

Data file : t22951.d

Matrix : WATER

CAS #	Compound	R.T.	Estimated Conc.
1)	4127-45-1 Cyclopropane, 1,1,2-trimethyl-	3.879-	10.31
2)	16747-31-2 Hexane, 3,3,4-trimethyl-	3.975-	2.70
3)	49622-18-6 Decane, 3,3,4-trimethyl-	4.115-	2.68
4)	594-36-5 Butane, 2-chloro-2-methyl-	5.231-	2.08
5)	544-76-3 Hexadecane	7.378-	2.85
6)	629-78-7 Heptadecane	8.215-	2.14
7)	629-78-7 Heptadecane	9.074-	2.74
8)	17453-94-0 Undecane, 5-ethyl-	9.492-	3.22
9)	629-50-5 Tridecane	9.932-	2.29
10)	62238-11-3 Decane, 2,3,5-trimethyl-	10.79-	3.00
11)	112-95-8 Eicosane	11.61-	2.26
12)	286-45-3 8-Oxabicyclo[5.1.0]octane	13.58-	37.33
13)	112-95-8 Eicosane	13.92-	3.88
14)	7098-22-8 Tetratetracontane	14.18-	3.18
15)	112-95-8 Eicosane	14.63-	4.72
16)	112-40-3 Dodecane	15.32-	4.36
17)	629-92-5 Nonadecane	15.97-	8.39
18)	638-68-6 Triacontane	16.60-	9.27
19)	593-45-3 Octadecane	16.97-	3.06
20)	638-68-6 Triacontane	17.22-	10.43
21)	295-17-0 Cyclotetradecane	17.66-	14.63
22)	638-68-6 Triacontane	17.81-	12.41
23)	112-95-8 Eicosane	18.37-	20.54
24)	295-17-0 Cyclotetradecane	18.78-	28.07
25)	7098-22-8 Tetratetracontane	18.93-	7.22
26)	295-48-7 Cyclopentadecane	19.32-	8.38
27)	629-99-2 Pentacosane	19.47-	14.31
28)	68779-14-6 Cyclohexane, 1,5-diethenyl-2,3-dimethyl-	19.76-	4.71
29)	295-65-8 Cyclohexadecane	19.83-	16.41
30)	630-07-9 Pentatriacontane	19.98-	5.22
31)	28981-49-9 Cyclododecane, ethyl-	20.83-	5.79

Concentration Units: Water: UG/L Soil: UG/KG

Data file : t22952.d

Matrix : WATER

CAS #	Compound	R.T.	Estimated Conc.
1) 79-34-5	Ethane, 1,1,2,2-tetrachloro-	3.865	58.54 ^{F-11-97}
2) 584-94-1	Hexane, 2,3-dimethyl-	4.112	4.61
3) 54125-39-2	trans-2,3-Epoxydecane	4.906	37.49
4) 3074-71-3	Heptane, 2,3-dimethyl-	5.121	2.62
5) 2425-66-3	Propane, 1-chloro-2-nitro-	5.228	3.73
6) 354-21-2	Ethane, 1,2,2-trichloro 1,1 difluoro	6.870	43.56 ^{P-11-97}
7) 1120-21-4	Undecane	9.940	2.36
8) 544-76-3	Hexadecane	17.21	3.18
9) 295-17-0	Cyclotetradecane	17.65	31.89
10) 295-48-7	Cyclopentadecane	18.23	15.76
11) 630-07-9	Pentatriacontane	18.38	10.60
12) 295-48-7	Cyclopentadecane	19.32	23.23
13) 630-07-9	Pentatriacontane	19.47	16.42
14) 295-65-8	Cyclohexadecane	19.84	48.85
15) 54832-82-5	Tricyclo[4.3.0.07,9]nonane, 2,2,5,5,8,8-	20.06	6.48
16) 295-65-8	Cyclohexadecane	20.84	26.54

Concentration Units: Water: UG/L Soil: UG/KG

Data file : t22950.d

Matrix : WATER

	CAS #	Compound	R.T.	Estimated Conc.	
1)	79-34-5	Ethane, 1,1,2,2-tetrachloro	3.856	55.88	File
2)	594-36-5	Butane, 2-chloro-2-methyl-	5.230	2.11	SM
3)	1120-21-4	Undecane	7.376	2.76	
4)	359-28-4	Ethane, 1,1,2-trichloro-2-fluoro-	9.061	2.81	File
5)	124-18-5	Decane	17.79	3.30	SM
6)	544-85-4	Dotriacontane	18.37	3.87	
7)	629-94-7	Heneicosane	19.46	3.94	

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18355.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 107-81-3	Pentane, 2-bromo-	3.461-	767.40
2) 79-34-5	Ethane, 1,1,2,2-tetrachloro-	3.492-	1116.17
3) 544-85-4	Dotriacontane	15.21-	498.29
4) 629-78-7	Heptadecane	16.44-	882.26
5) 630-06-8	Hexatriacontane	17.58-	2039.34
6) 112-40-3	Dodecane	18.63-	2896.32
7) 53584-60-4	28-Nor-17.alpha.(H)-hopane	18.88-	514.70

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18356.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 79-34-5	Ethane, 1,1,2,2-tetrachloro-	3.494-	947.19 ^{Soil}
2) 112-40-3	Dodecane	7.196-	600.95
3) 75163-97-2	Octadecane, 2,6-dimethyl-	9.273-	625.43
4) 593-49-7	Heptacosane	17.58-	505.20
5) 6248-88-0	Bicyclo[2.2.1]heptane, 1,3,3-trimethyl-	17.77-	449.71
6) 112-95-8	Eicosane	18.65-	421.26
7) 6079-19-2	Cholestane, 4,5-epoxy-, (4.alpha.,5.alph	19.15-	1052.38

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18364.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 1111-74-6	Silane, dimethyl	3.102	734.46
2) 111-01-3	Squalane	8.795	578.18
3) 3386-33-2	Octadecane, 1-chloro-	9.237	487.92
4) 1921-70-6	Pentadecane, 2,6,10,14-tetramethyl-	9.280	589.16
5) 36728-72-0	28-Nor-17.beta. (H) -hopane	18.88	1571.72
6) 295-17-0	Cyclotetradecane	19.03	1369.65

Concentration Units: Water: UG/L Soil: UG/KG

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Data file : v18399.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 20637-47-2	Heptane, 4-methoxy-3-(methoxymethyl)-	2.834-	810.35
2) 2216-30-0	Heptane, 2,5-dimethyl-	2.952-	493.01
3) 79-34-5	Ethane, 1,1,2,2-tetrachloro-	3.469-	569.26 ⁸⁻¹³⁻⁵
4) 74421-17-3	Hexane, 1-(hexyloxy)-2-methyl-	3.555-	385.30 ⁽²⁷⁾
5) 62108-21-8	Decane, 6-ethyl-2-methyl-	15.18-	321.74
6) 630-06-8	Hexatriacontane	17.55-	807.15
7) 112-40-3	Dodecane	18.63-	297.54
8) 0-00-0	2,2-Bis(4-trifluoroacetoxyphenyl)propane	22.79	335.77

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18400.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 2216-30-0	Heptane, 2,5-dimethyl-	2.955	458.90
2) 79-34-5	Ethane, 1,1,2,2-tetrachloro-	3.471	555.12
3) 59958-46-2	trans-2-Oxabicyclo[4.4.0]decane	3.665	444.35
4) 629-78-7	Heptadecane	16.41	308.05
5) 629-92-5	Nonadecane	17.55	805.94
6) 112-95-8	Eicosane	18.63	352.64

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18439.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 20637-29-0	Hexane, 1,2,3-trimethoxy-	2.814 -	1696.46
2) 2216-33-3	Octane, 3-methyl-	2.933 -	954.51
3) 1713-33-3	7-Oxabicyclo[4.1.0]heptane, 1-methyl-	3.654 -	868.02
4) 630-01-3	Hexacosane	17.51 -	805.45

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18359.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 1111-74-6	Silane, dimethyl-	3.095	719.62
2) 79-34-5	Ethane, 1,1,2,2-tetrachloro-	3.493	763.99
3) 354-21-2	Ethane, 1,2,2-trichloro 1,1-difluoro-	6.216	599.25
4) 629-78-7	Heptadecane	16.44	893.49
5) 593-45-3	Octadecane	17.58	1361.14
6) 17312-57-1	Dodecane, 3-methyl-	18.64	1206.68
7) 52474-84-7	Cholestane, 14-methyl-	19.15	943.37

Concentration Units: Water: UG/L

Soil: UG/KG

Data file : v18401.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 95057-12-8	1,1,3,4-Tetramethylcyclohexane	2.737-	150.95
2) 2216-33-3	Octane, 3-methyl-	2.953-	225.34
3) 2216-33-3	Octane, 3-methyl-	3.168-	117.24
4) 79-34-5	Ethane, 1,1,2,2-tetrachloro	3.469-	286.29
5) 61142-21-0	Cyclohexane, (1,2,2-trimethylbutyl)-	3.631-	121.43
6) 630-03-5	Nonacosane	12.42-	88.20
7) 0-00-0	10-Methylnonadecane	13.85-	303.97
8) 3386-33-2	Octadecane, 1-chloro-	15.19-	548.42
9) 54833-23-7	Eicosane, 10-methyl-	16.41-	150.30
10) 7098-22-8	Tetratetracontane	17.55-	300.28
11) 1560-88-9	Octadecane, 2-methyl-	18.63-	342.87

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18402.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 53584-60-4	28-Nor-17.alpha.(H)-hopane	18.86	1067.66

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18440.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 20637-29-0	Hexane, 1,2,3-trimethoxy-	2.816-	3096.60
2) 628-17-1	Pentane, 1-iodo-	8.402-	29960.66
3) 54105-77-0	(2-Methylbutyl)cyclohexane	14.89-	2120.72

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18403.d

Matrix : SOIL

	CAS #	Compound	R.T.	Estimated Conc.
1)	630-06-8	Hexatriacontane	13.85	6672.16
2)	3386-33-2	Octadecane, 1-chloro-	15.18	13937.09
3)	630-03-5	Nonacosane	17.55	11321.86
4)	638-67-5	Tricosane	18.63	12681.56
5)	62337-97-7	Cyclohexane, 1,1,2-trimethyl-3,5-bis(1-m	19.40	9832.28

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18404.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 629-99-2	Pentacosane	15.18-	7610.57
2) 646-31-1	Tetracosane	17.55-	5251.51
3) 629-94-7	Heneicosane	18.63-	8197.83
4) 14739-72-1	Heneicosane, 11-pentyl-	19.42-	5201.86

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18405.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 629-78-7	Heptadecane	16.41	4298.92
2) 629-92-5	Nonadecane	17.55	4070.89
3) 24635-97-0	1,3,2-Dioxarsenane, 2-methyl-	17.65	4305.14
4) 593-45-3	Octadecane	18.63	4933.02

Concentration Units: Water: UG/L Soil: UG/KG

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Data file : v18360.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 79-34-5	Ethane, 1,1,2,2-tetrachloro	3.492	875.21 ^{F-197}
2) 629-62-9	Pentadecane	16.43-	739.92
3) 112-95-8	Eicosane	17.58-	1185.04
4) 112-95-8	Eicosane	18.65-	639.93

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18365.d

Matrix : SOIL

	CAS #	Compound	R.T.	Estimated Conc.	
1)	79-34-5	Ethane, 1,1,2,2-tetrachloro-	3.490	493.65	P-1-L
2)	629-78-7	Heptadecane	16.43	322.92	DL
3)	544-76-3	Hexadecane	17.01	332.42	
4)	593-45-3	Octadecane	17.57	877.14	
5)	593-45-3	Octadecane	18.64	437.88	
6)	4534-65-0	Pentadecane, 3-phenyl-	20.85	381.31	P-1-S

Concentration Units: Water: UG/L Soil: UG/KG

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Data file : v18361.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 79-34-5	Ethane, 1,1,2,2-tetrachloro	3.489	1414.53 ⁸⁻⁷⁻²⁵ ₍₂₂₎
2) 49622-18-6	Decane, 3,3,4-trimethyl-	3.661	356.12
3) 590-66-9	Cyclohexane, 1,1-dimethyl-	3.683	381.30
4) 7225-67-4	Heptane, 2,2,3,3,5,6,6-heptamethyl-	17.01	179.53
5) 112-95-8	Eicosane	17.58	217.43
6) 544-76-3	Hexadecane	18.65	273.99
7) 55282-29-6	Hexadecane, 8-hexyl-8-pentyl-	19.15	340.53

Concentration Units: Water: UG/L Soil: UG/KG

Data file : t22948.d

Matrix : WATER

CAS #	Compound	R.T.	Estimated Conc.
1) 760-21-4	Pentane, 3-methylene-	3.535	5.14
2) 49622-18-6	Decane, 3,3,4-trimethyl-	4.114	9.03

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18428.d

Matrix : WATER

CAS #	Compound	R.T.	Estimated Conc.
1) 111-65-9	Octane	3.311	2.12

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18362.d

Matrix : SOIL

	CAS #	Compound	R.T.	Estimated Conc.	
1)	79-34-5	Ethane, 1,1,2,2-tetrachloro	3.493	532.50	F-12
2)	112-95-8	Eicosane	17.58	626.98	Ⓢ
3)	111-65-9	Octane	18.13	346.56	
4)	629-99-2	Pentacosane	18.65	983.35	
5)	629-62-9	Pentadecane	19.16	508.63	

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18363.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 41977-43-9	Cyclopropane, 1,1,2-trimethyl-3-(2-methy	3.492-	505.51
2) 629-78-7	Heptadecane	16.44-	457.90
3) 593-49-7	Heptacosane	17.58-	747.92
4) 593-45-3	Octadecane	18.64-	1290.63
5) 629-97-0	Docosane	19.67-	719.08
6) 541-05-9	Cyclotrisiloxane, hexamethyl-	19.83-	353.91
7) 97-94-9	Borane, triethyl-	19.88-	1012.03
8) 0-00-0	Silaspiro[5.5]undecane, 1,2,4,5,6,7,9,10	21.11-	3098.71

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18442.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 54833-48-6	Heptadecane, 2,6,10,15-tetramethyl-	16.38-	536.83
2) 0-00-0	Decane, 5,6-bis(2,2-dimethylpropylidene)	16.47-	945.52
3) 629-94-7	Heneicosane	17.52-	857.70

Concentration Units: Water: UG/L Soil: UG/KG

Data file : v18325.d

Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 54699-28-4	Butane, 2,2'-[methylenebis(oxy)]bis[2-me	2.778	89.14
2) 2216-30-0	Heptane, 2,5-dimethyl-	2.994	160.66
3) 2404-35-5	Cycloheptane, (bromo-	3.704	322.56

Concentration Units: Water: UG/L Soil: UG/KG

Alkane Report

Data file : t23013.d

Matrix : WATER

CAS #	Compound	R.T.	Estimated Conc.
1) 565-75-3	Pentane, 2,3,4-trimethyl-	4.070	9.72

Concentration Units: Water: UG/L Soil: UG/KG

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Data file : v18387a.d

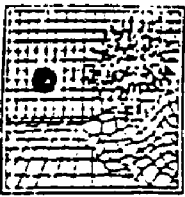
Matrix : SOIL

CAS #	Compound	R.T.	Estimated Conc.
1) 2216-33-3	Octane, 3-methyl-	2.953	329.51
2) 619-99-8	Hexane, 3-ethyl-	3.082	209.20
3) 2216-34-4	Octane, 4-methyl-	3.125	102.46
4) 2216-33-3	Octane, 3-methyl-	3.168	92.66
5) 760-21-4	Pentane, 3-methylene-	3.265	77.73
6) 61142-21-0	Cyclohexane, (1,2,2-trimethylbutyl)-	3.631	269.82
7) 590-66-9	Cyclohexane, 1,1-dimethyl-	3.663	407.90

Concentration Units: Water: UG/L Soil: UG/KG

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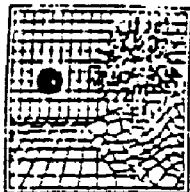
VOLATILES GC/MS pH LOG

CASE 25601

SDG# BSE22

AATS/SWLO ID	EPA SAMPLE ID	pH	ANALYST	DATE TESTED
30388.01	BSE22	6	ALZ	8/08/97
.02	BSE23	6	↓	↓
.03	BSE26	7		
.09	BSE39	6		
.10	BSE41	6		

COMMENTS: _____



VOLATILES GC/MS pH LOG

CASE 25601

SDG# BSE22

AATS/SWLO ID	EPA SAMPLE ID	pH	ANALYST	DATE TESTED
30412.08	BSE42	42	JD	8/08/97

COMMENTS: _____

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE22

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.01

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C25381.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/08/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethylene	10	U
124-48-1	Dibromochloroethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (Total)	10	U

FORM I VOA

OLM03.0

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE22

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.01

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C25381.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/08/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	14.356	6	J
2.	Naphthalene, methyl-	19.019	140	J
3.	Naphthalene, methyl-	19.212	56	J
4.	Naphthalene, ethenyl-	19.769	17	J
5.	Naphthalene, -ethyl-	19.971	9	J
6.	Naphthalene, dimethyl-	20.086	12	J
7.	Naphthalene, dimethyl-	20.259	13	J
8.				
9.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE23

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water)-WATER

Lab Sample ID: 30388.02

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C25382.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/08/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (Total)	10	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE23

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.02

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C25382.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/08/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Naphthalene, methyl-	19.018	52	J
2.	Naphthalene, methyl-	19.201	23	J
3.	Naphthalene, ethenyl-	19.767	13	J
4.	Naphthalene, dimethyl-	20.075	8	J
5.	Naphthalene, dimethyl-	20.267	10	J
6.				
7.				
8.				
9.				
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE26

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.03

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: C25385.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/08/97.

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
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9.				
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE27

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30388.04
 Sample wt/vol: 5.0 (g/mL) G Lab File ID: C25242.D
 Level: (low/med) LOW Date Received: 07/31/97
 % Moisture: not dec. 52 Date Analyzed: 08/04/97
 GC Column: DB-624 ID: 0.53 (mm) Dilution Factor: 1.0
 Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE28

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.05

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L26997.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 48

Date Analyzed: 08/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-18-3	Dimethyl sulfide	6.214	23	NJ
2.	UNKNOWN	15.391	10	J
3.	UNKNOWN	16.954	13	J
4.	UNKNOWN HYDROCARBON	17.080	12	J
5.	UNKNOWN	17.970	20	J
6.	UNKNOWN HYDROCARBON	18.124	140	J
7.				
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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE29

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.01

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27088.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 32

Date Analyzed: 08/06/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	17.129	45	J
2.				
3.				
4.				
5.				
6.				
7.				
8.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE31

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.06

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: C25243.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 59

Date Analyzed: 08/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	24	U
74-83-9	Bromomethane	24	U
75-01-4	Vinyl Chloride	24	U
75-00-3	Chloroethane	24	U
75-09-2	Methylene Chloride	24	U
67-64-1	Acetone	81	U
75-15-0	Carbon Disulfide	24	U
75-35-4	1,1-Dichloroethene	24	U
75-34-3	1,1-Dichloroethane	24	U
540-59-0	1,2-Dichloroethene (total)	24	U
67-66-3	Chloroform	24	U
107-06-2	1,2-Dichloroethane	24	U
78-93-3	2-Butanone	24	U
71-55-6	1,1,1-Trichloroethane	24	U
56-23-5	Carbon Tetrachloride	24	U
75-27-4	Bromodichloromethane	24	U
78-87-5	1,2-Dichloropropane	24	U
10061-01-5	cis-1,3-Dichloropropene	24	U
79-01-6	Trichloroethene	24	U
124-48-1	Dibromochloromethane	24	U
79-00-5	1,1,2-Trichloroethane	24	U
71-43-2	Benzene	24	U
10061-02-6	trans-1,3-Dichloropropene	24	U
75-25-2	Bromoform	24	U
108-10-1	4-Methyl-2-Pentanone	24	U
591-78-6	2-Hexanone	24	U
127-18-4	Tetrachloroethene	24	U
79-34-5	1,1,2,2-Tetrachloroethane	24	U
108-88-3	Toluene	24	U
108-90-7	Chlorobenzene	24	U
100-41-4	Ethylbenzene	24	U
100-42-5	Styrene	24	U
1330-20-7	Xylene (Total)	24	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE31

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.06

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: C25243.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 59

Date Analyzed: 08/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
4.				
5.				
6.				
7.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE32

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.03

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27058.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 24

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	13	U
67-64-1	Acetone	130	U
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	13	U
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	41	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (Total)	13	U

J

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE32

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.03

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27058.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 24

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 2

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	16.086	800	J
2.	UNKNOWN	16.520	7	J
3.				
4.				
5.				
6.				
7.				
8.				
9.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE33

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.04

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27059.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. **(77)**

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	43	U
74-83-9	Bromomethane	43	U
75-01-4	Vinyl Chloride	43	U
75-00-3	Chloroethane	43	U
75-09-2	Methylene Chloride	43	U
67-64-1	Acetone	43	U
75-15-0	Carbon Disulfide	43	U
75-35-4	1,1-Dichloroethene	43	U
75-34-3	1,1-Dichloroethane	43	U
540-59-0	1,2-Dichloroethene (total)	43	U
67-66-3	Chloroform	43	U
107-06-2	1,2-Dichloroethane	43	U
78-93-3	2-Butanone	43	U
71-55-6	1,1,1-Trichloroethane	43	U
56-23-5	Carbon Tetrachloride	43	U
75-27-4	Bromodichloromethane	43	U
78-87-5	1,2-Dichloropropane	43	U
10061-01-5	cis-1,3-Dichloropropene	43	U
79-01-6	Trichloroethene	43	U
124-48-1	Dibromochloromethane	43	U
79-00-5	1,1,2-Trichloroethane	43	U
71-43-2	Benzene	43	U
10061-02-6	trans-1,3-Dichloropropene	43	U
75-25-2	Bromoform	43	U
108-10-1	4-Methyl-2-Pentanone	43	U
591-78-6	2-Hexanone	43	U
127-18-4	Tetrachloroethene	43	U
79-34-5	1,1,2,2-Tetrachloroethane	43	U
108-88-3	Toluene	43	U
108-90-7	Chlorobenzene	43	U
100-41-4	Ethylbenzene	43	U
100-42-5	Styrene	43	U
1330-20-7	Xylene (Total)	43	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE33

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.04

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27059.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 77

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	15.812	250	J
2.				
3.				
4.				
5.				
6.				
7.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE34

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.05

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27060.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 90

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	100	U
74-83-9	Bromomethane	100	U
75-01-4	Vinyl Chloride	100	U
75-00-3	Chloroethane	100	U
75-09-2	Methylene Chloride	10	J
67-64-1	Acetone	660	U
75-15-0	Carbon Disulfide	19	J
75-35-4	1,1-Dichloroethene	100	U
75-34-3	1,1-Dichloroethane	100	U
540-59-0	1,2-Dichloroethene (total)	100	U
67-66-3	Chloroform	100	U
107-06-2	1,2-Dichloroethane	100	U
78-93-3	2-Butanone	200	U
71-55-6	1,1,1-Trichloroethane	100	P
56-23-5	Carbon Tetrachloride	100	U
75-27-4	Bromodichloromethane	100	U
78-87-5	1,2-Dichloropropane	100	U
10061-01-5	cis-1,3-Dichloropropene	100	U
79-01-6	Trichloroethene	100	U
124-48-1	Dibromochloromethane	100	U
79-00-5	1,1,2-Trichloroethane	100	U
71-43-2	Benzene	100	U
10061-02-6	trans-1,3-Dichloropropene	100	U
75-25-2	Bromoform	100	U
108-10-1	4-Methyl-2-Pentanone	100	U
591-78-6	2-Hexanone	100	U
127-18-4	Tetrachloroethene	100	U
79-34-5	1,1,2,2-Tetrachloroethane	100	U
108-88-3	Toluene	100	U
108-90-7	Chlorobenzene	140	U
100-41-4	Ethylbenzene	100	U
100-42-5	Styrene	100	U
1330-20-7	Xylene (Total)	100	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE34

ab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.05

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27060.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 90

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 4

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	15.735	91	J
2.	UNKNOWN	15.928	180	J
3.	UNKNOWN ALKYL BENZENE	17.085	58	J
4.	UNKNOWN ALKYL BENZENE	17.356	92	J
5.				
6.				
7.				
8.				
9.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE35

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.06

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27062.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 88

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	83	P ↓
74-83-9	Bromomethane	83	
75-01-4	Vinyl Chloride	83	
75-00-3	Chloroethane	83	
75-09-2	Methylene Chloride	8	
67-64-1	Acetone	230	
75-15-0	Carbon Disulfide	83	
75-35-4	1,1-Dichloroethene	83	
75-34-3	1,1-Dichloroethane	83	
540-59-0	1,2-Dichloroethene (total)	83	
67-66-3	Chloroform	83	
107-06-2	1,2-Dichloroethane	83	
78-93-3	2-Butanone	83	
71-55-6	1,1,1-Trichloroethane	83	
56-23-5	Carbon Tetrachloride	83	
75-27-4	Bromodichloromethane	83	
78-87-5	1,2-Dichloropropane	83	
10061-01-5	cis-1,3-Dichloropropene	83	
79-01-6	Trichloroethene	83	
124-48-1	Dibromochloromethane	83	
79-00-5	1,1,2-Trichloroethane	83	
71-43-2	Benzene	83	
10061-02-6	trans-1,3-Dichloropropene	83	
75-25-2	Bromoform	83	
108-10-1	4-Methyl-2-Pentanone	83	
591-78-6	2-Hexanone	83	
127-18-4	Tetrachloroethene	83	
79-34-5	1,1,2,2-Tetrachloroethane	12	
108-88-3	Toluene	83	
108-90-7	Chlorobenzene	83	
100-41-4	Ethylbenzene	83	
100-42-5	Styrene	83	
1330-20-7	Xylene (Total)	83	

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE35

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.06

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27062.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 88

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 3

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN HYDROCARBON	16.039	69	J
2.	UNKNOWN HYDROCARBON	16.155	130	J
3.	UNKNOWN	17.137	100	J
4.				
5.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE36RE

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.07RA

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27090.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 60

Date Analyzed: 08/06/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	25	U
74-83-9	Bromomethane	25	U
75-01-4	Vinyl Chloride	25	U
75-00-3	Chloroethane	25	U
75-09-2	Methylene Chloride	25	U
67-64-1	Acetone	29	U
75-15-0	Carbon Disulfide	25	U
75-35-4	1,1-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
540-59-0	1,2-Dichloroethene (total)	25	U
67-66-3	Chloroform	25	U
107-06-2	1,2-Dichloroethane	25	U
78-93-3	2-Butanone	25	U
71-55-6	1,1,1-Trichloroethane	25	U
56-23-5	Carbon Tetrachloride	25	U
75-27-4	Bromodichloromethane	25	U
78-87-5	1,2-Dichloropropane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
79-01-6	Trichloroethene	25	U
124-48-1	Dibromochloromethane	25	U
79-00-5	1,1,2-Trichloroethane	25	U
71-43-2	Benzene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
75-25-2	Bromoform	25	U
108-10-1	4-Methyl-2-Pentanone	25	U
591-78-6	2-Hexanone	25	U
127-18-4	Tetrachloroethene	25	U
79-34-5	1,1,2,2-Tetrachloroethane	25	U
108-88-3	Toluene	25	U
108-90-7	Chlorobenzene	25	U
100-41-4	Ethylbenzene	25	U
100-42-5	Styrene	25	U
1330-20-7	Xylene (Total)	25	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE36RE

