detected
TIC = Tentatively Identified Compound
All values represented in ppb unless otherwise noted.

TABLE 2
PHASE II SAMPLING RESULTS SUMMARY TABLE
Groundwater Samples

Parameter	MW-1	MW-2	MW-3	MW-4*	Field Blank	Trip Blank
(A) Inorganics						
Barium	33	7	37	37	ND	--
Cadmium	ND	ND	121	123	ND	--
Chromium	3	17	272	280	ND	--
Copper	7	ND	5	2	ND	--
Iron	446	638	706	500	35	--
Manganese	61	176	141	124	ND	--
(B) Volatile Organics						
Methylene Chloride	18	15	23	19	23	20
Acetone	9	6	7	11	ND	9
1,1-Dichloro-ethan	ND	ND	5	3	ND	ND

NOTE: All values represented in parts per billion (ppb).
* Sample MW-4 represents a quality control sample collected from Monitoring Well 3.

TABLE 2 - Continued

PHASE II SAMPLING RESULTS SUMMARY TABLE
Groundwater Samples

Parameter	MW-1	MW-2	MW-3	MW-4*	Field Blank	Trip Blank
(B) Volatile Organics (Continued)						
Chloroform	ND	ND	1	ND	ND	1
2-Butanone	5	ND	6	6	6	4
1,1,1-Trichloroethane	ND	ND	8	9	ND	3
Trichloroethene	6	ND	38	35	ND	ND
4-Methyl-2-Pentanone	2	ND	ND	ND	ND	ND
Benzene	ND	ND	3	5	ND	ND
Tetrachloroethene	25	ND	7	5	ND	3
Toluene	ND	ND	5	ND	ND	ND
TIC	34	42	40	43	42	34

NOTE: All values represented in ppb.
TIC = Tentatively Identified Compounds.

TABLE 2 (Continued)

PHASE II SAMPLING RESULTS SUMMARY TABLE

Groundwater Samples

Parameter	MW-1	MW-2	MW-3	MW-4	Field Blank	Trip Blank
(C) Semivolatile Organics						
Bis(2-ethyl-hexyl)-phthalate	4	6	12	10	20	--
TIC	38	24	8	68	50	--
(D) Pesticides/PCBs						
Aldrin	ND	0.02	0.03	0.03	0.01	--
Total Organics	141	93.02	163.03	214.03	141.01	74

NOTE: TIC = Tentatively Identified Compounds.
All values represented in ppb.

TABLE 2 - Continued

PHASE II SAMPLING RESULTS SUMMARY TABLE
Groundwater Monitoring Well Soil Boring Samples

Parameter	MW-1-SB*	MW-3-SB*
(A) Inorganics		
Aluminum	1440	2920
Antimony	4.7	5.5
Arsenic	1.2	ND
Barium	7.5	7.8
Beryllium	0.21	0.20
Cadmium	ND	ND
Calcium	136	1080
Chromium	12.8	3.7
Cobalt	1.5	2.5
Copper	7.7	4.3
Iron	5706	4810
Lead	3.8	6.9
Magnesium	267	631
Manganese	122	105
Mercury	ND	ND
Nickel	1.7	2.2
Potassium	213	189
Selenium	ND	ND
Silver	ND	ND
Sodium	2260	2220
Thallium	ND	ND
Vanadium	5.4	10
Zinc	9.0	10.8
Cyanide	ND	ND
(B) Volatile Organics		
Methylene Chloride	27 ppb	18 ppb
Acetone	25	7
2-Butanone	9	ND
1,1,1-trichloroethane	4	ND
Toluene	2	2
TIC.	37	38
(C) Semivolatile Organics		
Bis(2-ethylhexyl)phthalate	ND	93 ppb

NOTE: ND = Not Detected
TIC = Tentatively Identified Compounds
* All values represented in parts per million (ppm) unless otherwise noted.

TABLE 3

FEDERAL AND STATE WATER STANDARDS AND GOALS

TCL VOLATILE ORGANICS		Contract Detection Limit	[A] EPA 40CFR141	[A] EPA 40CFR141	[B] 10 NYCRR Subpart	[C] 6 NYCRR 702	[D] 6 NYCRR 703
CAS Number	Compound	[ug/l]	MCL* [ug/l]	MCLG** [ug/l]	5.1 MCL* [ug/l]	Standard [ug/l]	Standard [ug/l]
74-87-3	Chloromethane	10			5	50	5
74-83-9	Bromomethane	10			5	50	5
75-01-4	Vinyl Chloride	10	2	0	2	50	2
75-00-3	Chloroethane	10			5	50	5
75-09-2	Methylene Chloride	5			5	50	5
67-64-1	Acetone	10			50	50	50
75-15-0	Carbon Disulfide	5			50	50	50
75-35-4	1,1-Dichloroethene	5	7	7	5	50	5
75-34-3	1,1-Dichloroethane	5			5	50	5
540-59-0	1,2-Dichloroethene (total)	5			10	50	10
67-66-3	Chloroform	5	[1]		[2]	0.2	[2]
107-06-2	1,2-Dichloroethane	5	5	0	5	0.8	5
78-93-3	2-Butanone	10			50	50	50
71-55-6	1,1,1-Trichloroethane	5	200	200	5	50	5
56-23-5	Carbon Tetrachloride	5	5	0	5	50	5
108-05-4	Vinyl Acetate	10			50	50	50
75-27-4	Bromodichloromethane	5	[1]		[2]	50	[2]
78-87-5	1,2-Dichloropropane	5			5	0.6	5
10061-01-5	cis-1,3-Dichloropropene	5			5	50	5
79-01-6	Trichloroethene	5	5	0	5	50	5
124-48-1	Dibromochloromethane	5	[1]		[2]	50	[2]
79-00-5	1,1,2-Trichloroethane	5			50	50	50
71-43-2	Benzene	5	5	0	50	50	ND[4]
10061-02-6	trans-1,3-Dichloropropene	5			5	50	5
75-25-2	Bromoform	5	[1]		[2]	50	[2]
108-10-1	4-Methyl-2-pentanone	10			5	50	5
591-78-6	2-Hexanone	10			5	50	5
127-18-4	Tetrachloroethene	5			5	50	5
79-34-5	1,1,2,2-Tetrachloroethane	5			5	50	5
108-88-3	Toluene	5			5	50	5
108-90-7	Chlorobenzene	5			5	20[3]	5
100-41-4	Ethylbenzene	5			5	50	5
100-42-5	Styrene	5			5	50	5
1330-20-7	Xylene (total)	5			15	50	15

[1] 100 ug/l for the total of these four compounds for community water systems serving greater than 10,000 persons and which add a disinfectant (oxidant) to the water.

[2] 100 ug/l for the total of these four compounds for community water systems.

[3] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 5 ug/l. Primary contact recreation: 5 ug/l.

[4] Not detectable by tests or analytical determinations referenced in 6 NYCRR 703.4.

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Maximum Contaminant Level Goal - "nonenforceable health goal."

TABLE 3

FEDERAL AND STATE WATER STANDARDS AND GOALS

TCL SEMI-VOLATILE ORGANICS		Contract Detection Limit	[A] EPA 40CFR141	[A] EPA 40CFR141	[B] 10 NYCRR Subpart	[C] 6 NYCRR 702	[D] 6 NYCRR 703
CAS Number	Compound	[ug/l]	MCL* [ug/l]	MCLG** [ug/l]	5.1 MCL* [ug/l]	Standard [ug/l]	Standard [ug/l]
108-95-2	Phenol	10			50	1	50
111-44-4	bis(2-Chloroethyl)ether	10			50	50	1
95-57-8	2-Chlorophenol	10			50	50	50
541-73-1	1,3-Dichlorobenzene	10			5	20[1]	5
106-46-7	1,4-Dichlorobenzene	10	75	75	5	30[1]	4.7
100-51-6	Benzyl alcohol	10			50	50	50
95-50-1	1,2-Dichlorobenzene	10			5	50[1]	4.7
95-48-7	2-Methylphenol	10			50	50	50
39638-32-9	bis(2-Chloroisopropyl)ether	10			50	50	50
106-44-5	4-Methylphenol	10			50	50	50
621-64-7	N-Nitroso-di-n-propylamine	10			50	50	50
67-72-1	Hexachloroethane	10			50	50	50
98-95-3	Nitrobenzene	10			50	30	50
78-59-1	Isophorone	10			50	50	50
88-75-5	2-Nitrophenol	10			50	50	50
105-67-9	2,4-Dimethylphenol	10			50	50	50
65-85-0	Benzoic acid	50			50	50	50
111-91-1	bis(2-Chloroethoxy)methane	10			50	50	50
120-83-2	2,4-Dichlorophenol	10			50	0.3	50
120-82-1	1,2,4-Trichlorobenzene	10			5	10[1]	5
91-20-3	Naphthalene	10			50	10	50
106-47-8	4-Chloroaniline	10			50	50	50
87-68-3	Hexachlorobutadiene	10			5	0.5	5
59-50-7	4-Chloro-3-methylphenol	10			50	50	50
91-57-6	2-Methylnaphthalene	10			50	50	50
77-47-4	Hexachlorocyclopentadiene	10			50	1[2]	50
88-06-2	2,4,6-Trichlorophenol	10			50	50	50
95-95-4	2,4,5-Trichlorophenol	50			50	50	50
91-58-7	2-Chloronaphthalene	10			50	10	50
88-74-4	2-Nitroaniline	50			50	50	50
131-11-3	Dimethylphthalate	10			50	50	50
208-96-8	Acenaphthylene	10			50	50	50
606-20-2	2,6-Dinitrotoluene	10			50	50	50

[1] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 5 ug/l; primary contact recreation: 5 ug/l

[2] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 0.45 ug/l; primary contact recreation: 0.45 ug/l

[3] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 0.4 ug/l; primary contact recreation: 0.4 ug/l

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Maximum Contaminant Level Goal - "nonenforceable health goal."

TABLE 3
FEDERAL AND STATE WATER STANDARDS AND GOALS

TCL SEMI-VOLATILE ORGANICS		Contract Detection Limit	[A] EPA 40CFR141 MCL*	[A] EPA 40CFR141 MCLG**	[B] 10 NYCRR Subpart 5.1 MCL*	[C] 6 NYCRR 702 Standard	[D] 6 NYCRR 703 Standard
CAS Number	Compound	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
99-09-2	3-Nitroaniline	50			50	50	50
83-32-9	Acenaphthene	10			50	20	50
51-28-5	2,4-Dinitrophenol	50			50	50	50
100-02-7	4-Nitrophenol	50			50	50	50
132-64-9	Dibenzofuran	10			50	50	50
121-14-2	2,4-Dinitrotoluene	10			50	50	50
84-66-2	Diethylphthalate	10			50	50	50
7005-72-3	4-Chlorophenyl-phenylether	10			50	50	50
86-73-7	Fluorene	10			50	50	50
100-01-6	4-Nitroaniline	50			50	50	50
534-52-1	4,6-Dinitro-2-methylphenol	50			50	50	50
86-30-6	N-Nitroso-diphenylamine	10			50	50	50
101-55-3	4-Bromophenyl-phenylether	10			50	50	50
118-74-1	Hexachlorobenzene	10			50	50	0.35
87-86-5	Pentachlorophenol	50			50	1[3]	21
85-01-8	Phenanthrene	10			50	50	50
120-12-7	Anthracene	10			50	50	50
84-74-2	Di-n-butylphthalate	10			50	50	50
206-44-0	Fluoranthene	10			50	50	50
129-00-0	Pyrene	10			50	50	50
85-68-7	Butylbenzylphthalate	10			50	50	50
91-94-1	3,3'-Dichlorobenzidine	20			50	50	50
56-55-3	Benzo(a)anthracene	10			50	50	50
218-01-9	Chrysene	10			50	50	50
117-81-7	bis(2-Ethylhexyl)phthalate	10			50	0.6	4.2
117-84-0	Di-n-octylphthalate	10			50	50	50
205-99-2	Benzo(b)fluoranthene	10			50	50	50
207-08-9	Benzo(k)fluoranthene	10			50	50	50
50-32-8	Benzo(a)pyrene	10			50	50	50
193-39-5	Indeno(1,2,3-cd)pyrene	10			50	50	50
53-70-3	Dibenzo(a,h)anthracene	10			50	50	50
191-24-2	Benzo(g,h,i)perylene	10			50	50	50

[1] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 5 ug/l; primary contact recreation: 5 ug/l

[2] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 0.45 ug/l; primary contact recreation: 0.45 ug/l

[3] Sources of water for drinking, culinary or food processing purposes - aquatic life protection: 0.4 ug/l; primary contact recreation: 0.4 ug/l

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Maximum Contaminant Level Goal - "nonenforceable health goal."

TABLE 3

FEDERAL AND STATE WATER STANDARDS

TCL INORGANICS			[A]	[E]	[B]	[C]	[C]	[C]	[D]
		Contract Detection	EPA 40CFR141	EPA 40CFR143	10 NYCRR Subpart	6 NYCRR 702	6 NYCRR 702	6 NYCRR 702	6 NYCRR 703
CAS Number	Analyte	Limit [ug/l]	MCL* [ug/l]	SMCL** [ug/l]	5.1 MCL* [ug/l]	Human [ug/l]	Aquatic [ug/l]	PCR*** [ug/l]	Standard [ug/l]
7429-90-5	Aluminum	200					100	100	
7440-36-0	Antimony	60							
7440-38-2	Arsenic	10	50		50	50	190	190	25
7440-39-3	Barium	200	1000		1000	1000			1000
7440-41-7	Beryllium	5					1100[2]	1100[2]	
7440-43-9	Cadmium	5	10		10	10	0.9[3]	0.9[3]	10
7440-70-2	Calcium	5000							
7440-47-3	Chromium	10	50		50	50	163[3]	163[3]	50
7440-48-4	Cobalt	50					5	5	
7440-50-8	Copper	25		1000	1000	200	9.2[3]	9.2[3]	1000
7439-89-6	Iron	100		300	300[1]	300	300	300	300[1]
7439-92-1	Lead	5	50		50	50	2.2[3]	2.2[3]	25
7439-95-4	Magnesium	5000				35000			
7439-96-5	Manganese	15		50	300[1]	300			300[1]
7439-97-6	Mercury	0.2	2		2	2			2
7440-02-0	Nickel	40					76.8[3]	76.8[3]	
7440-09-7	Potassium	5000							
7782-49-2	Selenium	5	10		10	10	1	1	10
7440-22-4	Silver	10	50		50	50	0.1	0.1	50
7440-23-5	Sodium	5000							
7440-28-0	Thallium	10					8	8	
7440-62-2	Vanadium	50					14	14	
7440-66-6	Zinc	20		5000	5000	300	30	30	5000
	Cyanide	10				100	5.2	5.2	

[1] If both are present, the total of both concentrations may not exceed 500 ug/l.

[2] For water with hardness greater than 75 ppm. Standard is 11 ug/l for water with hardness less than or equal to 75 ppm.

[3] For water with hardness of 75 ppm. See 6 NYCRR 702 for determination of standard for other hardnesses.

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Secondary Maximum Contaminant Level - same definition as MCL except "not Federally enforceable but intended as guidelines for the States."

*** Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

TABLE 3

STATE SOIL REGULATIONS

TCL INORGANICS		[F] Common Range in Soil [mg/kg]	[G] 6 NYCRR Part 360 4.4 MC* [mg/kg]
CAS Number	Analyte		
7429-90-5	Aluminum		
7440-36-0	Antimony	2 - 10	
7440-38-2	Arsenic	1 - 50	
7440-39-3	Barium	100 - 3000	
7440-41-7	Beryllium	0.1 - 40	
7440-43-9	Cadmium	0.01 - 0.7	25
7440-70-2	Calcium	700 - 36000[1]	
7440-47-3	Chromium	1 - 1000	1000
7440-48-4	Cobalt	1 - 40	
7440-50-8	Copper	2 - 100	1000
7439-89-6	Iron	5000 - 50000[1]	
7439-92-1	Lead	2 - 200	1000
7439-95-4	Magnesium	1200 - 15000[1]	
7439-96-5	Manganese	200 - 10000[1]	
7439-97-6	Mercury	0.01 - 0.3	10
7440-02-0	Nickel	5 - 500	200
7440-09-7	Potassium	1700 - 33000[1]	
7782-49-2	Selenium	0.1 - 2	
7440-22-4	Silver	0.01 - 5	
7440-23-5	Sodium		
7440-28-0	Thallium		
7440-62-2	Vanadium	20 - 500	
7440-66-6	Zinc	10 - 300	2500
	Cyanide		

[1] Source: "The Nature and Properties of Soils," Buckman, H., Brady, N., Macmillan Co., New York, New York, 1969.

* "Maximum Concentration, ppm, dry weight basis."

TABLE 3

FEDERAL AND STATE WATER STANDARDS

TCL PESTICIDES AND PCB's		Contract Detection Limit	[A] EPA 40CFR141 MCL*	[B] 10 NYCRR Subpart 5.1 MCL*	[C] 6 NYCRR 702 Human	[C] 6 NYCRR 702 Aquatic	[C] 6 NYCRR 702 PCR**	[D] 6 NYCRR 703 Standard
CAS Number	Compound	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]
319-84-6	alpha-BHC	0.05			50	0.01	0.01	ND[2]
319-85-7	beta-BHC	0.05			50	0.01	0.01	ND[2]
319-86-8	delta-BHC	0.05			50	0.01	0.01	ND[2]
58-89-9	gamma-BHC (Lindane)	0.05	4	4	50	0.01	0.01	ND[2]
76-44-8	Heptachlor	0.05			0.009	0.001	0.001	ND[2]
309-00-2	Aldrin	0.05			0.001[1]	0.001[1]	0.001[1]	ND[2]
1024-57-3	Heptachlor epoxide	0.05			0.009	0.001	0.001	ND[2]
959-98-8	Endosulphan I	0.05			50	50	50	
60-57-1	Dieldrin	0.10			0.001[1]	0.001[1]	0.001[1]	ND[2]
72-55-9	4,4'-DDE	0.10			0.01	0.001	0.001	ND[2]
72-20-8	Endrin	0.10	0.2	0.2	0.2	0.002	0.002	ND[2]
33213-65-9	Endosulphan II	0.10			50	50	50	
72-54-8	4,4'-DDD	0.10			0.01	0.001	0.001	
1031-07-8	Endosulphan sulfate	0.10			50	50	50	
50-29-3	4,4'-DDT	0.10			0.01	0.001	0.001	ND[2]
53494-70-5	Endrin ketone	0.10			50	50	50	
72-43-5	Methoxychlor	0.5	100	50	35	0.03	0.03	35
5103-71-9	alpha-Chlordane	0.5			50	50	50	
5103-74-2	gamma-Chlordane	0.5			50	50	50	
8001-35-2	Toxaphene	1.0		5	50	50	50	ND[2]
12674-11-2	AROCLOR-1016	0.5			0.01	0.001	0.001	0.1
11104-28-2	AROCLOR-1221	0.5			0.01	0.001	0.001	0.1
11141-16-5	AROCLOR-1232	0.5			0.01	0.001	0.001	0.1
53469-21-9	AROCLOR-1242	0.5			0.01	0.001	0.001	0.1
12672-29-6	AROCLOR-1248	0.5			0.01	0.001	0.001	0.1
11097-69-1	AROCLOR-1254	1.0			0.01	0.001	0.001	0.1
11096-82-5	AROCLOR-1260	1.0			0.01	0.001	0.001	0.1

[1] 0.001 ug/l for the total of these two compounds.

[2] Not detectable by tests or analytical determinations referenced in 6 NYCRR 703.4.

* Maximum Contaminant Level - "maximum permissible level of a contaminant in water which is delivered to the free flowing outlet of the ultimate user of a public water system."

** Primary contact recreation and any other uses except as a source of water supply for drinking, culinary or food processing purposes.

TABLE 3

STATE SOIL REGULATIONS

TCL PESTICIDES AND PCB's		Contract Detection Limit [mg/kg]	[G] 6 NYCRR Part 360 4.4 MC* [mg/kg]
CAS Number	Compound		
319-84-6	alpha-BHC	0.008	
319-85-7	beta-BHC	0.008	
319-86-8	delta-BHC	0.008	
58-89-9	gamma-BHC (Lindane)	0.008	
76-44-8	Heptachlor	0.008	
309-00-2	Aldrin	0.008	
1024-57-3	Heptachlor epoxide	0.008	
959-98-8	Endosulphan I	0.008	
60-57-1	Dieldrin	0.016	
72-55-9	4,4'-DDE	0.016	
72-20-8	Endrin	0.016	
33213-65-9	Endosulphan II	0.016	
72-54-8	4,4'-DDD	0.016	
1031-07-8	Endosulphan sulfate	0.016	
50-29-3	4,4'-DDT	0.016	
53494-70-5	Endrin ketone	0.016	
72-43-5	Methoxychlor	0.08	
5103-71-9	alpha-Chlordane	0.08	
5103-74-2	gamma-Chlordane	0.08	
8001-35-2	Toxaphene	0.16	
12674-11-2	AROCLOR-1016	0.08	10[1]
11104-28-2	AROCLOR-1221	0.08	10[1]
11141-16-5	AROCLOR-1232	0.08	10[1]
53469-21-9	AROCLOR-1242	0.08	10[1]
12672-29-6	AROCLOR-1248	0.08	10[1]
11097-69-1	AROCLOR-1254	0.16	10[1]
11096-82-5	AROCLOR-1260	0.16	10[1]

[1] 10 mg/kg for "Total PCBs"

* "Maximum Concentration, ppm, dry weight basis."

TABLE 3

FEDERAL AND STATE STANDARDS AND GOALS

NOTES TO REGULATIONS

[A] Environmental Protection Agency National Primary Drinking Water Regulations (as of 7/17/89)

Applied to results of all water sample analyses.

[B] Chapter 1 of Title 10 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Part 5, Drinking Water Supplies, Subpart 5-1, Public Water Supplies (as of 11/28/88)

Applied to results of drinking water sample analyses.

[C] Chapter 10 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Division of Water Resources, Article 2, Part 702, Appendix 31, Ambient Water Quality Standards - "The standards adopted herein relate to the condition of waters as affected by the discharge of sewage, industrial wastes or other wastes." (as of 7/5/85)

For sources of water for drinking, culinary or food processing purposes and human life protection, unless otherwise noted.

Applied to results of surface water sample analyses for surface water that is not a source of drinking water.

[D] Chapter 10 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Division of Water Resources, Article 2, Part 703.5(a)(2) and (3), Classes and quality standards for groundwaters - "The purpose of these classes, quality standards, and effluent standards and/or limitations is to prevent pollution of groundwaters and to protect the groundwaters for use as a potable water." (as of 7/5/85)

Applied to results of all groundwater sample analyses regardless of groundwater use.

[E] Environmental Protection Agency National Secondary Drinking Water Regulations (as of 9/26/88)

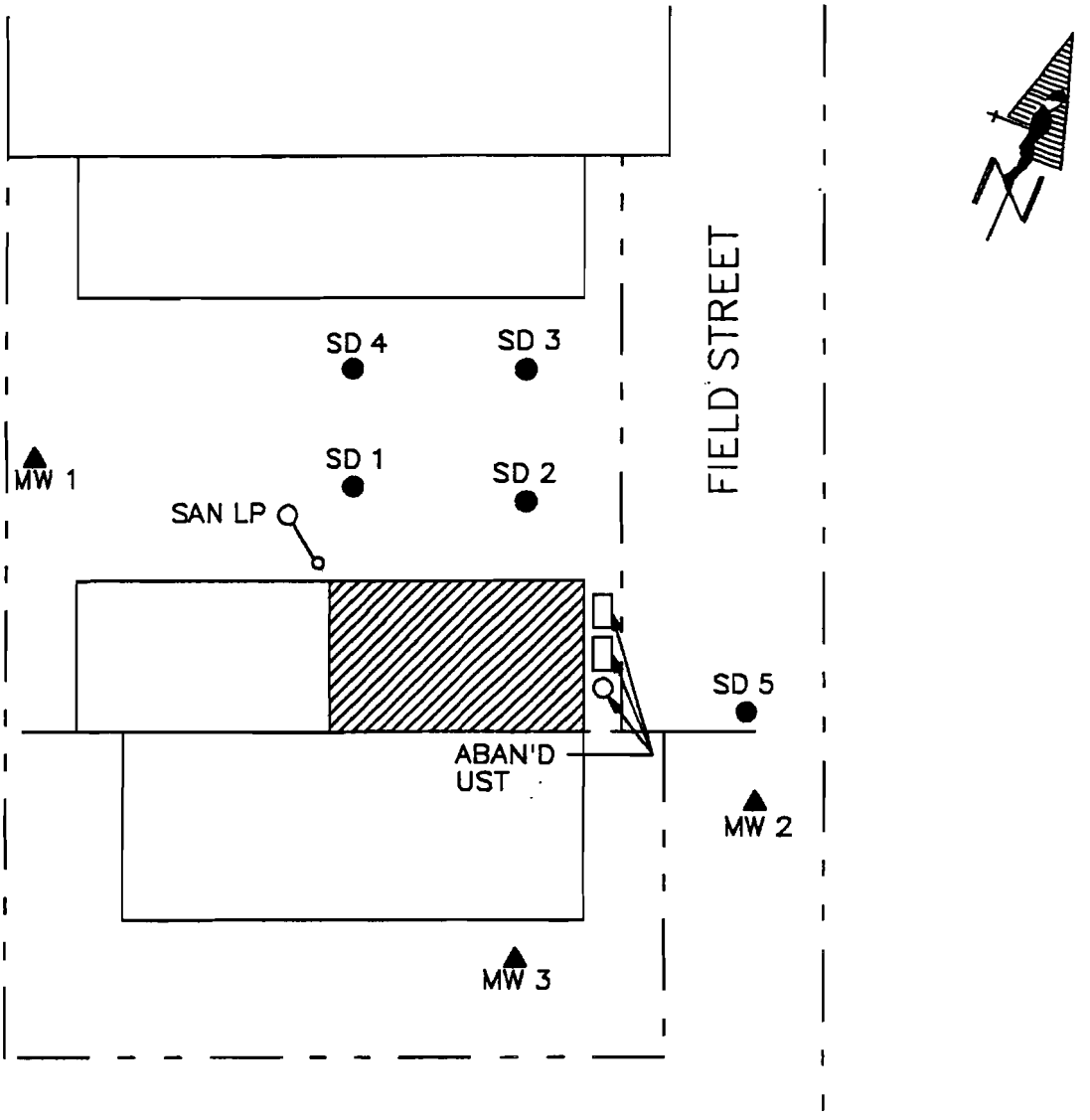
Applied to results of all water sample analyses.

[F] Source: "Review of In-Place Treatment Techniques for Contaminated Surface Soils," Volume 2, EPA-540/2-84-0036, November 1984, except as noted.

Applied to results of soil sample analyses.

[G] Chapter 360 of Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York, Solid Waste Management Facilities, Section 360-4.4(a), "Sewage sludge and septage destined for land application" (as of 12/31/88)

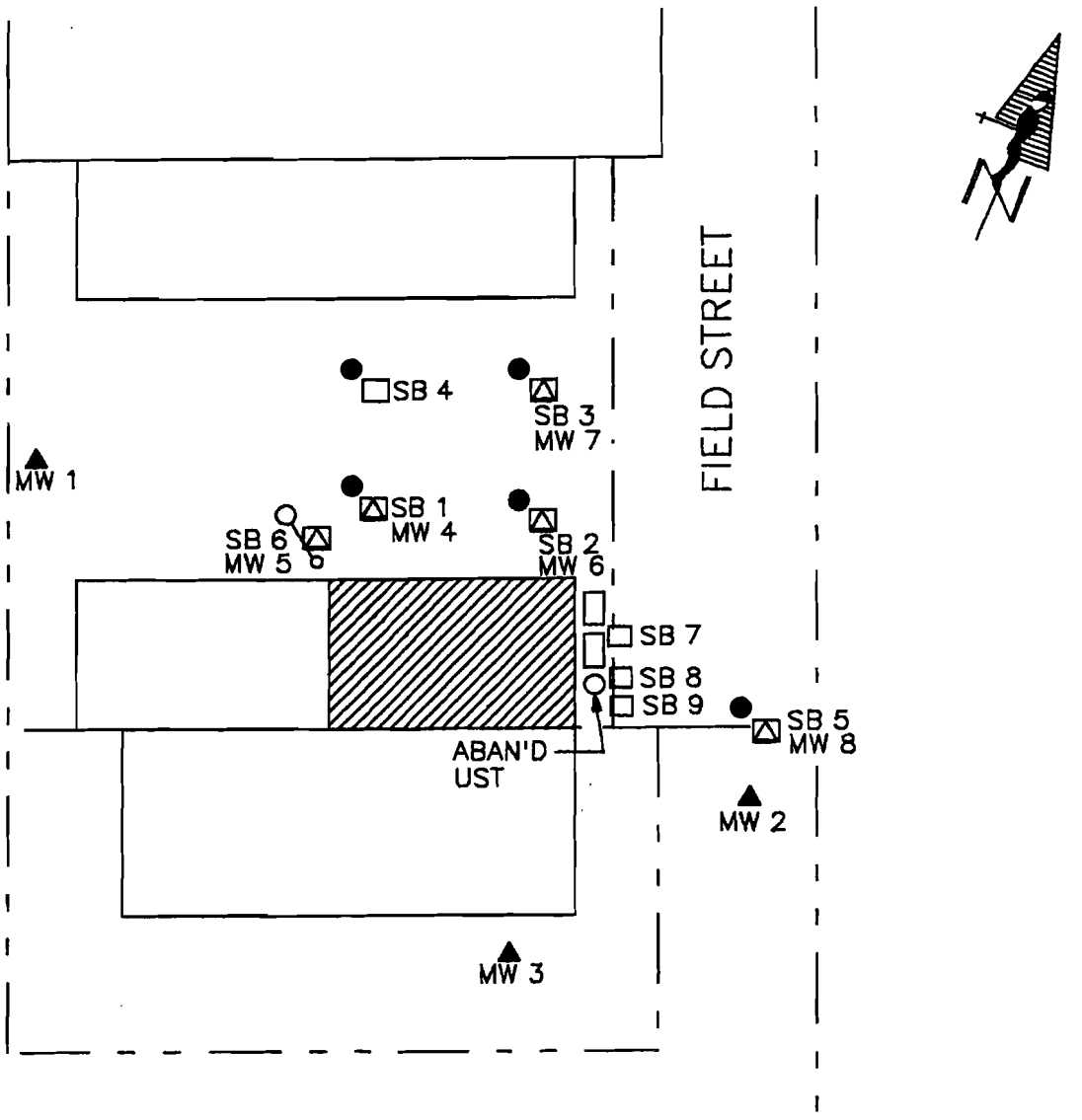
Applied to results of soil and sediment sample analyses.



LEGEND:
□ : SOIL BORING
▲ : MONITORING WELL
○ : SANITARY LEACHING PIT
● : STORM DRAIN
▭ : UST

SITE PLAN
FOR PHASE II INVESTIGATION
U.S. ELECTROPLATING CORP.

FIGURE 1A



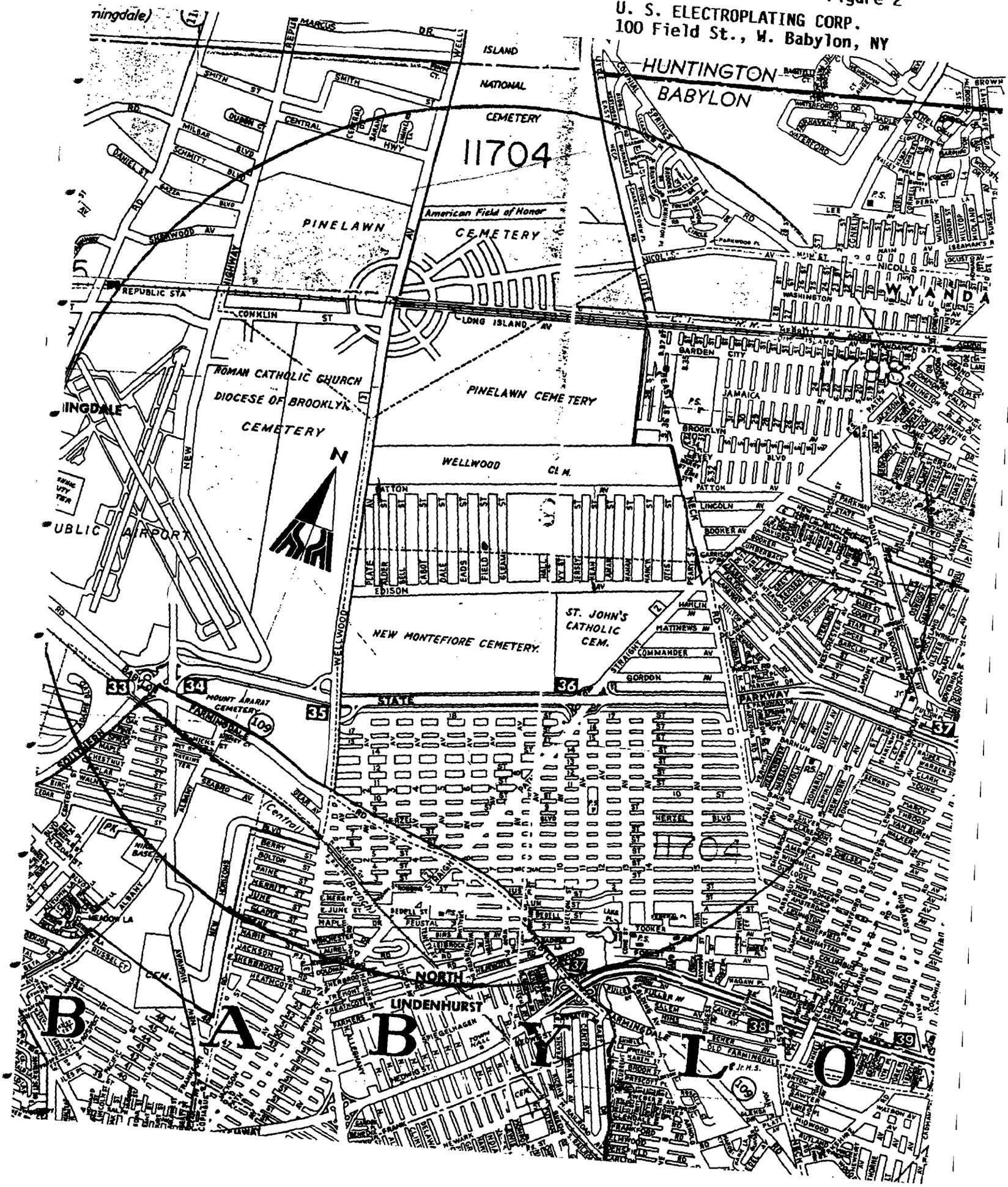
LEGEND:

- □ : PROPOSED SOIL BORING
- △ : PROPOSED MONITORING WELL
- ▲ : EXISTING MONITORING WELL
- ○ : SANITARY LEACHING PIT
- ● : STORM DRAIN
- ▭ : UST

SITE PLAN
FOR PHASE II INVESTIGATION
U.S. ELECTROPLATING CORP.

FIGURE 1B

SITE LOCATION MAP - Figure 2
U. S. ELECTROPLATING CORP.
100 Field St., W. Babylon, NY



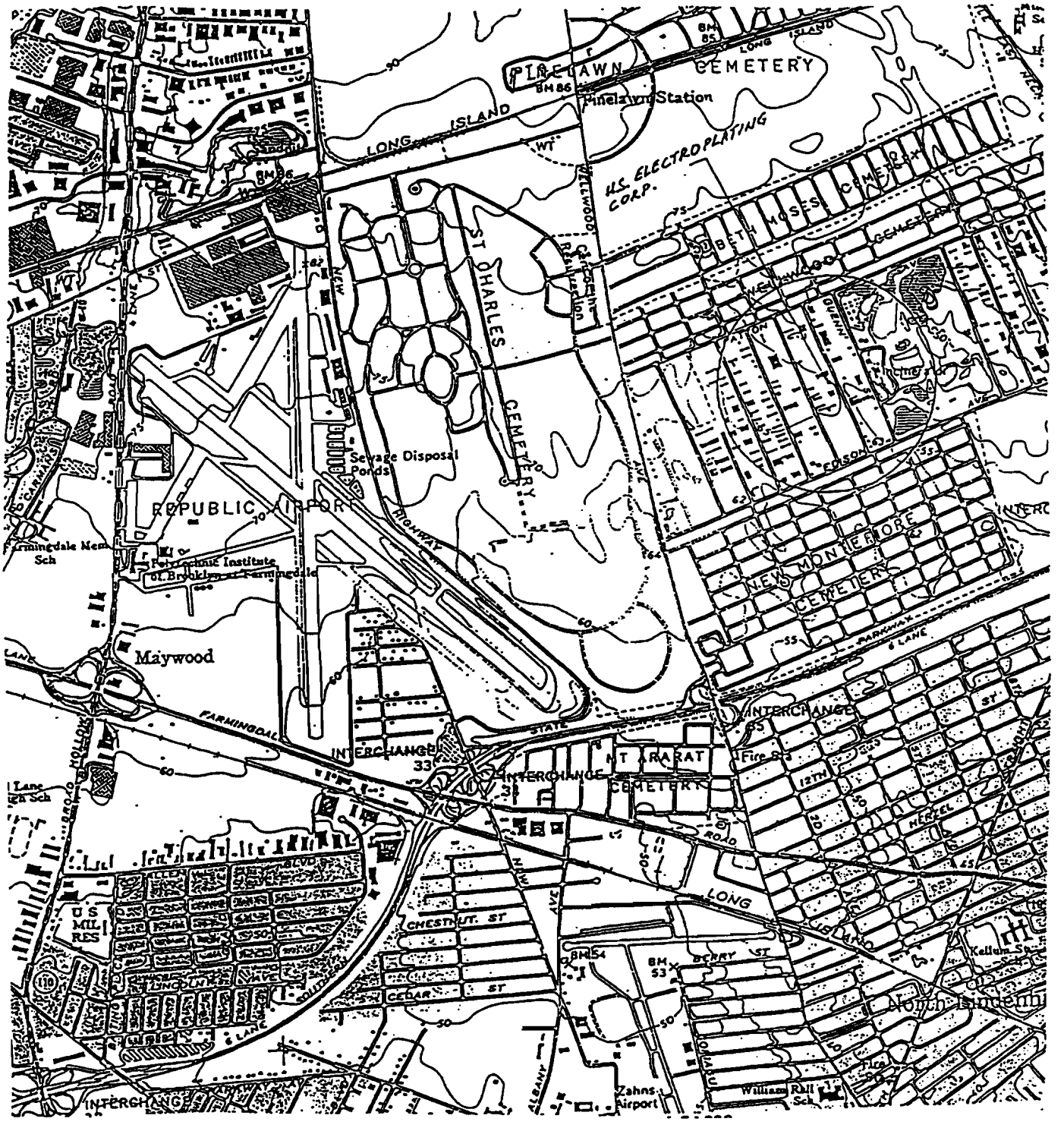


FIGURE 3

COORDINATES:
LONGITUDE: 73°23'30"
LATITUDE: 40°38'30"