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.07RA

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27090.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 60

Date Analyzed: 08/06/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 75-18-3	Dimethyl sulfide	6.166	18	NJ
2.	Cyclotrisiloxane	12.482	14	J
3.	Cyclotetrasiloxane	15.122	20	J
4.	UNKNOWN	16.620	15	J
5.	UNKNOWN	17.130	43	J
6.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE37

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.07

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: C25247.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 40

Date Analyzed: 08/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG Q

74-87-3	-----Chloromethane	17	U
74-83-9	-----Bromomethane	17	U
75-01-4	-----Vinyl Chloride	17	U
75-00-3	-----Chloroethane	17	U
75-09-2	-----Methylene Chloride	17	U
67-64-1	-----Acetone	17	U
75-15-0	-----Carbon Disulfide	17	U
75-35-4	-----1,1-Dichloroethene	17	U
75-34-3	-----1,1-Dichloroethane	17	U
540-59-0	-----1,2-Dichloroethene (total)	17	U
67-66-3	-----Chloroform	17	U
107-06-2	-----1,2-Dichloroethane	17	U
78-93-3	-----2-Butanone	17	U
71-55-6	-----1,1,1-Trichloroethane	17	U
56-23-5	-----Carbon Tetrachloride	17	U
75-27-4	-----Bromodichloromethane	17	U
78-87-5	-----1,2-Dichloropropane	17	U
10061-01-5	-----cis-1,3-Dichloropropene	17	U
79-01-6	-----Trichloroethene	17	U
124-48-1	-----Dibromochloromethane	17	U
79-00-5	-----1,1,2-Trichloroethane	17	U
71-43-2	-----Benzene	17	U
10061-02-6	-----trans-1,3-Dichloropropene	17	U
75-25-2	-----Bromoform	17	U
108-10-1	-----4-Methyl-2-Pentanone	17	U
591-78-6	-----2-Hexanone	17	U
127-18-4	-----Tetrachloroethene	17	U
79-34-5	-----1,1,2,2-Tetrachloroethane	17	U
108-88-3	-----Toluene	17	U
108-90-7	-----Chlorobenzene	17	U
100-41-4	-----Ethylbenzene	17	U
100-42-5	-----Styrene	17	U
1330-20-7	-----Xylene (Total)	17	U

FORM I VOA

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE38

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.08

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: C25245.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 53

Date Analyzed: 08/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

74-87-3-----	Chloromethane	21	U
74-83-9-----	Bromomethane	21	U
75-01-4-----	Vinyl Chloride	21	U
75-00-3-----	Chloroethane	21	U
75-09-2-----	Methylene Chloride	21	U
67-64-1-----	Acetone	21	U
75-15-0-----	Carbon Disulfide	21	U
75-35-4-----	1,1-Dichloroethene	21	U
75-34-3-----	1,1-Dichloroethane	21	U
540-59-0-----	1,2-Dichloroethene (total)	21	U
67-66-3-----	Chloroform	21	U
107-06-2-----	1,2-Dichloroethane	21	U
78-93-3-----	2-Butanone	21	U
71-55-6-----	1,1,1-Trichloroethane	21	U
56-23-5-----	Carbon Tetrachloride	21	U
75-27-4-----	Bromodichloromethane	21	U
78-87-5-----	1,2-Dichloropropane	21	U
10061-01-5-----	cis-1,3-Dichloropropene	21	U
79-01-6-----	Trichloroethene	21	U
124-48-1-----	Dibromochloromethane	21	U
79-00-5-----	1,1,2-Trichloroethane	21	U
71-43-2-----	Benzene	21	U
10061-02-6-----	trans-1,3-Dichloropropene	21	U
75-25-2-----	Bromoform	21	U
108-10-1-----	4-Methyl-2-Pentanone	21	U
591-78-6-----	2-Hexanone	21	U
127-18-4-----	Tetrachloroethene	21	U
79-34-5-----	1,1,2,2-Tetrachloroethane	21	U
108-88-3-----	Toluene	21	U
108-90-7-----	Chlorobenzene	21	U
100-41-4-----	Ethylbenzene	21	U
100-42-5-----	Styrene	21	U
1330-20-7-----	Xylene (Total)	21	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE38

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.08

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: C25245.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 53

Date Analyzed: 08/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	12.640	52	J
2.	UNKNOWN	12.668	47	J
3.	Cyclotetrasiloxane	14.827	1600	J
4.	UNKNOWN	16.650	2200	J
5.	UNKNOWN	18.463	98	J
6.				
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FORM I VOA-TIC

OLM03.0

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE39 *TB*

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.09

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: L26952.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/01/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	3	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	2	J
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (Total)	10	U

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE39

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.09

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: L26952.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/01/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
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FORM I VOA-TIC

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE41 *FB*

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.10

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: L26953.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/01/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	3	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	3	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (Total)	10	U

FORM I VOA

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE41

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.10

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: L26953.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. _____

Date Analyzed: 08/01/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1.				
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FORM I VOA-TIC

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE42 **FB**

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab-Sample ID: 30412.08

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: L27146.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. _____

Date Analyzed: 08/08/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (Total)	10	U

FORM I VOA

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE42

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30412.08

Sample wt/vol: 5.0 (g/mL) ML

Lab File ID: L27146.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. _____

Date Analyzed: 08/08/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.				
2.				
3.				
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30.				

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE43RE

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.11RA

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27050.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 21

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	13	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	13	U
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	7	J
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (Total)	13	U

FORM I VOA

OLM03.0

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1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE43RE

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.11RA

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27050.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: not dec. 21

Date Analyzed: 08/05/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Cyclotetrasiloxane	15.152	44	J
2.	UNKNOWN	17.178	110	J
3.				
4.				
5.				
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FORM I VOA-TIC

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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE44RE

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.09RA

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27091.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 21

Date Analyzed: 08/06/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

74-87-3	Chloromethane	13	U
74-83-9	Bromomethane	13	U
75-01-4	Vinyl Chloride	13	U
75-00-3	Chloroethane	13	U
75-09-2	Methylene Chloride	13	U
67-64-1	Acetone	13	U
75-15-0	Carbon Disulfide	13	U
75-35-4	1,1-Dichloroethene	13	U
75-34-3	1,1-Dichloroethane	13	U
540-59-0	1,2-Dichloroethene (total)	13	U
67-66-3	Chloroform	13	U
107-06-2	1,2-Dichloroethane	13	U
78-93-3	2-Butanone	13	U
71-55-6	1,1,1-Trichloroethane	13	U
56-23-5	Carbon Tetrachloride	13	U
75-27-4	Bromodichloromethane	13	U
78-87-5	1,2-Dichloropropane	13	U
10061-01-5	cis-1,3-Dichloropropene	13	U
79-01-6	Trichloroethene	13	U
124-48-1	Dibromochloromethane	13	U
79-00-5	1,1,2-Trichloroethane	13	U
71-43-2	Benzene	13	U
10061-02-6	trans-1,3-Dichloropropene	13	U
75-25-2	Bromoform	13	U
108-10-1	4-Methyl-2-Pentanone	13	U
591-78-6	2-Hexanone	13	U
127-18-4	Tetrachloroethene	13	U
79-34-5	1,1,2,2-Tetrachloroethane	13	U
108-88-3	Toluene	13	U
108-90-7	Chlorobenzene	13	U
100-41-4	Ethylbenzene	13	U
100-42-5	Styrene	13	U
1330-20-7	Xylene (Total)	13	U

FORM I VOA

OLM03.0

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TIERRA-A-018068

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE44RE

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.09RA ---

Sample wt/vol: 5.0 (g/mL) G

Lab File ID: L27091.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: not dec. 21

Date Analyzed: 08/06/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Cyclotetrasiloxane	15.124	32	J
2.	UNKNOWN	17.122	100	J
3.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE22

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.01

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22951.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene		U
106-46-7	1,4-Dichlorobenzene		U
95-50-1	1,2-Dichlorobenzene		U
95-48-7	2-Methylphenol		U
108-60-1	2,2'-oxybis(1-Chloropropane)		U
106-44-5	4-Methylphenol		U
621-64-7	N-Nitroso-di-n-propylamine		U
67-72-1	Hexachloroethane		U
98-95-3	Nitrobenzene		U
78-59-1	Isophorone		U
88-75-5	2-Nitrophenol		U
105-67-9	2,4-Dimethylphenol		U
111-91-1	bis(2-Chloroethoxy)methane		U
120-83-2	2,4-Dichlorophenol		U
120-82-1	1,2,4-Trichlorobenzene		U
91-20-3	Naphthalene		U
106-47-8	4-Chloroaniline		U
87-68-3	Hexachlorobutadiene		U
59-50-7	4-Chloro-3-Methylphenol		U
91-57-6	2-Methylnaphthalene		U
77-47-4	Hexachlorocyclopentadiene		U
88-06-2	2,4,6-Trichlorophenol		U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

FORM I SV-1

OLM03.0

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TIERRA-A-018070

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE22

b Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) WATER Lab Sample ID: 30388.01
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: T22951.D
 Level: (low/med) LOW Date Received: 07/31/97
 % Moisture: _____ decanted: (Y/N) _____ Date Extracted: 08/01/97
 Concentrated Extract Volume: 1000(uL) Date Analyzed: 08/05/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: 8.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	2	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	3	U
129-00-0	Pyrene	3	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	1	U
218-01-9	Chrysene	2	U
117-81-7	bis(2-Ethylhexyl)phthalate	3	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	2	U
207-08-9	Benzo(k)fluoranthene	1	U
50-32-8	Benzo(a)pyrene	1	U
193-39-5	Indeno(1,2,3-cd)pyrene	0.6	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE22

Contract: 68-D5-0026

b Name: SWL-TULSA

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.01

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22951.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 29

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.139	3	NJA
2.	UNKNOWN	3.235	6	J
3.	UNKNOWN	3.740	2	J
4.	UNKNOWN	4.148	7	J
5. 3658-80-8	Trisulfide, dimethyl	4.351	3	NJ
6.	UNKNOWN	4.974	2	J
7. 5756-24-1	Dimethyl tetrasulphide	6.165	4	NJ
8.	UNKNOWN	6.616	2	J
9.	UNKNOWN	8.537	3	J
10.	UNKNOWN	8.602	10	J
11. 143-07-7	Dodecanoic acid	8.774	3	NJ
12.	UNKNOWN	9.782	2	J
13. 5325-97-3	Phenanthrene, 1,2,3,4,5,6,7,	10.137	9	NJ
14. 544-63-8	Tetradecanoic acid	10.523	26	NJ
15. 10544-50-0	Sulfur, mol. (S8)	11.070	3	NJ
16.	UNKNOWN KETONE	11.671	3	J
17.	Tetradecanol	11.768	6	J
18.	UNKNOWN ORGANIC ACID	12.036	2	J
19. 57-10-3	Hexadecanoic acid	12.294	240	NJ
20. 10544-50-0	Sulfur, mol. (S8)	13.185	37	NJ
21. 112-80-1	Oleic Acid	13.636	64	NJ
22. 57-11-4	Octadecanoic acid	13.743	46	NJ
23.	UNKNOWN ORGANIC ACID	15.031	3	J
24. 57-10-3	Hexadecanoic acid	15.127	4	NJ
25.	UNKNOWN	15.224	4	J
26. 112-88-9	1-Octadecene	18.229	6	NJ
27.	UNKNOWN	19.603	4	J
28.	UNKNOWN	19.893	6	J
29.	UNKNOWN PAH	21.288	8	J
30.				

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE23

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.02

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22952.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	0.8	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

FORM I SV-1

OLM03.0

734

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE23

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22

Matrix: (soil/water) WATER Lab Sample ID: 30388.02

Sample wt/vol: 1000 (g/mL) ML Lab File ID: T22952.D

Level: (low/med) LOW Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____ Date Extracted: 08/01/97

Concentrated Extract Volume: 1000(uL) Date Analyzed: 08/05/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO. COMPOUND UG/L Q

51-28-5-----	2,4-Dinitrophenol	25	CC
100-02-7-----	4-Nitrophenol	25	
132-64-9-----	Dibenzofuran	10	
121-14-2-----	2,4-Dinitrotoluene	10	
84-66-2-----	Diethylphthalate	10	
7005-72-3-----	4-Chlorophenyl-phenylether	10	
86-73-7-----	Fluorene	10	
100-01-6-----	4-Nitroaniline	25	
534-52-1-----	4,6-Dinitro-2-methylphenol	25	
86-30-6-----	N-Nitrosodiphenylamine (1)	10	
101-55-3-----	4-Bromophenyl-phenylether	10	
118-74-1-----	Hexachlorobenzene	10	
87-86-5-----	Pentachlorophenol	25	
85-01-8-----	Phenanthrene	1	
120-12-7-----	Anthracene	10	
86-74-8-----	Carbazole	10	
84-74-2-----	Di-n-butylphthalate	10	
206-44-0-----	Fluoranthene	2	
129-00-0-----	Pyrene	3	
85-68-7-----	Butylbenzylphthalate	1	
91-94-1-----	3,3'-Dichlorobenzidine	10	
56-55-3-----	Benzo(a)anthracene	1	
218-01-9-----	Chrysene	2	
117-81-7-----	bis(2-Ethylhexyl)phthalate	3	
117-84-0-----	Di-n-octylphthalate	10	
205-99-2-----	Benzo(b)fluoranthene	2	
207-08-9-----	Benzo(k)fluoranthene	2	
50-32-8-----	Benzo(a)pyrene	1	
193-39-5-----	Indeno(1,2,3-cd)pyrene	0.8	
53-70-3-----	Dibenz(a,h)anthracene	10	
191-24-2-----	Benzo(g,h,i)perylene	0.9	

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE23

Lab Name: SWL-TULSA	Contract: 68-D5-0026
Lab Code: SWOK	Case No.: 25601 SAS No.: SDG No.: BSE22
Matrix: (soil/water) WATER	Lab Sample ID: 30388.02
Sample wt/vol: 1000 (g/mL) ML	Lab File ID: T22952.D
Level: (low/med) LOW	Date Received: 07/31/97
% Moisture: _____ decanted: (Y/N) _____	Date Extracted: 08/01/97
Concentrated Extract Volume: 1000(uL)	Date Analyzed: 08/05/97
Injection Volume: 2.0(uL)	Dilution Factor: 1.0
GPC Cleanup: (Y/N) N pH: 7.2	

Number TICs found: 34

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN ALKENE	3.039	370	J
2.	Furaldehyde	3.103	6	J
3. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.168	4	NJA
4.	UNKNOWN	3.264	12	J
5.	UNKNOWN	-3.994	4	JB
6.	UNKNOWN	-4.027	2	JB
7.	Propene, -trichloro-	4.155	9	J
8.	UNKNOWN	4.348	9	J
9.	UNKNOWN	4.585	3	J
10.	UNKNOWN	4.735	2	J
11.	UNKNOWN	4.971	4	J
12.	UNKNOWN	5.046	3	J
13. 65-85-0	Benzoic Acid	5.722	2	NJ
14.	UNKNOWN	6.109	3	J
15. 5756-24-1	Dimethyl tetrasulphide	6.162	3	NJ
16.	UNKNOWN	6.613	3	J
17.	UNKNOWN	7.182	2	J
18.	UNKNOWN	7.386	2	J
19. 101660-61-	Geranyl nitrile	7.676	4	NJ
20.	Heptanone, -diethyl-tetrame	8.406	2	J
21.	UNKNOWN	8.599	4	J
22.	UNKNOWN	9.060	2	J
23.	UNKNOWN ORGANIC ACID	9.146	3	J
24. 544-63-8	Tetradecanoic acid	10.509	4	NJ
25.	UNKNOWN	11.132	3	J
26.	UNKNOWN KETONE	11.196	2	J
27.	UNKNOWN ORGANIC ACID	12.033	3	J
28. 57-10-3	Hexadecanoic acid	12.184	17	NJ
29. 10544-50-0	Sulfur, mol. (S8)	13.150	12	NJ
30. 112-80-1	Oleic Acid	13.557	19	NJ

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE23

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.02

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22952.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 34

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 57-11-4	Octadecanoic acid	13.718	10	NJ
2. 3234-85-3	Tetradecanoic acid, tetradec	18.795	60	NJ
3.	UNKNOWN	19.611	6	J
4.	UNKNOWN ORGANIC ACID	21.318	7	J
5.				
6.				
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

BSE26

Extract: 68-D5-0026

Lab Name: SWL-TULSA

CAS No.:

SDG No.: BSE22

Lab Code: SWOK

Case No.: 25601

Lab Sample ID: 30388.03

Matrix: (soil/water) WATER

Lab File ID: T22950.D

Sample wt/vol: 1000 (g/mL)

Date Received: 07/31/97

Level: (low/med) LOW

Date Extracted: 08/01/97

% Moisture: _____ decanted: (Y/N)

Date Analyzed: 08/05/97

Concentrated Extract Volume: 100

Dilution Factor: 1.0

Injection Volume: 2.0(uL)

GPC Cleanup: (Y/N) N

CONVERSION UNITS:
(ug/Kg) UG/L

CAS NO. COMPOUND

CAS NO.	COMPOUND	CONCENTRATION (UG/L)	STATUS
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloro	10	U
95-57-8	2-Chlorophen	10	U
541-73-1	1,3-Dichloro	10	U
106-46-7	1,4-Dichloro	10	U
95-50-1	1,2-Dichloro	10	U
95-48-7	2-Methylphen	10	U
108-60-1	2,2'-oxybis(10	U
106-44-5	4-Methylphen	10	U
621-64-7	N-Nitroso-d	10	U
67-72-1	Hexachloroet	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophen	10	U
105-67-9	2,4-Dimethyl	10	U
111-91-1	bis(2-Chloro	10	U
120-83-2	2,4-Dichloro	10	U
120-82-1	1,2,4-Trich	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroani	10	U
87-68-3	Hexachlorob	10	U
59-50-7	4-Chloro-3-	10	U
91-57-6	2-Methylnaph	10	U
77-47-4	Hexachloroc	10	U
88-06-2	2,4,6-Trich	25	U
95-95-4	2,4,5-Trich	10	U
91-58-7	2-Chloronaph	25	U
88-74-4	2-Nitroanil	10	U
131-11-3	Dimethylpht	10	U
208-96-8	Acenaphthyl	10	U
606-20-2	2,6-Dinitro	25	U
99-09-2	3-Nitroanil	10	U
83-32-9	Acenaphthen		

FORM SV-1

OLM03.0

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE26

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) WATER Lab Sample ID: 30388.03
 Sample wt/vol: 1000 (g/mL) ML Lab File ID: T22950.D
 Level: (low/med) LOW Date Received: 07/31/97
 % Moisture: _____ decanted: (Y/N) _____ Date Extracted: 08/01/97
 Concentrated Extract Volume: 1000(uL) Date Analyzed: 08/05/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) N pH: 7.8

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	
100-02-7	4-Nitrophenol	25	
132-64-9	Dibenzofuran	10	
121-14-2	2,4-Dinitrotoluene	10	
84-66-2	Diethylphthalate	10	
7005-72-3	4-Chlorophenyl-phenylether	10	
86-73-7	Fluorene	10	
100-01-6	4-Nitroaniline	25	
534-52-1	4,6-Dinitro-2-methylphenol	25	
86-30-6	N-Nitrosodiphenylamine (1)	10	
101-55-3	4-Bromophenyl-phenylether	10	
118-74-1	Hexachlorobenzene	10	
87-86-5	Pentachlorophenol	25	
85-01-8	Phenanthrene	10	
120-12-7	Anthracene	10	
86-74-8	Carbazole	10	
84-74-2	Di-n-butylphthalate	10	
206-44-0	Fluoranthene	0.9	
129-00-0	Pyrene	0.8	
85-68-7	Butylbenzylphthalate	10	
91-94-1	3,3'-Dichlorobenzidine	10	
56-55-3	Benzo(a)anthracene	10	
218-01-9	Chrysene	10	
117-81-7	bis(2-Ethylhexyl)phthalate	1	
117-84-0	Di-n-octylphthalate	10	
205-99-2	Benzo(b)fluoranthene	10	
207-08-9	Benzo(k)fluoranthene	10	
50-32-8	Benzo(a)pyrene	10	
193-39-5	Indeno(1,2,3-cd)pyrene	10	
53-70-3	Dibenz(a,h)anthracene	10	
191-24-2	Benzo(g,h,i)perylene	10	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE26

Contract: 68-D5-0026

Lab Name: SWL-TULSA

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.03

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22950.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 14

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.019	270	J
2.	UNKNOWN	3.245	2	J
3.	UNKNOWN	3.996	5	JB
4.	UNKNOWN	4.114	4	JB
5.	UNKNOWN	4.146	10	JB
6.	UNKNOWN	4.361	5	J
7.	UNKNOWN ORGANIC ACID	9.137	3	J
8.	UNKNOWN	9.770	2	J
9.	57-10-3 Hexadecanoic acid	12.164	17	NJ
10.	10544-50-0 Sulfur, mol. (S8)	13.130	5	NJ
11.	301-00-8 9,12,15-Octadecatrienoic aci	13.570	14	NJ
12.	57-11-4 Octadecanoic acid	13.699	6	NJ
13.	UNKNOWN ORGANIC ACID	18.775	2	J
14.	UNKNOWN	19.881	2	J
15.				
16.				
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808

61003.0

1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE27

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30388.04
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: V18355.D
 Level: (low/med) LOW Date Received: 07/31/97
 % Moisture: 52 decanted: (Y/N) N Date Extracted: 08/01/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/06/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	690	U
111-44-4	bis(2-Chloroethyl)Ether	690	U
95-57-8	2-Chlorophenol	690	U
541-73-1	1,3-Dichlorobenzene	690	U
106-46-7	1,4-Dichlorobenzene	690	U
95-50-1	1,2-Dichlorobenzene	690	U
95-48-7	2-Methylphenol	690	U
108-60-1	2,2'-oxybis(1-Chloropropane)	690	U
106-44-5	4-Methylphenol	690	U
621-64-7	N-Nitroso-di-n-propylamine	690	U
67-72-1	Hexachloroethane	690	U
98-95-3	Nitrobenzene	690	U
78-59-1	Isophorone	690	U
88-75-5	2-Nitrophenol	690	U
105-67-9	2,4-Dimethylphenol	690	U
111-91-1	bis(2-Chloroethoxy)methane	690	U
120-83-2	2,4-Dichlorophenol	690	U
120-82-1	1,2,4-Trichlorobenzene	690	U
91-20-3	Naphthalene	690	U
106-47-8	4-Chloroaniline	690	U
87-68-3	Hexachlorobutadiene	690	U
59-50-7	4-Chloro-3-Methylphenol	690	U
91-57-6	2-Methylnaphthalene	42	U
77-47-4	Hexachlorocyclopentadiene	690	U
88-06-2	2,4,6-Trichlorophenol	690	U
95-95-4	2,4,5-Trichlorophenol	1700	U
91-58-7	2-Chloronaphthalene	690	U
88-74-4	2-Nitroaniline	1700	U
131-11-3	Dimethylphthalate	690	U
208-96-8	Acenaphthylene	690	U
606-20-2	2,6-Dinitrotoluene	690	U
99-09-2	3-Nitroaniline	1700	U
83-32-9	Acenaphthene	85	U

FORM I SV-1

OLM03.0

p.254

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE27

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30388.04
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: V18355.D
 Level: (low/med) LOW Date Received: 07/31/97
 % Moisture: 52 decanted: (Y/N) N Date Extracted: 08/01/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/06/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	UG/KG	Q
51-28-5	2,4-Dinitrophenol	1700	U
100-02-7	4-Nitrophenol	1700	U
132-64-9	Dibenzofuran	690	U
121-14-2	2,4-Dinitrotoluene	690	U
84-66-2	Diethylphthalate	690	U
7005-72-3	4-Chlorophenyl-phenylether	690	U
86-73-7	Fluorene	92	J
100-01-6	4-Nitroaniline	1700	U
534-52-1	4,6-Dinitro-2-methylphenol	1700	U
86-30-6	N-Nitrosodiphenylamine (1)	690	U
101-55-3	4-Bromophenyl-phenylether	690	U
118-74-1	Hexachlorobenzene	690	U
87-86-5	Pentachlorophenol	1700	U
85-01-8	Phenanthrene	1200	U
120-12-7	Anthracene	250	U
86-74-8	Carbazole	150	U
84-74-2	Di-n-butylphthalate	700	U
206-44-0	Fluoranthene	200	U
129-00-0	Pyrene	250	U
85-68-7	Butylbenzylphthalate	0	U
91-94-1	3,3'-Dichlorobenzidine	0	U
56-55-3	Benzo(a)anthracene	1	U
218-01-9	Chrysene	1	U
117-81-7	bis(2-Ethylhexyl)phthalate	0	U
117-84-0	Di-n-octylphthalate	990	U
205-99-2	Benzo(b)fluoranthene	1000	U
207-08-9	Benzo(k)fluoranthene	930	U
50-32-8	Benzo(a)pyrene	1000	U
193-39-5	Indeno(1,2,3-cd)pyrene	780	U
53-70-3	Dibenz(a,h)anthracene	250	U
191-24-2	Benzo(g,h,i)perylene	880	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

p. 255

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE27

Contract: 68-D5-0026

b Name: SWL-TULSA

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.04

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18355.D

Level: (lqw/med) LOW

Date Received: 07/31/97

% Moisture: 52 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.1

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.762	37000	J
2. 141-79-7	3-Penten-2-one, 4-methyl-	2.794	1700	NJAB R
3.	UNKNOWN ALCOHOL	2.859	1000	JB R
4.	UNKNOWN	2.956	38000	J
5. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.052	1100	NJAB R
6.	UNKNOWN	3.924	780	J
7.	UNKNOWN	4.333	750	J
8. 464-48-2	Bicyclo[2.2.1]heptan-2-one,	4.990	1400	NJ
9.	UNKNOWN	7.971	480	J
10.	UNKNOWN PAH	11.447	420	J
11.	Heptadecanol	12.383	1100	J
12. 10544-50-0	Sulfur, mol. (S8)	12.523	1800	NJ
13.	Benzo[]naphtho[]furan	13.158	550	J
14.	11H-Benzo[]fluorene	13.697	650	J
15.	Pyrene, methyl-	13.890	440	J
16.	UNKNOWN AMIDE	14.450	6100	J
17.	Hexanedioic acid,	14.622	1700	J
18.	UNKNOWN PAH	16.193	480	J
19. 192-97-2	Benzo[e]pyrene	17.851	640	NJ
20.	Unknown	18.400	420	J
21.	UNKNOWN	18.938	390	J
22.	UNKNOWN	19.153	740	J
23.	UNKNOWN	19.336	400	J
24.	UNKNOWN	19.444	470	J
25.	UNKNOWN	19.896	460	J
26.	UNKNOWN	19.950	590	J
27.	UNKNOWN	20.294	650	J
28.	UNKNOWN	20.348	390	J
29.	UNKNOWN	20.520	420	J
30.	UNKNOWN PAH	20.692	2700	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE27

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.04

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18355.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 52 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.1

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	Unknown	20.778	490	J
2.	UNKNOWN PAH	21.316	430	J
3.	UNKNOWN	21.532	600	J
4.	UNKNOWN	21.596	410	J
5.	UNKNOWN	22.027	870	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE28