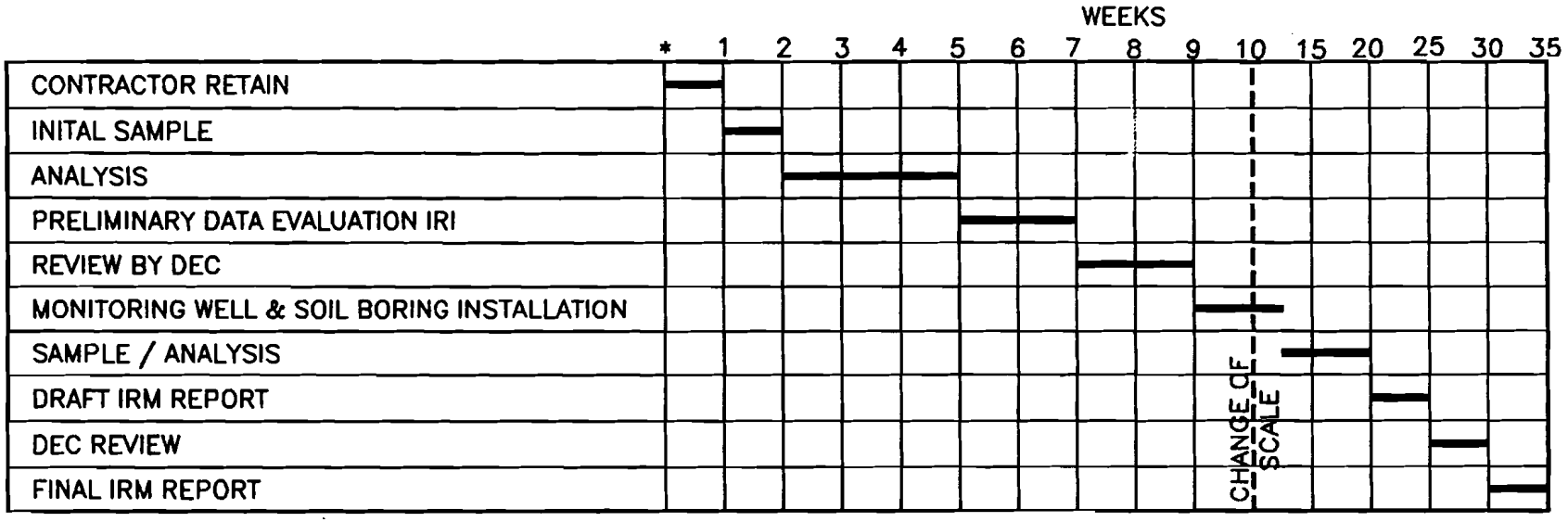
TOPOGRAPHICAL MAP

SITE: U.S. ELECTROPLATING, CORPORATION

MAP SOURCE: AMITYVILLE, N.Y. QUADRANGLE, U.S.G.S. 7.5 MIN SERIES (PHOTOREVISED 1979)
CONTOUR INTERVAL = 5 FEET

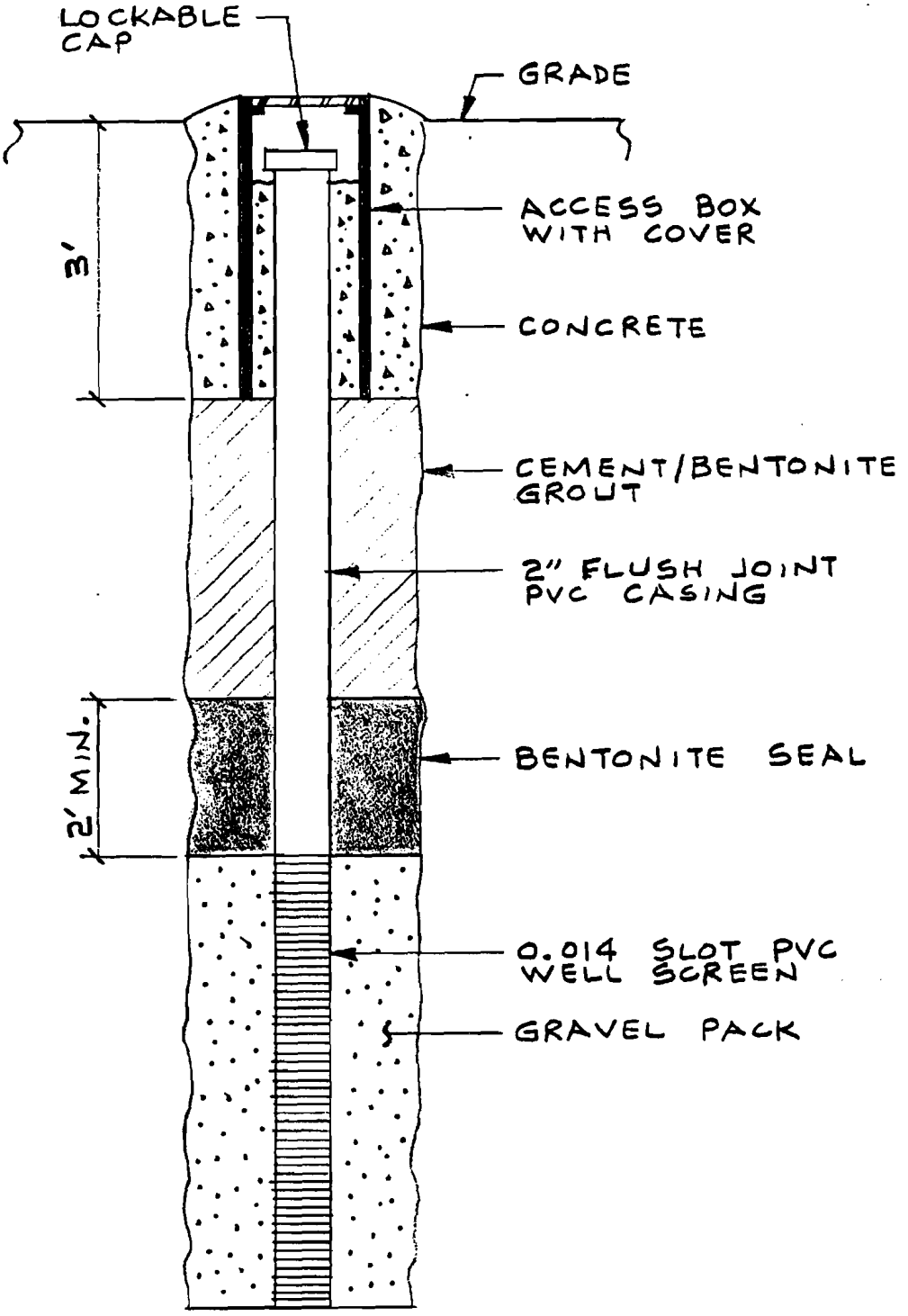
SCALE 1" = 2000'

RI/FS PROJECT SCHEDULE
U.S. ELECTROPLATING



U.S. ELECTROPLATING CORP.
100 FIELD STREET
WEST BABYLON, NY 11704
NYSDEC SITE #152027

FIGURE 4



MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

FOR U.S. ELECTROPLATING CORP.
BY: DONNELLY ENGINEERING
DATE: FEB 4, 1994

FIGURE 5

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

162403

Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9319713

Lab Code: 10195 Case No.: SH193 SAS No.: SDG No.: 0102

Matrix (soil/water): SOIL Lab Sample ID: 547503

Level (low/med): LOW Date Received: 01/20/93

% Solids: 74.8

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2980		*	P
7440-36-0	Antimony	16.0	U		P
7440-38-2	Arsenic	1.3	U		F
7440-39-3	Barium	27.1	B		P
7440-41-7	Beryllium	0.37	U		P
7440-43-9	Cadmium	239			P
7440-70-2	Calcium	9270			P
7440-47-3	Chromium	160		N	P
7440-48-4	Cobalt	2.4	U		P
7440-50-8	Copper	183		N	P
7439-89-6	Iron	7190		*	P
7439-92-1	Lead	103			P
7439-95-4	Magnesium	5110			P
7439-96-5	Manganese	68.3		N*	P
7439-97-6	Mercury	0.39			CV
7440-02-0	Nickel	38.0			P
7440-09-7	Potassium	279	U		P
7782-49-2	Selenium	1.3	U		F
7440-22-4	Silver	2.0	U	N	P
7440-23-5	Sodium	182	U		P
7440-28-0	Thallium	1.8	B		F
7440-62-2	Vanadium	7.5	B		P
7440-66-6	Zinc	158			P
5955-70-0	Cyanide	34.6			AS

Color Before: BLACK Clarity Before: Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts:

Comments:

CN_AT_A_20X_DILUTION.

Figure 6: Sludge Analysis for SD 5, before clean-out

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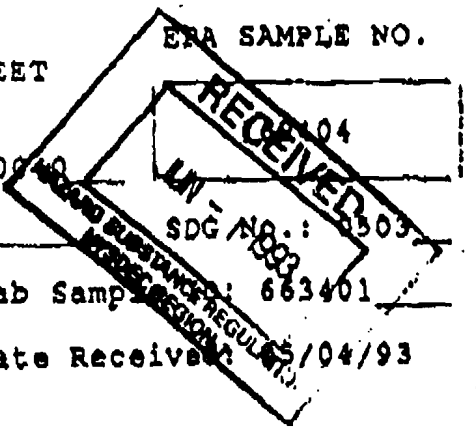
1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.



Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9320[illegible]

Lab Code: 10195_ Case No.: SH193_ SAS No.: _____ SDG No.: [illegible]

Matrix (soil/water): SOIL_ Lab Sample ID: 663401

Level (low/med): LOW_ Date Received: 05/04/93

% Solids: 83.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	1360			P
7440-36-0	Antimony	14.4	U		P
7440-38-2	Arsenic	1.9	B		F
7440-39-3	Barium	3.4	B		P
7440-41-7	Beryllium	0.22	U		P
7440-43-9	Cadmium	56.3			P
7440-70-2	Calcium	120	U		P
7440-47-3	Chromium	77.5			P
7440-48-4	Cobalt	2.9	U		P
7440-50-8	Copper	5.1	B		P
7439-89-6	Iron	2800			P
7439-92-1	Lead	4.5			F
7439-95-4	Magnesium	272	B		P
7439-96-5	Manganese	35.5			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	8.0	U		P
7440-09-7	Potassium	297	U		P
7782-49-2	Selenium	1.2	U		F
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	232	U		P
7440-28-0	Thallium	1.2	U		F
7440-62-2	Vanadium	2.4	B		P
7440-66-6	Zinc	101			P
5955-70-0	Cyanide	2.7			AS

TAGM 93-4046 Cleanup goals

Color Before: BROWN Clarity Before: _____ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR Artifacts: _____

Comments: John, use these cleanup goals for all three storm drains

FORM I - IN

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Figure 7: Sludge analysis for SD 5 after clean-out

0000012

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

162402

Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9319713___

Lab Code: 10195_ Case No.: SH193_ SAS No.: _____ SDG No.: 0102___

Matrix (soil/water): SOIL_ Lab Sample ID: 547502_____

Level (low/med): LOW__ Date Received: 01/20/93

% Solids: 35.5

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11700		*	P
7440-36-0	Antimony	33.8	U		P
7440-38-2	Arsenic	2.8	B		F
7440-39-3	Barium	142			P
7440-41-7	Beryllium	0.79	U		P
7440-43-9	Cadmium	9770			P
7440-70-2	Calcium	17700			P
7440-47-3	Chromium	4830		N	P
7440-48-4	Cobalt	5.5	B		P
7440-50-8	Copper	115		N	P
7439-89-6	Iron	23000		*	P
7439-92-1	Lead	1110			P
7439-95-4	Magnesium	9420			P
7439-96-5	Manganese	145		N*	P
7439-97-6	Mercury	0.78			CV
7440-02-0	Nickel	432			P
7440-09-7	Potassium	889	B		P
7782-49-2	Selenium	2.8	U		F
7440-22-4	Silver	4.2	U	N	P
7440-23-5	Sodium	5000			P
7440-28-0	Thallium	3.3	B		F
7440-62-2	Vanadium	9.9	B		P
7440-66-6	Zinc	4890			P
5955-70-0	Cyanide	611			AS

Color Before: GREY_____ Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW___ Clarity After: CLEAR Artifacts: _____

Comments:

CN_AT_A_40X_DILUTION._____

FORM I - IN

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Figure 8: Sludge analysis for SD 2 before clean-out

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

162406

Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9320040___

Lab Code: 10195_ Case No.: SH193_ SAS No.: _____ SDG No.: 0503__

Matrix (soil/water): SOIL_ Lab Sample ID: 663403____

Level (low/med): LOW__ Date Received: 05/04/93

% Solids: _82.6

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	991			P
7440-36-0	Antimony	14.5	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	5.6	B		P
7440-41-7	Beryllium	0.22	U		P
7440-43-9	Cadmium	39.4			P
7440-70-2	Calcium	121	U		P
7440-47-3	Chromium	95.9			P
7440-48-4	Cobalt	3.0	U		P
7440-50-8	Copper	13.0			P
7439-89-6	Iron	1440			P
7439-92-1	Lead	10.6		+	F
7439-95-4	Magnesium	238	U		P
7439-96-5	Manganese	8.6			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	8.1	U		P
7440-09-7	Potassium	332	B		P
7782-49-2	Selenium	1.2	U		F
7440-22-4	Silver	1.6	U		P
7440-23-5	Sodium	260	B		P
7440-28-0	Thallium	1.2	U		F
7440-62-2	Vanadium	5.7	B		P
7440-66-6	Zinc	107			P
5955-70-0	Cyanide	42.0			AS

Color Before: GREY_____ Clarity Before: _____ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

CN_RUN_AT_A_10X_DILUTION

FORM I - IN

ILM02.1

Figure 9: Sludge analysis for SD 2 after clean-out

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO. 162401

Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9319713

Lab Code: 10195 Case No.: SE193 SAS No.: _____ SDG No.: 0102

Matrix (soil/water): SOIL Lab Sample ID: 547501

Level (low/med): LOW Date Received: 01/20/93

% Solids: 31.2

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4590		*	P
7440-36-0	Antimony	38.5	U		P
7440-38-2	Arsenic	3.2	U		F
7440-39-3	Barium	74.1	B		P
7440-41-7	Beryllium	0.90	U		P
7440-43-9	Cadmium	229			P
7440-70-2	Calcium	18600			P
7440-47-3	Chromium	340		N	P
7440-48-4	Cobalt	7.4	B		P
7440-50-8	Copper	712		N	P
7439-89-6	Iron	12600		*	P
7439-92-1	Lead	509			P
7439-95-4	Magnesium	10700			P
7439-96-5	Manganese	108		N*	P
7439-97-6	Mercury	0.85			CV
7440-02-0	Nickel	124			P
7440-09-7	Potassium	670	U		P
7782-49-2	Selenium	3.2	U		F
7440-22-4	Silver	4.7	U	N	P
7440-23-5	Sodium	435	U		P
7440-28-0	Thallium	3.2	U	W	F
7440-62-2	Vanadium	36.7			P
7440-66-6	Zinc	644			P
5955-70-0	Cyanide	30.6			AS

Color Before: BLACK Clarity Before: _____ Texture: MEDIUM

Color After: YELLOW Clarity After: CLEAR Artifacts: _____

Comments:

FORM I - IN ILMO2.1

pre-point sample

0000006

US Electroplating

Figure 10: Sludge analysis for SD 3 before clean-out

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

162405

Lab Name: NYTEST_ENVIRONMENTAL_INC. Contract: 9320040___

Lab Code: 10195_ Case No.: SH193_ SAS No.: _____ SDG No.: 0503__

Matrix (soil/water): SOIL_ Lab Sample ID: 663402___

Level (low/med): LOW__ Date Received: 05/04/93

% Solids: _85.0

Concentration Units (ug/L or mg/kg dry weight): MG/KG

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	987			P
7440-36-0	Antimony	14.1	U		P
7440-38-2	Arsenic	1.2	U		F
7440-39-3	Barium	3.9	B		P
7440-41-7	Beryllium	0.21	U		P
7440-43-9	Cadmium	12.7			P
7440-70-2	Calcium	748	B		P
7440-47-3	Chromium	31.1			P
7440-48-4	Cobalt	2.9	U		P
7440-50-8	Copper	11.0			P
7439-89-6	Iron	2370			P
7439-92-1	Lead	5.9			F
7439-95-4	Magnesium	767	B		P
7439-96-5	Manganese	15.5			P
7439-97-6	Mercury	0.12	U		CV
7440-02-0	Nickel	7.9	U		P
7440-09-7	Potassium	292	U		P
7782-49-2	Selenium	1.2	U		F
7440-22-4	Silver	1.5	U		P
7440-23-5	Sodium	229	U		P
7440-28-0	Thallium	1.2	U		F
7440-62-2	Vanadium	2.8	B		P
7440-66-6	Zinc	44.8			P
5955-70-0	Cyanide	2.6			AS

Color Before: GREY_____ Clarity Before: _____ Texture: MEDIUM

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

FORM I - IN

ILM02.1

0000013

Figure 11: Sludge analysis for SD 3 after clean-out

FIELD SAMPLING PLAN FOR THE REMEDIAL INVESTIGATION/ FEASIBILITY STUDY FOR U. S. ELECTROPLATING CORP. WEST BABYLON, NEW YORK

FIELD SAMPLING PLAN

TABLE OF CONTENTS

FIELD SAMPLING PLAN FOR THE REMEDIAL INVESTIGATION/ FEASIBILITY STUDY FOR U. S. ELECTROPLATING CORP. IN WEST BABYLON, NEW YORK

1.0 INTRODUCTION

The following Field Sampling Plan (FSP) has been developed to insure that the Site Remedial Investigation is conducted in a proper manner and in accordance with the Order on Consent, the applicable regulatory guidance documents, and the Quality Assurance Project Plan (QAPP) provided as part of this package.

The Field Sampling Plan includes the methodology for sampling groundwater from the monitoring wells to be installed at U. S. Electroplating Corp. The methodology used to install the monitoring wells to collect soil samples and perform geophysical logging of the bore holes is also included.

2.0 MANAGEMENT PLAN

The following Site Management Plan includes a description of the Site preparation tasks and of the field investigation team.

2.1 SITE PREPARATION

The proposed locations of monitoring wells and soil borings to be installed at the Site are indicated on Figure 1. Prior to any Site work the location of the decontamination area will be determined by Donnelly Engineering. All private and public underground utility lines, other underground structures as well as above ground power lines will be clearly marked at and in the vicinity of the working area. The monitoring well locations will be painted or otherwise distinctly marked and the approval of ground locations, any excavations, tree removal or Site modifications will be obtained from U. S. Electroplating Corp. prior to the commencement of drilling. All drilling and decontamination activities will be located so that they minimize any obstruction to traffic.

2.2 FIELD INVESTIGATION TEAM

The Donnelly Engineering Field Investigation Team will consist of engineers, technicians and scientists familiar with site contamination investigations. The Site Safety Officer will make frequent visits to insure the HASP is being followed.

3.0 MONITORING WELL INSTALLATION

Several monitoring wells will be installed at the Site in accordance with the Order on Consent (O/C). The location of the monitoring wells will be identified in the Interim Remedial Investigation Report.

3.1 DRILLING METHOD

Monitoring well bore holes will be drilled at the Site using a truck-mounted hollow-stem auger rig. This technique involves rotating the string of augers into the subsurface. The continuously open axial stem of the hollow stem auger column enables the bore hole to be advanced while the auger column serves as a temporary casing to prevent collapse of the bore hole. The drill cuttings are lifted upward to the surface by the auger flights on the exterior of the hollow stem. Various techniques are employed to prevent the rise of the sediment into the hollow stem of the auger which may form a plug and present an obstacle to the insertion of the well screen. These techniques are well-known to experienced well drillers. Once the bore hole is advanced to a desired sampling depth the hollow stem is sounded to determine the presence or absence of a sediment plug and if the sediment plug is present, it is removed. The sample is collected through the hollow stem of the auger using a down-hole

hammer and a 2" split-spoon sampler to collect an undisturbed sample of the formation ahead of the auger bit. The sampling spoon is removed from the auger and the auger is advanced further to the next station for sampling. A qualified environmental scientist will be present at the operating drill rig and will be responsible for the collection and logging of samples, monitoring of drilling and decontamination operations and preparing the boring logs. In addition, this scientist will maintain a daily log recording the events of the day.

Donnelly Engineering personnel will carefully describe all recovered materials as the holes are drilled and these descriptions will be entered into the log. In addition to the normal lithologic and hydrologic descriptions, unusual odors and colors will be noted and recorded in the field log. Odors will only be described where the field personnel are not required to wear respirators or cartridge-type masks. The Project Engineer or supervising personnel will note arrivals and departures of persons visiting the Site, down-time, drilling time, and other important Site events. These data will be recorded on the daily log sheet by the Project Engineer.

3.2 DECONTAMINATION

The drilling rig, augers, rods and drilling tools will be steam-cleaned upon arrival at the Site, as well as before leaving the Site at the end of the project. In addition, the Project Engineer will make certain that all equipment is steam-cleaned between bore holes to reduce the possibility of cross-contamination. Decontamination activities will be conducted in a designated area.

3.3 DISPOSAL OF DRILL CUTTINGS

All drill cuttings and drilling fluids will be disposed of in accordance with the following State guidelines:

The cuttings and spoil may be stored temporarily on-site to allow for dewatering prior to disposal. Water which results from the dewatering may be allowed to infiltrate the Site. During storage and upon disposal, cuttings and spoil shall be covered with heavy plastic sheeting (4-6 mil) to prevent the release of chemical contaminants into the air or surface water which might escape the Site. Purge or development waters removed from on-site monitoring wells may be allowed to infiltrate the Site. In the event off-site wells are installed, purge or development waters from such wells must be containerized and stored on the Site until analysis of such waters is available.

To ensure that contaminated cuttings may be safely managed on-site, the following precautions shall be taken:

a) If pure wastes are present in the cuttings, the material shall be sampled and analyzed to ensure chemical compatibility with other cuttings before placing the materials in a common storage/disposal area;

b) Cuttings which are stored/disposed on-site in bulk (not in containers) shall be monitored for volatile emissions and for fugitive dust emissions. Monitoring instruments available at the Site as determined by the site-specified Health and Safety Plan (HASP) may generally be sufficient. If any action level specified in the HASP is exceeded, corrective actions such as interim cover, placement in containers, etc., shall be implemented promptly.

Drill cuttings shall be handled and disposed of in a manner that does not pose a threat to health and the environment.

Drill cuttings and spoil generated during Remedial Investigations on a Class 2a inactive hazardous waste site

may also be disposed at a properly permitted treatment, storage, or disposal facility. Representative samples of cuttings and spoils will have to be analyzed to determine if the materials are a "hazardous waste" or a "solid waste" and to ensure proper classification, treatment, and disposal.