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.05

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18356.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 48 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	630	U
111-44-4-----	bis(2-Chloroethyl)Ether	630	U
95-57-8-----	2-Chlorophenol	630	U
541-73-1-----	1,3-Dichlorobenzene	630	U
106-46-7-----	1,4-Dichlorobenzene	630	U
95-50-1-----	1,2-Dichlorobenzene	630	U
95-48-7-----	2-Methylphenol	630	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	630	U
106-44-5-----	4-Methylphenol	630	U
621-64-7-----	N-Nitroso-di-n-propylamine	630	U
67-72-1-----	Hexachloroethane	630	U
98-95-3-----	Nitrobenzene	630	U
78-59-1-----	Isophorone	630	U
88-75-5-----	2-Nitrophenol	630	U
105-67-9-----	2,4-Dimethylphenol	630	U
111-91-1-----	bis(2-Chloroethoxy)methane	630	U
120-83-2-----	2,4-Dichlorophenol	630	U
120-82-1-----	1,2,4-Trichlorobenzene	630	U
91-20-3-----	Naphthalene	630	U
106-47-8-----	4-Chloroaniline	630	U
87-68-3-----	Hexachlorobutadiene	630	U
59-50-7-----	4-Chloro-3-Methylphenol	630	U
91-57-6-----	2-Methylnaphthalene	630	U
77-47-4-----	Hexachlorocyclopentadiene	630	U
88-06-2-----	2,4,6-Trichlorophenol	630	U
95-95-4-----	2,4,5-Trichlorophenol	1600	U
91-58-7-----	2-Chloronaphthalene	630	U
88-74-4-----	2-Nitroaniline	1600	U
131-11-3-----	Dimethylphthalate	630	U
208-96-8-----	Acenaphthylene	97	U
606-20-2-----	2,6-Dinitrotoluene	630	U
99-09-2-----	3-Nitroaniline	1600	U
83-32-9-----	Acenaphthene	130	U

FORM I SV-1

OLM03.0

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE28

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.05

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18356.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 48 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1600	U
100-02-7	4-Nitrophenol	1600	U
132-64-9	Dibenzofuran	44	U
121-14-2	2,4-Dinitrotoluene	630	U
84-66-2	Diethylphthalate	630	U
7005-72-3	4-Chlorophenyl-phenylether	630	U
86-73-7	Fluorene	79	U
100-01-6	4-Nitroaniline	1600	U
534-52-1	4,6-Dinitro-2-methylphenol	1600	U
86-30-6	N-Nitrosodiphenylamine (1)	630	U
101-55-3	4-Bromophenyl-phenylether	630	U
118-74-1	Hexachlorobenzene	630	U
87-86-5	Pentachlorophenol	1600	U
85-01-8	Phenanthrene	840	U
120-12-7	Anthracene	230	U
86-74-8	Carbazole	150	U
84-74-2	Di-n-butylphthalate	150	U
206-44-0	Fluoranthene	1700	U
129-00-0	Pyrene	1800	U
85-68-7	Butylbenzylphthalate	700	U
91-94-1	3,3'-Dichlorobenzidine	630	U
56-55-3	Benzo(a)anthracene	940	U
218-01-9	Chrysene	1200	U
117-81-7	bis(2-Ethylhexyl)phthalate	8800	U
117-84-0	Di-n-octylphthalate	110	U
205-99-2	Benzo(b)fluoranthene	1100	U
207-08-9	Benzo(k)fluoranthene	1100	U
50-32-8	Benzo(a)pyrene	1200	U
193-39-5	Indeno(1,2,3-cd)pyrene	920	U
53-70-3	Dibenz(a,h)anthracene	370	U
191-24-2	Benzo(g,h,i)perylene	1200	U

* Result from BSE2201

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE28

Lab Name: SWL-TULSA	Contract: 68-D5-0026		
Lab Code: SWOK	Case No.: 25601	SAS No.:	SDG No.: BSE22
Matrix: (soil/water) SOIL		Lab Sample ID: 30388.05	
Sample wt/vol: 30.0 (g/mL) G		Lab File ID: V18356.D	
Level: (low/med) LOW		Date Received: 07/31/97	
% Moisture: 48	decanted: (Y/N) N	Date Extracted: 08/01/97	
Concentrated Extract Volume: 500(uL)		Date Analyzed: 08/06/97	
Injection Volume: 2.0(uL)		Dilution Factor: 1.0	
GPC Cleanup: (Y/N) Y	pH: 7.1		

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-79-7	3-Penten-2-one, 4-methyl-	2.784	1600	NJAB
2. 625-33-2	3-Penten-2-one	2.945	9900	NJ
3. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.053	1200	NJAB
4. 0-00-0	Decahydro-4,4,8,9,10-pentame	6.669	560	NJ
5. 0-00-0	Decahydro-4,4,8,9,10-pentame	7.121	600	NJ
6.	Decahydro-pentamethylnaphtha	7.444	860	J
7. 7704-34-9	Sulfur	12.513	1500	NJ
8.	UNKNOWN AMIDE	14.450	7300	J
9.	Hexanedioic acid, ester	14.623	1100	J
10.	UNKNOWN PAH	16.183	1200	J
11.	Unknown	16.818	530	J
12.	UNKNOWN	17.550	440	J
13.	UNKNOWN	17.658	840	J
14.	UNKNOWN	17.722	460	J
15. 192-97-2	Benzo[e]pyrene	17.851	990	NJ
16.	Tetradecanoic acid, ester	17.991	710	J
17. 198-55-0	Perylene	18.077	570	NJ
18.	UNKNOWN	18.174	470	J
19.	UNKNOWN	18.529	580	J
20.	UNKNOWN	18.745	410	J
21.	UNKNOWN	18.884	890	J
22.	UNKNOWN	18.928	870	J
23.	UNKNOWN ORGANIC ACID ESTER	19.035	630	J
24.	UNKNOWN	19.337	1300	J
25.	UNKNOWN PAH	19.552	790	J
26.	Unknown	19.767	620	J
27.	UNKNOWN	19.896	940	J
28.	UNKNOWN	19.971	920	J
29.	UNKNOWN	20.187	460	J
30.	UNKNOWN	20.294	500	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE28

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.05

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18356.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 48 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.1

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.370	750	J
2.	UNKNOWN	20.477	540	J
3.	UNKNOWN	20.789	430	J
4.	UNKNOWN	20.994	620	JB
5.	UNKNOWN	21.220	480	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE29

Contract: 68-D5-0026

b Name: SWL-TULSA

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.01

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18399.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 32 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4

CAS NO. COMPOUND CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG Q

108-95-2	Phenol	520	
111-44-4	bis(2-Chloroethyl) Ether	480	U
95-57-8	2-Chlorophenol	480	U
541-73-1	1,3-Dichlorobenzene	480	U
106-46-7	1,4-Dichlorobenzene	480	U
95-50-1	1,2-Dichlorobenzene	480	U
95-48-7	2-Methylphenol	480	U
108-60-1	2,2'-oxybis(1-Chloropropane)	480	U
106-44-5	4-Methylphenol	480	U
621-64-7	N-Nitroso-di-n-propylamine	480	U
67-72-1	Hexachloroethane	480	U
98-95-3	Nitrobenzene	480	U
78-59-1	Isophorone	480	U
88-75-5	2-Nitrophenol	480	U
105-67-9	2,4-Dimethylphenol	480	U
111-91-1	bis(2-Chloroethoxy)methane	480	U
120-83-2	2,4-Dichlorophenol	480	U
120-82-1	1,2,4-Trichlorobenzene	480	U
91-20-3	Naphthalene	480	U
106-47-8	4-Chloroaniline	480	U
87-68-3	Hexachlorobutadiene	480	U
59-50-7	4-Chloro-3-Methylphenol	480	U
91-57-6	2-Methylnaphthalene	480	U
77-47-4	Hexachlorocyclopentadiene	480	U
88-06-2	2,4,6-Trichlorophenol	480	U
95-95-4	2,4,5-Trichlorophenol	1200	U
91-58-7	2-Chloronaphthalene	480	U
88-74-4	2-Nitroaniline	1200	U
131-11-3	Dimethylphthalate	480	U
208-96-8	Acenaphthylene	480	U
606-20-2	2,6-Dinitrotoluene	480	U
99-09-2	3-Nitroaniline	1200	U
83-32-9	Acenaphthene	480	U

FORM I SV-1

OLM03.0

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE29

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30412.01
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: V18399.D
 Level: (low/med) LOW Date Received: 08/01/97
 % Moisture: 32 decanted: (Y/N) N Date Extracted: 08/04/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/07/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1200	
100-02-7	4-Nitrophenol	1200	
132-64-9	Dibenzofuran	480	
121-14-2	2,4-Dinitrotoluene	480	
84-66-2	Diethylphthalate	480	
7005-72-3	4-Chlorophenyl-phenylether	480	
86-73-7	Fluorene	480	
100-01-6	4-Nitroaniline	1200	
534-52-1	4,6-Dinitro-2-methylphenol	1200	
86-30-6	N-Nitrosodiphenylamine (1)	480	
101-55-3	4-Bromophenyl-phenylether	480	
118-74-1	Hexachlorobenzene	480	
87-86-5	Pentachlorophenol	1200	
85-01-8	Phenanthrene	340	
120-12-7	Anthracene	100	
86-74-8	Carbazole	480	
84-74-2	Di-n-butylphthalate	160	
206-44-0	Fluoranthene	600	
129-00-0	Pyrene	820	
85-68-7	Butylbenzylphthalate	580	
91-94-1	3,3'-Dichlorobenzidine	480	
56-55-3	Benzo(a)anthracene	400	
218-01-9	Chrysene	420	
117-81-7	bis(2-Ethylhexyl)phthalate	1400	
117-84-0	Di-n-octylphthalate	480	
205-99-2	Benzo(b)fluoranthene	320	
207-08-9	Benzo(k)fluoranthene	320	
50-32-8	Benzo(a)pyrene	420	
193-39-5	Indeno(1,2,3-cd)pyrene	300	
53-70-3	Dibenz(a,h)anthracene	130	
191-24-2	Benzo(g,h,i)perylene	330	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE29

b Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.01

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18399.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 32 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.4

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.737	1500	JB
2. 141-79-7	3-Penten-2-one, 4-methyl-	2.759	4200	NJAB
3.	UNKNOWN ORGANIC ACID	2.920	960	J
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.028	2800	NJAB
5.	UNKNOWN	3.082	550	J
*6.	UNKNOWN <i>Alkane</i>	3.663	670	JB
7. 617-94-7	Benzenemethanol, .alpha.,.al	4.524	480	NJ
8. 108-46-3	Resorcinol	5.816	240	NJ
9.	Benzo[]thiophene, -ethyl--me	7.774	460	J
10.	UNKNOWN	7.946	260	J
11.	UNKNOWN	8.958	390	J
12.	UNKNOWN	9.442	220	J
13. 25154-52-3	Phenol, nonyl-	9.507	400	NJ
14.	-Nonylphenol	9.561	270	J
15.	Phenol, nonyl-	9.776	260	J
16.	-Triazine--diamine, -phenyl-	12.176	320	J
17.	UNKNOWN AMIDE	13.123	310	JB
18.	UNKNOWN AMIDE	14.425	3900	JB
19.	-Indene, -dihydro--trimethyl	15.997	2000	J
20.	-Indene, -dihydro--trimethyl	16.287	690	J
21.	UNKNOWN AMIDE	17.019	1000	JB
22.	UNKNOWN	18.870	350	J
23.	UNKNOWN	19.742	270	J
24.	UNKNOWN	19.936	460	J
25. 83-47-6	.gamma.-Sitosterol	20.259	2200	NJ
26.	UNKNOWN	20.603	300	J
27.	UNKNOWN	20.743	330	J
28.	UNKNOWN	20.818	800	J
29.	UNKNOWN	20.915	520	J
30.	UNKNOWN	21.077	300	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE29

Contract: 68-D5-0026

Lab Name: SWL-TULSA

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample-ID: 30412.01

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18399.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 32 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.4

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 1058-61-3	Stigmast-4-en-3-one	21.184	840	NJ
2.	UNKNOWN	21.443	300	J
3.	UNKNOWN	21.507	260	J
4. 20475-86-9	Urs-12-en-24-oic acid, 3-oxo	21.572	690	NJ
5.	UNKNOWN	22.799	340	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE30

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.02

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18400.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 60 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	820	U
111-44-4	bis(2-Chloroethyl)Ether	820	U
95-57-8	2-Chlorophenol	820	U
541-73-1	1,3-Dichlorobenzene	820	U
106-46-7	1,4-Dichlorobenzene	820	U
95-50-1	1,2-Dichlorobenzene	820	U
95-48-7	2-Methylphenol	820	U
108-60-1	2,2'-oxybis(1-Chloropropane)	820	U
106-44-5	4-Methylphenol	820	U
621-64-7	N-Nitroso-di-n-propylamine	820	U
67-72-1	Hexachloroethane	820	U
98-95-3	Nitrobenzene	820	U
78-59-1	Isophorone	820	U
88-75-5	2-Nitrophenol	820	U
105-67-9	2,4-Dimethylphenol	820	U
111-91-1	bis(2-Chloroethoxy)methane	820	U
120-83-2	2,4-Dichlorophenol	820	U
120-82-1	1,2,4-Trichlorobenzene	820	U
91-20-3	Naphthalene	820	U
106-47-8	4-Chloroaniline	820	U
87-68-3	Hexachlorobutadiene	820	U
59-50-7	4-Chloro-3-Methylphenol	820	U
91-57-6	2-Methylnaphthalene	820	U
77-47-4	Hexachlorocyclopentadiene	820	U
88-06-2	2,4,6-Trichlorophenol	820	U
95-95-4	2,4,5-Trichlorophenol	2100	U
91-58-7	2-Chloronaphthalene	820	U
88-74-4	2-Nitroaniline	2100	U
131-11-3	Dimethylphthalate	820	U
208-96-8	Acenaphthylene	110	J
606-20-2	2,6-Dinitrotoluene	820	U
99-09-2	3-Nitroaniline	2100	U
83-32-9	Acenaphthene	100	J

FORM I SV-1

OLM03.0

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE30

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30412.02
 Sample wt/vol: 30.1 (g/mL) G Lab File ID: V18400.D
 Level: (low/med) LOW Date Received: 08/01/97
 % Moisture: 60 decanted: (Y/N) N Date Extracted: 08/04/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/07/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2100	
100-02-7	4-Nitrophenol	2100	
132-64-9	Dibenzofuran	80	
121-14-2	2,4-Dinitrotoluene	820	
84-66-2	Diethylphthalate	820	
7005-72-3	4-Chlorophenyl-phenylether	820	
86-73-7	Fluorene	140	
100-01-6	4-Nitroaniline	2100	
534-52-1	4,6-Dinitro-2-methylphenol	2100	
86-30-6	N-Nitrosodiphenylamine (1)	820	
101-55-3	4-Bromophenyl-phenylether	820	
118-74-1	Hexachlorobenzene	820	
87-86-5	Pentachlorophenol	2100	
85-01-8	Phenanthrene	1600	
120-12-7	Anthracene	400	
86-74-8	Carbazole	160	
84-74-2	Di-n-butylphthalate	820	
206-44-0	Fluoranthene	2100	
129-00-0	Pyrene	2200	
85-68-7	Butylbenzylphthalate	2600	
91-94-1	3,3'-Dichlorobenzidine	820	
56-55-3	Benzo(a)anthracene	1100	
218-01-9	Chrysene	1100	
117-81-7	bis(2-Ethylhexyl)phthalate	15000 2100	
117-84-0	Di-n-octylphthalate	820	
205-99-2	Benzo(b)fluoranthene	790	
207-08-9	Benzo(k)fluoranthene	800	
50-32-8	Benzo(a)pyrene	1000	
193-39-5	Indeno(1,2,3-cd)pyrene	580	
53-70-3	Dibenz(a,h)anthracene	290	
191-24-2	Benzo(g,h,i)perylene	670	

→ Report from BSE30DL

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE30

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.02

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18400.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 60 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.3

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-79-7	3-Penten-2-one, 4-methyl-	2.761	3000	NJAB
2.	UNKNOWN	2.826	620	JB
3.	UNKNOWN	2.923	490	JB
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.030	2100	NJAB
5.	UNKNOWN	3.084	320	J
6.	Phenol, -(-trimethylpentyl)-	8.584	370	J
7.	Anthracene, -methyl-	11.253	270	J
8. 203-64-5	4H-Cyclopenta[def]phenanthre	11.414	380	NJ
9.	UNKNOWN PAH	12.727	210	J
10.	Phenol, '(-methylethylidene	13.298	270	J
11.	UNKNOWN PAH	13.438	250	J
12.	UNKNOWN	13.642	250	J
13.	11H-Benzo[]fluorene	13.675	420	J
14.	UNKNOWN PHTHALATE	13.739	370	J
15.	Pyrene, -methyl-	13.868	250	J
16. 82-05-3	7H-Benz[de]anthracen-7-one	14.686	320	NJ
17. 1241-94-7	Octicizer	14.955	680	NJ
18.	UNKNOWN	15.816	400	J
19.	UNKNOWN PAH	15.892	250	J
20.	-Methylchrysene	16.161	370	J
21.	UNKNOWN	17.258	310	J
22. 198-55-0	Perylene	17.829	600	NJ
23. 192-97-2	Benzo[e]pyrene	18.044	270	NJ
24.	UNKNOWN	18.851	350	J
25.	UNKNOWN	18.905	280	J
26.	UNKNOWN	19.497	1800	J
27.	UNKNOWN	19.863	320	J
28.	UNKNOWN PAH	19.917	320	J
29. 83-47-6	.gamma.-Sitosterol	20.261	490	NJ
30.	UNKNOWN	20.337	520	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE30

Contract: 68-D5-0026

Job Name: SWL-TULSA

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.02

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18400.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 60 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.745	430	J
2.	UNKNOWN	21.101	280	J
3.	UNKNOWN	21.187	530	J
4.	UNKNOWN	21.757	370	J
5.	Naptho[-def]chrysene	22.102	260	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE31

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.06

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18359.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 59 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	800	U
111-44-4-----	bis(2-Chloroethyl)Ether	800	U
95-57-8-----	2-Chlorophenol	800	U
541-73-1-----	1,3-Dichlorobenzene	800	U
106-46-7-----	1,4-Dichlorobenzene	800	U
95-50-1-----	1,2-Dichlorobenzene	800	U
95-48-7-----	2-Methylphenol	800	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	800	U
106-44-5-----	4-Methylphenol	800	U
621-64-7-----	N-Nitroso-di-n-propylamine	800	U
67-72-1-----	Hexachloroethane	800	U
98-95-3-----	Nitrobenzene	800	U
78-59-1-----	Isophorone	800	U
88-75-5-----	2-Nitrophenol	800	U
105-67-9-----	2,4-Dimethylphenol	800	U
111-91-1-----	bis(2-Chloroethoxy)methane	800	U
120-83-2-----	2,4-Dichlorophenol	800	U
120-82-1-----	1,2,4-Trichlorobenzene	800	U
91-20-3-----	Naphthalene	800	U
106-47-8-----	4-Chloroaniline	800	U
87-68-3-----	Hexachlorobutadiene	800	U
59-50-7-----	4-Chloro-3-Methylphenol	800	U
91-57-6-----	2-Methylnaphthalene	70	U
77-47-4-----	Hexachlorocyclopentadiene	800	U
88-06-2-----	2,4,6-Trichlorophenol	800	U
95-95-4-----	2,4,5-Trichlorophenol	2000	U
91-58-7-----	2-Chloronaphthalene	800	U
88-74-4-----	2-Nitroaniline	2000	U
131-11-3-----	Dimethylphthalate	800	U
208-96-8-----	Acenaphthylene	800	U
606-20-2-----	2,6-Dinitrotoluene	800	U
99-09-2-----	3-Nitroaniline	2000	U
83-32-9-----	Acenaphthene	160	U

FORM I SV-1

OLM03.0

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE31

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.06

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18359.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 59 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	2000	U
100-02-7	4-Nitrophenol	2000	U
132-64-9	Dibenzofuran	800	U
121-14-2	2,4-Dinitrotoluene	800	U
84-66-2	Diethylphthalate	800	U
7005-72-3	4-Chlorophenyl-phenylether	800	U
86-73-7	Fluorene	150	J
100-01-6	4-Nitroaniline	2000	U
534-52-1	4,6-Dinitro-2-methylphenol	2000	U
86-30-6	N-Nitrosodiphenylamine (1)	800	U
101-55-3	4-Bromophenyl-phenylether	800	U
118-74-1	Hexachlorobenzene	800	U
87-86-5	Pentachlorophenol	2000	U
85-01-8	Phenanthrene	2000	U
120-12-7	Anthracene	420	U
86-74-8	Carbazole	270	U
84-74-2	Di-n-butylphthalate	1100	U
206-44-0	Fluoranthene	2900	U
129-00-0	Pyrene	3000	U
85-68-7	Butylbenzylphthalate	800	U
91-94-1	3,3'-Dichlorobenzidine	800	U
56-55-3	Benzo(a)anthracene	1600	U
218-01-9	Chrysene	1800	U
117-81-7	bis(2-Ethylhexyl)phthalate	660	U
117-84-0	Di-n-octylphthalate	800	U
205-99-2	Benzo(b)fluoranthene	1600	U
207-08-9	Benzo(k)fluoranthene	1300	U
50-32-8	Benzo(a)pyrene	1600	U
193-39-5	Indeno(1,2,3-cd)pyrene	1200	U
53-70-3	Dibenz(a,h)anthracene	600	U
191-24-2	Benzo(g,h,i)perylene	1400	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE31

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: -30388.06

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18359.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 59 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.794	1600	AJB
2.	UNKNOWN ALCOHOL	2.858	980	JB
3.	UNKNOWN	2.944	20000	JB
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.052	1100	NJAB
5.	UNKNOWN	3.095	720	JB
6. 76-22-2	Camphor	4.989	3100	NJ
7.	UNKNOWN	7.981	900	J
8.	UNKNOWN PAH	11.447	610	J
9.	Octadecanol	12.394	2000	J
10. 10544-50-0	Sulfur, mol. (S8)	12.523	1400	NJ
11.	UNKNOWN AMIDE	13.158	720	J
12.	11E-Benzo[]fluorene	13.707	740	J
13.	UNKNOWN AMIDE	14.450	6500	J
14.	Hexanedioic acid, este	14.622	1200	JB
15.	UNKNOWN PAH	15.838	800	J
16.	UNKNOWN PAH	16.204	760	J
17. 192-97-2	Benzo[e]pyrene	17.861	820	NJ
18.	UNKNOWN ORGANIC ACID	18.399	520	J
19.	UNKNOWN	18.948	470	J
20.	UNKNOWN	19.207	650	J
21.	UNKNOWN	19.336	590	J
22.	UNKNOWN ALDEHYDE	19.454	670	J
23.	UNKNOWN PAH	19.562	510	J
24.	UNKNOWN PAH	19.895	640	J
25.	UNKNOWN PAH	19.949	780	J
26.	UNKNOWN	20.294	720	J
27.	UNKNOWN	20.520	480	J
28.	UNKNOWN	20.659	570	J
29.	UNKNOWN	20.703	1100	J
30.	UNKNOWN	20.789	520	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE31

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.06

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18359.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 59 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.1

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.025	600	JB
2.	UNKNOWN	21.531	530	J
3.	UNKNOWN	22.037	670	J
4.	Naphtho[]chrysene	22.155	490	J
5.	Dibenzpyrene	23.199	460	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE32

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.03

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18401.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	430	U
111-44-4	bis(2-Chloroethyl)Ether	430	U
95-57-8	2-Chlorophenol	430	U
541-73-1	1,3-Dichlorobenzene	430	U
106-46-7	1,4-Dichlorobenzene	430	U
95-50-1	1,2-Dichlorobenzene	430	U
95-48-7	2-Methylphenol	430	U
108-60-1	2,2'-oxybis(1-Chloropropane)	430	U
106-44-5	4-Methylphenol	430	U
621-64-7	N-Nitroso-di-n-propylamine	430	U
67-72-1	Hexachloroethane	430	U
98-95-3	Nitrobenzene	430	U
78-59-1	Isophorone	430	U
88-75-5	2-Nitrophenol	430	U
105-67-9	2,4-Dimethylphenol	430	U
111-91-1	bis(2-Chloroethoxy)methane	430	U
120-83-2	2,4-Dichlorophenol	430	U
120-82-1	1,2,4-Trichlorobenzene	430	U
91-20-3	Naphthalene	430	U
106-47-8	4-Chloroaniline	430	U
87-68-3	Hexachlorobutadiene	430	U
59-50-7	4-Chloro-3-Methylphenol	430	U
91-57-6	2-Methylnaphthalene	430	U
77-47-4	Hexachlorocyclopentadiene	430	U
88-06-2	2,4,6-Trichlorophenol	430	U
95-95-4	2,4,5-Trichlorophenol	1100	U
91-58-7	2-Chloronaphthalene	430	U
88-74-4	2-Nitroaniline	1100	U
131-11-3	Dimethylphthalate	430	U
208-96-8	Acenaphthylene	430	U
606-20-2	2,6-Dinitrotoluene	430	U
99-09-2	3-Nitroaniline	1100	U
83-32-9	Acenaphthene	430	U

FORM I SV-1

OLM03.0

p.274

1300
TIERRA-A-018100

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE32

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.03

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18401.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1100	U
100-02-7	4-Nitrophenol	1100	U
132-64-9	Dibenzofuran	430	U
121-14-2	2,4-Dinitrotoluene	430	U
84-66-2	Diethylphthalate	430	U
7005-72-3	4-Chlorophenyl-phenylether	430	U
86-73-7	Fluorene	430	U
100-01-6	4-Nitroaniline	1100	U
534-52-1	4,6-Dinitro-2-methylphenol	1100	U
86-30-6	N-Nitrosodiphenylamine (1)	430	U
101-55-3	4-Bromophenyl-phenylether	430	U
118-74-1	Hexachlorobenzene	430	U
87-86-5	Pentachlorophenol	1100	U
85-01-8	Phenanthrene	430	U
120-12-7	Anthracene	430	U
86-74-8	Carbazole	430	U
84-74-2	Di-n-butylphthalate	430	U
206-44-0	Fluoranthene	430	U
129-00-0	Pyrene	430	U
85-68-7	Butylbenzylphthalate	430	U
91-94-1	3,3'-Dichlorobenzidine	430	U
56-55-3	Benzo(a)anthracene	430	U
218-01-9	Chrysene	430	U
117-81-7	bis(2-Ethylhexyl)phthalate	430	U
117-84-0	Di-n-octylphthalate	430	U
205-99-2	Benzo(b)fluoranthene	430	U
207-08-9	Benzo(k)fluoranthene	430	U
50-32-8	Benzo(a)pyrene	190	U
193-39-5	Indeno(1,2,3-cd)pyrene	430	U
53-70-3	Dibenz(a,h)anthracene	430	U
191-24-2	Benzo(g,h,i)perylene	430	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

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1301
TIERRA-A-018101

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

BSE32

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.03

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18401.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 32