Cuttings and spoils sent off site for disposal shall be transported by a hauler licensed in accordance with 6NYCRR Part 364, and if determined to be a hazardous waste, the waste shipment shall be accompanied by a manifest in accordance with 6NYCRR Part 372. The Project Manager shall be responsible for implementing sufficient controls over the work, to ensure the wastes are properly disposed. Such controls include issuance and collection of "trip tickets," collection of receipts for tipping fees, etc. Purge water from monitoring well development and sampling may be allowed to infiltrate the ground in the nearby proximity to that well.

3.4 INSTALLATION OF MONITORING WELL

The newly installed monitoring wells will be used to determine the impact on groundwater quality detected at the Site and to determine the potentiometric head across the study area.

Monitoring wells will be designated as MW-NN. The monitoring wells will be screened from 5′ above to 10′ below the water table.

A truck-mounted hollow-stem auger rig will be used to drill the monitoring well bore holes. When each bore hole is drilled and enlarged, a 2" diameter monitoring well casing will be constructed in the bore hole. The exact depth to the screened interval will be based upon a review of the hydrologic information collected during the drilling, sampling and logging of each bore hole. The monitoring wells will be constructed using a 2" diameter flush mount PVC casing and 10′ of 14 slot PVC screen. The well screens and casings will be steam-cleaned prior to installation. A graded gravel pack will be back-filled into annulus space around the well screen to at least 2′ above the top of the screen. A one-foot sand choke will be installed above the gravel pack. A 3′ thick bentonite seal will be placed above the sand choke. The remainder of the annulus space will be filled with a neat cement bentonite slurry (95% cement and 5% bentonite) which will be pumped using a tremie pipe with diversion elbow from the top of the bentonite seal to just below the ground surface. A stand-up protective steel casing and locking cap will be cemented in at the land surface Figure 2 shows the construction details of the monitoring wells.

If a potable source of water is unavailable on Site, the appropriate pressure reduction value will be used to secure a Hydrant Permit from the local fire department.

3.5 MONITORING WELL DEVELOPMENT

After construction, each monitoring well will be developed to assure that the well-screen is open to the surrounding formation. The monitoring wells will be developed by pumping or surging with a submersible pump until the water is sediment-free. Donnelly Engineering will monitor the development procedure. Well development will be considered complete when at least five casing volumes have been withdrawn and the turbidity of the groundwater does not exceed 50 NTU's. pH, temperature and conductivity will be monitored with the withdrawal of each casing volume and well development will continue until these parameters stabilize. Any foreign material introduced into the well, other than a pump, bailer, dedicated rope or tubing, may necessitate the abandonment of the monitoring well.

3.6 WELL ABANDONMENT PROCEDURES

If, for any reason, a bore hole or well should have to be abandoned, it will be sealed from the bottom of the open part of the bore hole or well to the ground surface. If the

monitoring well is to be grouted into place then the screened-zone will be filled with sand and both the annulus space and the inside of the well will be filled with grout in the same manner. After the grout has cured for 24-hours, additional grout may be added to bring the level up to ground surface. The location of the hole will be noted on a site location sketch. All aspects of the abandonment procedures should be noted on the daily log sheet.

Well abandonment procedures should be in accordance with the following:

1. Screened Interval

The portion of the well occupied by the screen must be filled with clean sand or gravel. Clean sand or gravel is defined as being relatively free of clay and organic matter. The filling should be no less permeable than the formation surrounding the screen, and shall extend no more than three feet above the top of the screen.

2. Casings

The entire casing, including the riser pipes and annular spaces between casings must be filled with

cement grout. The cement grout shall not contain more than six gallons of water per bag. The grout shall be placed under pressure through tremie pipes to the bottom of the space to be filled in order to prevent dilution of the grout. The tremie pipe may be raised slowly as grout is introduced to the casing or hole. Placing of grout shall be continuous until grout appears at the top of the casing, at which times, the tremie pipe may be removed.

3. Casing Seal

After the grout has consolidated, as confirmed by visual inspection, the top of the casing must be closed and sealed. Steel casings are to be sealed with a welded steel plate. PVC casings are to be sealed with a permanently affixed PVC cap.

4. Surface Well Seal

Where monitoring wells are installed in manholes or curb boxes below grade, the manhole or box is to be filled with concrete after the well has been grouted and capped. The manhole or box cover may then be reinstalled. Where monitor wells were installed without a protective concrete collar (surface well

seal), one shall be constructed upon abandonment. The disturbed soils at the top of the well, or an area two feet in diameter and one foot thick about the top of the well (whichever is larger) shall be filled with cement concrete.

5. Soil Borings

For noncased boreholes ending above the water table, abandonment is to consist of back filling with clean fill, of no greater permeability than the formations penetrated by the bore hole. Mechanical compaction of the fill may be necessary to avoid later settlement. Non-cased boreholes, through or into contaminated soils, shall be abandoned in accordance with item 6, below (grouted).

6. Soil Borings to Groundwater

For noncased boreholes ending at or below the water table, abandonment is to consist of back filling the area below the water table with clean fill following the procedures in section #4 above, and then grouting the boreholes following the procedures in section #5 above. Grouting is to continue to a point at or near the surface. Grout shall be allowed to

spread into and fill disturbed soil areas about the top of the bore hole, assuring a good surface seal.

4.0 GROUNDWATER SAMPLING PLAN

Groundwater samples will be collected from all newly installed monitoring wells at the Site, at least two weeks after the last well is developed. All groundwater samples will be submitted to an NYSDEC approved laboratory, and analyzed for site specific contaminant compounds. All analyses will be performed in accordance with NYSDEC approved procedures including analysis and reporting of sample duplicates required. The following groundwater sampling equipment will be utilized during the Remedial Investigation.

Equipment:

Electric Power Generator

Stainless Steel Submersible Pump

Measuring Tapes and Chalk

Polyethylene Tubing

Rags and Paper Towels

Deionized Water

Polyethylene Sheeting

Polypropylene Rope

Teflon Bailer

Detergent Solution

Latex Gloves

pH Meter and Buffers for Calibration

Prefilters and 0.45 Micron Filters

Filter Funnel (Gelman)

Laboratory Dedicated Vacuum Flasks

Vacuum Pump Electric or Operated

Thermometer

Sample Bottles

Graduated Polyethylene Buckets

Beakers

Brushes

Conductivity Meter and Resistance Standard

Portable Nephelometer

Sample Bottle Labels

Clear Tape

Potable Tap Water

4.1 GROUNDWATER SAMPLING PROCEDURE

1. Open the well and clean off any surfacial dirt in the protective casing.

2. Measure the depth to water in the well to the hundredth of a foot with a steel tape or electronic measuring device. Sound the depth of

the well, if necessary. Compute the amount of water standing in the well.

3. Place polyethylene sheeting down around the well and secure it at the corners.

4. Set a clean bladder pump to the desired depth in the well (decontamination procedures for the bladder pump are provided in step 16). Tubing used for discharge will be dedicated polyethylene and will be discarded after each sampling event. The tubing will be connected into the pump head with stainless steel clamps, screw type, and a safety line of stainless cable or polypropylene rope connected to the pump and secured to the protective casing.

5. At least three times the volume of standing water in the well will be removed. Pumping will continue until the temperature, pH and specific conductance readings have stabilized, such that sequential readings agree within 10% of each other. Readings will be collected and recorded at the start-up of development and at frequent intervals during the development.

6. After the well is evacuated, remove the pump discard the discharge tubing and safety line. The discharge tubing and safety line may undergo decontamination procedures as an optional alternative to discarding. The well must be sampled within four hours of purging.

7. Attach a 10' length of teflon coated wire to a clean dedicated teflon bailer. The remainder of the bailer cord will be polypropylene rope which will be discarded after each use. The teflon bailer and wire will be decontaminated according to the decontamination procedures.

8. Lower the clean bailer into the well and then into the water column gradually to minimize turbulence. Allow the bailer to sink and become fully submerged. Recover the bailer from the well; bailer cord should be held in hand or laid on polyethylene sheeting while bailing.

9. Use a separate aliquot to measure pH, specific conductance and temperature measurements. Calibrate conductivity meter with a standard, and the pH meter with appropriate buffers. Rinse electrode and conductance cell with distilled/deionized water.

10. Fill the beaker with sample and immerse thermometer, pH electrode and conductance cell. Swirl the pH electrode and record the pH. Swirl the conductance cell and record the conductance and the temperature.

11. Label all sample containers (project, well, date and sampler, etc.) and wrap with clear tape. All sampling containers will be supplied by the contracted laboratory.

12. New York State certified laboratory, follows EPA "Handbook for Sampling and Sample Preservation of Water," EPA-600/4-82-029, September 1982 for all sampling and sample handling procedures.

General elements include: Defining objectives, collecting representative samples, proper preservation/handling, chain of custody, sample identification, and field quality assurance.

13. A Matrix Spike Duplicate (MSD) must be acquired for each case of field samples, or each 20 samples in a case, or each 7th calendar day, which field samples in a case were received in that sample delivery group.

Purgeable Organics

a) A sample is collected by filling a 40 ml teflon-lined septum vial to overflowing (i.e., no air space is present).

b) Vials, caps and septa will be detergent washed, rinsed with tap water and then distilled water and dried.

c) Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

d) A sample label containing the following information will be affixed to the sample container:

- Client Number
- Sample Number
- Site Designation
- Preservative, if any.
- Sample collectors' signatures
- Analysis to be performed
- Sampling Date
- Date of sample receipt in laboratory.

e) One duplicate will be taken for each 20 samples or each case, whichever is greater.

f) A field blank will be taken using reagent water brought to the field for each case of 20 samples.

Base/Neutral & Acid Extractable Organic Compounds

a) Grab samples will be collected in a 40 oz. glass bottle with a teflon-lined cap.

b) Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

c) A sample label containing the following information will be affixed to the sample container:

- Client Number
- Sample Number
- Site Designation
- Preservative, if any.
- Sample collectors' signatures
- Analysis to be performed
- Sampling Date
- Date of sample receipt in laboratory.

d) One duplicate will be taken for each 20 samples or each case, whichever is greater.

e) A field blank will be taken using reagent water brought to the field for each case of 20 samples.

Pesticides

a) Grab samples will be collected in an 80 oz. glass bottle with a teflon-lined cap, preserved with sodium thiosulfate to inhibit any chlorine residual present.

b) Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

c) A sample label containing the following information will be affixed to the sample container:

- Client Number
- Sample Number
- Site Designation
- Preservative, if any.
- Sample collectors' signatures
- Analysis to be performed
- Sampling Date
- Date of sample receipt in laboratory.

d) One duplicate sample will be taken for each 20 samples or each case, whichever is greater.

e) A field blank will be taken using reagent water brought to the field for each case of 20 samples.

Metals

Samples collected will be analyzed for the metal specified in Work Plan in accordance with NYSDEC policy and the O/C following the procedures listed below.

a) Use a polyethylene, laboratory cleaned flask and filter holder and pre-clean with a 10% nitric acid solution, followed by a demonstrated analyte-free water rinse. Clean in this manner between sampling points.

b) Filter the sample through a new cellulose-based membrane filter of 0.45 micron pore size. Use a prefilter if the groundwater sample is especially murky or hard to filter.

c) Grab samples will be collected in a 16 oz. plastic bottle preserved with Instra-Analyzed Nitric Acid.

d) Fill another sample container with unfiltered water. NOTE: Do not rinse containers with sample as some containers contain preservatives.

e) Designate samples as follows: Well Shallow/Deep - Filtered/Unfiltered. (For example, a sample collected from MW-7 that is filtered, would be designated as MW-7 - F.)

f) Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

g) A sample label containing the following information will be affixed to the sample container:

- Client Number
- Sample Number
- Site Designation
- Preservative, if any.
- Sample collectors' signatures
- Analysis to be performed
- Sampling Date
- Date of sample receipt in laboratory.

h) One duplicate will be taken for each 20 samples or each case, whichever is greater.

i) A field blank will be taken using reagent water brought to the field for each case of 20 samples.

Cyanide

a) Grab samples will be collected in a 16 oz. plastic bottle filled to capacity, preserved with 2 ml of 10N sodium hydroxide (pH greater than or equal to 12) at the time of collection.

b) Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

c) A sample label containing the following information will be affixed to the sample container:

- Client Number
- Sample Number
- Site Designation
- Preservative, if any.
- Sample collectors' signatures
- Analysis to be performed
- Sampling Date
- Date of sample receipt in laboratory.

d) One duplicate will be taken for each 20 samples or each case, whichever is greater.

e) A field blank will be taken using reagent water brought to the field for each case of 20 samples.

Phenol

a) Grab samples will be collected in a 16 oz. glass bottle filled to capacity. The sample should be analyzed within 28 days after collection.

b) Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

c) A sample label containing the following information will be affixed to the sample container:

- Client Number
- Sample Number
- Site Designation
- Preservative, if any.
- Sample collectors' signatures
- Analysis to be performed
- Sampling Date
- Date of sample receipt in laboratory.

d) One duplicate will be taken for each 20 samples or each case, whichever is greater.

e) A field blank will be taken using reagent water brought to the field for each case of 20 samples.

Additional Parameters

a) The following analyses require no preservative: fluoride, settleable matter, acidity and chloride. Grab samples will be collected in plastic or glass quart bottles.

b) The following analyses require determination on site: pH, temperature, sulfite, chlorine and dissolved oxygen.

c) The following analyses require samples to be cooled (4°C) as a preservative: color, conductivity, odor, residues, turbidity, alkalinity, bromide, nitrate, nitrite, hardness, ortho-phosphate, silica, sulfate, BOD, surfactants. Samples will be collected in plastic or glass (odor, glass only) quart bottles.

d) The following analyses require cooling (4°C) samples as a preservative: ammonia, TKN, nitrate plus nitrite, total phosphorus, COD, oil and grease, and total organic carbon.

e) Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

f) A sample label containing the following information will be affixed to the sample container:

- Client Number
- Sample Number
- Site Designation
- Preservative, if any.
- Sample collectors' signatures
- Analysis to be performed
- Sampling Date
- Date of sample receipt in laboratory.

g) One duplicate will be taken for each 20 samples or each case, whichever is greater.

h) A field blank will be taken using reagent water brought to the field for each case of 20 samples.

13. Close and secure the well.

14. Pack samples on ice in a cooler. Fill out remaining data on water sampling log and complete Chain of Custody form. The samples will be delivered to the New York State certified laboratory as soon as possible and the receiver's signature will be obtained on the Chain of Custody form. The samples must be shipped to the laboratory within 24-hours of collection.

15. Discard polypropylene rope, gloves, polyethylene tubing and sheeting.

16. Bladder pump will be decontaminated as follows:

- Remove visual contamination from outside with paper towel.
- Rinse with detergent solution and tap water.
- Rinse pump exterior with tap water.
- Pour potable water through pump.
- Rinse pump exterior with distilled/deionized water.

Decontamination Procedures:

All bailers, funnels, beakers and flasks used for sample collection and preparation will be precleaned according to the following protocols:

1. Wash all equipment with a low phosphate detergent solution.
2. Rinse all equipment with tap water.
3. Rinse all equipment with copious amounts of deionized water (demonstrated to be analyte free).
4. Allow equipment to dry.
5. Wrap clean bailers in aluminum foil. In order to determine whether the bailers have been

decontaminated properly and to assure that they have not contributed any metal contaminants to the samples, a rinse blank (field blank) for filtered metals fractions will be run through the bailer and the filtering apparatus. The rinse blank for the unfiltered metals analysis will only be run through the bailer.

5.0 FORMATION SAMPLING

Split-spoon core samples will be collected from the bore holes at five-foot intervals starting at a depth of five feet for the entire depth of the deepest bore hole at each location where soil borings have been specified. The Donnelly Engineering Project Engineer will observe the drilling of each bore hole and note the general geology of each split-spoon sample collected and any noticeable formation changes on a sample log. Detailed protocols and procedures for formation sampling are provided below:

Equipment:

Split Spoon Samplers

Detergent

Brushes

Polyethylene Buckets

Distilled/Deionized Water (several gallons)

Polyethylene Sheeting

Work Table

Latex Surgical Gloves or Equivalent

Stainless Steel Spatula

Large Quantity of Clean Tap Water for Initial Washing

Alcohol for Final Rinsing

Procedure:

1. Prepare a solution of detergent and distilled water in a bucket.
2. Disassemble the split-spoon sampler and immerse all parts and the spatula in the detergent solution. Scrub with a brush to remove any adhering particles. NOTE: Wear gloves while cleaning equipment and taking samples to avoid sample contamination. Change surgical gloves frequently.
3. Rinse all parts with copious amounts of distilled water. Place clean parts on the polyethylene sheet (using the table makes this operation easier).
4. Reassemble the split-spoon sampler when all parts have been cleaned.
5. Transfer the split-spoon sampler to the driller, be sure that this person is also wearing clean disposable surgical gloves.

6. Have the driller collect the sample using a procedure similar to the Standard Penetration Test.
7. Obtain the split-spoon sampling device from the driller and place it on the polyethylene sheeting.
8. Unscrew the end cap and break the spoon open to expose the sample.
9. Remove the sample from the split spoon by scooping it into an approved sample bottle. The bottle will be filled to the top and packed tightly to minimize voids which may allow for volatilization.
10. Complete the sample label with project, location, depth, date and the identification of the person taking the sample and then cover the label with transparent tape. Complete the sample log.

TABLE 1

U. S. ELECTROPLATING

1st ROUND SAMPLING

	1 Sample Each		
	(W) MW's 1,2,3	(S) SD	(S) Sanitary Leaching Pool
TCL	X	X	X
8 RCRA Metals	X	X	X
Survey Elevation	X		

(W): Water Matrix
(S): Soil Matrix

ALL PROPOSED MW's AND SB's

Sample will be analyzed for analytical parameters listed below in future testing programs. If additional analytes are found in the initial round, they will be added to the Site specific list.

Site Specific Indicator Compounds

Metals	Organics
Pb	601
Cr	602
Zn	Ketones
Cu	
Cd	
CN	
Ni	
Ag	

TABLE 2

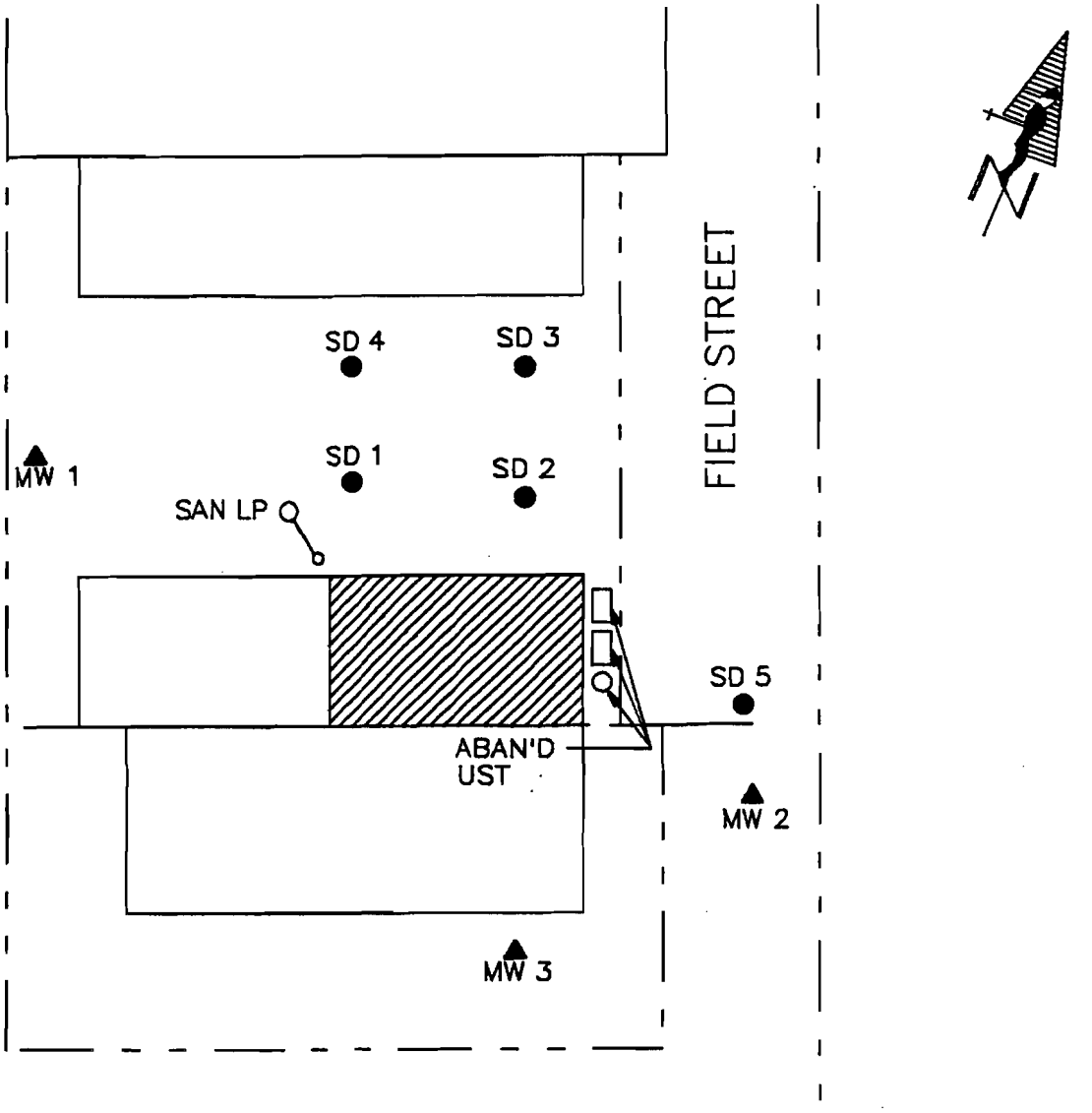
ANALYTICAL PROTOCOL FOR METALS

The analytical protocol to be used for laboratory analysis of solid and liquid samples is the 1991 ASP. The individual method number for volatiles is 91-1, semi-volatiles is 91-2, pesticide/arochlor is 91-3, and low level volatiles is 91-4. the method numbers used for metals on the target compound list are from 1991 ASP (Analytical Services Protocol) D-V-2, 3 and 4.