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-79-7	3-Penten-2-one, 4-methyl-	2.760	2100	NJAB
2.	UNKNOWN	2.824	420	JB
3. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.029	1600	NJAB
4.	UNKNOWN	3.082	190	J
5.	UNKNOWN Alkane	<u>3.664</u>	340	JB
6.	Cyclooctadiene, -()-	10.498	110	J
7.	UNKNOWN AMIDE	11.552	120	J
8.	UNKNOWN AMIDE	12.995	110	J
9.	UNKNOWN AMIDE	13.124	260	JB
10.	UNKNOWN AMIDE	14.426	2600	JB
11.	UNKNOWN	15.233	260	J
12.	-Eicosanol	16.460	830	J
13.	UNKNOWN AMIDE	17.020	1200	JB
14. 7683-64-9	Squalene	17.257	140	NJ
15.	UNKNOWN	17.633	240	J
16.	UNKNOWN	17.709	140	J
17.	UNKNOWN KETONE	18.796	130	J
18.	UNKNOWN	19.538	120	J
19.	UNKNOWN	19.786	140	J
20.	UNKNOWN KETONE	19.861	220	J
21.	UNKNOWN	19.926	280	J
22.	UNKNOWN	20.044	180	J
23.	UNKNOWN	20.259	400	J
24.	UNKNOWN	20.302	1100	J
25.	UNKNOWN	20.442	200	J
26.	UNKNOWN PAH	20.496	660	J
27.	UNKNOWN	20.604	510	J
28.	UNKNOWN	20.765	540	J
29.	UNKNOWN	20.905	520	J
30.	UNKNOWN	21.185	160	J

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1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE32

Site Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.03

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18401.D

Level: (lqw/med) LOW

Date Received: 08/01/97

% Moisture: 24 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 32

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.400	160	J
2.	UNKNOWN	21.981	710	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE33

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.04

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18402.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 77 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----	Phenol	1400	U
111-44-4-----	bis(2-Chloroethyl)Ether	1400	U
95-57-8-----	2-Chlorophenol	1400	U
541-73-1-----	1,3-Dichlorobenzene	1400	U
106-46-7-----	1,4-Dichlorobenzene	88	U
95-50-1-----	1,2-Dichlorobenzene	1400	U
95-48-7-----	2-Methylphenol	1400	U
108-60-1-----	2,2'-oxybis(1-Chloropropane)	1400	U
106-44-5-----	4-Methylphenol	1400	U
621-64-7-----	N-Nitroso-di-n-propylamine	1400	U
67-72-1-----	Hexachloroethane	1400	U
98-95-3-----	Nitrobenzene	1400	U
78-59-1-----	Isophorone	1400	U
88-75-5-----	2-Nitrophenol	1400	U
105-67-9-----	2,4-Dimethylphenol	1400	U
111-91-1-----	bis(2-Chloroethoxy)methane	1400	U
120-83-2-----	2,4-Dichlorophenol	1400	U
120-82-1-----	1,2,4-Trichlorobenzene	1400	U
91-20-3-----	Naphthalene	600	J
106-47-8-----	4-Chloroaniline	1400	U
87-68-3-----	Hexachlorobutadiene	1400	U
59-50-7-----	4-Chloro-3-Methylphenol	1400	U
91-57-6-----	2-Methylnaphthalene	230	J
77-47-4-----	Hexachlorocyclopentadiene	1400	U
88-06-2-----	2,4,6-Trichlorophenol	1400	U
95-95-4-----	2,4,5-Trichlorophenol	3600	U
91-58-7-----	2-Chloronaphthalene	1400	U
88-74-4-----	2-Nitroaniline	3600	U
131-11-3-----	Dimethylphthalate	1400	U
208-96-8-----	Acenaphthylene	420	U
606-20-2-----	2,6-Dinitrotoluene	1400	U
99-09-2-----	3-Nitroaniline	3600	U
83-32-9-----	Acenaphthene	790	U

FORM I SV-1

OLM03.0

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE33

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30412.04
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: V18402.D
 Level: (low/med) LOW Date Received: 08/01/97
 % Moisture: 77 decanted: (Y/N) N Date Extracted: 08/04/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/07/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	3600	
100-02-7	4-Nitrophenol	3600	
132-64-9	Dibenzofuran	520	
121-14-2	2,4-Dinitrotoluene	1400	
84-66-2	Diethylphthalate	1400	
7005-72-3	4-Chlorophenyl-phenylether	1400	
86-73-7	Fluorene	880	
100-01-6	4-Nitroaniline	3600	
534-52-1	4,6-Dinitro-2-methylphenol	3600	
86-30-6	N-Nitrosodiphenylamine (1)	1400	
101-55-3	4-Bromophenyl-phenylether	1400	
118-74-1	Hexachlorobenzene	1400	
87-86-5	Pentachlorophenol	3600	
85-01-8	Phenanthrene	8000	
120-12-7	Anthracene	2300	
86-74-8	Carbazole	1000	
84-74-2	Di-n-butylphthalate	14000	
206-44-0	Fluoranthene	12000	
129-00-0	Pyrene	12000	
85-68-7	Butylbenzylphthalate	7800	
91-94-1	3,3'-Dichlorobenzidine	1400	
56-55-3	Benzo(a)anthracene	6800	
218-01-9	Chrysene	6900	
117-81-7	bis(2-Ethylhexyl)phthalate	25000	
117-84-0	Di-n-octylphthalate	260	
205-99-2	Benzo(b)fluoranthene	5300	
207-08-9	Benzo(k)fluoranthene	6600	
50-32-8	Benzo(a)pyrene	7400	
193-39-5	Indeno(1,2,3-cd)pyrene	4800	
53-70-3	Dibenz(a,h)anthracene	1900	
191-24-2	Benzo(g,h,i)perylene	5500	

* Result from 158 33 DL

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE33

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.04

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18402.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 77 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.3

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 34

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-79-7	3-Penten-2-one, 4-methyl-	2.762	9300	NJAB
2. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.021	9300	NJAB
3.	UNKNOWN ORGANIC ACID	8.434	25000	J
4.	UNKNOWN PHTHALATE	10.759	1900	J
5. 203-64-5	4H-Cyclopenta[def]phenanthre	11.415	2100	NJ
6.	11H-Benzo[]fluorene	13.675	3100	J
7.	Pyrene, -methyl-	13.869	2100	J
8.	UNKNOWN AMIDE	14.429	22000	JB
9.	UNKNOWN	14.935	2100	J
10.	UNKNOWN PHTHALATE	15.032	2000	J
11.	UNKNOWN	15.150	2000	J
12.	UNKNOWN PAH	15.591	2100	J
13.	UNKNOWN	15.817	3200	J
14.	UNKNOWN	15.893	3300	J
15.	Chrysene, -methyl-	16.162	2100	J
16. 1090-13-7	5,12-Naphthacenedione	16.786	960	NJ
17.	Decanedioic acid, este	17.119	980	J
18.	Benzo[]fluoranthene	17.539	2700	J
19.	UNKNOWN PHTHALATE	17.658	2400	J
20.	UNKNOWN PHTHALATE	17.733	4100	J
21. 192-97-2	Benzo[e]pyrene	17.830	5200	NJ
22. 198-55-0	Perylene	18.056	3000	NJ
23.	-Quaterphenyl	18.110	3500	J
24.	UNKNOWN PHTHALATE	18.206	2100	J
25.	UNKNOWN PAH	18.282	920	J
26.	UNKNOWN	19.143	880	J
27.	UNKNOWN PAH	19.864	1100	J
28.	UNKNOWN	20.337	1100	J
29. 603-48-5	Benzenamine, 4,4',4''-methyl	20.746	6200	NJ
30. 1058-61-3	Stigmast-4-en-3-one	21.198	970	NJ

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE33

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.04

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18402.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 77 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.3

Number TICs found: 34

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.500	1200	J
2.	[]Dibenzpyrene	22.113	1400	J
3.	-Dibenzpyrene	22.382	980	J
4.	-Dibenzpyrene	23.146	920	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE34

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.05

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18403.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 90 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	3300	U
111-44-4	bis(2-Chloroethyl) Ether	3300	U
95-57-8	2-Chlorophenol	3300	U
541-73-1	1,3-Dichlorobenzene	3300	U
106-46-7	1,4-Dichlorobenzene	3300	U
95-50-1	1,2-Dichlorobenzene	3300	U
95-48-7	2-Methylphenol	3300	U
108-60-1	2,2'-oxybis(1-Chloropropane)	3300	U
106-44-5	4-Methylphenol	3300	U
621-64-7	N-Nitroso-di-n-propylamine	3300	U
67-72-1	Hexachloroethane	3300	U
98-95-3	Nitrobenzene	3300	U
78-59-1	Isophorone	3300	U
88-75-5	2-Nitrophenol	3300	U
105-67-9	2,4-Dimethylphenol	3300	U
111-91-1	bis(2-Chloroethoxy)methane	3300	U
120-83-2	2,4-Dichlorophenol	3300	U
120-82-1	1,2,4-Trichlorobenzene	3300	U
91-20-3	Naphthalene	3300	U
106-47-8	4-Chloroaniline	3300	U
87-68-3	Hexachlorobutadiene	3300	U
59-50-7	4-Chloro-3-Methylphenol	3300	U
91-57-6	2-Methylnaphthalene	3300	U
77-47-4	Hexachlorocyclopentadiene	3300	U
88-06-2	2,4,6-Trichlorophenol	3300	U
95-95-4	2,4,5-Trichlorophenol	8300	U
91-58-7	2-Chloronaphthalene	3300	U
88-74-4	2-Nitroaniline	8300	U
131-11-3	Dimethylphthalate	3300	U
208-96-8	Acenaphthylene	3300	U
606-20-2	2,6-Dinitrotoluene	3300	U
99-09-2	3-Nitroaniline	8300	U
83-32-9	Acenaphthene	3300	U

FORM I SV-1

OLM03.0

p. 282

1493

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE34

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22

Matrix: (soil/water) SOIL Lab Sample ID: 30412.05

Sample wt/vol: 30.0 (g/mL) G Lab File ID: V18403.D

Level: (low/med) LOW Date Received: 08/01/97

% Moisture: 90 decanted: (Y/N) N Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL) Date Analyzed: 08/07/97

Injection Volume: 2.0(uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	8300	U
100-02-7	4-Nitrophenol	8300	U
132-64-9	Dibenzofuran	3300	U
121-14-2	2,4-Dinitrotoluene	3300	U
84-66-2	Diethylphthalate	3300	U
7005-72-3	4-Chlorophenyl-phenylether	3300	U
86-73-7	Fluorene	3300	U
100-01-6	4-Nitroaniline	8300	U
534-52-1	4,6-Dinitro-2-methylphenol	8300	U
86-30-6	N-Nitrosodiphenylamine (1)	3300	U
101-55-3	4-Bromophenyl-phenylether	3300	U
118-74-1	Hexachlorobenzene	3300	U
87-86-5	Pentachlorophenol	8300	U
85-01-8	Phenanthrene	3300	U
120-12-7	Anthracene	3300	U
86-74-8	Carbazole	3300	U
84-74-2	Di-n-butylphthalate	3300	U
206-44-0	Fluoranthene	3300	U
129-00-0	Pyrene	3300	U
85-68-7	Butylbenzylphthalate	3300	U
91-94-1	3,3'-Dichlorobenzidine	3300	U
56-55-3	Benzo(a)anthracene	3300	U
218-01-9	Chrysene	3300	U
117-81-7	bis(2-Ethylhexyl)phthalate	3300 760	U
117-84-0	Di-n-octylphthalate	3300	U
205-99-2	Benzo(b)fluoranthene	3300	U
207-08-9	Benzo(k)fluoranthene	3300	U
50-32-8	Benzo(a)pyrene	3300	U
193-39-5	Indeno(1,2,3-cd)pyrene	3300	U
53-70-3	Dibenz(a,h)anthracene	3300	U
191-24-2	Benzo(g,h,i)perylene	3300	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

p-263

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE34

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.05

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18403.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 90 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.1

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.737	13000	JB
2. 10574-37-5	2-Pentene, 2,3-dimethyl-	2.759	25000	NJA
3.	UNKNOWN	2.920	8200	JB
4. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.028	17000	NJAS
5. 5153-92-4	1H-Naphtho[2,1-b]pyran, 4a,5	11.842	9000	NJ
6. 19407-28-4	Phenanthrene, 1,2,3,4,4a,9,1	12.424	6000	NJ
7. 511-15-9	2-Phenanthrenol, 4b,5,6,7,8,	14.275	15000	NJ
8.	UNKNOWN	14.339	13000	J
9.	UNKNOWN AMIDE	14.425	29000	JB
10.	UNKNOWN ORGANIC ACID	16.460	6600	J
11.	UNKNOWN AMIDE	17.030	21000	JB
12.	UNKNOWN ORGANIC ACID	18.720	13000	J
13.	UNKNOWN KETONE	18.795	13000	J
14. 471-68-1	Olean-12-ene	18.870	9800	NJ
15.	UNKNOWN	19.021	8500	J
16.	UNKNOWN	19.129	8500	J
17. 1615-91-4	A'-Neogammacer-22(29)-ene	19.279	21000	NJ
18.	UNKNOWN	19.548	7400	J
19.	UNKNOWN	19.656	16000	J
20.	UNKNOWN	19.753	7400	J
21.	UNKNOWN	19.796	15000	J
22. 0-00-0	2-Nonacosanone	19.871	11000	NJ
23.	UNKNOWN	19.936	23000	J
24.	UNKNOWN	20.087	11000	J
25. 514-07-8	D-Friedoolean-14-en-3-one	20.323	170000	NJ
26.	UNKNOWN	20.442	31000	J
27. 127-22-0	Taraxerol	20.506	62000	NJ
28.	UNKNOWN	20.646	29000	J
29. 1617-70-5	Lup-20(29)-en-3-one	20.808	510000	NJ
30. 1678-31-5	a'-Neogammacer-22(29)-en-3-o	20.948	82000	NJ

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE34

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample-ID: -30412.05

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18403.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 90 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/07/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.1

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	21.098	34000	J
2.	UNKNOWN	21.195	12000	J
3.	UNKNOWN	21.421	7900	J
4.	UNKNOWN	21.809	6900	J
5.	UNKNOWN	21.981	34000	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE35

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30412.06
 Sample wt/vol: 30.1 (g/mL) G Lab File ID: V18404.D
 Level: (low/med) LOW Date Received: 08/01/97
 % Moisture: 88 decanted: (Y/N) N Date Extracted: 08/04/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/08/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	2700	U
111-44-4	bis(2-Chloroethyl) Ether	2700	U
95-57-8	2-Chlorophenol	2700	U
541-73-1	1,3-Dichlorobenzene	2700	U
106-46-7	1,4-Dichlorobenzene	2700	U
95-50-1	1,2-Dichlorobenzene	2700	U
95-48-7	2-Methylphenol	2700	U
108-60-1	2,2'-oxybis(1-Chloropropane)	2700	U
106-44-5	4-Methylphenol	2700	U
621-64-7	N-Nitroso-di-n-propylamine	2700	U
67-72-1	Hexachloroethane	2700	U
98-95-3	Nitrobenzene	2700	U
78-59-1	Isophorone	2700	U
88-75-5	2-Nitrophenol	2700	U
105-67-9	2,4-Dimethylphenol	2700	U
111-91-1	bis(2-Chloroethoxy)methane	2700	U
120-83-2	2,4-Dichlorophenol	2700	U
120-82-1	1,2,4-Trichlorobenzene	2700	U
91-20-3	Naphthalene	2700	U
106-47-8	4-Chloroaniline	2700	U
87-68-3	Hexachlorobutadiene	2700	U
59-50-7	4-Chloro-3-Methylphenol	2700	U
91-57-6	2-Methylnaphthalene	2700	U
77-47-4	Hexachlorocyclopentadiene	2700	U
88-06-2	2,4,6-Trichlorophenol	2700	U
95-95-4	2,4,5-Trichlorophenol	6900	U
91-58-7	2-Chloronaphthalene	2700	U
88-74-4	2-Nitroaniline	6900	U
131-11-3	Dimethylphthalate	2700	U
208-96-8	Acenaphthylene	2700	U
606-20-2	2,6-Dinitrotoluene	2700	U
99-09-2	3-Nitroaniline	6900	U
83-32-9	Acenaphthene	2700	U

FORM I SV-1

OLM03.0

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE35

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.06

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18404.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 88 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/08/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	(ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	6900	U
100-02-7	4-Nitrophenol	6900	U
132-64-9	Dibenzofuran	2700	U
121-14-2	2,4-Dinitrotoluene	2700	U
84-66-2	Diethylphthalate	2700	U
7005-72-3	4-Chlorophenyl-phenylether	2700	U
86-73-7	Fluorene	2700	U
100-01-6	4-Nitroaniline	6900	U
534-52-1	4,6-Dinitro-2-methylphenol	6900	U
86-30-6	N-Nitrosodiphenylamine (1)	2700	U
101-55-3	4-Bromophenyl-phenylether	2700	U
118-74-1	Hexachlorobenzene	2700	U
87-86-5	Pentachlorophenol	6900	U
85-01-8	Phenanthrene	2700	U
120-12-7	Anthracene	2700	U
86-74-8	Carbazole	2700	U
84-74-2	Di-n-butylphthalate	2700	U
206-44-0	Fluoranthene	2700	U
129-00-0	Pyrene	2700	U
85-68-7	Butylbenzylphthalate	180	U
91-94-1	3,3'-Dichlorobenzidine	2700	U
56-55-3	Benzo(a)anthracene	2700	U
218-01-9	Chrysene	2700	U
117-81-7	bis(2-Ethylhexyl)phthalate	3800	U
117-84-0	Di-n-octylphthalate	2700	U
205-99-2	Benzo(b)fluoranthene	2700	U
207-08-9	Benzo(k)fluoranthene	2700	U
50-32-8	Benzo(a)pyrene	210	U
193-39-5	Indeno(1,2,3-cd)pyrene	2700	U
53-70-3	Dibenz(a,h)anthracene	2700	U
191-24-2	Benzo(g,h,i)perylene	2700	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

p. 297

1545

TIERRA-A-018113

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE35

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.06

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18404.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 88 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/08/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.737	4900	JR
2.	10574-37-5 2-Pentene, 2,3-dimethyl-	2.758	14000	NJA
3.	123-42-2 2-Pentanone, 4-hydroxy-4-met	3.027	19000	NJAB
4.	38754-94-8 s-Indacen-1(2H)-one, 3,5,6,7	12.122	6400	NJ
5.	19407-28-4 Phenanthrene, 1,2,3,4,4a,9,1	12.423	4600	NJ
6.	UNKNOWN	12.735	7400	J
7.	UNKNOWN HYDROCARBON	13.855	5500	J
8.	511-15-9 2-Phenanthrenol, 4b,5,6,7,8,	14.274	20000	NJ
9.	UNKNOWN	14.339	12000	J
10.	2-Phenanthrenol, -octa	14.382	6700	J
11.	-Nonadecanol	18.719	7900	J
12.	UNKNOWN	18.784	11000	J
13.	UNKNOWN	18.870	7200	J
14.	59-02-9 Vitamin E	19.042	5400	NJ
15.	UNKNOWN	19.085	4900	J
16.	UNKNOWN	19.300	7400	J
17.	UNKNOWN	19.537	5100	J
18.	UNKNOWN	19.645	8200	J
19.	UNKNOWN	19.742	5600	J
20.	UNKNOWN	19.795	8700	J
21.	UNKNOWN KETONE	19.860	6700	J
22.	UNKNOWN	19.935	25000	J
23.	UNKNOWN	20.032	6800	J
24.	UNKNOWN	20.269	14000	J
25.	514-07-8 D-Friedoolean-14-en-3-one	20.323	64000	NJ
26.	UNKNOWN	20.441	15000	J
27.	UNKNOWN	20.506	29000	J
28.	UNKNOWN	20.624	22000	J
29.	UNKNOWN	20.807	83000	J
30.	UNKNOWN	20.979	44000	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE35

Contract: 68-D5-0026

b Name: SWL-TULSA

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.06

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18404.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 88 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500 (uL)

Date Analyzed: 08/08/97

Injection Volume: 2.0 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND	RT	EST. CONC.	Q
1.	UNKNOWN	21.098	8300	J
2. 1058-61-3	Stigmast-4-en-3-c	21.195	9400	NJ
3.	UNKNOWN	21.238	9000	J
4.	UNKNOWN	22.680	9000	J
5.	Unknown	22.841	5600	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE36

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30412.07
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: V18405.D
 Level: (low/med) LOW Date Received: 08/01/97
 % Moisture: 60 decanted: (Y/N) N Date Extracted: 08/04/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/08/97
 Injection Volume: 2.0(uL) Dilution Factor: 10.0
 GPC Cleanup: (Y/N) Y pH: 7.5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	8200	U
111-44-4	bis(2-Chloroethyl)Ether	8200	U
95-57-8	2-Chlorophenol	8200	U
541-73-1	1,3-Dichlorobenzene	8200	U
106-46-7	1,4-Dichlorobenzene	8200	U
95-50-1	1,2-Dichlorobenzene	8200	U
95-48-7	2-Methylphenol	8200	U
108-60-1	2,2'-oxybis(1-Chloropropane)	8200	U
106-44-5	4-Methylphenol	8200	U
621-64-7	N-Nitroso-di-n-propylamine	8200	U
67-72-1	Hexachloroethane	8200	U
98-95-3	Nitrobenzene	8200	U
78-59-1	Isophorone	8200	U
88-75-5	2-Nitrophenol	8200	U
105-67-9	2,4-Dimethylphenol	8200	U
111-91-1	bis(2-Chloroethoxy)methane	8200	U
120-83-2	2,4-Dichlorophenol	8200	U
120-82-1	1,2,4-Trichlorobenzene	8200	U
91-20-3	Naphthalene	8200	U
106-47-8	4-Chloroaniline	8200	U
87-68-3	Hexachlorobutadiene	8200	U
59-50-7	4-Chloro-3-Methylphenol	8200	U
91-57-6	2-Methylnaphthalene	8200	U
77-47-4	Hexachlorocyclopentadiene	8200	U
88-06-2	2,4,6-Trichlorophenol	8200	U
95-95-4	2,4,5-Trichlorophenol	21000	U
91-58-7	2-Chloronaphthalene	8200	U
88-74-4	2-Nitroaniline	21000	U
131-11-3	Dimethylphthalate	8200	U
208-96-8	Acenaphthylene	8200	U
606-20-2	2,6-Dinitrotoluene	8200	U
99-09-2	3-Nitroaniline	21000	U
83-32-9	Acenaphthene	8200	U

FORM I SV-1

OLM03.0

p.290

1595

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE36

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18405.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 60. decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/08/97

Injection Volume: 2.0(uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	21000	U
100-02-7	4-Nitrophenol	21000	U
132-64-9	Dibenzofuran	8200	U
121-14-2	2,4-Dinitrotoluene	8200	U
84-66-2	Diethylphthalate	8200	U
7005-72-3	4-Chlorophenyl-phenylether	8200	U
86-73-7	Fluorene	8200	U
100-01-6	4-Nitroaniline	21000	U
534-52-1	4,6-Dinitro-2-methylphenol	21000	U
86-30-6	N-Nitrosodiphenylamine (1)	8200	U
101-55-3	4-Bromophenyl-phenylether	8200	U
118-74-1	Hexachlorobenzene	8200	U
87-86-5	Pentachlorophenol	21000	U
85-01-8	Phenanthrene	4200	U
120-12-7	Anthracene	1000	U
86-74-8	Carbazole	8200	U
84-74-2	Di-n-butylphthalate	8200	U
206-44-0	Fluoranthene	5400	U
129-00-0	Pyrene	5400	U
85-68-7	Butylbenzylphthalate	2800	U
91-94-1	3,3'-Dichlorobenzidine	8200	U
56-55-3	Benzo(a)anthracene	2800	U
218-01-9	Chrysene	3100	U
117-81-7	bis(2-Ethylhexyl)phthalate	20000	U
117-84-0	Di-n-octylphthalate	7700	U
205-99-2	Benzo(b)fluoranthene	2200	U
207-08-9	Benzo(k)fluoranthene	2600	U
50-32-8	Benzo(a)pyrene	3000	U
193-39-5	Indeno(1,2,3-cd)pyrene	1800	U
53-70-3	Dibenz(a,h)anthracene	8200	U
191-24-2	Benzo(g,h,i)perylene	2000	U

* Result from BSE36DL

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

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1596

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE36

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18405.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 60 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/08/97

Injection Volume: 2.0(uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y

pH: 7.5

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-79-7	3-Penten-2-one, 4-methyl-	2.771	5800	NJAB
2. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.029	9700	NJAB
3.	UNKNOWN AMIDE	14.427	11000	JB
4.	UNKNOWN	15.202	5000	J
5.	UNKNOWN	15.266	40000	J
6.	UNKNOWN PHTHALATE	15.525	4800	J
7.	UNKNOWN PHTHALATE	15.804	5400	J
8.	UNKNOWN PHTHALATE	15.880	8600	J
9.	UNKNOWN PHTHALATE	15.912	5700	J
10.	UNKNOWN PHTHALATE	15.977	3100	J
11.	UNKNOWN PHTHALATE	16.160	8200	J
12.	UNKNOWN PHTHALATE	16.256	14000	J
13.	UNKNOWN	16.321	2900	J
14.	UNKNOWN PHTHALATE	16.353	2900	J
15.	UNKNOWN	16.504	3500	J
16. 1330-78-5	Phosphoric acid, tris(methyl	16.579	3300	NJ
17.	UNKNOWN PHTHALATE	16.622	5700	J
18.	UNKNOWN PHTHALATE	16.730	2900	J
19.	UNKNOWN	16.848	4100	J
20.	UNKNOWN PHTHALATE	16.967	3100	J
21.	UNKNOWN	17.031	3400	J
22.	UNKNOWN PHTHALATE	17.709	8400	J
23.	UNKNOWN	17.774	4400	J
24. 192-97-2	Benzo[e]pyrene	17.838	5300	NJ
25.	UNKNOWN PHTHALATE	17.871	3100	J
26.	Unknown	19.130	3700	J
27.	UNKNOWN	19.313	2400	J
28.	UNKNOWN	19.378	3600	J
29.	UNKNOWN	20.271	4500	J
30.	UNKNOWN	20.755	2400	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE36

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18405.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 60 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/08/97

Injection Volume: 2.0(uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.5

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.949	3100	J
2.	UNKNOWN	21.186	5100	J
3.	UNKNOWN	21.573	4900	J
4.	UNKNOWN	22.133	13000	J
5.	UNKNOWN	22.854	12000	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE37

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18360.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 40 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2-----Phenol	550	U
111-44-4-----bis(2-Chloroethyl)Ether	550	U
95-57-8-----2-Chlorophenol	550	U
541-73-1-----1,3-Dichlorobenzene	550	U
106-46-7-----1,4-Dichlorobenzene	550	U
95-50-1-----1,2-Dichlorobenzene	550	U
95-48-7-----2-Methylphenol	550	U
108-60-1-----2,2'-oxybis(1-Chloropropane)	550	U
106-44-5-----4-Methylphenol	550	U
621-64-7-----N-Nitroso-di-n-propylamine	550	U
67-72-1-----Hexachloroethane	550	U
98-95-3-----Nitrobenzene	550	U
78-59-1-----Isophorone	550	U
88-75-5-----2-Nitrophenol	550	U
105-67-9-----2,4-Dimethylphenol	550	U
111-91-1-----bis(2-Chloroethoxy)methane	550	U
120-83-2-----2,4-Dichlorophenol	550	U
120-82-1-----1,2,4-Trichlorobenzene	550	U
91-20-3-----Naphthalene	550	U
106-47-8-----4-Chloroaniline	550	U
87-68-3-----Hexachlorobutadiene	550	U
59-50-7-----4-Chloro-3-Methylphenol	550	U
91-57-6-----2-Methylnaphthalene	54	U
77-47-4-----Hexachlorocyclopentadiene	550	U
88-06-2-----2,4,6-Trichlorophenol	550	U
95-95-4-----2,4,5-Trichlorophenol	1400	U
91-58-7-----2-Chloronaphthalene	550	U
88-74-4-----2-Nitroaniline	1400	U
131-11-3-----Dimethylphthalate	550	U
208-96-8-----Acenaphthylene	550	U
606-20-2-----2,6-Dinitrotoluene	550	U
99-09-2-----3-Nitroaniline	1400	U
83-32-9-----Acenaphthene	560	U