Metal	AA Furnace	AA Flame
Al	202.2	202.1
Sn	204.2	204.1
As	206.2	206.1
Ba	208.2	208.1
Be	210.2	210.1
Cd	213.2	213.1
Cr	218.2	218.1
Co	219.2	219.1
Cu	220.2	220.1
Fe	236.2	236.1
Pb	239.2	239.1
Mn	243.2	243.1
Ni	249.2	249.1
Se	270.2	270.1
Ag	272.2	272.1
Tl	279.2	279.1
Va	286.2	286.1
Zn	289.2	289.1

All metals by Inductively Coupled Plasma (ICP)

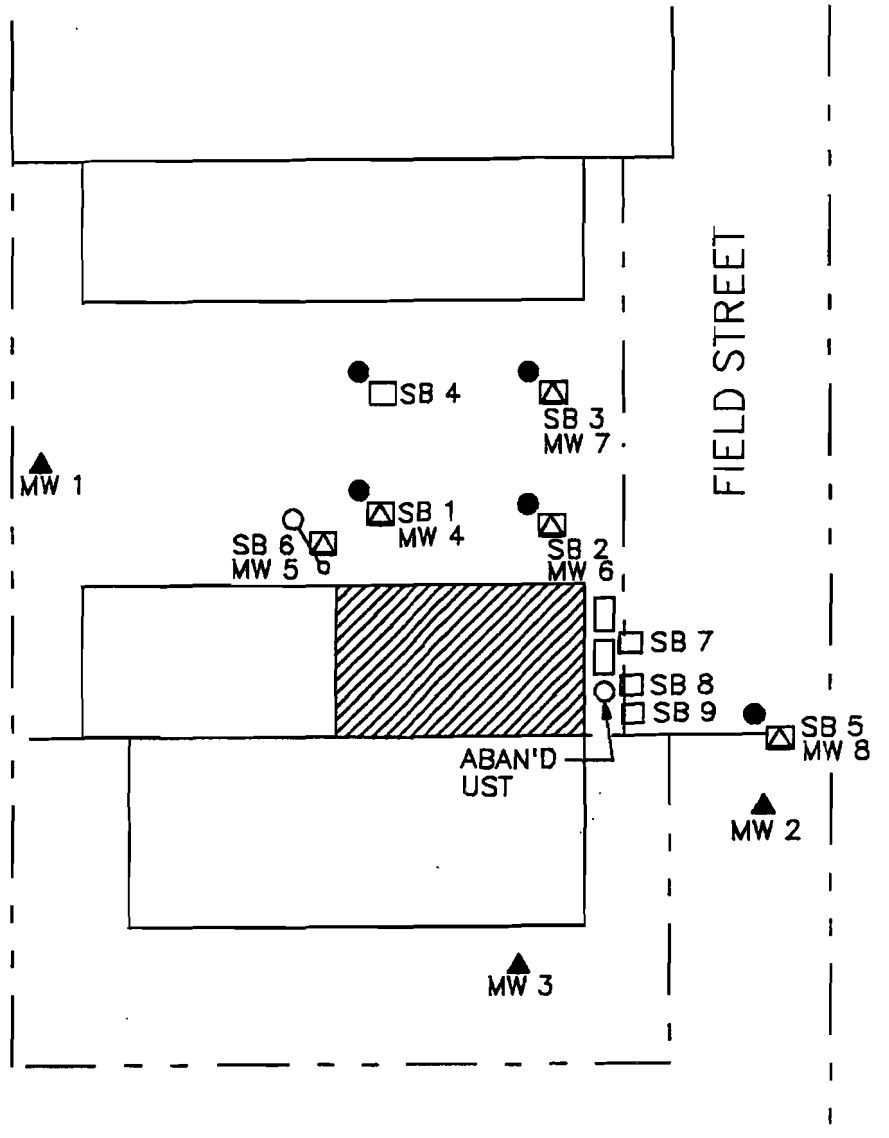
	ASP	200.7	
Cold Vapor	Hg	245.1	Manual
		245.2	Automatic
Total Cyanide		335.2	in Water, Soil or Sediment



LEGEND:
□: SOIL BORING
▲: MONITORING WELL
○: SANITARY LEACHING PIT
●: STORM DRAIN
▭: UST

SITE PLAN
FOR PHASE II INVESTIGATION
U.S. ELECTROPLATING CORP.

FIGURE 1A

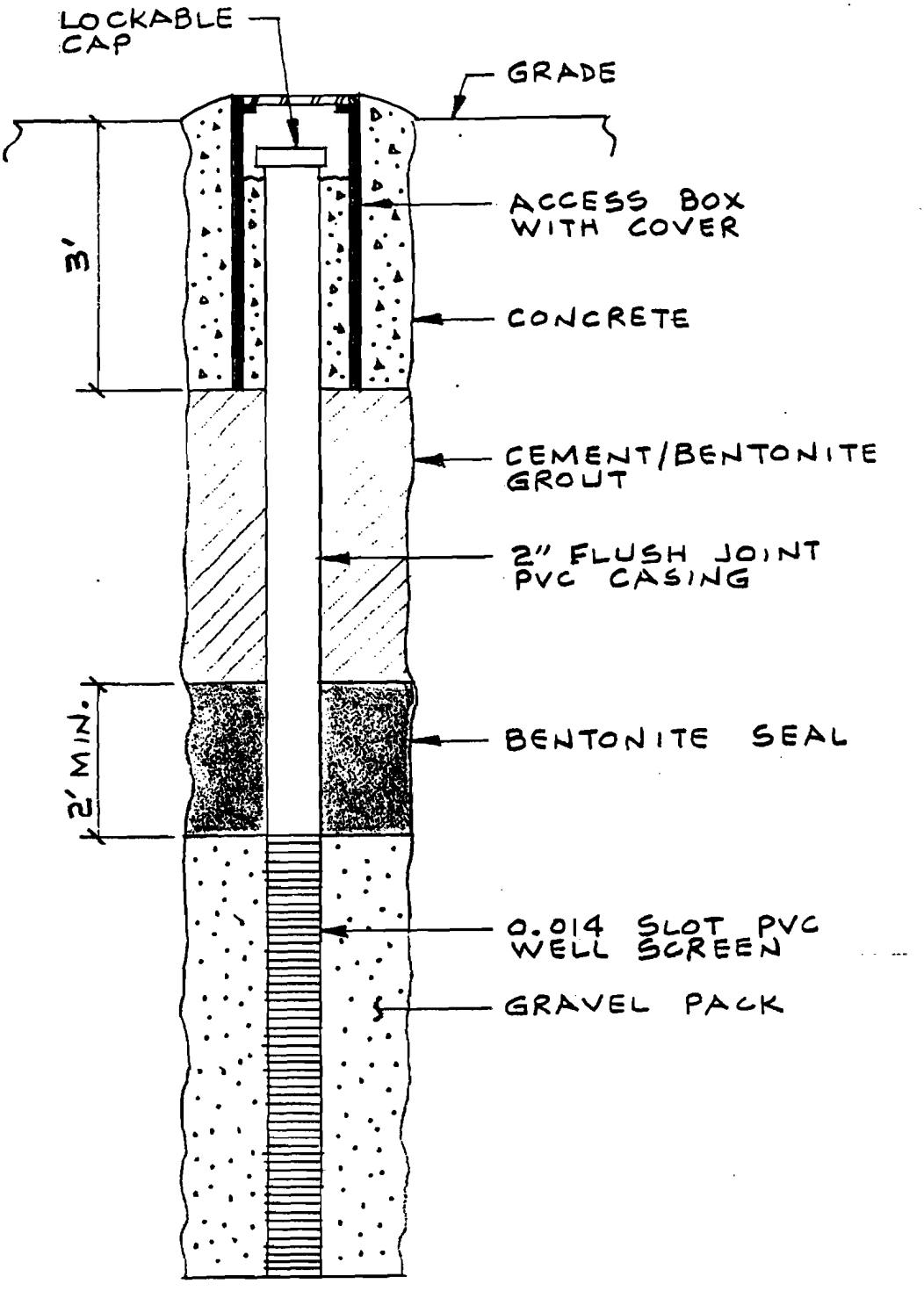


LEGEND:

□ : PROPOSED SOIL BORING
△ : PROPOSED MONITORING WELL
▲ : EXISTING MONITORING WELL
○ : SANITARY LEACHING PIT
● : STORM DRAIN
▭ : UST

SITE PLAN
FOR PHASE II INVESTIGATION
U.S. ELECTROPLATING CORP.

FIGURE 1B



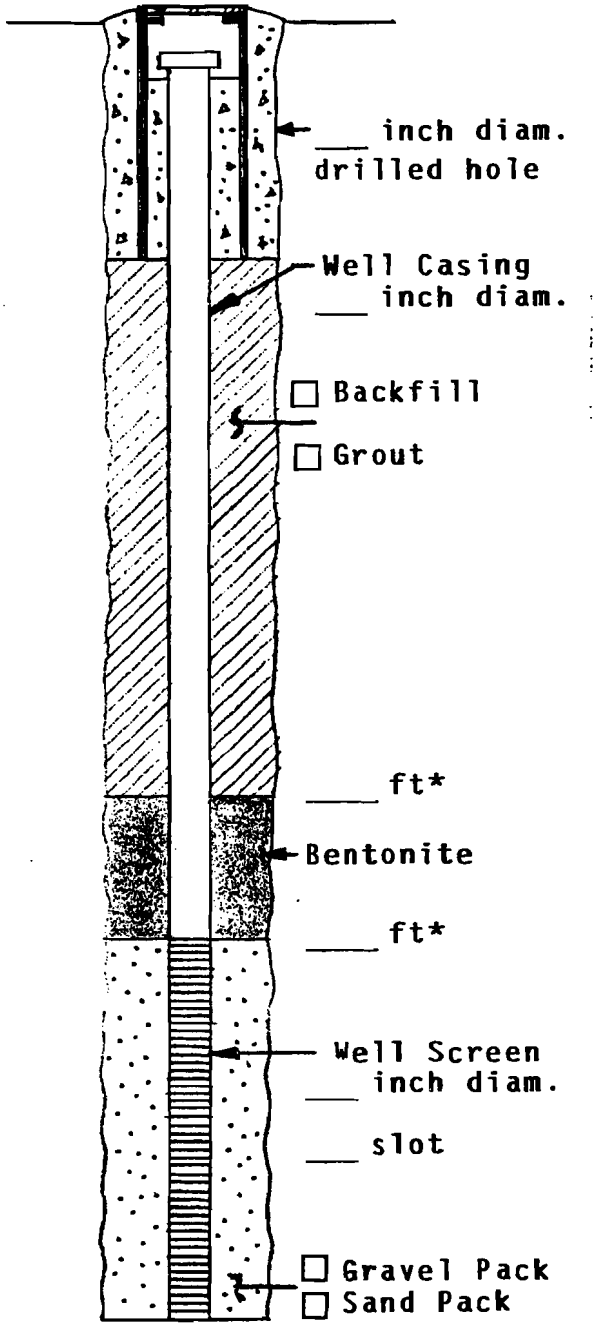
MONITORING WELL CONSTRUCTION DETAIL

NO SCALE

FOR U.S. ELECTROPLATING CORP.
BY: DONNELLY ENGINEERING
DATE: FEB 4, 1994

FIGURE 2

WELL CONSTRUCTION LOG
(UNCONSOLIDATED)



* Depth below land surface

Project_____Well_____

Town/City_____

County_____State_____Zip_____

Permit No._____

Land-Surface Elevation

and Datum_____feet ☐ Surveyed

_____ ☐ Estimated

Installation Date(s)_____

Drilling Method_____

Drilling Contractor_____

Development Technique(s) and Date(s)

_____

_____

_____

Water Removed During Development_____gals.

Static Depth to Water_____feet below M.P.

Well Purpose_____

_____

_____

Remarks_____

_____

_____

_____

_____

Prepared by_____

WATER LEVEL/TEST RECORD

PROJECT_____ SITE_____

SCREEN SETTING_____ MEASURING POINT DESCRIPTION_____ HEIGHT ABOVE GROUND SURFACE_____

MEASURED WITH_____

DATE	WELL NO.	DEPTH TO WATER	REMARKS

CHECK LIST FOR ABOVEGROUND AND UNDERGROUND UTILITIES AND STRUCTURES

Project:_____ **Prepared by:**_____

Location:_____ **Date:**_____

Instructions. This checklist has to be completed by a Donnelly Engineering staff member as a safety measure to insure that all aboveground and underground utility lines, other underground structures as well as aboveground power lines are clearly marked out in the area selected for boring or excavation. **DRILLING OR EXCAVATION WORK MAY NOT PROCEED UNTIL LINES ARE MARKED AND THIS CHECKLIST HAS BEEN COMPLETED.** Arrangements for underground utility markouts are best made at the time of the preliminary site visit to allow client and/or utility company sufficient time. Keep completed checklist and maps on site; send copy to Project Manager.

Assignment of Responsibility. Client is responsible for having underground utilities and structures located and marked. Preferably, the utilities themselves should mark out the lines.

Drilling or Excavation Sites. Attach a map of the property showing the proposed drilling or excavation site (or if sites are widely separated, several maps) clearly indicating the area(s) checked for underground utilities or underground structures and the location of aboveground power lines.

Utilities and Structures

TYPE	NOT PRESENT	PRESENT	HOW MARKED
Petroleum products line			
Natural gas line			
Steam line			
Water line			
Sewer line			
Storm drain			
Telephone cable			
Electric power line			
Product tank			
Septic tank/drain field			
Overhead power line			

1) Flags, paint on pavement, wooden stakes, etc.

Name and affiliation of person who marked out underground lines or structures.

Name _____ Organization _____ Phone _____

EMERGENCY PROCEDURES

Persons at site or facility to contact in case of emergency

1._____ Phone_____

2._____ Phone_____

Fire Dept.: Phone _____ Ambulance: Phone_____

Utility: Phone_____ Utility: Phone_____

Utility: Phone_____ Utility: Phone_____

Directions to nearest hospital (describe or attach map).

WATER SAMPLING LOG

Project No._____ Page _____ of _____

Site Location_____

Well No._____ Date_____

Weather_____ Time Sampling Began_____ Time Sampling Completed_____

EVACUATION DATA

Description of Measuring Point (MP)_____

Height of MP Above/Below Land Surface _____ MP Elevation_____

Total Sounded Depth of Well Below MP _____ Water-Level Elevation_____

Depth to Water Below MP _____ Diameter of Casing_____

Water Column in Well _____ Gallons Pumped/Bailed Prior to Sampling_____

Gallons per Foot _____

Gallons in Well _____ Sampling Pump Intake Setting (feet below land surface)_____

Evacuation Method_____

SAMPLING DATA/FIELD PARAMETERS

Color_____ Odor_____ Appearance_____ Temperature_____ °F/°C

Sampling Method and Material_____

Constituents Sampled	Container Description	Preservative

Remarks _____

Sampling Personnel_____

WELL CASING VOLUMES

GAL/FT	1-1/4" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.09	2-1/2" = 0.26	3-1/2" = 0.50	6" = 1.47

WELL/BORING LOG

Boring/Well_____ Project Name_____ Page_____ of_____

Site Location_____ Drilling Started_____ Drilling Completed_____

Total Depth Drilled_____ feet Hole Diameter_____ inches Type of Sample/ Coring Device_____

Length and Diameter of Coring Device_____ Sampling Interval_____ feet

Land-Surface Elev._____ feet ☐ Surveyed ☐ Estimated Datum_____

Drilling Method_____

Drilling Contractor_____ Driller_____ Helper_____

Prepared By_____ Hammer Weight_____ Hammer Drop_____

Sample/Core Depth (feet below land surface) From	To	Sample Type	Sample/Core Description

HEALTH AND SAFETY PLAN (HASP)

FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY

TO BE PERFORMED AT U. S. ELECTROPLATING CORP.

100 FIELD STREET, WEST BABYLON, NY 11704

NYSDEC SITE #152027

HEALTH AND SAFETY PLAN

TABLE OF CONTENTS

HEALTH AND SAFETY PLAN (HASP)
FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY
TO BE PERFORMED AT THE U. S. ELECTROPLATING CORP. FACILITY
100 FIELD STREET, WEST BABYLON, NEW YORK

1.0 INTRODUCTION

This Health and Safety Plan (HASP) has been prepared as a guide in the performance of the proposed Remedial Investigation activity at the U. S. Electroplating Corp. Site. This HASP document has been developed in accordance with the OSHA standard "Hazardous Waste Operations and Emergency Response" Title 29 CFR 1910.120 and the USEPA Guidance Document "Standard Operating Safety Guides" (OSWER, 1988).

The objective of the task is to insure that safe working conditions exist during the planned field activities. These field activities include the installation of monitoring wells and soil boring operations, sampling of soil and sampling of the groundwater. These procedures have been chosen to minimize the potential exposure of operating personnel to hazards during the performance of these activities.

2.0 RESPONSIBILITIES

The Project Manager has the responsibility of the overall Work Plan prepared for this Site. The responsibility of exercising this HASP will be that of the designated Site Safety Officer (SSO). The key personnel on this project are listed below:

Senior Project Manager - Lawrence Donnelly

Site Safety Officer - Lawrence Donnelly

Field Engineer - Joseph Salvo

Alternate SSO - Michael Capotosto

Quality Assurance/Quality Control Advisor - Lawrence Donnelly

3.0 DESCRIPTION OF HAZARDS

An evaluation of the hazards based on the data collected and prior investigations at this site is given below. Table 1 presents the soil sampling results and Table 2 presents the groundwater results from the U. S. Electroplating Phase II field sampling activities over the past several years. The follow exposure pathways have been identified:

- Inhalation of potentially contaminated particulate and vapors.

- Dermal contact with potentially contaminated soils, equipment, and groundwater.

- Accidental ingestion of potentially contaminated soils and groundwater.

- Heat stress due to high ambient temperature and work activities.

- Hypothermia due to overexposure to low ambient temperature.

- Danger of personal injury resulting from the handling and moving of heavy drilling equipment.

4.0 PROTECTIVE MEASURES

Based on the potential hazards listed above that can result from the proposed Site activities, the following protective measures will be used to maximize worker safety.

The SSO will have the option of requiring on site personnel to wear respirators equipped with dust particulate cartridges based on the actual Site conditions, e.g., the dryness of the soil and the wind velocity.

Modified Level D protection will be used as a starting point for all work conducted at the Site. The level of protection chosen can be modified by the Site Safety Officer down or up based upon a hazard evaluation conducted daily on site during work activities.

Heat or cold stress, depending upon the season in which the Remedial Investigation is conducted will be evaluated on a day to day basis. Working conditions will be monitored and adequate rest periods will be provided to recover from excessive exposure to the hot or cold temperatures. Potable water will be maintained on site to be available at all times for working personnel. Hard hats will be worn at all times by personnel operating within the work zone which will be clearly established around the drilling rig. Sturdy canvas or leather gloves will be the minimum hand protection required for workers handing the heavy drilling equipment. The engineers and field scientists collecting samples will be required to wear latex surgical gloves to avoid dermal contact with the contaminated soil and/or groundwater. If the Site Safety Officer feels that the presence of vapors

presents a danger to inhalation by the workers on Site, he will require the workers down-wind of the source to wear respirators equipped with organic vapor protection cartridges.

The physical hazard presented by the drilling apparatus must not endanger the general public in the vicinity of this Site. A work area will be established and marked by red traffic cones and yellow caution tape. The Site Safety Officer will restrict entry to this area to those personnel authorized by the Project Manager to be part of the work group performing the remedial investigation. Drilling will not proceed unless this perimeter restriction is being enforced at that time. Modified Level D Protection shall be worn at all times within the drilling work area.

5.0 PERSONNEL PROTECTIVE EQUIPMENT

Personal protective equipment has been chosen as the primary means of minimizing the workers' potential exposure to safety hazards at this Site. Based upon the hazard evaluation, the following levels of protection will be provided on site:

Modified Level D Protection will include but not be limited to the following:

- Disposable Coveralls
- Chemical Resistant Gloves
- Hard Hat
- Eye Protection (Safety Glasses, Goggles or Face Shield)
- Hearing Protection (Disposable Ear Plugs or Ear Muffs)
- Steel Toe and Shank Boots

Modified Level C Protection will include the following, in addition to all of the items mentioned above:

- Full Face Respirator with Organic Vapor Cartridge and Dust Prefilter.

6.0 SITE CONTROL

Prior to the start of the field activities, the SSO will be responsible for the designation of the work area, the support area and the clean zone. The work zone will be an area surrounding the immediate work being performed where the greatest potential hazard exists. Only the necessary workers required to perform the work will be permitted in

this zone. A support zone will be established for the storage of equipment and personnel decontamination. A clean zone will be established for site control of visitors, equipment deliveries and communications.

7.0 GENERAL WORK PRACTICES

The following general work practices will be employed at this Site. A copy of this HASP will be available at all times on site. All visitors to the project Site will be required to review the HASP and sign the Visitor Log testifying to this fact. Contractors and subcontractors will have access to this HASP. Contractors and subcontractors are responsible for their own employee training requirements per OSHA standard 29 CFR 1910.120 "Hazardous Waste Site Operations and Emergency Response."

7.1 DRUG AND ALCOHOL POLICY

It is the policy of Donnelly Engineering to prohibit the possession, use, transportation or sale of illegal narcotics or intoxicants or the misuse of legal drugs on company premise, the premises of the client, or while on a field assignment. This includes all areas of the company's or client's buildings and parking facilities. In addition, this includes travel by the employee to and from the job site before, during and after the work at the project.

Any employee violating this policy will be subject to disciplinary action up to and including immediate dismissal. An employee who uses narcotics or intoxicants or misuses legal drugs while on company premises or on the premises of a client company or while on a field assignment will be subject to immediate dismissal. Any employee who reports to either company or client locations under the influence of legal narcotic, intoxicants or misuse of illegal drugs will not be permitted to work and will be subject to further discipline. Employees must notify the Project Manager of any conviction under the criminal drug statute for violations occurring in the work place or while representing Donnelly Engineering, immediately. This requirement is mandated in the Drug-free Work Place Act of 1988. Supervisory personnel are responsible for the implementation of this company policy and are required to report any violations to the Project Manager.

7.2 HAZARDOUS WEATHER

In the event of hazardous or threatening weather conditions, work at the Site will cease as quickly as possible.

7.3 TAILGATE SAFETY MEETINGS

Daily tailgate safety meetings will be held at the project Site. The SSO will review the planned activities for the day along with the potential hazards and the personal protective equipment that is required. A tailgate safety meeting sheet is attached in this HASP for logging purposes.

7.4 ACCIDENTS

All job related injuries and illnesses will be reported to the SSO. If medical attention is needed the injured worker will be decontaminated, if possible, prior to leaving the Site. The SSO will investigate the cause of the accident and corrective measures will be taken before the work can resume. It will be the responsibility of the SSO to complete the Accident Reporting Form (OSHA 101) for all injuries. The completed form should be forwarded to the SSO and Project Manager within 5 days for recording into the OSHA 200 Log. In the event of a fatality, or hospitalization of 5 or more workers, the SSO will prepare notification to OSHA.

7.5 EATING, DRINKING AND SMOKING

No eating, drinking or smoking will be permitted in the work area.

7.6 HAZARDS

No sources of ignition such as matches or lighters will be permitted in the work area.

7.7 BUDDY SYSTEM

The buddy system will be used in all work areas.

8.0 TRAINING

The Site Safety Officer has received the 40-hour required training.

9.0 DECONTAMINATION

A personnel decontamination station will be established in the support zone. Personnel decontamination will consist of washing potentially contaminated items, such as boots and gloves, with a mild detergent and water solution and a clean

water rinse. All personnel leaving the work zone will go through the decontamination process before leaving the work area.

10.0 EMERGENCY PROCEDURES

Verbal communications may be difficult at times due to personal protective equipment and noise. A universal set of hand signals will then be used. They are as follows:

Signal	Meaning
Hand gripping throat	Cannot breath
Grip partner's wrist or place hands around waist	Leave work area immediately
Signal	**Meaning**
Hand on top of head	Need assistance
Thumbs up	O.K., I'm all right
Thumbs down	No, negative

The Site Safety Officer will be notified of any on-site emergencies and will be responsible for insuring that the appropriate attention is given in such emergencies. A list of emergency telephone numbers: police, fire, ambulance and medical facility, will be on site. Directions to the nearest hospital will also be kept on site in the event of such an emergency.

Safety equipment to be kept at the decontamination line is as follows:

- First Aid Kit
- Eyewash Station
- Fire Extinguisher, Type A, B, C (multipurpose)
- Potable Water

The above items will be kept at the Site during all activities.

The contaminants possibly present in the surface soil or auger cuttings at the U. S. Electroplating Corp. Site, are shown below.

Cd)		TCE)	
)		)	
Cr)		PCE)	Vapor
)		)	
Cu)	Particulate	MeQ_2)	
)			
Zu)			
)			
Pb)			

Bureau of Labor Statistics
Supplementary Record of
Occupational Injuries and Illnesses

U.S. Department of Labor

This form is required by Public Law 91-596 and must be kept in the establishment for 5 years. Failure to maintain can result in the issuance of citations and assessment of penalties.

Case or File No.

Form Approved
O.M.B. No. 1220-0029

Employer

1. Name

2. Mail address *(No. and street, city or town, State, and zip code)*

3. Location, if different from mail address

Injured or Ill Employee

4. Name *(First, middle, and last)*

Social Security No.

5. Home address *(No. and street, city or town, State, and zip code)*

6. Age

7. Sex *(Check one)* Male ☐ Female ☐

8. Occupation *(Enter regular job title, not the specific activity he was performing at time of injury.)*

9. Department *(Enter name of department or division in which the injured person is regularly employed, even though he may have been temporarily working in another department at the time of injury.)*

The Accident or Exposure to Occupational Illness

If accident or exposure occurred on employer's premises, give address of plant or establishment in which it occurred. Do not indicate department or division within the plant or establishment. If accident occurred outside employer's premises at an identifiable address, give that address. If it occurred on a public highway or at any other place which cannot be identified by number and street, please provide place references locating the place of injury as accurately as possible.

10. Place of accident or exposure *(No. and street, city or town, State, and zip code)*

11. Was place of accident or exposure on employer's premises? Yes ☐ No ☐

12. What was the employee doing when injured? *(Be specific. If he was using tools or equipment or handling material, name them and tell what he was doing with them.)*

13. How did the accident occur? *(Describe fully the events which resulted in the injury or occupational illness. Tell what happened and how it happened. Name any objects or substances involved and tell how they were involved. Give full details on all factors which led or contributed to the accident. Use separate sheet for additional space.)*

Occupational Injury or Occupational Illness

14. Describe the injury or illness in detail and indicate the part of body affected. *(E.g., amputation of right index finger at second joint; fracture of rib; lead poisoning; dermatitis of left hand, etc.)*

15. Name the object or substance which directly injured the employee. *(For example, the machine or thing he struck against or which struck him; the vapor or poison he inhaled or swallowed; the chemical or radiation which irritated his skin; or in cases of strains, hernias, etc., the thing he was lifting, pulling, etc.)*

16. Date of injury or initial diagnosis of occupational illness

17. Did employee die? *(Check one)* Yes ☐ No ☐

Other

18. Name and address of physician

19. If hospitalized, name and address of hospital

Date of report	Prepared by	Official position

OSHA No. 101 (Feb. 1981)

DIRECTIONS TO NEAREST HOSPITAL

BRUNSWICK HOSPITAL

Take Field Street south to Edison Avenue (west) for approximately 0.6 miles. Head south on Wellwood Avenue for approximately 0.5 miles (Southern State Parkway). Take Southern State Parkway west for approximately 2 miles, Exit 32, Broadway. Take Broadway south for approximately 2 miles. Brunswick Hospital is on the right-hand side.

EMERGENCY NUMBERS

AMBULANCE. 911

HOSPITAL:

(Brunswick Hospital) . . . . . (516) 789-7000

WEST BABYLON FIRE DEPARTMENT . . . DIAL 0 OR (516) 226-1212

POLICE: Emergency calls only 911

Headquarters . . . (516) 852-6000

1st Precinct . . . (516) 854-8100

U.S.E.P.A - 24-hour Hotline. . . . . (800) 424-8802

CHEMTREC . . . . . (800) 424-9300

NATIONAL POISON CONTROL CENTER . . . . . (404) 588-4400

TABLE 1

PHASE II SAMPLING RESULTS SUMMARY TABLE
Sediment Sampling

Parameter	SD-1	SD-2	LP-1	MW-1-SB
(A) Inorganics				
Aluminum	11,300 ppm	10,100 ppm	11,700 ppm	1,440 ppm
Antimony	24.8	30.1	43.5	4.7
Arsenic	5.1	11.8	ND	1.2
Barium	85.7	86.8	132	7.5
Beryllium	0.6	1.7	ND	0.21
Cadmium	913	615	1220	ND
Calcium	19,100	31,300	9290	136
Chromium	790	338	1660	12.8
Cobalt	8.7	12.7	6.5	1.5
Copper	306	286	1050	7.7
Iron	19,500	66,100	8830	5,706
Lead	628	508	88.2	3.8
Magnesium	9,870	9560	2450	267
Manganese	221	365	52.4	122
Mercury	0.41	ND	1.2	ND
Nickel	121	70.7	169	1.7
Potassium	538	254	706	213
Selenium	ND	ND	ND	ND
Silver	9.0	5.6	5.9	ND
Sodium	2,990	3010	6020	2,260
Thallium	ND	ND	ND	ND
Vanadium	53.8	16.9	ND	5.4
Zinc	1,430	841	1200	9.0
Cyanide	187	1202	650	ND
(B) Volatile Organics				
Methylene Chloride	130	87	83	27
Acetone	46	45	ND	25
2-Butanone	4	5	ND	9
1,1,1-Trichloroethane	7	6	9	4
Trichloroethene	23	11	17	ND
Tetrachloroethane	15	10	16	ND
1,1-Dichloroethene	8	5	11	ND
1,1-Dichloroethane	ND	ND	5	ND
Chloroform	3	10	10	ND
Benzene	4	2	ND	ND
Toluene	10	5	5	2
Chlorobenzene	3	ND	ND	ND
2-Hexanone	ND	10	ND	ND
4-Methyl-2-Pentanone	18	10	ND	ND
TIC	263	216	763	37

TABLE 1 - Continued

PHASE II **SAMPLING RESULTS SUMMARY TABLE**
Sediment Sampling

Parameter	SD-1	SD-2	LP-1	MW-1-SB
(C) Semivolatile Organics				
Bis(2-ethyl-hexyl)phthalate	5900	1100	5000	ND
Dimethylphthalate	69	ND	ND	ND
Phenanthrene	300	420	ND	ND
Di-n-butylphthalate	330	260	ND	ND
Fluoranthene	420	450	ND	ND
Pyrene	900	370	ND	ND
Butylbenzylphthalate	910	160	ND	ND
Chrysene	410	180	ND	ND
Phenol	880	390	ND	ND
Anthracene	ND	82	ND	ND
Di-n-octylphthalate	240	69	ND	ND
Benzo(b)fluoranthene	220	150	ND	ND
Benzo(k)fluoranthene	170	68	ND	ND
Benzo(a)anthracene	ND	120	ND	ND
TIC	41,940	46,560	126,490	ND
(D) Pesticides				
Aldrin	ND	ND	ND	ND
Endosulfan II	24	ND	ND	ND
Heptachlor epoxide	ND	30	62	ND
Endosulfan sulfate	ND	25	ND	ND
4,4'-DDT	ND	25	38	ND
Dieldrin	ND	ND	13	ND

Notes:

ND = Not Detected
TIC = Tentatively Identified Compound
All values represented in ppb unless otherwise noted.

TABLE 2

PHASE II SAMPLING RESULTS SUMMARY TABLE
Groundwater Samples

Parameter	MW-1	MW-2	MW-3	MW-4*	Field Blank	Trip Blank
(A) Inorganics						
Barium	33	7	37	37	ND	--
Cadmium	ND	ND	121	123	ND	--
Chromium	3	17	272	280	ND	--
Copper	7	ND	5	2	ND	--
Iron	446	638	706	500	35	--
Manganese	61	176	141	124	ND	--
(B) Volatile Organics						
Methylene Chloride	18	15	23	19	23	20
Acetone	9	6	7	11	ND	9
1,1-Dichloro-ethan	ND	ND	5	3	ND	ND

NOTE: All values represented in parts per billion (ppb).
* Sample MW-4 represents a quality control sample collected from Monitoring Well 3.

TABLE 2 - Continued

PHASE II SAMPLING RESULTS SUMMARY TABLE
Groundwater Samples

Parameter	MW-1	MW-2	MW-3	MW-4*	Field Blank	Trip Blank
(B) Volatile Organics (Continued)						
Chloroform	ND	ND	1	ND	ND	1
2-Butanone	5	ND	6	6	6	4
1,1,1-Trichloroethane	ND	ND	8	9	ND	3
Trichloroethene	6	ND	38	35	ND	ND
4-Methyl-2-Pentanone	2	ND	ND	ND	ND	ND
Benzene	ND	ND	3	5	ND	ND
Tetrachloroethene	25	ND	7	5	ND	3
Toluene	ND	ND	5	ND	ND	ND
TIC	34	42	40	43	42	34

NOTE: All values represented in ppb.
TIC = Tentatively Identified Compounds.

TABLE 2 (Continued)

PHASE II SAMPLING RESULTS SUMMARY TABLE

Groundwater Samples

Parameter	MW-1	MW-2	MW-3	MW-4	Field Blank	Trip Blank
(C) Semivolatile Organics						
Bis(2-ethyl-hexyl)-phthalate	4	6	12	10	20	--
TIC	38	24	8	68	50	--
(D) Pesticides/PCBs						
Aldrin	ND	0.02	0.03	0.03	0.01	--
Total Organics	141	93.02	163.03	214.03	141.01	74

NOTE: TIC = Tentatively Identified Compounds.
All values represented in ppb.

TABLE 2 - Continued

PHASE II SAMPLING RESULTS SUMMARY TABLE
Groundwater Monitoring Well Soil Boring Samples

Parameter	MW-1-SB*	MW-3-SB*
(A) Inorganics		
Aluminum	1440	2920
Antimony	4.7	5.5
Arsenic	1.2	ND
Barium	7.5	7.8
Beryllium	0.21	0.20
Cadmium	ND	ND
Calcium	136	1080
Chromium	12.8	3.7
Cobalt	1.5	2.5
Copper	7.7	4.3
Iron	5706	4810
Lead	3.8	6.9
Magnesium	267	631
Manganese	122	105
Mercury	ND	ND
Nickel	1.7	2.2
Potassium	213	189
Selenium	ND	ND
Silver	ND	ND
Sodium	2260	2220
Thallium	ND	ND
Vanadium	5.4	10
Zinc	9.0	10.8
Cyanide	ND	ND
(B) Volatile Organics		
Methylene Chloride	27 ppb	18 ppb
Acetone	25	7
2-Butanone	9	ND
1,1,1-trichloroethane	4	ND
Toluene	2	2
TIC	37	38
(C) Semivolatile Organics		
Bis(2-ethylhexyl)phthalate	ND	93 ppb

NOTE: ND = Not Detected
TIC = Tentatively Identified Compounds
* All values represented in parts per million (ppm) unless otherwise noted.

QUALITY ASSURANCE PROJECT PLAN

FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY

TO BE PERFORMED AT U. S. ELECTROPLATING CORP.

100 FIELD STREET, WEST BABYLON, NY 11704

NYSDEC SITE #152027

QUALITY ASSURANCE PROJECT PLAN

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QUALITY ASSURANCE PROJECT PLAN

FOR

U. S. ELECTROPLATING CORP.

100 FIELD STREET

WEST BABYLON, NEW YORK

1.0 SAMPLING PROCEDURES

Donnelly Engineering follows EPA "Handbook for Sampling and Sample Preservation of Water and Wastewater," EPA-600/4-82-029, September 1982 for all sampling and sample handling procedures.

General elements include: Defining objectives, collecting representative samples, proper preservation/handling, chain of custody, sample identification, and field quality assurance.

1.1 PURGEABLE ORGANICS

Sampling:

1.1.1 A sample is collected by filling a 40 ml septum vial to overflowing (i.e., no air space is present).

1.1.2 Vials, caps and septa will be detergent washed, rinsed with tap water and then distilled water and dried at 150°C for six hours prior to use.

1.1.3 Samples will be treated with appropriate amounts of sodium thiosulfate, if field testing procedures indicate presence of chlorine.

1.1.4 Samples will be immediately refrigerated at 4°C and maintained at that temperature until transported and received at the laboratory.

1.1.5 A sample label containing the information noted below will be affixed to the sample container.

1.1.6 One duplicate will be taken for each 20 samples or each case, whichever is greater.

1.1.7 A field blank will be taken using reagent water brought to the field for each case of 20 samples.

1.1.8 Since refrigeration alone is not sufficient to prevent biological destruction of aromatic compounds, such as, benzene, toluene and ethylbenzene, a separate sample should be taken for those compounds and preserved at pH less than 2 by adding 1+1 HCL.

1.2 BASE/NEUTRAL ORGANIC COMPOUNDS

Sampling:

1.2.1 Grab or composite samples will be collected in a 80 oz. glass bottle with a teflon-lined cap. If the sample is suspected of containing residual chlorine, 35 mg of sodium thiosulfate per 1 ppm of free chlorine is added.

1.2.2 All other procedures, as outlined in Paragraph 1.1.4-.7 should be followed.

1.3 ACID FRACTION

Sampling

1.3.1 Grab or composite samples will be collected in an 80 oz. glass bottle with a teflon-lined cap. If the sample is suspected of

containing residual chlorine, 35 mg of sodium thiosulfate per 1 ppm of free chlorine is added.

1.3.2 All other procedures, as outlined in Paragraph 1.1.4-.7 should be followed.

1.4 PESTICIDES

Sampling

1.4.1 Grab or composite samples will be collected in an 80 oz. glass bottle with a teflon-lined cap, preserved with sodium thiosulfate to inhibit any chlorine residual present.

1.4.2 All other procedures, as outlined in Paragraph 1.1.4-.7 should be followed.

1.5 METALS

Sampling

1.5.1 Grab or composite samples will be collected in a 16 oz. plastic bottle preserved with Instra-Analyzed nitric acid. If hexavalent chromium is to be analyzed, one additional sample without any preservative will be collected in a plastic or glass container.

1.5.2 All other procedures, as outlined in Paragraph 1.1.4-.7 should be followed.

1.6 CYANIDE

Sampling

1.6.1 Grab or composite samples will be collected in a 16 oz. plastic bottle filled to capacity, preserved with 2 ml of 10N sodium hydroxide (pH greater than or equal to 12) at the time of collection.

1.6.2 All other procedures, as outlined in Paragraph 1.1.4-.7 should be followed.

1.7 PHENOL

Sampling

1.7.1 Grab or composite samples will be collected in a 16 oz. plastic bottle filled to capacity, preserved with sulfuric acid at pH less than 2. The sample should be analyzed within 28 days after collection.

1.7.2 All other procedures, as outlined in Paragraph 1.1.4-.7 should be followed.

1.8 ADDITIONAL PARAMETERS

1.8.1 The following analyses require no preservative: fluoride, settleable matter, acidity and chloride. Grab or composite samples will be collected in plastic or glass quart bottles.

1.8.2 The following analyses require determination on site: pH, temperature, sulfite, chlorine and dissolved oxygen.

1.8.3 The following analyses require samples to be cooled (4°C) as a preservative: color, conductivity, odor, residues, turbidity, alkalinity, bromide, nitrate, nitrite, hardness, ortho-phosphate, silica, sulfate, BOD, surfactants. Samples will be collected in plastic or glass (odor, glass only) quart bottles.