FORM I SV-1

OLM03.0

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1674

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE37

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18360.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 40 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

51-28-5-----	2,4-Dinitrophenol	1400	U
100-02-7-----	4-Nitrophenol	1400	U
132-64-9-----	Dibenzofuran	240	U
121-14-2-----	2,4-Dinitrotoluene	550	U
84-66-2-----	Diethylphthalate	550	U
7005-72-3-----	4-Chlorophenyl-phenylether	550	U
86-73-7-----	Fluorene	440	U
100-01-6-----	4-Nitroaniline	1400	U
534-52-1-----	4,6-Dinitro-2-methylphenol	1400	U
86-30-6-----	N-Nitrosodiphenylamine (1)	550	U
101-55-3-----	4-Bromophenyl-phenylether	550	U
118-74-1-----	Hexachlorobenzene	550	U
87-86-5-----	Pentachlorophenol	1400	U
85-01-8-----	Phenanthrene	3400	U
120-12-7-----	Anthracene	870	U
86-74-8-----	Carbazole	420	U
84-74-2-----	Di-n-butylphthalate	550	U
206-44-0-----	Fluoranthene	4500	U
129-00-0-----	Pyrene	4100	U
85-68-7-----	Butylbenzylphthalate	190	U
91-94-1-----	3,3'-Dichlorobenzidine	550	U
56-55-3-----	Benzo(a)anthracene	2300	U
218-01-9-----	Chrysene	2200	U
117-81-7-----	bis(2-Ethylhexyl)phthalate	1600	U
117-84-0-----	Di-n-octylphthalate	550	U
205-99-2-----	Benzo(b)fluoranthene	1800	U
207-08-9-----	Benzo(k)fluoranthene	1600	U
50-32-8-----	Benzo(a)pyrene	2000	U
193-39-5-----	Indeno(1,2,3-cd)pyrene	1200	U
53-70-3-----	Dibenz(a,h)anthracene	520	U
191-24-2-----	Benzo(g,h,i)perylene	1300	U

* Results from BSE37

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

p. 295

1675

TIERRA-A-018121

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE37

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30388.07
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: V18360.D
 Level: (low/med) LOW Date Received: 07/31/97
 % Moisture: 40 decanted: (Y/N) N Date Extracted: 08/01/97
 Concentrated Extract Volume: 500(uL) Date Analyzed: 08/06/97
 Injection Volume: 2.0(uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.2

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.793	1100	JB
2.	UNKNOWN	2.944	10000	JB
3.	123-42-2	3.051	910	NJAB
4.	2-Pentanone, 4-hydroxy-4-met	3.794	890	J
5.	Benzene, (-methylethyl)-	9.649	1000	J
6.	UNKNOWN	9.950	670	NJ
7.	20071-09-4	9.950	670	NJ
8.	203-64-5	11.446	980	NJ
9.	10544-50-0	12.522	550	NJ
10.	Sulfur, mol. (S8)	12.759	700	J
11.	UNKNOWN	12.759	700	J
12.	UNKNOWN AMIDE	13.157	470	J
13.	Phenanthrene, -tetramethyl-	13.674	550	J
14.	11H-Benzo[]fluorene	13.706	810	J
15.	Pyrene, -methyl-	13.900	520	J
16.	UNKNOWN AMIDE	14.449	5100	J
17.	Hexanedioic acid, este	14.621	1700	JB
18.	UNKNOWN PAH	14.998	650	J
19.	UNKNOWN	15.181	4400	J
20.	UNKNOWN	15.848	2100	J
21.	UNKNOWN	15.923	2400	J
22.	UNKNOWN	15.977	680	J
23.	UNKNOWN	16.031	1000	J
24.	192-97-2	16.203	480	J
25.	Benzo[]phenanthrene, methyl-	16.203	480	J
26.	Benzo[e]pyrene	17.860	1100	NJ
27.	UNKNOWN	19.163	980	J
28.	UNKNOWN	19.238	570	J
29.	UNKNOWN	19.335	550	J
30.	UNKNOWN	19.894	510	J
31.	UNKNOWN PAH	19.948	730	J
32.	UNKNOWN	20.293	520	J
33.	UNKNOWN PAH	20.336	600	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE37

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18360.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 40 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.777	500	J
2.	UNKNOWN	21.218	810	J
3.	Dibenzpyrene	22.144	620	J
4.	Dibenzpyrene	22.413	450	J
5.	Dibenzpyrene	23.123	450	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE38

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.08

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18361.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 53 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	700	U
111-44-4	bis(2-Chloroethyl)Ether	700	U
95-57-8	2-Chlorophenol	700	U
541-73-1	1,3-Dichlorobenzene	700	U
106-46-7	1,4-Dichlorobenzene	700	U
95-50-1	1,2-Dichlorobenzene	700	U
95-48-7	2-Methylphenol	700	U
108-60-1	2,2'-oxybis(1-Chloropropane)	700	U
106-44-5	4-Methylphenol	700	U
621-64-7	N-Nitroso-di-n-propylamine	700	U
67-72-1	Hexachloroethane	700	U
98-95-3	Nitrobenzene	700	U
78-59-1	Isophorone	700	U
88-75-5	2-Nitrophenol	700	U
105-67-9	2,4-Dimethylphenol	700	U
111-91-1	bis(2-Chloroethoxy)methane	700	U
120-83-2	2,4-Dichlorophenol	700	U
120-82-1	1,2,4-Trichlorobenzene	700	U
91-20-3	Naphthalene	700	U
106-47-8	4-Chloroaniline	700	U
87-68-3	Hexachlorobutadiene	700	U
59-50-7	4-Chloro-3-Methylphenol	700	U
91-57-6	2-Methylnaphthalene	50	U
77-47-4	Hexachlorocyclopentadiene	700	U
88-06-2	2,4,6-Trichlorophenol	700	U
95-95-4	2,4,5-Trichlorophenol	1800	U
91-58-7	2-Chloronaphthalene	700	U
88-74-4	2-Nitroaniline	1800	U
131-11-3	Dimethylphthalate	700	U
208-96-8	Acenaphthylene	700	U
606-20-2	2,6-Dinitrotoluene	700	U
99-09-2	3-Nitroaniline	1800	U
83-32-9	Acenaphthene	700	U

FORM I SV-1

OLM03.0

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE38

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.08

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18361.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 53 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5	2,4-Dinitrophenol	1800	↓
100-02-7	4-Nitrophenol	1800	
132-64-9	Dibenzofuran	700	
121-14-2	2,4-Dinitrotoluene	700	
84-66-2	Diethylphthalate	700	
7005-72-3	4-Chlorophenyl-phenylether	700	
86-73-7	Fluorene	39	
100-01-6	4-Nitroaniline	1800	
534-52-1	4,6-Dinitro-2-methylphenol	1800	
86-30-6	N-Nitrosodiphenylamine (1)	700	
101-55-3	4-Bromophenyl-phenylether	700	
118-74-1	Hexachlorobenzene	700	
87-86-5	Pentachlorophenol	1800	
85-01-8	Phenanthrene	380	
120-12-7	Anthracene	87	
86-74-8	Carbazole	700	
84-74-2	Di-n-butylphthalate	700	
206-44-0	Fluoranthene	580	
129-00-0	Pyrene	630	
85-68-7	Butylbenzylphthalate	700	
91-94-1	3,3'-Dichlorobenzidine	700	
56-55-3	Benzo(a)anthracene	260	
218-01-9	Chrysene	300	
117-81-7	bis(2-Ethylhexyl)phthalate	480	
117-84-0	Di-n-octylphthalate	700	
205-99-2	Benzo(b)fluoranthene	260	
207-08-9	Benzo(k)fluoranthene	200	
50-32-8	Benzo(a)pyrene	240	
193-39-5	Indeno(1,2,3-cd)pyrene	160	
53-70-3	Dibenz(a,h)anthracene	700	
191-24-2	Benzo(g,h,i)perylene	200	

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE38

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.08

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18361.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 53 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 33

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	2.758	16000	J
2.	ALDOL CONDENSATE	2.790	1300	AJ R
3.	UNKNOWN ALCOHOL	2.854	900	JB
4.	UNKNOWN ALCOHOL	2.897	280	JB R
5.	Buten-one, -methyl-	2.951	15000	J
6.	UNKNOWN	3.016	220	JB
7. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.048	1000	NJAB R
8.	UNKNOWN	3.102	660	JB
9.	UNKNOWN ALKENE	3.285	200	J
10.	UNKNOWN	3.371	330	JB R
11.	UNKNOWN	3.468	360	J
12.	UNKNOWN	3.576	220	JB R
13.	UNKNOWN	<u>3.748</u>	380	JB R
14. 100-52-7	Benzaldehyde	3.802	410	NJ
15.	UNKNOWN	3.931	210	J
16.	UNKNOWN	4.318	190	J
17.	UNKNOWN	6.212	210	J
18.	UNKNOWN	12.412	190	J
19. 10544-50-0	Sulfur, mol. (S8)	12.519	180	NJ
20.	UNKNOWN AMIDE	13.154	420	J
21.	Phenanthrene, tetramethyl-	13.671	360	J
22.	UNKNOWN AMIDE	14.446	7200	J
23.	Hexanedioic acid, este	14.618	920	JB R
24.	UNKNOWN	16.437	250	J
25.	Dodecatrien-ol, trimethy	17.276	300	J
26. 198-55-0	Perylene	17.857	300	NJ
27.	UNKNOWN	18.503	280	J
28.	UNKNOWN	18.880	270	J
29.	UNKNOWN	19.332	210	J
30.	UNKNOWN	19.881	190	J

** was not found on blank Form 1F*

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE38

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.08

Sample wt/vol: 30.1 (g/mL) G

Lab File ID: V18361.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 53 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 7.6

CONCENTRATION UNITS:
 (ug/L or ug/Kg) UG/KG

Number TICs found: 33

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	20.989	420	JB
2.	UNKNOWN	21.140	240	JP
3.	UNKNOWN	22.022	730	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE41

FB

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.10

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22948.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

FORM I SV-1

OLM03.0

p. 302

1874

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE41

F3

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.10

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22948.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	0.5	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

p. 303

1875

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE41

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.10

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: T22948.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/01/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/05/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.6

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

Number TICs found: 4

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.117	4	NJA
2.	UNKNOWN	3.868	16	JB
3.	Trimethyl-hexene	3.997	5	J
4.	UNKNOWN	4.136	8	JB
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE42

FB

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30412.08

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: V18428.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/05/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/11/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 8.4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
108-95-2	Phenol	10	U
111-44-4	bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitroso-di-n-propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	bis(2-Chloroethoxy)methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

FORM I SV-1

OLM03.0

p. 305

1887

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE42

FB

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30412.08

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: V18428.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/05/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/11/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.4

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-phenylether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-n-butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(a)anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	bis(2-Ethylhexyl)phthalate	12	U
117-84-0	Di-n-octylphthalate	10	U
205-99-2	Benzo(b)fluoranthene	10	U
207-08-9	Benzo(k)fluoranthene	10	U
50-32-8	Benzo(a)pyrene	10	U
193-39-5	Indeno(1,2,3-cd)pyrene	10	U
53-70-3	Dibenz(a,h)anthracene	10	U
191-24-2	Benzo(g,h,i)perylene	10	U

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE42

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30412.08

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: V18428.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: _____ decanted: (Y/N) _____

Date Extracted: 08/05/97

Concentrated Extract Volume: 1000(uL)

Date Analyzed: 08/11/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N

pH: 8.4

Number TICs found: 2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	3.452	2	J
2.	Hexanedioic acid, est	7.079	2	JB
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE43

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.11

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18362.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
108-95-2	Phenol	280	J
111-44-4	bis(2-Chloroethyl)Ether	420	U
95-57-8	2-Chlorophenol	420	U
541-73-1	1,3-Dichlorobenzene	420	U
106-46-7	1,4-Dichlorobenzene	420	U
95-50-1	1,2-Dichlorobenzene	420	U
95-48-7	2-Methylphenol	420	U
108-60-1	2,2'-oxybis(1-Chloropropane)	420	U
106-44-5	4-Methylphenol	420	U
621-64-7	N-Nitroso-di-n-propylamine	420	U
67-72-1	Hexachloroethane	420	U
98-95-3	Nitrobenzene	420	U
78-59-1	Isophorone	420	U
88-75-5	2-Nitrophenol	420	U
105-67-9	2,4-Dimethylphenol	420	U
111-91-1	bis(2-Chloroethoxy)methane	420	U
120-83-2	2,4-Dichlorophenol	420	U
120-82-1	1,2,4-Trichlorobenzene	420	U
91-20-3	Naphthalene	420	U
106-47-8	4-Chloroaniline	420	U
87-68-3	Hexachlorobutadiene	420	U
59-50-7	4-Chloro-3-Methylphenol	420	U
91-57-6	2-Methylnaphthalene	54	Y
77-47-4	Hexachlorocyclopentadiene	420	U
88-06-2	2,4,6-Trichlorophenol	420	U
95-95-4	2,4,5-Trichlorophenol	1000	U
91-58-7	2-Chloronaphthalene	420	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	420	U
208-96-8	Acenaphthylene	140	U
606-20-2	2,6-Dinitrotoluene	420	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	420	U

FORM I SV-1

OLM03.0

1897

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1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE43

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) -SOIL

Lab Sample ID: 30388.11

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18362.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 5.8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	UG/KG	Q
51-28-5	2,4-Dinitrophenol	1000	UUUJ
100-02-7	4-Nitrophenol	1000	UUUU
132-64-9	Dibenzofuran	420	UUUU
121-14-2	2,4-Dinitrotoluene	420	UUUU
84-66-2	Diethylphthalate	1600	UUUU
7005-72-3	4-Chlorophenyl-phenylether	420	UUUU
86-73-7	Fluorene	420	UUUU
100-01-6	4-Nitroaniline	1000	UUUU
534-52-1	4,6-Dinitro-2-methylphenol	1000	UUUU
86-30-6	N-Nitrosodiphenylamine (1)	1200	UUUU
101-55-3	4-Bromophenyl-phenylether	420	UUUU
118-74-1	Hexachlorobenzene	420	UUUU
87-86-5	Pentachlorophenol	1000	UUUU
85-01-8	Phenanthrene	260	UUUU
120-12-7	Anthracene	120	UUUU
86-74-8	Carbazole	420	UUUU
84-74-2	Di-n-butylphthalate	200	UUUU
206-44-0	Fluoranthene	410	UUUU
129-00-0	Pyrene	620	UUUU
85-68-7	Butylbenzylphthalate	5300 * 5400	UUUU
91-94-1	3,3'-Dichlorobenzidine	420	UUUU
56-55-3	Benzo(a)anthracene	350	UUUU
218-01-9	Chrysene	440	UUUU
117-81-7	bis(2-Ethylhexyl)phthalate	2000	UUUU
117-84-0	Di-n-octylphthalate	150	UUUU
205-99-2	Benzo(b)fluoranthene	470	UUUU
207-08-9	Benzo(k)fluoranthene	340	UUUU
50-32-8	Benzo(a)pyrene	420	UUUU
193-39-5	Indeno(1,2,3-cd)pyrene	360	UUUU
53-70-3	Dibenz(a,h)anthracene	130	UUUU
191-24-2	Benzo(g,h,i)perylene	540	UUUU

* Result from BSE43DL

(1) - Cannot be separated from Diphenylamine

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE43

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.11

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18362.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 5.8

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-79-7	3-Penten-2-one, 4-methyl-	2.783	780	NJAB
2.	UNKNOWN	2.880	430	JB
3.	UNKNOWN	2.945	1600	JB
4.	UNKNOWN	3.053	640	JB
5.	UNKNOWN	3.096	1000	JB
6.	UNKNOWN	8.617	760	J
7.	Phenol, (phenylamino)-	11.437	660	J
8.	1,1'-Biphenyl, -Tetrachloro-	11.899	360	J
9.	Triazine-diamine, -phenyl-	12.211	580	J
10.	1,1'-Biphenyl, -pentachloro-	13.514	540	J
11.	11H-Benzo[]fluorene	13.707	610	J
12.	1,1'-Biphenyl, -pentachloro-	13.890	680	J
13.	UNKNOWN AMIDE	14.461	4400	J
14.	Hexanedioic acid, este	14.622	590	JB
15. 115-86-6	Phosphoric acid, triphenyl e	14.870	3700	NJ
16.	UNKNOWN	17.646	410	J
17.	UNKNOWN	17.776	280	J
18. 192-97-2	Benzo[e]pyrene	17.862	380	NJ
19.	UNKNOWN	18.206	300	J
20.	UNKNOWN	18.303	420	J
21.	UNKNOWN	18.389	370	J
22.	UNKNOWN PAH	18.497	600	J
23.	UNKNOWN	18.572	370	J
24.	UNKNOWN PAH	18.712	610	J
25.	UNKNOWN	18.787	240	J
26.	UNKNOWN	18.895	650	J
27.	UNKNOWN	18.949	350	J
28.	Unknown	19.003	250	J
29. 59-02-9	Vitamin E	19.067	300	NJ
30.	UNKNOWN	19.336	270	J

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE43

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.11

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18362.D

Level: (low/med) LOW

Date Received: 07/31/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/01/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/06/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 5.8

Number TICs found: 35

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 83-47-6	.gamma.-Sitosterol	20.294	980	NJ
2. 603-48-5	Benzenamine, 4,4',4''-methyl	20.778	450	NJ
3.	UNKNOWN	21.123	740	J
4. 1058-61-3	Stigmast-4-en-3-one	21.230	720	NJ
5.	UNKNOWN	22.576	340	J
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE44

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18442.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/11/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

108-95-2	Phenol	420	J ↓
111-44-4	bis(2-Chloroethyl) Ether	420	
95-57-8	2-Chlorophenol	420	
541-73-1	1,3-Dichlorobenzene	420	
106-46-7	1,4-Dichlorobenzene	420	
95-50-1	1,2-Dichlorobenzene	420	
95-48-7	2-Methylphenol	38	
108-60-1	2,2'-oxybis(1-Chloropropane)	420	
106-44-5	4-Methylphenol	46	
621-64-7	N-Nitroso-di-n-propylamine	420	
67-72-1	Hexachloroethane	420	
98-95-3	Nitrobenzene	420	
78-59-1	Isophorone	420	
88-75-5	2-Nitrophenol	420	
105-67-9	2,4-Dimethylphenol	420	
111-91-1	bis(2-Chloroethoxy)methane	420	
120-83-2	2,4-Dichlorophenol	420	
120-82-1	1,2,4-Trichlorobenzene	420	
91-20-3	Naphthalene	420	
106-47-8	4-Chloroaniline	420	
87-68-3	Hexachlorobutadiene	420	
59-50-7	4-Chloro-3-Methylphenol	420	
91-57-6	2-Methylnaphthalene	42	
77-47-4	Hexachlorocyclopentadiene	420	
88-06-2	2,4,6-Trichlorophenol	420	
95-95-4	2,4,5-Trichlorophenol	1000	
91-58-7	2-Chloronaphthalene	420	
88-74-4	2-Nitroaniline	1000	
131-11-3	Dimethylphthalate	420	
208-96-8	Acenaphthylene	120	
606-20-2	2,6-Dinitrotoluene	420	
99-09-2	3-Nitroaniline	1000	
83-32-9	Acenaphthene	91	

FORM I SV-1

OLM03.0

p. 312

2045

TIERRA-A-018138

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE44

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: -V18442.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/11/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 6.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
51-28-5-----	2,4-Dinitrophenol	1000	
100-02-7-----	4-Nitrophenol	1000	
132-64-9-----	Dibenzofuran	52	
121-14-2-----	2,4-Dinitrotoluene	420	
84-66-2-----	Diethylphthalate	420	
7005-72-3-----	4-Chlorophenyl-phenylether	420	
86-73-7-----	Fluorene	74	
100-01-6-----	4-Nitroaniline	1000	
534-52-1-----	4,6-Dinitro-2-methylphenol	1000	
86-30-6-----	N-Nitrosodiphenylamine (1)	420	
101-55-3-----	4-Bromophenyl-phenylether	420	
118-74-1-----	Hexachlorobenzene	420	
87-86-5-----	Pentachlorophenol	1000	
85-01-8-----	Phenanthrene	1200	
120-12-7-----	Anthracene	380	
86-74-8-----	Carbazole	110	
84-74-2-----	Di-n-butylphthalate	70	
206-44-0-----	Fluoranthene	1800	
129-00-0-----	Pyrene	2200	
85-68-7-----	Butylbenzylphthalate	420	
91-94-1-----	3,3'-Dichlorobenzidine	420	
56-55-3-----	Benzo(a)anthracene	1300	
218-01-9-----	Chrysene	1400	
117-81-7-----	bis(2-Ethylhexyl)phthalate	1700	
117-84-0-----	Di-n-octylphthalate	420	
205-99-2-----	Benzo(b)fluoranthene	1100	
207-08-9-----	Benzo(k)fluoranthene	1100	
50-32-8-----	Benzo(a)pyrene	1300	
193-39-5-----	Indeno(1,2,3-cd)pyrene	850	
53-70-3-----	Dibenz(a,h)anthracene	350	
191-24-2-----	Benzo(g,h,i)perylene	980	

(1) - Cannot be separated from Diphenylamine

FORM I SV-2

OLM03.0

p. 3/3

2046

TIERRA-A-018139

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE44

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18442.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/11/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 6.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1. 141-79-7	3-Penten-2-one, 4-methyl-	2.738	2900	NJAB
2. 123-42-2	2-Pentanone, 4-hydroxy-4-met	3.007	2400	NJAB
3. 100-52-7	Benzaldehyde	3.761	1100	NJ
4. 57-10-3	Hexadecanoic acid	11.391	3500	NJ
5.	UNKNOWN	11.574	960	J
6.	Naphtho[]pyran,	11.800	3400	J
7.	Indacen-one, -tetrahydro-	12.080	2000	J
8.	Phenanthrene, -dimethyl-	12.371	810	J
9.	UNKNOWN	12.457	1900	J
10.	UNKNOWN	12.694	2500	J
11.	UNKNOWN	13.264	730	J
12.	Phenanthrene, -tetramethyl-	13.608	7200	J
13.	UNKNOWN	13.899	670	J
14.	UNKNOWN	14.125	620	J
15.	UNKNOWN	14.168	6800	J
16.	UNKNOWN	14.243	1400	J
17.	UNKNOWN	14.373	1400	J
18. 1740-19-8	1-Phenanthrenecarboxylic aci	14.416	6900	NJ
19.	UNKNOWN	14.599	580	J
20. 18956-15-5	2-Propen-1-one, 1-(2,6-dihyd	14.857	980	NJ
21.	UNKNOWN	15.072	840	J
22. 1740-19-8	1-Phenanthrenecarboxylic aci	15.158	1800	NJ
23.	Benzopyran-one, -dihydro-d	15.449	720	J
24.	UNKNOWN	15.772	620	J
25.	UNKNOWN	16.008	2900	J
26.	UNKNOWN	16.105	1400	J
27.	UNKNOWN	16.202	820	J
28.	UNKNOWN	16.536	590	J
29.	UNKNOWN	17.214	920	J
30.	UNKNOWN	18.602	1400	J

PT

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

BSE44

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.09

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: V18442.D

Level: (low/med) LOW

Date Received: 08/01/97

% Moisture: 21 decanted: (Y/N) N

Date Extracted: 08/04/97

Concentrated Extract Volume: 500(uL)

Date Analyzed: 08/11/97

Injection Volume: 2.0(uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y

pH: 6.2

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

Number TICs found: 35

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
1.	UNKNOWN	18.828	560	J
2.	UNKNOWN	18.936	620	J
3.	UNKNOWN PAH	20.260	930	J
4.	UNKNOWN	20.916	1000	J
5.	UNKNOWN	21.131	1500	J
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1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE22

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.01

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____

Date Received: 07/31/97

Extraction: (SepF/Cont/Sonc) CONT

Date Extracted: 08/01/97

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 08/16/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.1

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.