1.8.4 The following analyses require sulfuric acid (H_2SO_4) (to pH less than 2) to be added to samples as a preservative, then cooled (to 4°C): ammonia, TKN, nitrate plus nitrite, total phosphorus, COD, oil and grease, and total organic carbon.

1.8.5 All other procedures, as outlined in Paragraph 1.1.4-.7 should be followed, as required.

Sample Management

1.8.6 Receive all incoming samples. Insure each sample is tagged (and accompanied by a chain of custody form, see Appendix 1) with the following information:

Client ID
Sample ID
Site Designation
Preservative, if any
Sample collectors' signatures
Analysis to be performed
Sampling date
Date of sample receipt in laboratory
Continue chain of custody by signing for properly labelled samples
Insure samples are properly stored
Inform department supervisors that samples have arrived
Note on chain of custody any visible discrepancies in sample handling.

2.0 ANALYTICAL PROCEDURES

2.1 PURGEABLE ORGANICS

Analytical procedures and detection limits are outlined in the Federal Register, Volume 44, No. 233, Method 624 and/or Method 8240 as outlined in the "EPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition," November 1986.

2.2 BASE/NEUTRAL ORGANIC COMPOUNDS

Analytical procedures and detection limits are outlined in the Federal Register, Volume 44, No. 233, Method 625 and/or Method 8270 as outlined in the "EPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition," November 1986.

2.3 ACID FRACTION

Analytical procedures and detection limits are outlined in the Federal Register, Volume 44, No. 233, Method 625 and/or Method 8270 as outlined in the "EPA SW 846, Test Methods for Evaluating Solid Waste, 3rd Edition," November 1986.

2.4 PESTICIDES

Analytical procedures and detection limits are outlined in the Federal Register, Volume 44, No. 233, Method 625 and 608 and/or Method 8080 as outlined in the "EPA SW 846, Test Methods for Evaluating Solid Waste, 3rd Edition," November 1986.

2.5 METALS

Analytical procedures and detection limits are outlined in "Methods for Chemical Analysis of Water and Wastes," EPA 600/4-79-020, Section 200.0.

Element	Method	Detection Limit (mg/L)
Antimony	204.1	0.2
Arsenic	206.2	0.001
Beryllium	210.1	0.005
Cadmium	213.1	0.005
Chromium	218.1	0.05
Copper	220.1	0.02
Lead	239.1	0.1
Mercury	245.1	0.0002
Nickel	249.1	0.04
Selenium	270.2	0.002
Silver	272.1	0.01
Thallium	279.1	0.1
Zinc	289.1	0.005

and/or "EPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition," November 1986

Element	Method No.	Detection Limit (mg/kg)
Antimony	7040	2.00
Arsenic	7060	0.01
Beryllium	7090	0.10
Cadmium	7130	0.10
Chromium	7190	0.50
Copper	7210	0.20
Lead	7420	1.00
Mercury	7470	0.002
Nickel	7520	0.40
Selenium	7740	0.02
Silver	7760	0.10
Thallium	7840	2.00
Zinc	7950	0.05

2.6 CYANIDE AND PHENOLS

Analytical procedures and detection limits are outlined in "Methods for Chemical Analysis of Water and Wastes" EPA-600 4-79-020, March 1979, and/or Method 9010 and 9066 as outlined in the "EPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition," November 1986.

2.7 ADDITIONAL PARAMETERS

Analytical procedures and detection limits are outlined in "Methods for Chemical Analysis of Water and Wastes" EPA-600/4-79-020, March 1979 and/or "EPA SW 846, Test Methods for Evaluating Solid Waste, Third Edition," November 1986.

Parameter	EPA 600/4-79-020 Methods	EPA SW846 Methods
Color	110.2	----
Conductance	120.1	9050
Odor	140.1	----
pH	150.1	9040
Filterable Residue	160.1	----
Non-Filterable Residue	160.2	----
Total Residue	160.3	----
Volatile Residue	160.4	----
Settleable Matter	160.5	----
Hardness	130.1	----
Temperature	170.1	----
Turbidity	180.1	----
Acidity	305.1	----
Alkalinity	310.1	----
Bromide	320.1	----
Chloride	325.3	9252
Residual Chlorine	330.2	----
Fluoride	340.2	----
Ammonia	350.2/350.3	----
TNK	351.2	----
Nitrate/Nitrate	353.2	9200
Dissolved Oxygen	360.2	----
Phosphorus (all forms)	365.1	----
Silica	370.1	----
Sulfate	375.4	9038
Sulfide	376.1	9030
BOD	405.1	----
COD	405.1/410.2/410.3	----
Oil/Grease	413.1/413.2	9070
Total Organic Carbon	415.1	9060
Petroleum Hydro-carbons (IR)	418.1	----
Surfactants	425.2	----

APPENDIX 1

CHAIN OF CUSTODY

CHAIN OF CUSTODY RECORD

Page_____of_____

SHIP TO:

TO: Client Name_____
Address_____
_____
Phone_____
Attn_____

Attn._____

Project No.	Project Name	Date Shipped	Carrier
Sampler: (Signature)	Analytical Protocol	Air Bill No.	Cooler No.

Sample I.D.	Date/Time Sampled		Sample Description	No. Of Con-tainers	ANALYSIS REQUESTED

Relinquished by (Signature)	Date / Time	Rec'd. By (Signature)	Date / Time
Print Name		Print Name	
Relinquished by (Signature)	Date / Time	Rec'd. by (Signature)	Date / Time
Print Name		Print Name	
Relinquished by (Signature)	Date / Time	Received for Laboratory by (Signature)	Date / Time
Print Name		Print Name	

Special Instructions/Comments_____

Client Retains Yellow Copy Only

APPENDIX 2

MATRIX SPECIFIC QUANTITATION LIMITS

SECTION II

APPENDIX 2

SUPERFUND-CLP INORGANICS

Superfund Target Compound List (TCL) and Contract Required Quantitation Limit

Parameter	Contract Required Quantitation Level (µg/L)
1. Aluminum	200
2. Antimony	60
3. Arsenic	10
4. Barium	200
5. Beryllium	5
6. Cadmium	5
7. Calcium	5000
8. Chromium	10
9. Cobalt	50
10. Copper	25
11. Iron	100
12. Lead	3
13. Magnesium	5000
14. Manganese	15
15. Mercury	0.2
16. Nickel	40
17. Potassium	5000
18. Selenium	5
19. Silver	10
20. Sodium	5000
21. Thallium	10
22. Vanadium	50
23. Zinc	20
24. Cyanide	10

Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Volatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[A] ug/Kg
1. Chloromethane	74-87-3	10	10
2. Bromomethane	74-83-9	10	10
3. Vinyl Chloride	75-01-4	10	10
4. Chloroethane	75-00-3	10	10
5. Methylene Chloride	75-09-2	5	5
6. Acetone	67-64-1	10	10
7. Carbon Disulfide	75-15-0	5	5
8. 1,1-Dichloroethene	75-35-4	5	5
9. 1,1-Dichloroethane	75-34-3	5	5
10. 1,2-Dichloroethene (total)	540-59-0	5	5
11. Chloroform	67-66-3	5	5
12. 1,2-Dichloroethane	107-06-2	5	5
13. 2-Butanone	78-93-3	10	10
14. 1,1,1-Trichloroethane	71-55-6	5	5
15. Carbon Tetrachloride	56-23-5	5	5
16. Vinyl Acetate	108-05-4	10	10
17. Bromodichloromethane	75-27-4	5	5
18. 1,2-Dichloropropane	78-87-5	5	5
19. cis-1,3-Dichloropropene	10061-01-5	5	5
20. Trichloroethene	79-01-6	5	5
21. Dibromochloromethane	124-48-1	5	5
22. 1,1,2-Trichloroethane	79-00-5	5	5
23. Benzene	71-43-2	5	5
24. trans-1,3-Dichloropropene	10061-02-6	5	5
25. Bromoform	75-25-2	5	5
26. 4-Methyl-2-pentanone	108-10-1	10	10
27. 2-Hexanone	591-78-6	10	10
28. Tetrachloroethene	127-18-4	5	5
29. Toluene	108-88-3	5	5
30. 1,1,2,2-Tetrachloroethane	79-34-5	5	5

(continued)

Volatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[a] ug/Kg
31. Chlorobenzene	108-90-7	5	5
32. Ethyl Benzene	100-41-4	5	5
33. Styrene	100-42-5	5	5
34. Xylenes (Total)	1330-20-7	5	5

[a]Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Volatile TCL Compounds are 125 times the individual Low Soil/Sediment CRQL.

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

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

Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Semivolatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[b] ug/Kg
35. Phenol	108-95-2	10	330
36. bis(2-Chloroethyl) ether	111-44-4	10	330
37. 2-Chlorophenol	95-57-8	10	330
38. 1,3-Dichlorobenzene	541-73-1	10	330
39. 1,4-Dichlorobenzene	106-46-7	10	330
40. Benzyl alcohol	100-51-6	10	330
41. 1,2-Dichlorobenzene	95-50-1	10	330
42. 2-Methylphenol	95-48-7	10	330
43. bis(2-Chloroisopropyl) ether	108-60-1	10	330
44. 4-Methylphenol	106-44-5	10	330
45. N-Nitroso-di-n-dipropylamine	621-64-7	10	330
46. Hexachloroethane	67-72-1	10	330
47. Nitrobenzene	98-95-3	10	330
48. Isophorone	78-59-1	10	330
49. 2-Nitrophenol	88-75-5	10	330
50. 2,4-Dimethylphenol	105-67-9	10	330
51. Benzoic acid	65-85-0	50	1600
52. bis(2-Chloroethoxy) methane	111-91-1	10	330
53 2,4-Dichlorophenol	120-83-2	10	330
54. 1,2,4-Trichlorobenzene	120-82-1	10	330
55. Naphthalene	91-20-3	10	330
56. 4-Chloroaniline	106-47-8	10	330
57. Hexachlorobutadiene	87-68-3	10	330
58. 4-Chloro-3-methylphenol (para-chloro-meta-cresol)	59-50-7	10	330
59. 2-Methylnaphthalene	91-57-6	10	330
60. Hexachlorocyclopentadiene	77-47-4	10	330
61. 2,4,6-Trichlorophenol	88-06-2	10	330
62. 2,4,5-Trichlorophenol	95-95-4	50	1600
63. 2-Chloronaphthalene	91-58-7	10	330
64. 2-Nitroaniline	88-74-4	50	1600
65. Dimethylphthalate	131-11-3	10	330
66. Acenaphthylene	208-96-8	10	330
67. 2,6-Dinitrotoluene	606-20-2	10	330
68. 3-Nitroaniline	99-09-2	50	1600
69. Acenaphthene	83-32-9	10	330

(continued)

Semivolatiles	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[b] ug/Kg
70. 2,4-Dinitrophenol	51-28-5	50	1600
71. 4-Nitrophenol	100-02-7	50	1600
72. Dibenzofuran	132-64-9	10	330
73. 2,4-Dinitrotoluene	121-14-2	10	330
74. Diethylphthalate	84-66-2	10	330
75. 4-Chlorophenyl-phenyl ether	7005-72-3	10	330
76. Fluorene	86-73-7	10	330
77. 4-Nitroaniline	100-01-6	50	1600
78. 4,6-Dinitro-2-methylphenol	534-52-1	50	1600
79. N-nitrosodiphenylamine	86-30-6	10	330
80. 4-Bromophenyl-phenylether	101-55-3	10	330
81. Hexachlorobenzene	118-74-1	10	330
82. Pentachlorophenol	87-86-5	50	1600
83. Phenanthrene	85-01-8	10	330
84. Anthracene	120-12-7	10	330
85. Di-n-butylphthalate	84-74-2	10	330
86. Fluoranthene	206-44-0	10	330
87. Pyrene	129-00-0	10	330
88. Butylbenzylphthalate	85-68-7	10	330
89. 3,3'-Dichlorobenzidine	91-94-1	20	660
90. Benzo(a)anthracene	56-55-3	10	330
91. Chrysene	218-01-9	10	330
92. bis(2-Ethylhexyl)phthalate	117-81-7	10	330
93. Di-n-octylphthalate	117-84-0	10	330
94. Benzo(b)fluoranthene	205-99-2	10	330
95. Benzo(k)fluoranthene	207-08-9	10	330
96. Benzo(a)pyrene	50-32-8	10	330
97. Indeno(1,2,3-cd)pyrene	193-39-5	10	330
98. Dibenz(a,h)anthracene	53-70-3	10	330
99. Benzo(g,h,i)perylene	191-24-2	10	330

[b] Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Semivolatile TCL Compounds are 60 times the individual Low Soil/Sediment CRQL.

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

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

Target Compound List (TCL) and Contract Required Quantitation Limits (CRQL)*

Pesticides/PCBs	CAS Number	Quantitation Limits** Water ug/L	Low Soil/Sediment[c] ug/Kg
100. alpha-BHC	319-84-6	0.05	8.0
101. beta-BHC	319-85-7	0.05	8.0
102. delta-BHC	319-86-8	0.05	8.0
103. gamma-BHC (Lindane)	58-89-9	0.05	8.0
104. Heptachlor	76-44-8	0.05	8.0
105. Aldrin	309-00-2	0.05	8.0
106. Heptachlor epoxide	1024-57-3	0.05	8.0
107. Endosulfan I	959-98-8	0.05	8.0
108. Dieldrin	60-57-1	0.10	16.0
109. 4,4'-DDE	72-55-9	0.10	16.0
110. Endrin	72-20-8	0.10	16.0
111. Endosulfan II	33213-65-9	0.10	16.0
112. 4,4'-DDD	72-54-8	0.10	16.0
113. Endosulfan sulfate	1031-07-8	0.10	16.0
114. 4,4'-DDT	50-29-3	0.10	16.0
115. Methoxychlor	72-43-5	0.5	80.0
116. Endrin ketone	53494-70-5	0.10	16.0
117. alpha-Chlordane	5103-71-9	0.5	80.0
118. gamma-Chlordane	5103-74-2	0.5	80.0
119. Toxaphene	8001-35-2	1.0	160.0
120. Aroclor-1016	12674-11-2	0.5	80.0
121. Aroclor-1221	11104-28-2	0.5	80.0
122. Aroclor-1232	11141-16-5	0.5	80.0
123. Aroclor-1242	53469-21-9	0.5	80.0
124. Aroclor-1248	12672-29-6	0.5	80.0
125. Aroclor-1254	11097-69-1	1.0	160.0
126. Aroclor-1260	11096-82-5	1.0	160.0

[c] Medium Soil/Sediment Contract Required Quantitation Limits (CRQL) for Pesticide/PCB TCL compounds are 15 times the individual Low Soil/Sediment CRQL.

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

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

APPENDIX 3

SITE SPECIFIC LIMITS OF CONCERN

WATER QUALITY STANDARDS AND GUIDANCE VALUES

APPENDIX 3

SITE SPECIFIC LIMITS OF CONCERN

CATEGORY	WATER QUALITY STANDARDS AND GUIDANCE VALUES (micrograms/L)
METALS	
Aluminum	--
Antimony	3
Arsenic	25
Barium	1000
Beryllium	3
Cadmium	10
Calcium	--
Chromium	50
Cobalt	--
Copper	200
Iron	500
Lead	25
Magnesium	35,000
Manganese	300
Mercury	2
Nickel	--
Potassium	--
Selenium	10
Silver	50
Sodium	20,000
Thallium	4
Vanadium	--
Zinc	300
Cyanide	100
VOLATILES	
Chloromethane	5
Bromomethane	5
Vinyl Chloride	2
Chloroethane	5
Methylene Chloride	5

VOLATILES Cont'd.

Acetone	NR
Carbon Disulfide	NR
1,1, Dichlorethene	5
1,1 Dichloroethane	5
1,2 Dichloroethene (total)	--
Chloroform	7
1,2 Dichloroethane	5
2 Butanone	NR
1,1,1 Trichloroethane	5
Carbon Tetrachloride	5
Vinyl Acetate	NR
Bromodichloromethane	50
1,2 Dichloropropane	5
cis 1,3 Dichloropropene	5
Trichloroethene	5
Dibromochloromethane	50
1,1,2 Trichloroethane	5
Benzene	0.7
trans 1,3 Dichloropropene	5
Bromoform	50
4 Methyl 2 pentanone	NR
2 Hexanone	50
Tetrachloroethene	5
Toluene	5
1,1,2,2 Tetrachloroethane	5
Chlorobenzene	5
Ethyl Benzene	5
Styrene	5
Xylenes (Total)	5

SEMI-VOLATILES

Phenol	1
bis (2 chloroethyl) ether	1
2 Chlorophenol	--
1,3 Dichlorobenzene	5
1,4 Dichlorobenzene	--
Benzyl alcohol	NR
1,2 Dichlorobenzene	--
2 Methylphenol	--
bis (2 Chloroisopropyl) ether	5
4 Methylphenol	--

SEMI-VOLATILES, Cont'd.

N Nitroso-di-n-dipropylamine	NR
Hexachloroethane	5
Nitrobenzene	5
Isophorone	50
2 Nitrophenol	--
2,4 Dimethylphenol	--
Benzoic acid	NR
Bis (2 Chloroethoxy) methane	5
2,4 Dichlorophenol	ND
1,2,4 Trichlorobenzene	5
Naphthalene	10
4 chloroanilinc	5
Hexachlorobutadiene	5
4 chloro-3-methylphenol (para-chloro-meta-cresol)	--
2 Methylnaphthalene	NR
Hexachlorocyclopentadiene	5
2,4,6 trichlorophenol	--
2,4,5 Trichlorophenol	--
2 Chloronaphthalene	10
2 Nitroaniline	5
Dimethylphthalate	50
Acenaphthalate	NR
2,6 Dinitrotoluene	5
3-Nitroaniline	5
Acenaphthene	20
2,4 Dinitrophenol	--
4 Nitrophenol	--
Dibenzofuran	NR
2,4 Dinitrotoluene	5
Diethylphthalate	50
4 Chlorophenyl-phenyl ether	NR
Fluorene	50
4 Nitroaniline	5
4,6 Dinitro 2 methylphenol	--
N-nitrosodiphenylamine	50
4 Bromophenyl-phenylether	NR
Hexachlorobenzene	0.35
Pentachlorophenol	1
Phenanthrene	50
Anthracene	50

SEMI-VOLATILES, Cont'd.

Di-n-butylphthalate	50
Fluoranthene	50
Pyrene	50
Butylbenzylphthalate	50
3,3 Dichlorobenzidine	5
Benzo(a)anthracene	0.002
Chrysene	0.002
bis(2-Ethylhexyl) phthalate	50
Di-n-octylphthalate	50
Benzo(b)fluoranthene	0.002
Benzo(k)fluoranthene	0.002
Benzo(a)pyrene	ND
Indeno(1,2,3-ed)pyrene	0.002
Dibenz(a,h)anthracence	NR
Benzo(g,h,i)perylene	NR
PESTICIDES/PCBs	
alpha-BHC	ND
beta-BHC	ND
delta-BHC	ND
gamma-BHC (Lindane)	ND
Heptachlor	ND
Aldrin	ND
Heptachlor epoxide	ND
Endosulfan I	NR
Dieldrin	--
4,4'-DDE	ND
Endrin	ND
Endosulfan II	NR
4,4'-DDD	ND
Endosulfan sulfate	NR
4,4'-DDT	ND
Methoxychlor	35
Endrin ketone	--
alpha-Chlordane	--
gamma-Chlordane	--
Toxaphene	ND

PESTICIDES/PCBs, Cont'd.

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

ND Non-Detectable
NR Not Regulated
-- Not Specified

SITE-SPECIFIC

CITIZEN PARTICIPATION PLAN

FOR THE REMEDIAL INVESTIGATION/FEASIBILITY STUDY

TO BE PERFORMED AT U. S. ELECTROPLATING CORP.

100 FIELD STREET, WEST BABYLON, NY 11704

NYSDEC SITE #152027

CITIZENS PARTICIPATION PLAN

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1.0 INTRODUCTION

The New York State Department of Environmental Conservation is committed to a Citizen Participation Program as a part of its responsibilities for the inactive hazardous waste site remedial program. Citizen participation promotes public understanding of the Department's responsibilities, planning activities, and remedial activities at inactive hazardous waste disposal sites. It provides an opportunity for the Department to learn from the public information that will enable the Department to develop a comprehensive remedial program which is protective of both public health and the environment. The U. S. Electroplating Citizen Participation Plan is prepared for the Department's review and approval of the Draft/Final Remediation Investigation/Feasibility Work Plan.

2.0 SITE HISTORY

U. S. Electroplating Corp., located at 100 Field Street, West Babylon, New York, has conducted operations at this facility since 1971. See enclosed USGS Topographical Map, Location Map and Site Plan, respectively. This facility performs electroplating and metal finishing procedures on a job by job basis. Material is sent to the facility by manufacturers of metal products for treatment by U. S. Electroplating. The processes employed at this facility are alodine, anodize, copper cyanide plating, zinc cyanide plating, cadmium cyanide plating, tin plating, nickel plating, caustic etch, acid dip, and numerous rinsing baths.

The material delivered for treatment is aluminum, non-ferrous or ferrous alloy product. The pieces are delivered in large boxes or bins from which they are manually transferred to racks or baskets for dipping into the tank solutions. Rinse waters from the process are held in approved containers for removal by licensed waste carting firms. The entire plating facility is built to the specification of Article 12, Suffolk County Sanitary Code. This specification requires a corrosion resistant, impermeable coating for the floor with berms surrounding the interior of the entire facility to protect against the discharge of any spillage to the environment.

Spillage is normally recovered using material similar to the product "Speedy-Dri" or sawdust. The wet absorbent is recovered from the floor with the wastewater that has soaked the material. The wet and/or contaminated absorbent material is shoveled into the waste containers to be removed by a licensed waste carting firm.

In 1982 the Suffolk County Department of Health Services (SCDHS) discovered contamination in the storm drains and sanitary leaching pool of this facility. The source of the waste was assumed to be drainage from the solid waste dumpster located in the parking lot. It was assumed that storm water had washed contaminants from the dumpster into the storm drain. Another theory which was considered at that time was the possibility of a disgruntled employee having flushed plating solution down the toilet and discarded some of the plating solution in open containers placed in the dumpster.

In response to a Directive by SCDHS, U. S. Electroplating had the storm drains and sanitary leaching pool power washed and pumped to remove the recoverable industrial waste for proper disposal. This case was closed and prosecution discontinued by SCDHS.

A survey of available literature by the firm of Woodward-Clyde Consultants, Inc., under contract to NYSDEC, produced evidence of contaminant release from the Suffolk County files. These files contained the Notices of Violation and correspondence relating to the incident described above. Upon review of the Phase I-Preliminary Investigation by Woodward-Clyde Consultants, the NYSDEC instituted a Phase II Investigation by Gibbs & Hill, Inc. This work was subcontracted to LeRoy Callender, P.C. A review of the Phase II Investigation by NYSDEC resulted in the current request for a RI/FS Report.

3.0 PROJECT DESCRIPTION

Donnelly Engineering was retained by U. S. Electroplating to prepare a Workplan for a Remedial Investigation/Feasibility Study (RI/FS) for the real property located at 100 Field Street, West Babylon, Suffolk County, New York. This Workplan has been prepared in anticipation of an Order on Consent requested by letter dated September 22, 1993, from Louis P. Oliva, Senior Attorney, NYSDEC.

Earlier sampling of the storm drains and sanitary disposal system showed elevated levels of cadmium, chromium, trichloroethene and methylene chloride. Activities for document submittals in regard to this investigation shall address on-site and off-site impact of the alleged contamination in accordance with "Requisite Remedial Technology." The purpose of the project is to identify and mitigate or eliminate any threat to the public health or environment posed by the presence of hazardous waste at the subject Site or release of hazardous waste at the subject Site. The Workplan for the investigation of on-site contamination will focus on data derived from soil samples of the leaching pools, soil borings, and monitoring wells. Soil borings will be advanced in or around suspected leaching pools in which contaminants were previously found. Monitoring wells will be installed down gradient of each of the suspected point sources identified herein.

The soil borings will allow sampling and discovery of the horizontal migration through the vadose formation around the leaching pools. The vertical extent of any contamination will be determined in this manner with borings to the depth of groundwater. The monitoring wells will establish hydraulic gradient and flow vector on-site. Groundwater samples will be used to detect horizontal

migration of the contaminants from the suspected point sources, down gradient, using one or more of the observed groundwater vectors. It should be noted that due to the intermittent operation of a nearby cooling water well at the Town Landfill, significant influence on the groundwater vector value is anticipated.

When the initial findings are evaluated, it will be decided if off-site migration of contaminants is taking place and whether or not additional monitoring wells are needed for off-site tracking.

4.0 IDENTIFICATION OF DEPARTMENT CONTACTS

DEC Project Manager:

Thomas L. Gibbons
Div. of Hazardous Waste Remed.
N.Y.S. Dept. of Environmental
Conservation
50 Wolf Road
Albany, NY 12233-0001
(518) 457-1708

DEC Citizen Participation Specialist

Joshua Epstein
Div. of Haz. Waste Remediation
Region I - NYSDEC
Building 40 - SUNY
Stony Brook, NY
(516) 751-4078

Donald W.R. Miles
New York State Dept. of Health
Bureau of Environmental Exposure Investigation
2 University Place
Albany, NY 12203
(518) 458-6305

Ms. Nina Knapp
New York State Dept. of Health
Bureau of Toxic Substance Assessment
Room 240
2 University Place
Albany, NY 12203
1 800 458-1158 or (518) 458-6405

James Pim, P.E.
Suffolk County Dept. of Health Services
15 Horseblock Place
Farmingville, NY 11738
(516) 854-2536

5.0 PUBLIC CONTACT LIST

Donnelly Engineering has developed a contact list which includes, but is not limited to, the following:

Environmental Protection
Suffolk County Dept. of Health Services
15 Horseblock Place
Farmingville, NY 11738

N.Y.S. Dept. of Environmental Conservation
SUNY - Building 40
Stony Brook, NY 11794

U.S. Environmental Protection Agency
Region II
26 Federal Plaza
New York, NY 10278

Academic Institutions
Suffolk County Community College
533 College Road
Selden, NY 11784

Polytechnic University
Route 110
Farmingdale, NY 11735

State University of New York
at Farmingdale
Route 110
Farmingdale, NY 11735

West Babylon Union Free School District
10 Farmingdale Road
West Babylon, NY 11704

Local and Regional Media
Newsday
235 Pinelawn Road
Melville, NY 11747

Suffolk Life Newspapers
General Business
Route 58
Riverhead, NY 11901

South Bay Newspaper
150 West Hoffman Avenue
Lindenhurst, NY 11757

Beacon Newspaper
220 Deer Park Avenue
Babylon, NY 11702

Government Officials

United States Senators:

Daniel Moynihan
405 Lexington Avenue
41st Floor
New York, NY 10174

Alfonse D'Amato
710 Penn Plaza
New York, NY 10001

New York State Senator For West Babylon:

Owen Johnson
23-24 Argyle Square
Babylon, NY 11702
Governor Cuomo

Town of Babylon Supervisor:

Richard H. Schaffer
200 East Sunrise Highway
Lindenhurst, NY 11757

U.S. Congressman Representing West Babylon:

Richard Lazio
126 West Main Street
Babylon, NY 11702

Assemblyman Representing West Babylon:

Robert Sweeney
270-B North Wellwood Avenue
Lindenhurst, NY 11757

Thomas C. Jorling, Commissioner
N.Y.S. Dept. of Environmental Conservation
50 Wolf Road
Albany, NY 12233-0001

Ray E. Cowen, Regional Director
N.Y.S. Dept. of Environmental Conservation
SUNY - Building 40
Stony Brook, NY 11794

Governmental Bodies and Subdivisions

New York State

Suffolk County

Town of Babylon

United States Environmental
Protection Agency Region II

N.Y.S. Dept. of Environmental
Conservation, Region I

Civic Groups

Longwood Harbor Civic Association
23 Sandpiper Lane
West Babylon, NY 11704

John Oberholzer, Pres.
West Babylon Taxpayers Association
665 Albin Avenue
West Babylon, NY 11704

The Long Island Citizens Advisory Committee
on Hazardous Waste (LICAC-HW)
(Actual distribution can be through Joshua
Epstein, NYSDEC Region One)

6.0 INFORMATION REPOSITORIES

N.Y.S. Dept. of Environmental Conservation
Region I
Division of Hazardous Waste Remediation
SUNY - Building 40
Stony Brook, NY 11794
Hours of Operation: 8:30 a.m. - 4:45 p.m.

West Babylon Public Library
211 Route 109
West Babylon, NY 11704
(516) 669-5445
Hours of Operation: Mon. - Thurs. - 10 a.m. - 9 p.m.
Fri. & Sat. - 10 a.m. - 5 p.m.

7.0 SPECIFIC CITIZEN PARTICIPATION ACTIVITIES

A copy of the Final Work Plan for the RI/FS will be placed in the local Document Repository to be identified by NYSDEC. At that time, a public notice will be mailed to an established contact list to give public notice of the availability of the Final RI/FS Work Plan. The purpose of the notice is to describe the Site, discuss objectives of the RI/FS and identify the project's local Document Repository. The Contact List will consist of residents in the area bounded by: The Long Island National Cemetery on the north side; Republic Airport on the west side (Broadhollow Road); Route 109 (Farmingdale Road) and Sunrise Highway on the south side, and Straight Path and Mount Avenue on the east side. This notification will request comments and other information from the interested/affected parties at a public, informational "kick-off" meeting which will present the approved RI/FS Work Plan.

The public will be notified of this meeting through the fact sheet (combined with a meeting invitation on the first page) required by Part 375 Regulations and which is already in the draft. Public notification of such a meeting will take place two weeks in advance through the above means and mailed to the Public Contact List. In addition, a press notice will be distributed to Newsday and the South Bay

Newspaper. When the Draft/Final RI/FS Report has been prepared for the first phase of this project, a copy shall be placed in the project's local Document Repository. The findings of the RI/FS will be discussed at a public informational meeting at a nearby place of assembly. The public will be notified of this meeting two weeks in advance using a fax sheet mailed to the Public Contact List. A legal notice of the availability of the Draft/Final RI/FS report will be published in Newsday. A fact-sheet will be mailed to the public contact list and a press notice distributed to Newsday and the South Bay Newspaper. A public meeting will be conducted to present the Draft/Final RI/FS report, the Proposed Remedial Action Plan (PRAP), and to solicit public comment. The public will be notified of the meeting at least 15 days in advance through the means described. There will be a transcript of the meeting and a responsiveness summary. The Draft/Final RI/FS Report, the PRAP, the transcript, and summary will be deposited in the local document repositories and the public will be so notified. In addition, if feasible, the summary will be distributed more widely if the remedial action selected differs significantly from the one proposed at the public meeting, additional citizen participation measures will be executed, as per the NYSDEC Part 375 Regulation. The conceptual design for the recommended Remedial Program will be placed in the project's local Document Repository and

announced to the contact list. The same shall hold true for the draft design when it becomes substantially complete.

When the construction contract for remediation is awarded, a copy of the Final Plans and Specifications, along with the HASP, shall be placed in the project's local Document Repository. In addition, the HASP for the remedial work will accompany the Final Plans and Specifications.

At the completion of remedial construction, the contact list will be notified of the status of the project and the objectives which were accomplished will be described.

During the development and implementation of the long-term monitoring operation and maintenance program at U. S. Electroplating Corp., the Citizen Participation Plan will be reviewed and amended as necessary. The plan is designed to inform the public in the development of the long-term monitoring, operation and maintenance program, to keep them informed throughout the program's implementation.

APPENDIX 1

DEFINITIONS OF COMMONLY USED CITIZEN PARTICIPATION TERMS

APPENDIX 1

Definitions of Commonly Used Citizen Participation Terms

Availability Session - Scheduled gathering of the Department staff and the public in a setting less formal than a public meeting. Encourages "one-to-one" discussions in which the public meets with Department staff on an individual or small group basis to discuss particular questions or concerns.

Citizen Participation - A process to inform and involve the interested/affected public in the decision-making process during identification, assessment and remediation of inactive hazardous waste sites. This process helps to assure that the best decisions are made from environmental, human health, economic, social and political perspectives.

Citizen Participation Plan - A document that describes the site-specific citizen participation activities that will take place to complement the "technical" (remedial) activities. It also provides site background and rationale for the selected citizen participation program for the site. A plan may be updated or altered as public interest or the technical aspects of the program change.

Citizen Participation Specialist - A Department staff member within the Division of Hazardous Waste Remediation who provides guidance, evaluation and assistance to help the Project Manager carry out his/her site-specific Citizen Participation program.

Contact List - Names, addresses and/or telephone numbers of individuals, groups, organizations and media interested and/or affected by a particular hazardous waste site. Compiled and updated by the Department. Interest in the site, stage of remediation and other factors guide how comprehensive the list becomes. Used to assist the Department to inform and involve the interested/affected public.

Document Repository - Typically a regional DEC office and/or public building, such as a library, near a particular site, at which documents related to remedial and citizen participation activities at the site are available for public review. Provides access to documents at times and a location convenient to the public. Environmental Management Councils (EMCs), Conservation Advisory Committees (CACs) as well as active local groups often can serve as supplemental document repositories.

Information Sheet - A written discussion of a site's remedial process, or some part of it, prepared by the Department for the public in easily understandable language. May be prepared for the "general" public or a particular segment. Uses may include, for example: discussion of an element of the remedial program, opportunities for public involvement, availability of a report or other information, or announcement of a public meeting. May be mailed to all or part of the interested public, distributed at meetings and availability sessions or sent on an "as requested" basis.

Project Manager - A Department staff member within the Division of Hazardous Waste Remediation (usually an engineer, geologist or hydrogeologist) responsible for the day-to-day administration of activities, and ultimate disposition of, one or more hazardous waste sites. The Project Manager works with the Office of Public Affairs as well as fiscal and legal staff to accomplish site-related goals and objectives.

Public - The universe of individuals, groups and organizations: a) affected (or potentially affected) by an inactive hazardous waste site and/or its remedial program; b) interested in the site and/or its remediation; c) having information about the site and its history.

Public Meeting - A scheduled gathering of the Department staff and the public to give and receive information, ask questions and discuss concerns. May take one of the following forms: large-group meeting called by the Department; participation by the Department at a meeting sponsored by another organization such as a town board or Department of Health; working group or workshop; tour of the hazardous waste site.

Public Notice - A written or verbal informational technique for telling people about an important part of a site's remedial program coming up soon (examples: announcement that the report for the RI/FS is publicly available; a public meeting has been scheduled).

The public notice may be formal and meet legal requirements (for example: what it must say, such as announcing beginning of a public comment period; where, when and how it is published).

o Publish - For purposes of 6NYCRR Part 375.7, at a minimum requires publication of a legal notice in a local newspaper of general circulation.

Another kind of public notice may be more informal and may not be legally required (examples: paid newspaper advertisement; telephone calls to key citizen leaders; targetted mailings).

Responsiveness Summary - A formal or informal written or verbal summary and response by the Department to public questions and comments. Prepared during or after important elements in a site's remedial program. The responsiveness summary may list and respond to each question, or summarize and respond to questions in categories.

Toll-Free "800" Telephone Information Number - Provides cost-free access to the Department by members of the public who have questions, concerns or information about a particular hazardous waste site. Calls are taken and recorded 24 hours a day and a Department staff member contacts the caller as soon as possible (usually the same day).

APPENDIX 2

DEFINITIONS OF SIGNIFICANT ELEMENTS AND

TERMS OF THE REMEDIAL PROGRAM

APPENDIX 2

Definitions of Significant Elements and Terms of the Remedial Program

NOTE: The first eight definitions represent major elements of the remedial process. They are presented in the order in which they occur, rather than in alphabetical order, to provide a context to aid in their definition.

Site Placed on Registry of Inactive Hazardous Waste Sites - Each inactive site known or suspected of containing hazardous waste must be included in the Registry. Therefore, all sites which state or county environmental or public health agencies identify as known or suspected to have received hazardous waste should be listed in the Registry as they are identified. Whenever possible, the Department carries out an initial evaluation at the site before listing.

Phase I Site Investigation - Preliminary characterizations of hazardous substances present at a site; estimates pathways by which pollutants might be migrating away from the original site of disposal; identifies population or resources which might be affected by pollutants from a site; observes how the disposal area was used or operated; and gathers information regarding who might be responsible for wastes at a site. Involves a search of records from all agencies known to be involved with a site, interviews with site owners, employees and local residents to gather pertinent information about a site. Information gathered is summarized in a Phase I report.

After a Phase I investigation, DEC may choose to initiate an emergency response; to nominate the site for the National Priorities List; or, where additional information is needed to determine site significance, to conduct further (Phase II) investigation.

Phase II Site Investigation - Ordered by DEC when additional information is still needed after completion of Phase I to properly classify the site. A Phase II investigation is not sufficiently detailed to determine the full extent of the contamination, to evaluate remedial alternatives, or to prepare a conceptual design for construction. Information gathered is summarized in a Phase II report and is used to arrive at a final hazard ranking score and to classify the site.

Remedial Investigation (RI) - A process to determine the nature and extent of contamination by collecting data and analyzing the site. It includes sampling and monitoring, as necessary, and includes the gathering of sufficient information to determine the necessity for, and proposed extent of, a remedial program for the site.

Feasibility Study (FS) - A process for developing, evaluating and selecting remedial actions, using data gathered during the remedial investigation to: define the objectives of the remedial program for the site and broadly develop remedial action alternatives; perform an initial screening of these alternatives; and perform a detailed analysis of a limited number of alternatives which remain after the initial screening stage.

Remedial Design - Once a remedial action has been selected, technical drawings and specifications for remedial construction at a site are developed, as specified in the final RI/FS report. Design documents are used to bid and construct the chosen remedial actions. Remedial design is prepared by consulting engineers with experience in inactive hazardous waste disposal site remedial actions.

Construction - DEC selects contractors and supervises construction work to carry out the designed remedial alternative. Construction may be as straightforward as excavation of contaminated soil with disposal at a permitted hazardous waste facility. On the other hand, it may involve drum sampling and identification, complete encapsulation, leachate collection, storage and treatment, groundwater management, or other technologies. Construction costs may vary from several thousand dollars to many millions of dollars, depending on the size of the site, the soil, groundwater and other conditions, and the nature of the wastes.

Monitoring/Maintenance - Denotes post-closure activities to insure continued effectiveness of the remedial actions. Typical monitoring/maintenance activities include quarterly inspection by an engineering technician; measurement of level of water in monitoring wells; or collection of ground water and surface water samples and analysis for factors showing the condition of water, presence of toxic substances, or other indicators of possible pollution from the site. Monitoring/maintenance may be required indefinitely at many sites.

Consent Order - A legal and enforceable negotiated agreement between the Department and responsible parties where responsible parties agree to undertake investigation and cleanup or pay for the costs of investigation and cleanup work at a site. The order includes a description of the remedial actions to be undertaken at the site and a schedule for implementation.

Contract - A legal document signed by a contractor and the Department to carry out specific site remediation activities.

Contractor - A person or firm hired to furnish materials or perform services, especially in construction projects.

Delisting - Removal of a site from the state Registry based on study which shows the site does not contain hazardous wastes.

Potentially Responsible Party Lead Site - An inactive hazardous waste site at which those legally liable for the site have accepted responsibility for investigating problems at the site, and for developing and implementing the site's remedial program. PRP's include: those who owned the site during the time wastes were placed, current owners, past and present operators of the site, and those who generated the wastes placed at the site. Remedial programs developed and implemented by PRP's generally result from an enforcement action taken by the State and the costs of the remedial program are generally borne by the PRP.

Ranking System - The United States Environmental Protection Agency uses a hazard ranking system (HRS) to assign numerical scores to each inactive hazardous waste site. The scores express the relative risk or danger from the site.

Responsible Parties - Individuals, companies (e.g. site owners, operators, transporters or generators of hazardous waste) responsible for or contributing to the contamination problems at a hazardous waste site. PRP is a potentially responsible party.

Site Classification - The Department assigns sites to classifications established by state law, as follows:

o Classification 1 - A site causing or presenting an imminent danger of causing irreversible or irreparable damage to the public health or environment --immediate action required.

o Classification 2 - A site posing a significant threat to the public health or environment--action required.

o Classification 2a - A temporary classification for a site known or suspected to contain hazardous waste. Most likely the site will require a Phase I and Phase II investigation to obtain more information. Based on the results, the site then would be reclassified or removed from the state Registry if found not to contain hazardous wastes.

o Classification 3 - A site which has hazardous waste confirmed, but not a significant threat to the public health or environment--action may be deferred.

o Classification 4 - A site which has been properly closed--requires continued management.

o Classification 5 - A site which has been properly closed, with no evidence of present or potential adverse impact--no further action required.

State-Lead Site - An inactive hazardous waste site at which the Department has responsibility for investigating problems at the site and for developing and implementing the site's remedial program. The Department uses money available from the State Superfund and the Environmental Quality Bond Act of 1986 to pay for these activities. The Department has direct control and responsibility for the remedial program.