COMPOUND

Q

319-84-6-----	alpha-BHC	0.050	U
319-85-7-----	beta-BHC	0.050	U
319-86-8-----	delta-BHC	0.050	U
58-89-9-----	gamma-BHC (Lindane)	0.050	U
76-44-8-----	Heptachlor	0.050	U
309-00-2-----	Aldrin	0.050	U
1024-57-3-----	Heptachlor epoxide	0.050	U
959-98-8-----	Endosulfan I	0.050	U
60-57-1-----	Dieldrin	0.10	U
72-55-9-----	4,4'-DDE	0.10	U
72-20-8-----	Endrin	0.10	U
33213-65-9-----	Endosulfan II	0.10	U
72-54-8-----	4,4'-DDD	0.10	U
1031-07-8-----	Endosulfan sulfate	0.10	U
50-29-3-----	4,4'-DDT	0.10	U
72-43-5-----	Methoxychlor	0.50	U
53494-70-5-----	Endrin ketone	0.10	U
7421-93-4-----	Endrin aldehyde	0.10	U
5103-71-9-----	alpha-Chlordane	0.050	U
5103-74-2-----	gamma-Chlordane	0.050	U
8001-35-2-----	Toxaphene	5.0	U
12674-11-2-----	Aroclor-1016	1.0	U
11104-28-2-----	Aroclor-1221	2.0	U
11141-16-5-----	Aroclor-1232	1.0	U
53469-21-9-----	Aroclor-1242	1.0	U
12672-29-6-----	Aroclor-1248	1.0	U
11097-69-1-----	Aroclor-1254	1.0	U
11096-82-5-----	Aroclor-1260	1.0	U

J

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE23

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.02

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____

Date Received: 07/31/97

Extraction: (SepF/Cont/Sonc) CONT

Date Extracted: 08/01/97

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 08/16/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.3

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
---------	----------	--	---

319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

2414
OLM03.0

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE26

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.03

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____

Date Received: 07/31/97

Extraction: (SepF/Cont/Sonc) CONT

Date Extracted: 08/01/97

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 08/16/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.2

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

2417

~~AD~~
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE27

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: ~~25601~~ 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.04 ~~BE~~

Sample wt/vol: 30.0 (g/mL) ~~GF~~

Lab File ID: _____

% Moisture: 52 decanted: (Y/N) ~~Y~~

Received: 07/31/97 *f. 8/25/97*

Extraction: (SepF/Cont/Sonc) SC

Detected: 08/15/97

Concentrated Extract Volume: 50

ed: 08/24/97

Injection Volume: 0.5 (uL)

1.0

GPC Cleanup: (Y/N) Y pH: 7

(Y/N) N

CAS NO. COMPOUND

319-84-6	alpha-BHC
319-85-7	beta-BHC
319-86-8	delta-BHC
58-89-9	gamma-BHC (I)
76-44-8	Heptachlor
309-00-2	Aldrin
1024-57-3	Heptachlor e
959-98-8	Endosulfan I
60-57-1	Dieldrin
72-55-9	4,4'-DDE
72-20-8	Endrin
33213-65-9	Endosulfan I
72-54-8	4,4'-DDD
1031-07-8	Endosulfan s
50-29-3	4,4'-DDT
72-43-5	Methoxychlor
53494-70-5	Endrin keton
7421-93-4	Endrin aldeh
5103-71-9	alpha-Chloro
5103-74-2	gamma-Chloro
8001-35-2	Toxaphene
12674-11-2	Aroclor-101
11104-28-2	Aroclor-122
11141-16-5	Aroclor-123
53469-21-9	Aroclor-124
12672-29-6	Aroclor-124
11097-69-1	Aroclor-125
11096-82-5	Aroclor-126

Q

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2420

ID
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE28DL

Lab Name: SWL-TULSA Contract: 68-D5-0026
Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
Matrix: (soil/water) SOIL Lab Sample ID: 30388.05DL
Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____
% Moisture: 48 decanted: (Y/N) N Date Received: 07/31/97
Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/15/97
Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/24/97
Injection Volume: 0.5 (uL) Dilution Factor: 10.0
GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	33	U
319-85-7	beta-BHC	33	U
319-86-8	delta-BHC	33	U
58-89-9	gamma-BHC (Lindane)	33	U
76-44-8	Heptachlor	33	U
309-00-2	Aldrin	33	U
1024-57-3	Heptachlor epoxide	33	U
959-98-8	Endosulfan I	33	U
60-57-1	Dieldrin	100	U
72-55-9	4,4'-DDE	63	U
72-20-8	Endrin	63	U
33213-65-9	Endosulfan II	63	U
72-54-8	4,4'-DDD	240	U
1031-07-8	Endosulfan sulfate	63	U
50-29-3	4,4'-DDT	130	U
72-43-5	Methoxychlor	330	U
53494-70-5	Endrin ketone	63	U
7421-93-4	Endrin aldehyde	63	U
5103-71-9	alpha-Chlordane	73	U
5103-74-2	gamma-Chlordane	72	U
8001-35-2	Toxaphene	3300	U
12674-11-2	Aroclor-1016	630	U
11104-28-2	Aroclor-1221	1300	U
11141-16-5	Aroclor-1232	630	U
53469-21-9	Aroclor-1242	630	U
12672-29-6	Aroclor-1248	630	U
11097-69-1	Aroclor-1254	630	U
11096-82-5	Aroclor-1260	450	U

2432

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE30

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.02

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: _____

% Moisture: 60 decanted: (Y/N) N

Date Received: 08/01/97

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 08/04/97

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 08/17/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

319-84-6	alpha-BHC	4.2	DD	↑ H H H H H H H H H H
319-85-7	beta-BHC	4.2	DD	
319-86-8	delta-BHC	4.2	DD	
58-89-9	gamma-BHC (Lindane)	12	DD	
76-44-8	Heptachlor	5.5	AA	
309-00-2	Aldrin	31	AA	
1024-57-3	Heptachlor epoxide	4.2	AA	
959-98-8	Endosulfan I	17	DD	
60-57-1	Dieldrin	25	DD	
72-55-9	4,4'-DDE	54	DD	
72-20-8	Endrin	8.2	DD	↑ H H H H H H H H H H
33213-65-9	Endosulfan II	8.2	DD	
72-54-8	4,4'-DDD	78	DD	
1031-07-8	Endosulfan sulfate	8.2	DD	
50-29-3	4,4'-DDT	100	DD	
72-43-5	Methoxychlor	78	AA	
53494-70-5	Endrin ketone	10	AA	
7421-93-4	Endrin aldehyde	95	AA	
5103-71-9	alpha-Chlordane	29	AA	
5103-74-2	gamma-Chlordane	16	DD	
8001-35-2	Toxaphene	420	DD	↑ H H H H H H H
12674-11-2	Aroclor-1016	82	DD	
11104-28-2	Aroclor-1221	170	DD	
11141-16-5	Aroclor-1232	82	DD	
53469-21-9	Aroclor-1242	82	DD	
12672-29-6	Aroclor-1248	82	DD	
11097-69-1	Aroclor-1254	82	DD	
11096-82-5	Aroclor-1260	600	DD	

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE31

Lab Name: SWL-TULSA Contract: 68-D5-0026
 Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22
 Matrix: (soil/water) SOIL Lab Sample ID: 30388.06
 Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____
 % Moisture: 59 decanted: (Y/N) N Date Received: 07/31/97
 Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/15/97
 Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/24/97
 Injection Volume: 0.5 (uL) Dilution Factor: 1.0
 GPC Cleanup: (Y/N) Y pH: 7.1 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO. COMPOUND UG/KG Q

319-84-6	alpha-BHC	4.1	U
319-85-7	beta-BHC	4.1	U
319-86-8	delta-BHC	4.1	U
58-89-9	gamma-BHC (Lindane)	4.1	U
76-44-8	Heptachlor	4.1	U
309-00-2	Aldrin	4.1	U
1024-57-3	Heptachlor epoxide	4.1	U
959-98-8	Endosulfan I	4.1	U
60-57-1	Dieldrin	8.0	U
72-55-9	4,4'-DDE	8.0	U
72-20-8	Endrin	8.0	U
33213-65-9	Endosulfan II	8.0	U
72-54-8	4,4'-DDD	130	U
1031-07-8	Endosulfan sulfate	8.0	U
50-29-3	4,4'-DDT	8.0	U
72-43-5	Methoxychlor	41	U
53494-70-5	Endrin ketone	8.0	U
7421-93-4	Endrin aldehyde	8.0	U
5103-71-9	alpha-Chlordane	4.1	U
5103-74-2	gamma-Chlordane	4.1	U
8001-35-2	Toxaphene	410	U
12674-11-2	Aroclor-1016	80	U
11104-28-2	Aroclor-1221	160	U
11141-16-5	Aroclor-1232	80	U
53469-21-9	Aroclor-1242	80	U
12672-29-6	Aroclor-1248	80	U
11097-69-1	Aroclor-1254	80	U
11096-82-5	Aroclor-1260	80	U

** Results as BSE31DL was qualified "U"

2483

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE32

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.03

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: _____

% Moisture: 24 decanted: (Y/N) N

Date Received: 08/01/97

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 08/04/97

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 08/17/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.4

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.

COMPOUND

Q

319-84-6-----alpha-BHC	2.2	U
319-85-7-----beta-BHC	2.2	U
319-86-8-----delta-BHC	2.2	U
58-89-9-----gamma-BHC (Lindane)	2.2	U
76-44-8-----Heptachlor	2.2	U
309-00-2-----Aldrin	2.2	U
1024-57-3-----Heptachlor epoxide	2.2	U
959-98-8-----Endosulfan I	22	U
60-57-1-----Dieldrin	4.3	U
72-55-9-----4,4'-DDE	4.3	U
72-20-8-----Endrin	4.3	U
33213-65-9-----Endosulfan II	4.3	U
72-54-8-----4,4'-DDD	4.3	U
1031-07-8-----Endosulfan sulfate	4.3	U
50-29-3-----4,4'-DDT	9.5	U
72-43-5-----Methoxychlor	22	U
53494-70-5-----Endrin ketone	4.3	U
7421-93-4-----Endrin aldehyde	4.3	U
5103-71-9-----alpha-Chlordane	22	U
5103-74-2-----gamma-Chlordane	20	N
8001-35-2-----Toxaphene	220	U
12674-11-2-----Aroclor-1016	43	U
11104-28-2-----Aroclor-1221	88	U
11141-16-5-----Aroclor-1232	43	U
53469-21-9-----Aroclor-1242	43	U
12672-29-6-----Aroclor-1248	43	U
11097-69-1-----Aroclor-1254	43	U
11096-82-5-----Aroclor-1260	110	U

J

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE33

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.04

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: _____

% Moisture: 77 decanted: (Y/N) N

Date Received: 08/01/97

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 08/04/97

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 08/17/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.3

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG		
319-84-6	alpha-BHC	7.4	U	J
319-85-7	beta-BHC	7.4	U	
319-86-8	delta-BHC	78	P	
58-89-9	gamma-BHC (Lindane)	58		
76-44-8	Heptachlor	140*	PE N	
309-00-2	Aldrin	7.4	U	
1024-57-3	Heptachlor epoxide	210*	PE N	
959-98-8	Endosulfan I	900*	PE	
60-57-1	Dieldrin	330	E	
72-55-9	4,4'-DDE	730*	PE N	
72-20-8	Endrin	62	E	R
33213-65-9	Endosulfan II	14	U	
72-54-8	4,4'-DDD	1300*	E	
1031-07-8	Endosulfan sulfate	16		
50-29-3	4,4'-DDT	780*	PE N	
72-43-5	Methoxychlor	74	U	
53494-70-5	Endrin ketone	47		
7421-93-4	Endrin aldehyde	810*	PE N	
5103-71-9	alpha-Chlordane	700*	E	
5103-74-2	gamma-Chlordane	870*	PE	
8001-35-2	Toxaphene	740	U	
12674-11-2	Aroclor-1016	140	U	
11104-28-2	Aroclor-1221	290	U	
11141-16-5	Aroclor-1232	140	U	
53469-21-9	Aroclor-1242	140	U	
12672-29-6	Aroclor-1248	140	U	
11097-69-1	Aroclor-1254	140	U	
11096-82-5	Aroclor-1260	810* 5400	PE	

* Result from BSE33DL.
 ** Analyte was not detected in BSE33DL.

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE34

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.05

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: _____

% Moisture: 90 decanted: (Y/N) N

Date Received: 08/01/97

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 08/04/97

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 08/17/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.1

Sulfur Cleanup: (Y/N) N

CAS NO. COMPOUND CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG Q

319-84-6	alpha-BHC	17	U
319-85-7	beta-BHC	17	U
319-86-8	delta-BHC	17	U
58-89-9	gamma-BHC (Lindane)	17	U
76-44-8	Heptachlor	17	U
309-00-2	Aldrin	17	U
1024-57-3	Heptachlor epoxide	17	U
959-98-8	Endosulfan I	17	U
60-57-1	Dieldrin	33	U
72-55-9	4,4'-DDE	33	U
72-20-8	Endrin	33	U
33213-65-9	Endosulfan II	33	U
72-54-8	4,4'-DDD	33	U
1031-07-8	Endosulfan sulfate	33	U
50-29-3	4,4'-DDT	33	U
72-43-5	Methoxychlor	170	U
53494-70-5	Endrin ketone	33	U
7421-93-4	Endrin aldehyde	33	U
5103-71-9	alpha-Chlordane	17	U
5103-74-2	gamma-Chlordane	17	U
8001-35-2	Toxaphene	1700	U
12674-11-2	Aroclor-1016	330	U
11104-28-2	Aroclor-1221	670	U
11141-16-5	Aroclor-1232	330	U
53469-21-9	Aroclor-1242	330	U
12672-29-6	Aroclor-1248	330	U
11097-69-1	Aroclor-1254	330	U
11096-82-5	Aroclor-1260	330	U

2564

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE35

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.06

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: _____

% Moisture: 88 decanted: (Y/N) N

Date Received: 08/01/97

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 08/04/97

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 08/17/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.0

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	14	U
319-85-7	beta-BHC	14	U
319-86-8	delta-BHC	14	U
58-89-9	gamma-BHC (Lindane)	14	U
76-44-8	Heptachlor	14	U
309-00-2	Aldrin	14	U
1024-57-3	Heptachlor epoxide	14	U
959-98-8	Endosulfan I	14	U
60-57-1	Dieldrin	28	U
72-55-9	4,4'-DDE	28	U
72-20-8	Endrin	28	U
33213-65-9	Endosulfan II	28	U
72-54-8	4,4'-DDD	81	U
1031-07-8	Endosulfan sulfate	28	U
50-29-3	4,4'-DDT	28	U
72-43-5	Methoxychlor	140	U
53494-70-5	Endrin ketone	28	U
7421-93-4	Endrin aldehyde	28	U
5103-71-9	alpha-Chlordane	14	U
5103-74-2	gamma-Chlordane	14	U
8001-35-2	Toxaphene	1400	U
12674-11-2	Aroclor-1016	280	U
11104-28-2	Aroclor-1221	560	U
11141-16-5	Aroclor-1232	280	U
53469-21-9	Aroclor-1242	280	U
12672-29-6	Aroclor-1248	280	U
11097-69-1	Aroclor-1254	280	U
11096-82-5	Aroclor-1260	280	U

2570

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE36

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30412.07

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: _____

% Moisture: 60 decanted: (Y/N) N

Date Received: 08/01/97

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 08/04/97

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 08/17/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.5

Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L. or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	4.2	N N N N N N N N N N N N N N N
319-85-7	beta-BHC	4.2	
319-86-8	delta-BHC	4.2	
58-89-9	gamma-BHC (Lindane)	4.2	
76-44-8	Heptachlor	4.2	
309-00-2	Aldrin	4.2	
1024-57-3	Heptachlor epoxide	4.2	
959-98-8	Endosulfan I	28	
60-57-1	Dieldrin	21	
72-55-9	4,4'-DDE	23	
72-20-8	Endrin	8.2	
33213-65-9	Endosulfan II	8.2	
72-54-8	4,4'-DDD	39	
1031-07-8	Endosulfan sulfate	8.2	
50-29-3	4,4'-DDT	78	
72-43-5	Methoxychlor	42	
53494-70-5	Endrin ketone	8.2	
7421-93-4	Endrin aldehyde	49	
5103-71-9	alpha-Chlordane	25	N N N N N N N N N N
5103-74-2	gamma-Chlordane	26	
8001-35-2	Toxaphene	420	
12674-11-2	Aroclor-1016	82	
11104-28-2	Aroclor-1221	170	
11141-16-5	Aroclor-1232	82	
53469-21-9	Aroclor-1242	82	
12672-29-6	Aroclor-1248	82	
11097-69-1	Aroclor-1254	82	
11096-82-5	Aroclor-1260	350	

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1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE37DL

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) SOIL

Lab Sample ID: 30388.07DL

Sample wt/vol: 30.0 (g/mL) G

Lab File ID: _____

% Moisture: 40 decanted: (Y/N) N

Date Received: 07/31/97

Extraction: (SepF/Cont/Sonc) SONC

Date Extracted: 08/15/97

Concentrated Extract Volume: 5000 (uL)

Date Analyzed: 08/24/97

Injection Volume: 0.5 (uL)

Dilution Factor: 10.0

GPC Cleanup: (Y/N) Y pH: 7.2

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	UG/KG	Q
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319-84-6	alpha-BHC	28	U
319-85-7	beta-BHC	28	U
319-86-8	delta-BHC	28	U
58-89-9	gamma-BHC (Lindane)	28	U
76-44-8	Heptachlor	28	U
309-00-2	Aldrin	28	U
1024-57-3	Heptachlor epoxide	28	U
959-98-8	Endosulfan I	28	U
60-57-1	Dieldrin	68	D
72-55-9	4,4'-DDE	56	D
72-20-8	Endrin	120	D
33213-65-9	Endosulfan II	59	D
72-54-8	4,4'-DDD	42	D
1031-07-8	Endosulfan sulfate	55	U
50-29-3	4,4'-DDT	55	U
72-43-5	Methoxychlor	280	U
53494-70-5	Endrin ketone	55	U
7421-93-4	Endrin aldehyde	55	U
5103-71-9	alpha-Chlordane	83	D
5103-74-2	gamma-Chlordane	63	D
8001-35-2	Toxaphene	2800	U
12674-11-2	Aroclor-1016	550	U
11104-28-2	Aroclor-1221	1100	U
11141-16-5	Aroclor-1232	550	U
53469-21-9	Aroclor-1242	550	U
12672-29-6	Aroclor-1248	550	U
11097-69-1	Aroclor-1254	550	U
11096-82-5	Aroclor-1260	650	U

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE38

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22

Matrix: (soil/water) SOIL Lab Sample ID: 30388.08

Sample wt/vol: 30.0 (g/mL) G Lab File ID: _____

% Moisture: 53 decanted: (Y/N) N Date Received: 07/31/97

Extraction: (SepF/Cont/Sonc) SONC Date Extracted: 08/15/97

Concentrated Extract Volume: 5000 (uL) Date Analyzed: 08/24/97

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 7.6 Sulfur Cleanup: (Y/N) N

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	3.6	U
319-85-7	beta-BHC	3.6	U
319-86-8	delta-BHC	3.6	U
58-89-9	gamma-BHC (Lindane)	3.6	U
76-44-8	Heptachlor	3.6	U
309-00-2	Aldrin	3.6	U
1024-57-3	Heptachlor epoxide	3.6	U
959-98-8	Endosulfan I	3.6	U
60-57-1	Dieldrin	7.0	U
72-55-9	4,4'-DDE	7.0	U
72-20-8	Endrin	7.0	U
33213-65-9	Endosulfan II	7.0	U
72-54-8	4,4'-DDD	7.0	U
1031-07-8	Endosulfan sulfate	7.0	U
50-29-3	4,4'-DDT	7.0	U
72-43-5	Methoxychlor	36	U
53494-70-5	Endrin ketone	7.0	U
7421-93-4	Endrin aldehyde	7.0	U
5103-71-9	alpha-Chlordane	3.6	U
5103-74-2	gamma-Chlordane	3.6	U
8001-35-2	Toxaphene	360	U
12674-11-2	Aroclor-1016	70	U
11104-28-2	Aroclor-1221	140	U
11141-16-5	Aroclor-1232	70	U
53469-21-9	Aroclor-1242	70	U
12672-29-6	Aroclor-1248	70	U
11097-69-1	Aroclor-1254	70	U
11096-82-5	Aroclor-1260	70	U

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RT

2612A

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE41

Lab Name: SWL-TULSA

Contract: 68-D5-0026

Lab Code: SWOK

Case No.: 25601

SAS No.:

SDG No.: BSE22

Matrix: (soil/water) WATER

Lab Sample ID: 30388.10

Sample wt/vol: 1000 (g/mL) ML

Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____

Date Received: 07/31/97

Extraction: (SepF/Cont/Sonc) CONT

Date Extracted: 08/01/97

Concentrated Extract Volume: 10000 (uL)

Date Analyzed: 08/16/97

Injection Volume: 0.5 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 7.1

Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L Q

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

J

2618

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE42

Lab Name: SWL-TULSA Contract: 68-D5-0026

Lab Code: SWOK Case No.: 25601 SAS No.: SDG No.: BSE22

Matrix: (soil/water) WATER Lab Sample ID: 30412.08

Sample wt/vol: 1000 (g/mL) ML Lab File ID: _____

% Moisture: _____ decanted: (Y/N) _____ Date Received: 08/01/97

Extraction: (SepF/Cont/Sonc) SEPF Date Extracted: 08/04/97

Concentrated Extract Volume: 10000 (uL) Date Analyzed: 08/16/97

Injection Volume: 0.5 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 8.4 Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND	UG/L	Q
319-84-6	alpha-BHC	0.050	U
319-85-7	beta-BHC	0.050	U
319-86-8	delta-BHC	0.050	U
58-89-9	gamma-BHC (Lindane)	0.050	U
76-44-8	Heptachlor	0.050	U
309-00-2	Aldrin	0.050	U
1024-57-3	Heptachlor epoxide	0.050	U
959-98-8	Endosulfan I	0.050	U
60-57-1	Dieldrin	0.10	U
72-55-9	4,4'-DDE	0.10	U
72-20-8	Endrin	0.10	U
33213-65-9	Endosulfan II	0.10	U
72-54-8	4,4'-DDD	0.10	U
1031-07-8	Endosulfan sulfate	0.10	U
50-29-3	4,4'-DDT	0.10	U
72-43-5	Methoxychlor	0.50	U
53494-70-5	Endrin ketone	0.10	U
7421-93-4	Endrin aldehyde	0.10	U
5103-71-9	alpha-Chlordane	0.050	U
5103-74-2	gamma-Chlordane	0.050	U
8001-35-2	Toxaphene	5.0	U
12674-11-2	Aroclor-1016	1.0	U
11104-28-2	Aroclor-1221	2.0	U
11141-16-5	Aroclor-1232	1.0	U
53469-21-9	Aroclor-1242	1.0	U
12672-29-6	Aroclor-1248	1.0	U
11097-69-1	Aroclor-1254	1.0	U
11096-82-5	Aroclor-1260	1.0	U

J

2621

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE43DL

Lab Name: SWL-TULSA	Contract: 68-D5-0026	
Lab Code: SWOK	Case No.: 25601	SAS No.:
		SDG No.: BSE22
Matrix: (soil/water) SOIL		Lab Sample ID: 30388.11DL
Sample wt/vol: 30.0 (g/mL) G		Lab File ID: _____
% Moisture: 21	decanted: (Y/N) N	Date Received: 07/31/97
Extraction: (SepF/Cont/Sonc) SONC		Date Extracted: 08/15/97
Concentrated Extract Volume: 5000 (uL)		Date Analyzed: 08/24/97
Injection Volume: 0.5 (uL)		Dilution Factor: 10.0
GPC Cleanup: (Y/N) Y	pH: 5.8	Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	22	U
319-85-7	beta-BHC	22	U
319-86-8	delta-BHC	22	U
58-89-9	gamma-BHC (Lindane)	22	U
76-44-8	Heptachlor	22	U
309-00-2	Aldrin	22	U
1024-57-3	Heptachlor epoxide	22	U
959-98-8	Endosulfan I	22	U
60-57-1	Dieldrin	260	DP
72-55-9	4,4'-DDE	180	D
72-20-8	Endrin	300	DP
33213-65-9	Endosulfan II	88	DP
72-54-8	4,4'-DDD	120	DP
1031-07-8	Endosulfan sulfate	42	U
50-29-3	4,4'-DDT	600	DP
72-43-5	Methoxychlor	220	U
53494-70-5	Endrin ketone	42	U
7421-93-4	Endrin aldehyde	93	D
5103-71-9	alpha-Chlordane	190	DP
5103-74-2	gamma-Chlordane	33	DP
8001-35-2	Toxaphene	2200	U
12674-11-2	Aroclor-1016	420	U
11104-28-2	Aroclor-1221	850	U
11141-16-5	Aroclor-1232	420	U
53469-21-9	Aroclor-1242	420	U
12672-29-6	Aroclor-1248	420	U
11097-69-1	Aroclor-1254	420	U
11096-82-5	Aroclor-1260	1800	D

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FORM I PEST

OLM03.0

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TIERRA-A-018159

1D
PESTICIDE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

BSE44DL

Lab Name: SWL-TULSA	Contract: 68-D5-0026	
Lab Code: SWOK	Case No.: 25601	SAS No.:
		SDG No.: BSE22
Matrix: (soil/water) SOIL		Lab Sample ID: 30412.09DL
Sample wt/vol: 30.0 (g/mL) G		Lab File ID: _____
% Moisture: 21	decanted: (Y/N) N	Date Received: 08/01/97
Extraction: (SepF/Cont/Sonc) SONC		Date Extracted: 08/04/97
Concentrated Extract Volume: 5000 (uL)		Date Analyzed: 08/17/97
Injection Volume: 0.5 (uL)		Dilution Factor: 10.0
GPC Cleanup: (Y/N) Y	pH: 6.2	Sulfur Cleanup: (Y/N) N

CONCENTRATION UNITS:
(ug/L or ug/Kg) UG/KG

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/KG	Q
319-84-6	alpha-BHC	22	U
319-85-7	beta-BHC	22	U
319-86-8	delta-BHC	22	U
58-89-9	gamma-BHC (Lindane)	22	U
76-44-8	Heptachlor	22	U
309-00-2	Aldrin	22	U
1024-57-3	Heptachlor epoxide	22	U
959-98-8	Endosulfan I	22	U
60-57-1	Dieldrin	42	U
72-55-9	4,4'-DDE	42	U
72-20-8	Endrin	42	U
33213-65-9	Endosulfan II	42	U
72-54-8	4,4'-DDD	42	U
1031-07-8	Endosulfan sulfate	42	U
50-29-3	4,4'-DDT	61	DF
72-43-5	Methoxychlor	220	U
53494-70-5	Endrin ketone	42	U
7421-93-4	Endrin aldehyde	42	U
5103-71-9	alpha-Chlordane	22	U
5103-74-2	gamma-Chlordane	22	U
8001-35-2	Toxaphene	2200	U
12674-11-2	Aroclor-1016	420	U
11104-28-2	Aroclor-1221	850	U
11141-16-5	Aroclor-1232	420	U
53469-21-9	Aroclor-1242	420	U
12672-29-6	Aroclor-1248	420	U
11097-69-1	Aroclor-1254	420	U
11096-82-5	Aroclor-1260	810	DF

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OLM03.0

**U.S. EPA CLP
DATA PACKAGE -
TARGET ANALYTE LIST**

OTHER ANALYTES WORK TABLE

Project: Keegan Landfill Site

START PM: Gerry Gilliland

Sampling Date: July 30 & 31, 1997

SAMPLE #/CONCENTRATION (ug/L)

Total Metals	Contract Required Detection Limit (CRDL)	Water MBQK29 07025S	Water MBQK30 07026S	Water MBQK33 07027S	Water MBQK46 07028S	Water MBQK47 07092S	
Percent Solids Dilution Factor		- 1.0	- 1.0	- 1.0	- 1.0	- 1.0	
Aluminum	200	19200 J	14900 J	20800 J	20.4 B	119 B	
Antimony	60.0	R	R	R	R	U	
Arsenic	10.0	32.0	31.9	38.9	U	3.0 B	
Barium	200	1380	839	1470	1.0 B	3.3 B	
Beryllium	10.0	0.73 B	0.45 B	0.84 B	U	U	
Cadmium	10.0	11.2 J	12.8 J	13.2 J	1.7 B	1.6 B	
Calcium	5000	150000	257000	151000	91.6 B	337 B	
Chromium	10.0	117	160	130	1.9 B	1.0 B	
Cobalt	50.0	13.9 B	15.5 B	14.6 B	U	U	
Copper	25.0	499	549	602	27.8	74.5	
Iron	100.0	66500	52200	70400	72.8 B	81.2 B	
Lead	3.0	1020	1590	1180	34.9	21.2	
Magnesium	5000	40600	56700	40900	35.1 B	151 B	
Manganese	15.0	726	1700	748	2.2 B	7.6 B	
Mercury	0.2	7.8	6.2	8.7	0.17 B	U	
Nickel	40.0	82.4	115	91.6	17.5 B	5.3 B	
Potassium	5000	18600	21600	18500	185 B	368 B	
Selenium	10.0	U J	U J	U J	U J	U	
Strontium	10.0	15.8	11.1	17.6	1.6 B	0.92 B	
Sodium	5000	77100	102000	75500	U	353 B	
Thallium	10.0	U	U J	U	U	6.5 B	
Vanadium	50.0	81.6	87.2	90.8	U	U	
Zinc	20.0	1520	1640	1710	46.7	44.1	

Inorganic Qualifiers

U - non-detected compound

J - estimated value

B - between the instrument detection limit (IDL)
and the contract required detection limit (CRDL)

R - rejected compound

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OTHER ANALYTES WORK TABLE

Project: Keegan Landfill Site

START PM: Gerry Gilliland

Sampling Date: July 30 & 31, 1997

SAMPLE #/CONCENTRATION (MG/KG)

Total Metals	Contract Required Detection Limit (CRDL)	Soil MBQK34 07029S	Soil MBQK35 07030S	Soil MBQK36 07085S	Soil MBQK37 07086S	Soil MBQK38 07031S	Soil MBQK39 07087S
Percent Solids Dilution Factor		42.1 1	49.8 1	71.9 1	28.3 1	44.6 1	57.3 1
Aluminum	40.0	12400 J	11100	7200	8410 J	9820 J	6320
Antimony	12.0	3.8 BJ	2.5 BJ	U J	71.5 J	2.8 BJ	U J
Arsenic	2.0	27.9 J	11.8 J	2.6 B	17.9 J	18.9 J	4.6
Barium	40.0	374 J	312	55.8	511 J	339 J	131
Beryllium	1.0	0.72 BJ	0.42 B	0.36 B	0.91 BJ	0.56 BJ	0.35 B
Cadmium	1.0	5.3 J	5.8 J	1.3 B	13.9 J	4.3 J	1.1 B
Calcium	1000	5080 J	14800	1970	21000 J	3570 J	3490
Chromium	2.0	103 J	125	19.8	229 J	61.7 J	19.8
Cobalt	10.0	7.3 BJ	6.1 B	5.0 B	12.2 BJ	5.2 BJ	2.8 B
Copper	5.0	447 J	279 J	R	588 J	302 J	R
Iron	20.0	23100 J	27300	10600	47400 J	17900 J	10900
Lead	0.6	1130 J	879	164	27700 J	844 J	92.2
Magnesium	1000	3680 J	3870 J	1790 J	2240 BJ	2650 J	1180 B
Manganese	3.0	255 J	272	335	266 J	99.5 J	89.1
Mercury	0.1	10.8 J	4.2	1.1	1.7 J	7.5 J	0.30
Nickel	8.0	50.2 J	44.0 J	16.0 J	157 J	35.3 J	12.9 B
Potassium	1000	1310 BJ	945 B	762 B	691 BJ	1050 BJ	494 B
Selenium	1.0	2.1 BJ	U	U	U J	2.1 J	U
Strontium	2.0	7.0 J	6.5 J	1.1 B	8.6 J	5.8 J	0.95 B
Thallium	1000	996 BJ	576 B	459 B	1600 BJ	779 BJ	643 B
Vanadium	2.0	U J	U	U	U J	U J	U
Zinc	10.0	74.2 J	53.8	20.6	94.8 J	51.3 J	13.0 B
	4.0	873 J	877	290	1130 J	662 J	148

Inorganic Qualifiers

U - non-detected compound

Estimated value

Between the instrument detection limit (IDL)

and the method detection limit (MDL)

R - rejected compound

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OTHER ANALYTES WORK TABLE

Project: Keegan Landfill Site

START PM: Gerry Gilliland

Sampling Date: July 30 & 31, 1997

SAMPLE #/CONCENTRATION (MG/KG)

Total Metals	Contract Required Detection Limit (CRDL)	Soil MBQK40 07088S	Soil MBQK41 07089S	Soil MBQK42 07090S	Soil MBQK43 07091S	Soil MBQK44 07032S	Soil MBQK45 07033S
Percent Solids Dilution Factor		17.4 1.0	9.8 1.0	10.2 1.0	43.8 1.0	58.1 1.0	59.2 1.0
Aluminum	40.0	15200 J	2260 J	6390 J	13100 J	7300	16900
Antimony	12.0	23.2 BJ	U J	15.9 BJ	6.6 BJ	1.7 BJ	4.0 BJ
Arsenic	2.0	93.0 J	4.9 BJ	31.4 J	9.2 J	4.5	60.5 J
Barium	40.0	1740 J	174 BJ	297 BJ	389 J	129	85.1
Beryllium	1.0	0.70 BJ	U J	0.49 BJ	0.59 BJ	0.27 B	0.17 B
Cadmium	1.0	22.2 J	1.5 BJ	3.4 BJ	8.4 J	3.3 J	0.87 B
Calcium	1000	23400 J	16200 J	22100 J	90200 J	6850	21200
Chromium	2.0	441 J	49.2 J	143 J	54.9 J	57.0	28.9
Cobalt	10.0	39.1 BJ	U J	3.1 BJ	7.5 BJ	6.0 B	3.5 B
Copper	5.0	1560 J	R	R	247 J	177 J	4870 J
Iron	20.0	71200 J	6300 J	12000 J	20500 J	29900	15000
Lead	0.6	2250 J	215 J	518 J	319 J	463	91.4
Magnesium	1000	4600 BJ	4550 BJ	4750 BJ	6530 J	1710 J	2560 J
Manganese	3.0	590 J	114 J	123 J	377 J	272	370
Mercury	0.1	7.1 J	0.82 BJ	0.89 BJ	1.2 J	2.1	0.15 B
Nickel	8.0	468 J	21.7 BJ	43.9 BJ	56.2 J	27.3 J	13.8 J
Potassium	1000	872 BJ	701 BJ	1080 BJ	2030 BJ	645 B	637 B
Selenium	1.0	U J	U J	U J	U J	U	U
Strontium	2.0	16.4 J	2.8 BJ	2.3 BJ	1.9 BJ	2.5 B	0.80 B
Sulfur	1000	2100 BJ	4730 BJ	4340 BJ	1180 BJ	308 B	435 B
Thallium	2.0	U J	U J	U J	U J	U	U
Vanadium	10.0	145 J	51.7 BJ	112 J	49.3 J	23.1	24.3
Zinc	4.0	3620 J	R	492 J	979 J	528	436

Inorganic Qualifiers

- J - non-detected compound
- U - estimated value
- B - between the instrument detection limit (IDL) and the method detection limit (MDL)
- R - rejected compound

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OTHER ANALYTES WORK TABLE

Project: Keegan Landfill Site

START PM: Gerry Gilliland

Sampling Date: July 30 & 31, 1997

SAMPLE #/CONCENTRATION (MG/KG)

Total Metals	Contract Required Detection Limit (CRDL)	Soil MBQK48 07034S	Soil MBQK49 07093S	Soil MBQK66 07094S	Soil MBQK67 07095S	Soil MBQK68 07096S	
Percent Solids Dilution Factor		71.9 1.0	79.0 1.0	34.5 1.0	34.3 1.0	21.6 1.0	
Aluminum	40.0	10500	6000	11400 J	7510 J	4420 J	
Antimony	12.0	215 J	3.9 BJ	4.7 BJ	U J	U J	
Arsenic	2.0	39.6 J	12.1 J	2.7 BJ	1.8 BJ	5.4 BJ	
Barium	40.0	1110	704	236 J	118 J	323 J	
Beryllium	1.0	1.1 B	0.36 B	0.65 BJ	0.43 BJ	0.37 BJ	
Cadmium	1.0	22.4 J	5.4 J	8.2 J	1.7 BJ	5.9 J	
Calcium	1000	4590	4570	8390 J	4100 J	13100 J	
Chromium	2.0	118	34.2	281 J	35.1 J	44.2 J	
Cobalt	10.0	11.8 B	6.9 B	6.4 BJ	6.3 BJ	10.6 BJ	
Copper	5.0	443 J	154 J	545 J	R	390 J	
Iron	20.0	116000	51800	15200 J	12400 J	23400 J	
Lead	0.6	1200	522	1330 J	282 J	754 J	
Magnesium	1000	1100 B	1450 J	4130 J	2480 BJ	1910 BJ	
Manganese	3.0	598	225	150 J	691 J	207 J	
Mercury	0.1	3.7	1.1	5.0 J	0.75 J	4.0 J	
Nickel	8.0	82.3 J	24.0 J	71.1 J	24.6 J	299 J	
Potassium	1000	662 B	656 B	1150 BJ	1110 BJ	839 BJ	
Selenium	1.0	U	U	1.4 BJ	U J	U J	
Silver	2.0	5.4 J	2.3 J	7.2 J	1.5 BJ	4.7 BJ	
Sodium	1000	385 B	194 B	866 BJ	1630 BJ	1500 BJ	
Thallium	2.0	U	U	U J	U J	U J	
Vanadium	10.0	106	30.4	72.4 J	35.7 J	59.6 J	
Zinc	4.0	1580	862	1090 J	281 J	1000 J	

Inorganic Qualifiers

- U - non-detected compound
- J - estimated value
- B - between the instrument detection limit (IDL) and the method detection limit (MDL)
- R - rejected compound

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RECORD OF COMMUNICATION

REGIONAL SAMPLE CONTROL CENTER

DATE: AUG. 15, 1997
SUBJECT: CLP Data Package for Quality Assurance Review
FROM: RSCC / ESAT
TO: Hanif Sheikh, Hazardous Waste Support Section

RECEIVED
SEP. 11 1997

Attached is the following *INORGANIC* Data Package to be reviewed for Quality Assurance

SITE	<u>KEEGAN LF</u>	CASE#	<u>25601</u>		
CONTRACTOR	<u>STARTW</u>	#SAMPLES	<u>17</u>	MATRIX	<u>SOIL</u>
PHASE	<u>SIP</u>		<u>5</u>		<u>WATER</u>
LAB	<u>SENTIN</u>	FRACTION	<u>TAL ONLY</u>		

REGION II RSCC DATA TRANSFER LOG

Relinquished By

Received By

Signature

Date/Time

Signature

Date/Time

John Balich 8/15/97
CM Aline 9/9/97
DCR Pittwater 9/10/97
Hanif Sheikh 9/11/97

John Balich 8/14/97
CM Aline 8/28/97
Hanif Sheikh 9/10/97
DCR 9/11/97 2:07

(over for instructions) revised 7/96

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the Contract Laboratory Program
 Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
 Number: HW-2
 Revision: 11

Case #	25601	Site:	Keegan Landfill	Soil:	17
SDG #	MBQK29/MBQK34	Lab:	Sentinel	Water:	05
Contractor:	STARTW/SIP	Reviewer:	C. M. Alaimo/ESAT	Other:	

A.2.1. Validation flags- The following flags have been applied in red by the data validator and must be considered by the data user.

J - This flag indicates the result qualified as estimated.

Red-Line - A red-line drawn through a sample result indicates unusable value. The red-lined data are known to contain significant errors based on documented information and must not be used by the data user.

Fully Usable Data- The results that do not carry "J" or "red-line" are fully usable.

Contractual Qualifiers- The legend of contractual qualifiers applied by the lab on Form I's is found on page B-20 of SCW IIMD1.0

A.2.2. The data assessment is given below and on the attached sheets. This package consists of seventeen (17) soil and five (5) aqueous samples taken from the Keegan Landfill site on 7/30/97 and 7/31/97 for TAL metals analysis. QC was performed on sample MBQK30 for the aqueous matrix and sample MBQK35 for the soil matrix. Two field blanks were identified as samples MBQK46 & MBQK48. Two field duplicate pairs were taken: for aqueous matrix-MBQK29/MBQK33; for soil matrix-MBQK34/MBQK38. All holding times were met.

CSF

The trip report and chain of custody listed two samples with the same ID# MBQK48. This was corrected by the lab (see page 180). Two soil samples (MBQK67 & MBQK68) were included in this package but was not listed on the trip report. RSCC was contacted and the lab submitted a revised trip report with the additional samples included.

CRDL

SDG# MBQK29

The initial CRI % recovery for Tl (75.5%) fell between 50-79% therefore all associated data within the affected range were estimated.

J--->Tl in MBQK30.

MATRIX SPIKE

SDG# MBQK29 (water matrix)

For Sb, the matrix spike recovery was less than 30% (17.0%) therefore all associated data were rejected. For Se, the matrix spike recovery fell between 30-74% (74.5%), therefore all associated data were estimated.

R--->Sb in MBQK29, MBQK30, MBQK33 & MBQK46

J--->Se in MBQK29, MBQK30, MBQK33 & MBQK46

SDG# MBQK34 (soil matrix)

For Sb, the matrix spike recovery fell between 10-74% (10.7%), therefore all associated data were estimated. For Cu, the matrix spike recovery fell between 126-200% (130.5%), therefore all positive associated data were estimated. Please note that due to field blank contamination several Cu results were notated for rejection under that criterion.

R--->Sb in MBQK34-->45, MBQK47-->49, MBQK66, MBQK67 & MBQK68

J--->Cu in MBQK34, MBQK35, MBQK36*, MBQK37, MBQK38, MBQK39*, MBQK40, MBQK41*, MBQK42*, MBQK43 to MBQK49, MBQK66, MBQK67* & MBQK68

STANDARD OPERATING PROCEDURE

HS
9/11/97

Title: Evaluation of Metals Data for the Contract Laboratory Program
Appendix A.2: Data Assessment Narrative

Date: Jan. 1992
Number: HW-2
Revision: 11

A.2.2. (continuation)

ICP SERIAL DILUTION

SDG# MBQK29 (water matrix)
For Al (15.6%) and Cd (20.8%), the %Ds were >10% but <100% when the initial sample results were >10xIDL, therefore all associated data \geq CRDL (or \geq 10xIDL when 10xIDL > CRDL) were estimated.

J--->Al & Cu in MBQK29, MBQK30 & MBQK33.

SDG# MBQK34 (soil matrix)
For As (57.0%), Cd (17.9%), Mg (15.3%), Ni (31.0%) and Ag (11.1%), the %Ds were >10% but <100% when the initial sample results were >10xIDL, therefore all associated data \geq CRDL (or \geq 10xIDL when 10xIDL > CRDL) were estimated.

J--->As in MBQK34, MBQK35, MBQK37, MBQK38, MBQK40, MBQK43, MBQK45, MBQK48 & MBQK49
J--->Cd in MBQK34, MBQK35, MBQK37, MBQK38, MBQK40, MBQK43, MBQK44, MBQK48, MBQK49, MBQK66 & MBQK68
J--->Mg in MBQK34, MBQK35, MBQK36, MBQK38, MBQK43, MBQK44, MBQK45, MBQK49 & MBQK66
J--->Ni in MBQK34-->38, MBQK40, MBQK43-->45, MBQK48, MBQK49, MBQK66-->68
J--->Ag in MBQK34, MBQK35, MBQK37, MBQK38, MBQK40, MBQK48, MBQK49 & MBQK66.

FIELD BLANK CONTAMINATION

Both field blanks had values greater than the CRDL for several analytes. Only field blank MBQK47 had associated data that was affected by the contaminants. Associated positive data with results less than 5x the contaminate results were rejected.

L--->Cu in MBQK36, MBQK39, MBQK41, MBQK42, MBQK67
R--->Zn in MBQK41.

% TOTAL SOLIDS

For samples MBQK34 (42.1%), MBQK37 (28.3%), MBQK38 (44.6%), MBQK40 (17.4%), MBQK41 (9.8%-rounded up to 10%), MBQK42 (10.2%), MBQK43 (43.8%), MBQK66 (34.5%) MBQK67 (34.3%) & MBQK68 (21.6%), the % total solids were less than 50% but greater than 10%, therefore all associated data not previously qualified were estimated.

J--->all metals not previously qualified in MBQK34, MBQK37, MBQK38, MBQK40, MBQK41, MBQK42, MBQK43, MBQK66, MBQK67 & MBQK68.

A.2.3. Contract-Problems/Non-Compliance
NONE.

MMB Reviewer: _____ Date: _____

Contractor Reviewer: Signature _____ Date: 9/11/97
Signature

Verified by: _____ Date: _____
Signature

STANDARD OPERATING PROCEDURE

Title: Evaluation of Metals Data for the
Contract Laboratory Program
Appendix A.3: Contract Non-Compliance
(SMD Report)

Date: Jan. 1992
Number: HW-2
Revision: 11

CONTRACT NON-COMPLIANCE
(SMD REPORT)

Regional Review of Uncontrolled Hazardous Waste
Site Contract Laboratory Data Package

CASE NO. 25601

The hardcopied (laboratory name) _____
Inorganic data package received at Region II has been reviewed and the quality assurance and
performance data summarized. The data reviewed included:

SMD Sample No.: _____

Conc. & Matrix: _____

Contract No. (_____) requires that specific analytical work be done and
that associated reports be provided by the contractor to the Regions, EMSL-LV, and SMD. The
general criteria used to determine the performance were based on an examination of:

- Data Completeness
- Duplicate Analysis Results
- Matrix Spike Results
- Blank Analysis Results
- Calibration Standards Results
- MSA Results

Items of non-compliance with the above contract are described below.

Comments: N/A

CMA
Reviewer's Initial

9/5/97
Date

DPO MAILING LIST FOR DATA REVIEWERS

- | | | | |
|-----|--|-----|---|
| 1. | USEPA Region I (ESD)
60 Westview Street
Lexington, MA 02173
Deb Szaro
(617) 861-4312
CT, ME, MA, NH, RI, VT
CAA, Resource Analysts, York,
E3I, Skinner, TMA | 2. | USEPA Region II ESD
Woodbridge Avenue
Edison, NJ 08837
Lisa Gatto Vidulich
(201) 321-6676
NJ, NY, PR, VI
Century, Chemtech, US Test, Nanco
ETC, Gadsco, EMS, Galson, ICM |
| 3. | USEPA Region III (CRL)
839 Bestgate Road
Annapolis, MD 21401
Chuck Sands
(301) 266-9180
DE, MD, PA, VA, WV, DC
Centec, Hitman, JTC, MACK, VERSAR,
ITAS, Weston, NOKES, EA Engineering,
Subject Tech., KEYPA | 4. | USEPA Region IV (ESD)
Analytical Support Branch
College Station Road
Athens, GA 30613
Tom Bennett, Jr.
(404) 546-3112
AL, FL, GA, KY, MS, NC, SC, TN
CompuChem, EPS, ESE, PBS&J,
Triangle Labs |
| 5. | USEPA Region V (ESD)
536 South Clark Street
Tenth Floor, CRL
Chicago, IL 60605
Pat Churilla
(312) 353-9087
IL, IN, MI, MN, OH, WI
NLE, TAL/ENG | 6. | USEPA Region VI (ESD)
Monterey Park Plaza, Bldg. C
6608 Horswood Drive
Houston, TX 77074
David Stockton
(713) 853-3425
AR, LA, NM, TX, OK
ANACON, RADIAN, SPECS, EIS, Glochem
Research, Inc., SPL, Inc., SWRI,
Allied, KEYTX, EIRA |
| 7. | USEPA Region VII Laboratory
25 Funston Road
Kansas City, KS 66115
Debra Morry
(913) 236-3881
IO, KS, NB, MO
Wilsoe, Kansas City Scientific
Enterprises, Eagle Fisher | 8. | USEPA Region VIII Laboratory
Box 25366
Denver Federal Center
Lakewood, CO 80225
Eva Hoffman
(303) 236-7371
CO, ND, SD, UT, WY, MT
ACCU, CSNRI, RMAL, Data Chem, Caref |
| 9. | USEPA Region XI (ESD)
QA Management Section
215 Fremont Street
San Francisco, CA 94105
Kent Kitchingman
(415) 974-0924
AZ, CA, HI, NV, American Samoa,
Guam Trust Territories of Pacific
Islands, Wake Island
ALI, CAL Weston, S-Cubed, IT_CA,
Vegas | 10. | USEPA Region X Laboratory
P.O. Box 549
Manchester, WA 98353
Gerald Muth
(206) 442-0370
AK, ID, OR, WA
Lauck Testing Labs, Century Testing
Labs (For VOA Only), Weyerhaeuser Co.,
Columbia Testing, Silver Valley |
| 11. | Carla Dempsey - (OS-230)
USEPA
401 "M" Street S.W.
Washington, DC 20460
FTS 382-5746 | 12. | Edward Kantor
USEPA
ENSL-LV
944 E. Harmon Avenue
Box 93478
Las Vegas, NV 89119 |
| 13. | Sample Management Office
Viar and Company
P.O. Box 818
Alexandria, VA 22313 | | |

STANDARD OPERATING PROCEDURE

Page 5 of 6

Title: Evaluation of Metals Data for the
Contract Laboratory Program
Appendix A.6: CLP Data Assessment Checklist

Date: Jan. 1992
Number: HW-2
Revision: 11

Inorganic Analysis

INORGANIC REGIONAL DATA ASSESSMENT

Region II

CASE NO. 25601

SITE Keegan LF

LABORATORY Sentinel

NO. OF SAMPLES
MATRIX 17 soil / 5 water

SDG# MBQK29 / MBQK34

REVIEWER (IF NOT ESD) _____

SOW# ILM04.0

REVIEWER'S NAME C.M. Alamo

DPO: ACTION _____ FYI _____

COMPLETION DATE 9/5/97

DATA ASSESSMENT SUMMARY

	ICP	AA	Hg	CYANIDE
1. HOLDING TIMES	O	N/A	O	N/A
2. CALIBRATIONS				
3. BLANKS				
4. ICS				
5. LCS				
6. DUPLICATE ANALYSIS				
7. MATRIX SPIKE				
8. MSA				
9. SERIAL DILUTION				
10. SAMPLE VERIFICATION				
11. OTHER QC	X			
12. OVERALL ASSESSMENT	() - X			

- O = Data has no problems/or qualified due to minor problems.
- M = Data qualified due to major problems.
- Z = Data unacceptable.
- X = Problems, but do not affect data.

ACTION ITEMS: _____

AREAS OF CONCERN: _____

NOTABLE PERFORMANCE: _____

Title: Evaluation of Metals Data for the
Contract Laboratory Program
Appendix A.6: CLP Data Assessment
Summary Form (Inorganics)

Date: Feb. 1990
Number: HW-2
Revision: 10

CLP DATA ASSESSMENT SUMMARY FORM (INORGANICS)

Type of Review: TAL Date: 9/5/97 Case #: 25601
Site: Keegan LF Lab Name: Sentinel
Reviewer's Initials: CMA Number of Samples: 17 soil / 5 air

Analytes Rejected Due to Exceeding Review Criteria: 0

	Holding Time	Calibration	Prep Blank	Field Blank	Interferences	Spike Recovery	Duplicates Lab/Field	Detection Limits	LCS	Serial Dilution	MSA	Total Analytes	Rejection
ICP				6		4						484	10
Flame AA													
Furnace AA													
Mercury												22	0
Total				6		4						506	10
Other													

Analytes Flagged as Estimated (J) Due to Exceeding Criteria For: 0

7TS CRDL

ICP	180	1				38/5*				57		484	375/5*
Flame AA													
Furnace AA													
Mercury												22	
Total	180	1				38/5*				57		506	375/5*
Other													

Note:

Asterisk (*) Indicates additional exceedances of review criteria.

SENTINEL, Inc.

Industrial Hygiene and Environmental Services

2800 Bob Wallace Avenue, Ste. L3

Huntsville, AL 35805

(205) 534-9800

FAX TRANSMITTAL

DATE: August 4, 1997

TO: Dyncorp

ATTN: Mistie Sisson

FAX NUMBER: (703) 519-8626

NO. OF PAGES: 1 (Including Transmittal Page)

FROM: Susan Pearsall
Sentinel, Inc.
2800 Bob Wallace Avenue, Suite L-3
Huntsville, AL 35805
Telephone No.: (205) 534-9800
Fax No.: (205) 534-9878

COMMENTS: Concerning Case 25601:

Sample MBQK48 (LW TM) was incorrectly labeled on the
COC. The actual sample number is MBQK47.

If you have any questions regarding this transmittal, or you need any additional information, please do not hesitate to call.

U.S. EPA - CUP

6
FIELD DUPLICATES

EPA SAMPLE NO.

MDQK19 MBQK3:

Lab Name: Sentinel 1 wa

Contract: 68-DT-0169

Lab Code: Sentin Case No.: 25601

SAS No.: _____

SDG No.: MBQK29

Matrix (soil/water): water

Level (low/med): low

% Solids Sample: 0

% Solids Duplicate: 0

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

Analyte	Action Limit	Sample (S)	C	Field Duplicate (D)	C	RPD	DIFF	Q	M
		Concentration		Concentration					
Aluminum		19200.0000		20800.0000		8.0	—		P
Antimony		7.7000	B	5.1000	B	—	2.6		P
Arsenic		32.0000		38.9000		—	6.9		F
Barium		1380.0000		1470.0000		6.3	—		P
Beryllium		0.7500	A	0.8400	B	—	1.1		P
Cadmium		11.2000		13.2000		—	2.0		P
Calcium		150000.0000		151000.0000		0.7	—		P
Cromium		117.0000		130.0000		10.5	—		P
Cobalt		13.9000	B	14.6000	B	—	0.7		P
Copper		199.0000		602.0000		18.7	—		F
Iron		66500.0000		70400.0000		5.7	—		P
Lead		1020.0000		1180.0000		14.5	—		P
Magnesium		40600.0000		40900.0000		0.7	—		P
Manganese		726.0000		748.0000		3.0	—		P
Mercury		7.8000		8.7000		10.9	—		CV
Nickel		82.4000		91.6000		—	9.2		P
Potassium		18600.0000		18500.0000		—	100		P
Selenium		2.4000	U	2.4000	U	—	—		F
Silver		15.0000		17.6000		—	1.8		P
Sodium		77100.0000		75500.0000		2.1	—		P
Thallium		3.4000	U	3.4000	U	—	—		F
Vanadium		81.6000		90.8000		—	9.2		P
Zinc		1520.0000		1710.0000		11.8	—		P
Cyanide									NR

FORM VI - IN

U.S. EPA - CLP

6
FIELD DUPLICATES

EPA SAMPLE NO.

MSQRJY MSQRK3

Lab Name: Sentinel, Inc

Contract: 68-D5-0169

Lab Code: Sentinel Case No.: 25601

SAS No.: _____ SOG No.: MSQRK34

Matrix (soil/water): soil

Level (low/med): low

% Solids Sample: 42.1

% Solids Duplicate: 44.6

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

Analyte	Action Limit	Sample (S)	C	Field Duplicate (D)	C	RPD	DIFF	O	M
		Concentration		Concentration					
Aluminum	100%	26102.0000		21898.6000		17.5	—		P
Antimony	120	7.9999	B	6.2440	B	—	17.5%		P
Arsenic	20	58.7295		42.1470		—	16.58%		F
Barium	400	787.2700		755.9700		—	31.3		P
Beryllium	10	1.5156	B	1.2488	B	—	0.26%		P
Cadmium	10	11.1565		9.5890		—	1.56%		P
Calcium	10,000	10693.4000		7961.1000		—	2732%		P
Chromium	100%	216.8150		137.5910		44.7	—		P
Cobalt	100	15.3665	B	11.5960	B	—	3.70%		P
Copper	100%	940.9356		673.4606		33.1	—		F
Iron	100%	48625.5000		39917.0000		19.7	—		P
Lead	100%	2278.6500		1882.1200		25.2	—		P
Magnesium	10,000	7741.4000		5909.5000		—	1836.9		P
Manganese	100%	536.7750		221.8850		83.0	—		P
Mercury	100%	9.0936		6.6900		30.4	—		CV
Nickel	80	105.6710		78.7190		—	26.9%		P
Potassium	10,000	2757.5500	B	2341.5000	B	—	416.0%		P
Selenium	10	4.4205	B	4.6830		—	0.26%		F
Silver	20	19.7350		12.9340		—	1.80%		P
Sodium	10,000	2096.5800	B	1737.1700	B	—	359.41		P
Thallium		2.9470	U	2.8990	U	—	—		F
Vanadium	100	156.1910		114.3990		—	41.79%		P
Zinc	100%	1837.6650		1476.2600		21.8	—		P
Cyanide									NR

FORM VI - IN

17.

Evaluation of Metals Data for the Contract Laboratory Program (CLP)

based on

SCR. 3/90

(SOP Revision XI)

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Harif Smith, Quality Assurance Chemist
Toxic and Hazardous Waste Section

APPROVED BY: Kevin Kubik DATE: 1-30-92
Kevin Kubik, Chief
Toxic and Hazardous Waste Section

APPROVED BY: Robert Runyon DATE: 1/30/92
Robert Runyon, Chief
Monitoring Management Branch

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1.0 Scope

1.1 This procedure is applicable to inorganic data obtained from contractor laboratories working for Hazardous Waste Site Contract Laboratory Program (CLP).

1.2 The data validation is based upon analytical and quality assurance requirements specified in Statement of Work (SOW) 3/90.

2.0 Responsibilities - Data reviewers will complete the following tasks as assigned by the Data Review Coordinator:

2.1. For a total review:

2.1.1 Data Assessment - "Total Review-Inorganics" Checklist Appendix (A.1).
The reviewer must answer every question on the checklist.

2.1.2 Data Assessment - Data Assessment Narrative (Appendix A.2)
The answer on the checklist must match the action in the narrative (appendix A.2) and on Form I's. Do not use pencil to write the narrative.

2.1.3 Contract Non-Compliance - SMD Report (Appendix A.3)
This report is to be completed only when a serious contract violation is encountered, or upon the request of the Data Validation Task Monitor, or Technical Project Officer (TPO). Forward 5 copies: one each for internal files, appropriate Regional TPO, Sample Management Office (SMO) and last two addresses of Mailing List for Data Reviewers (Appendix A.4). In other cases, all contract violations should be appended to the end of the Data Assessment Narrative (Sec. A.2.2).

2.1.4 CLP Data Assessment Summary Forms

2.1.4.1 Appendix A.5
Fill in the total number of analytes analyzed by different analyses and the number of analytes rejected or flagged as estimated due to corresponding quality control criteria. Place an "X" in boxes where analyses were not performed, or criteria do not apply.

2.1.4.2 Appendix A.6
Data reviewer is also required to fill out Inorganic Regional Data Assessment form (Appendix A.7) provided by EPA Headquarters. Codes listed on the form will be used to describe the Data Assessment Summary.

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-
- 2.1.5 Data Review Log: It is recommended that each data reviewer should maintain a log of the reviews completed to include:
- a. date of start of case review
 - b. date of completion of case review
 - c. site
 - d. case number
 - e. contract laboratory
 - f. number of samples
 - g. matrix
 - h. hours worked
 - i. reviewer's initials
- 2.1.6 Telephone Record Log - the data reviewer should enter the bare facts of inquiry, before initiating any phone conversation with CLP laboratory. After the case review has been completed, mail white copy of Telephone Record Log to the laboratory and pink copy to SMD. File yellow copy in the Telephone Record Log folder, and attach a xerox copy of the Telephone Record Log to the completed Data Assessment Narrative (Appendix A.2).
- 2.1.7 Forwarded Paperwork
- 2.1.7.1 Upon completion of review, the following are to be forwarded to the Regional Sample Control Center (RSCC) located in the Surveillance and Monitoring Branch:
- a. data package
 - b. completed data assessment checklist (Appendix A.1, original)
 - c. SMD Contract Compliance Screening (CCS)
 - d. Record of Communication (copy)
 - e. CLP Reanalysis Request/Approval Record (original + 3 copies)
 - f. Appendix A.6 (original).
- 2.1.7.2 Forward 2 copies of completed Data Assessment Narrative (Appendix A.2) along with 2 copies of the Inorganic Data Assessment Form (Appendix A.6) and Telephone Record Log, if any, : one each for appropriate Regional TFO, and the other one to EPA EMSL office in Las Vegas. The addresses of TFOs and EPA office in Las Vegas are given in Appendix A-4.
- 2.1.8 Filed Paperwork - Upon completion of review, the following are to be filed within MMB files:
- a. Two copies of completed Data Assessment Narrative (Appendix A.2) each carrying Appendix A.6.
 - b. Telephone Record Log (copy)
 - c. SMD Report (copy Appendix A-3)
 - d. CLP Reanalysis Request/Approval Record (copy)

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- 3.0 Data Completeness
Each data package is checked by a Regional Sample Control Coordinator (RSSC) for completeness. A data package is assumed to be complete when all the deliverables required under the contract are present. If a data package is incomplete, the RSSC would call the laboratory for missing document(s). If the laboratory does not respond within a week, SVO and MMB coordinator of Region II will be notified.
- 4.0 Rejection of Data - All values determined to be unacceptable on the Inorganic Analysis Data Sheet (Form I) must be lined over with a red pencil. As soon as any review criteria causes data to be rejected, that data can be eliminated from any further review or consideration.
- 5.0 Acceptance Criteria - In order that reviews be consistent among reviewers, acceptance criteria as stated in Appendix A.1 (pages 4-25) should be used. Additional guidance can be found in the National Inorganic Functional Guidelines of October 1, 1989.
- 6.0 SVO Contract Compliance Screening (CCS) - This is intended to aid reviewer in locating any problems, both corrected and uncorrected. However, the validation should be carried out even if CCS is not present. Resubmittals received from laboratory in response to CCS must be used by the reviewer.
- 7.0 Request for Reanalysis - Data reviewers must note all items of contract non-compliance within Data Assessment Narrative. If holding times and sample storage times have not been exceeded, TPO may request reanalysis if items of non-compliance are critical to data assessment. Requests are to be made on "CLP Re-Analysis Request/Approval Record".
- 8.0 Record of Communication - Provided by the Regional Sample Control Center (RSSC) to indicate which data packages have been received and are ready to be reviewed.
- 9.0 Rounding off numbers - The data reviewer will follow the standard practice.

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	YES	NO	N/A
A.1.1 <u>Contract Compliance Screening Report (CCS)</u> - Present?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no, contact RSOC.			
A.1.2 <u>Record of Communication (from RSOC)</u> - Present?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no, request from RSOC.			
A.1.3 <u>Trip Report</u> - Present and complete?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no, contact RSOC for trip report.			
A.1.4 <u>Sample Traffic Report</u> - Present?	<input type="checkbox"/>	—	—
Legible?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no, request from Regional Sample Control Center (RSOC).			
A.1.5 <u>Cover Page</u> - Present?	<input type="checkbox"/>	—	—
Is cover page properly filled in and signed by the lab manager or the manager's designee?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no, prepare Telephone Record Log, and contact laboratory.			
Do numbers of samples correspond to numbers on Record of Communication?	<input type="checkbox"/>	—	—
Do sample numbers on cover page agree with sample numbers on:			
(a) Traffic Report Sheet?	<input type="checkbox"/>	—	—
(b) Form I's?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no for any of the above, contact RSOC for clarification.			

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A.1.6 Form I to IX

A.1.6.1 Are all the Form I through Form IX labeled with:

	Yes	No	N/A
Laboratory name?	<input type="checkbox"/>	—	—
Case/SAS number?	<input type="checkbox"/>	—	—
EPA sample No.?	<input type="checkbox"/>	—	—
SDG No.?	<input type="checkbox"/>	—	—
Contract No.?	<input type="checkbox"/>	—	—
Correct units?	<input type="checkbox"/>	—	—
Matrix?	<input type="checkbox"/>	—	—

ACTION: If no for any of the above, note under Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.6.2 Do any computation/transcription errors exceed 10% of reported values on Forms I-IX for:

(NOTE: Check all forms against raw data.)

(a) all analytes analyzed by ICP?	<input type="checkbox"/>	—	—
(b) all analytes analyzed by GFAA?	<input type="checkbox"/>	—	—
(c) all analytes analyzed by AA Flame?	<input type="checkbox"/>	—	—
(d) Mercury?	<input type="checkbox"/>	—	—
(e) Cyanide?	<input type="checkbox"/>	—	—

ACTION: If yes, prepare Telephone Log, contact laboratory for corrected data and correct errors with red pencil and initial.

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		YES	NO	N/A
A.1.7	<u>Raw Data</u>			
A.1.7.1	Digestion Log* for flame AA/ICP (Form XIII) present?	<input type="checkbox"/>	___	___
	Digestion Log for furnace AA Form XIII present?	<input type="checkbox"/>	___	___
	Distillation Log for mercury Form XIII present?	<input type="checkbox"/>	___	___
	Distillation Log for cyanides Form XIII present?	<input type="checkbox"/>	___	___
	Are pH values (pH<2 for all metals, pH>12 for cyanide) present?	<input type="checkbox"/>	___	___
	*Weights, dilutions and volumes used to obtain values.			
	Percent solids calculation present for soils/sediments?	<input type="checkbox"/>	___	___
	Are preparation dates present on sample preparation logs/bench sheets?	<input type="checkbox"/>	___	___
A.1.7.2	Measurement read out record present?			
	ICP	<input type="checkbox"/>	___	___
	Flame AA	<input type="checkbox"/>	___	___
	Furnace AA	<input type="checkbox"/>	___	___
	Mercury	<input type="checkbox"/>	___	___
	Cyanides	<input type="checkbox"/>	___	___
A.1.7.3	Are all raw data to support all sample analyses and QC operations present?	<input type="checkbox"/>	___	___
	Legible?	<input type="checkbox"/>	___	___
	Properly Labeled?	<input type="checkbox"/>	___	___

ACTION: If no for any of the above questions in sections A.1.7.1 through A.1.7.3, write Telephone Record Log and contact laboratory for resubmittals.

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		YES	NO	N/A
A.1.8	<u>Holding Times</u> - (aqueous and soil samples) (Examine sample traffic reports and digestion/distillation logs.)			
	Mercury analysis (28 days) exceeded?	—	<input type="checkbox"/>	—
	Cyanide distillation (14 days) exceeded?	—	<input type="checkbox"/>	—
	Other Metals analysis (6 months) exceeded?	—	<input type="checkbox"/>	—
	<u>NOTE:</u> Prepare a list of all samples and analytes for which holding times have been exceeded. Specify the number of days from date of collection to the date of preparation (from raw data). Attach to checklist.			
	<u>ACTION:</u> If yes, reject (red-line) values less than Instrument Detection Limit (IDL) and flag as estimated (J) the values above IDL even though sample(s) was preserved properly.			
A.1.8.2	Is pH of aqueous samples for: Metals Analysis >2?	—	<input type="checkbox"/>	—
	Cyanides Analysis <12?	—	<input type="checkbox"/>	—

Action: If yes, flag the associated metals and cyanides data as estimated.

A.1.9	<u>Form I (Final Data)</u>			
A.1.9.1	Are all Form I's present and complete?		<input type="checkbox"/>	—
	<u>ACTION:</u> If no, prepare telephone record log and contact laboratory for submittal.			
A.1.9.2	Are correct units (ug/l for waters and mg/kg for soils) indicated on Form I's?		<input type="checkbox"/>	—
	Are soil sample results for each parameter corrected for percent solids?		<input type="checkbox"/>	—
	Are all "less than IDL" values properly coded with "U"?		<input type="checkbox"/>	—

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	YES	NO	N/A
Are the correct concentration qualifiers used with final data?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no for any of the above, prepare Telephone Record Log, and contact laboratory for corrected data.			
A.1.9.3 Are EPA sample # s and corresponding laboratory sample ID # s the same as on the Cover Page, Form I's and in the raw data?	<input type="checkbox"/>	—	—
Was a brief physical description of samples given on Form I's?	<input type="checkbox"/>	—	—
Was the dilution of any sample diluted beyond the requirements of the contract noted on Form I or Form XIV?	—	<input type="checkbox"/>	—
<u>ACTION:</u> If no for any of the above, note under Contract-Problem/Non-Compliance of the "Data Assessment Narrative".			
A.1.10 <u>Calibration</u>			
A.1.10.1 Is record of at least 2 point calibration present for ICP analysis?	<input type="checkbox"/>	—	—
Is record of 5 point calibration present for Hg analysis?	<input type="checkbox"/>	—	—
Is record of 4 point calibration present for:			
Flame AA?	<input type="checkbox"/>	—	—
Furnace AA?	<input type="checkbox"/>	—	—
Cyanides?	<input type="checkbox"/>	—	—
Is one calibration standard at the ORL level for all AA (except Hg) and cyanides analyses?	<input type="checkbox"/>	—	—

ACTION: If no for any of the above, write in the Contract Problem/Non-Compliance section of the "Data Assessment Narrative".

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	YES	NO	N/A
A.1.10.2 Is correlation coefficient less than 0.995 for:			
Mercury Analysis?	—	<input type="checkbox"/>	—
Cyanide Analysis?	—	<input type="checkbox"/>	—
Atomic Absorption Analysis?	—	<input type="checkbox"/>	—

ACTION: If yes, flag the associated data as estimated.

NOTE: The data validator shall calculate the correlation coefficient using concentrations of the standards and the corresponding instrument response (e.g. absorbance, peak area, peak height, etc.).

A.1.10.3	In the instance where less than 4 standards are measured in absorbance (or peak area, peak height, etc.) mode, are the remaining standards analyzed in concentration mode immediately after calibration within $\pm 10\%$ of the true values?	<input type="checkbox"/>	—	—
----------	---	--------------------------	---	---

ACTION: If no, flag the associated data as estimated if standards are not within $\pm 10\%$ of true values. Do not flag the data as estimated in linear range indicated by good recovery of standard(s).

A.1.11 Form II A (Initial and Continuing Calibration Verification)-

A.1.11.1	Present and complete for every metal and cyanide?	<input type="checkbox"/>	—	—
	Present and complete for AA and ICP when both are used for the same analyte?	<input type="checkbox"/>	—	—

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory.

A.1.11.2	Circle on each Form IIA all percent recoveries that are outside the contract windows. Are all calibration standards (initial and continuing) within control limits:			
	Metals- 90-1104R?	- <input type="checkbox"/>	—	—
	Hg - 80-1204R?	<input type="checkbox"/>	—	—
	Cyanides- 85-1154R?	<input type="checkbox"/>	—	—

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	YES	NO	N/A
ACTION: Flag as estimated (J) all positive data (not flagged with a "U") analyzed between a calibration standard with %R between 75-89% (65-79% for Hg; 70-84% for CN) or 111-125% (121-135% for Hg; 116-130% for CN) recovery and nearest good calibration standard. Qualify results <IDL as estimated (U) if the ICV or CCV %R is 75-89% (CN, 70-84% ; HG, 65-79%). Reject (red-line) as unacceptable data if recovery of the ICV or CCV is outside the range 75-125% (CN, 70-130%; Hg, 65-135%). Qualify five samples on either side of verification standard out of control limits.			
A.1.11.3 Was continuing calibration performed every 10 samples or every 2 hours?	<input type="checkbox"/>	—	—
Was ICV for cyanides distilled?	<input type="checkbox"/>	—	—

ACTION: If no for any of the above, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".

A.1.12 Form II B (CRDL Standards for AA and ICP) -

A.1.12.1 Was a CRDL standard (CRA) analyzed after initial calibration for all AA metals (except Hg)?	<input type="checkbox"/>	—	—
Was a mid-range calib. verification standard distilled and analyzed for cyanide analysis?	<input type="checkbox"/>	—	—
Was a 2xCRDL (or 2xIDL when IDL > CRDL) analyzed (CRI) for each ICP run? (Note: CRI for AL, Ba, Ca, Fe, Mg, Na, or K is not required.)	<input type="checkbox"/>	—	—

ACTION: If no for any of the above, flag as estimated all data falling within the affected ranges. The affected ranges are:
AA Analysis - **True Value \pm CRDL
ICP Analysis - **True Value \pm 2CRDL
CN Analysis - **True Value \pm 0.5 x True Value.

**True value of CRA, CRI or mid-range standard. Substitute IDL for CRDL when IDL > CRDL. Compute the concentration of the missing mid-range standard from the calibration range.

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	YES	NO	N/A
A.1.12.2 Was ORI analyzed after ICV/ICB and before the final CCV/CCB, and twice every eight hours of ICP run?	<input type="checkbox"/>	—	—
<u>ACTION:</u> If no, write in Contract Problem/Non-Compliance Section of the "Data Assessment Narrative".			
A.1.12.3 Circle on each Form IIB all the percent recoveries that are outside the acceptance windows.			
Are CRA and ORI standards within control limits:			
Metals 80 - 120%R?	<input type="checkbox"/>	—	—
Is mid-range standard within control limits:			
Cyanide 80 - 120%R?	<input type="checkbox"/>	—	—
<u>ACTION:</u> Flag as estimated all sample results within the affected range if the recovery of the standard is between 50-79%; flag only positive data within the affected range if the recovery is between 121-150%; reject all data within the affected range if the recovery is less than 50%; reject only positive data within the affected range if the recovery is greater than 150%. Qualify 50% of the samples on either side of ORI standard outside the control limits.			
<u>Note:</u> Flag or reject the final results only when sample raw data are within the affected ranges and the CRI standards are outside the acceptance windows.			
A.1.13 <u>Form III (Initial and Continuing Calibration Blanks)</u>			
A.1.13.1 Present and complete?	<input type="checkbox"/>	—	—
For both AA and ICP when both are used for the same analyte?	<input type="checkbox"/>	—	—
Was an initial calibration blank analyzed?	<input type="checkbox"/>	—	—
Was a continuing calibration blank analyzed after every 10 samples or every 2 hours (which ever is more frequent)?	<input type="checkbox"/>	—	—

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YES NO N/A

ACTION: If no, prepare Telephone Record Log, contact laboratory and write in the Contract-Problems/Non-Compliance section of the "Data Assessment Narrative".

A.1.13.2 Circle on each Form III all calibration blank values that are above CRDL (or 2 x IDL when IDL > CRDL).

Are all calibration blanks (when IDL < CRDL) less than or equal to the Contract Required Detection Limits (CRDLs)?

Are all calibration blanks less than two times Instrument Detection Limit (when IDL > CRDL)?

ACTION: If no for any of the above, flag as estimated (J) positive sample results when raw sample value is less than or equal to calibration blank value analyzed between calibration blank with value over CRDL (or 2xIDL) and nearest good calibration blank.
 Flag five samples on either side of the calibration blank outside the control limits.

A.1.14 FORM III (Preparation Blank) -
 (Note: The preparation blank for mercury is the same as the calibration blank.)

A.1.14.1 Was one prep. blank analyzed for:

each Sample Delivery Group (SDG)?

each batch of digested samples?

each matrix type?

both AA and ICP when both are used for the same analyte?

ACTION: If no for any of the above, flag as estimated (J) all the associated positive data < 10 x IILs for which prep. blank was not analyzed.

NOTE: If only one blank was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).

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		YES	NO	N/A
A.1.14.2	Is concentration of prep. blank value greater than the CRDL when IDL is less than or equal to CRDL? If yes, is the concentration of the sample with the least concentrated analyte less than 10 times the prep. blank? <u>ACTION:</u> If yes, reject (red-line) all associated data greater than CRDL concentration but less than ten times the prep. blank value.	—	<input type="checkbox"/>	—
A.1.14.3	Is concentration of prep. blank value (Form III) less than two times IDL, when IDL is greater than CRDL? <u>ACTION:</u> If no, reject (red-line) all positive sample results when sample raw data are less than 10 times the prep. blank value.	<input type="checkbox"/>	—	—
A.1.14.4	Is concentration of prep. blank below the negative CRDL? <u>ACTION:</u> If yes, reject (red-line) all associated sample results less than 10xCRDL.	—	<input type="checkbox"/>	—
A.1.15	<u>Form IV (ICP Interference Check Sample)</u>	<input type="checkbox"/>	—	—
A.1.15.1	Present and complete? <u>NOTE:</u> Not required for furnace AA, flame AA, mercury, cyanide and Ca, Mg, K and Na.) Was ICS analyzed at beginning and end of run (or at least twice every 8 hours)? <u>ACTION:</u> If no, flag as estimated (J) all the samples for which Al, Ca, Fe, or Mg is higher than in ICS.	<input type="checkbox"/>	—	—
A.1.15.2	Circle all values on each Form IV that are more than $\pm 20\%$ of true or established mean value. Are all Interference Check Sample results inside the control limits ($\pm 20\%$)? If no, is concentration of Al, Ca, Fe, or Mg lower than the respective concentration in ICS?	<input type="checkbox"/>	—	—

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		YES	NO	N/A
	ACTION: If no, flag as estimated (J) those positive results for which ICS recovery is between 121-150%; flag all sample results as estimated if ICS recovery falls within 50-79%; reject (red-line) those sample results for which ICS recovery is less than 50%; if ICS recovery is above 150%, reject positive results only (not flagged with a "U").			
A.1.16	<u>Form V A (Spiked Sample Recovery - Pre-Digestion/Pre-Distillation)</u> - (Note: Not required for Ca, Mg, K, and Na (both matrices), Al, and Fe (soil only.)			
A.1.16.1	Present and complete for: each SDG?	<input type="checkbox"/>	—	—
	each matrix type?	<input type="checkbox"/>	—	—
	each conc. range (i.e. low, med., high)?	<input type="checkbox"/>	—	—
	For both AA and ICP when both are used for the same analyte?	<input type="checkbox"/>	—	—
	ACTION: If no for any of the above, flag as estimated (J) all the positive data less than four times the spiking levels specified in SOW for which spiked sample was not analyzed.			
	NOTE: If one spiked sample was analyzed for more than 20 samples, then first 20 samples analyzed do not have to be flagged as estimated (J).			
A.1.16.2	Was field blank used for spiked sample?	—	<input type="checkbox"/>	—
	ACTION: If yes, flag all positive data less than 4 x spike added as estimated (J) for which field blank was used as spiked sample.			
A.1.16.3	Circle on each Form VA all spike recoveries that are outside control limits (75% to 125%).			
	Are all recoveries within control limits?	<input type="checkbox"/>	—	—
	If no, is sample concentration greater than or equal to four times spike concentration?	<input type="checkbox"/>	—	—

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ACTION: If yes, disregard spike recoveries for analytes whose concentrations are greater than or equal to four times spike added. If no, circle those analytes on Form V for which sample concentration is less than four times the spike concentration.

Are results outside the control limits (75-125%) flagged with "N" on Form I's and Form VA?

YES NO N/A

ACTION: If no, write in the Contract - Problem/Non - Compliance section of "Data Assessment Narrative".

A.1.16.4

Aqueous

Are any spike recoveries:

(a) less than 30%?

(b) between 30-74%?

(c) between 126-150%?

(d) greater than 150%?

ACTION: If less than 30%, reject all associated aqueous data; if between 30-74%, flag all associated aqueous data as estimated (J); if between 126-150%, flag as estimated (J) all associated aqueous data not flagged with a "U"; if greater than 150%, reject (red-line) all associated aqueous data not flagged with a "U".

A.1.16.5

Soil/Sediment

Are any spike recoveries:

(a) less than 10%?

(b) between 10-74%?

(c) between 126-200%?

(d) greater than 200%?

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	YES	NO	N/A
ACTION: If less than 10%, reject all associated data; if between 10-74%, flag all associated data as estimated; if between 126-200%, flag as estimated all associated data was not flagged with a "U"; if greater than 200%, reject all associated data not flagged with a "U".			

A.1.17 <u>Form VI (Lab Duplicates)</u>			
A.1.17.1 Present and complete for: each SDG?	<input type="checkbox"/>	—	—
each matrix type?	<input type="checkbox"/>	—	—
each concentration range (i.e. low, med., high)?	<input type="checkbox"/>	—	—
both AA and ICP when both are used for the same analyte?	<input type="checkbox"/>	—	—

ACTION: If no for any the above, flag as estimated (J) all the data \geq CRDL* for which duplicate sample was not analyzed.

Note: 1. If one duplicate sample was analyzed for more than 20 samples, then first 20 samples do not have to be flagged as estimated.
2. If percent solids for soil sample and its duplicate differ by more than 1%, prepare a Form VI for each duplicate pair, report concentrations in ug/L on wet weight basis and calculate RPD or Difference for each analyte.

A.1.17.2 Was field blank used for duplicate analysis?	—	<input type="checkbox"/>	—
--	---	--------------------------	---

ACTION: If yes, flag all data \geq CRDL* as estimated (J) for which field blank was used as duplicate.

A.1.17.3 Are all values within control limits (RPD 20% or difference \leq \pm CRDL)?	<input type="checkbox"/>	—	—
---	--------------------------	---	---

If no, are all results outside the control limits flagged with an * on Form I's and VI?

ACTION: If no, write in the Contract - Problems/Non-Compliance section of "Data Assessment Narrative".

* Substitute IDL for CRDL when IDL > CRDL.

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YES NO N/A

- NOTE:** 1. RPD is not calculable for an analyte of the sample - duplicate pair when both values are less than IDL.
2. If the result of lab duplicate analyzed by GFAA is rejectable due to coefficient of correlation of MSA, analytical spike recovery, or duplicate injections criteria, do not apply precision criteria to metals analyzed by GFAA.

A.1.17.4 Aqueous

Circle on each Form VI all values that are:

RPD > 50%, or
Difference > CRDL*

Is any RPD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?

Is any difference** between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?

ACTION: If yes, flag the associated data as estimated.

A.1.17.5 Soil/Sediment

Circle on each Form VI all values that are:

RPD > 100%, or
Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than or equal to 5 times *CRDL) :
> 100%?

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x*CRDL) :
> 2x*CRDL?

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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	YES	NO	N/A
<u>ACTION:</u> If yes, flag the associated data as estimated.			
A.1.18 <u>Field Duplicates</u>	<input type="checkbox"/>	—	—
A.1.18.1 Were field duplicates analyzed?			

ACTION: If yes, prepare a Form VI for each aqueous field duplicate pair. Prepare a Form VI for each soil duplicate pair, if percent solids for sample and its duplicate differ by more than 1%; report concentrations of soils in ug/l on wet weight basis and calculate RFDs or Difference for each analyte.

- NOTE:
- Do not calculate RFD when both values are less than IDL.
 - Flag all associated data only for field duplicate pair.

A.1.18.2 Aqueous

Circle all values on self prepared Form VI for field duplicates that are:

RFD > 50%, or
Difference > CRDL*

Is any RFD greater than 50% where sample and duplicate are both greater than or equal to 5 times *CRDL?

Is any **difference between sample and duplicate greater than *CRDL where sample and/or duplicate is less than 5 times *CRDL?

ACTION: If yes, flag the associated data as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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	YES	NO	N/A
--	-----	----	-----

A.1.18.3 Soil/Sediment

Circle all values on self prepared Form VI for field duplicates that are:

RPD >100%, or

Difference > 2 x CRDL*

Is any RPD (where sample and duplicate are both greater than 5 times *CRDL) :

>100%?

Is any **difference between sample and duplicate (where sample and/or duplicate is less than 5x *CRDL) :

>2x *CRDL?

ACTION: If yes, flag the associated data as estimated.

A.1.19 Form VII (Laboratory Control Sample) (Note: LCS - not required for aqueous Hg and cyanide analyses.)

A.1.19.1 Was one LCS prepared and analyzed for:

each SDG?

each batch samples digested/distilled?

both AA and ICP when both are used for the same analyte?

ACTION: If no for any of the above, prepare Telephone Record Log and contact laboratory for submittal of results of LCS. Flag as estimated (J) all the data for which LCS was not analyzed.

NOTE: If only one LCS was analyzed for more than 20 samples, then first 20 samples close to LCS do not have to be flagged as estimated.

* Substitute IDL for CRDL when IDL > CRDL.
** Use absolute values of sample and duplicate to calculate the difference.

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		YES	NO	N/A
A.1.19.2	<u>Aqueous LCS</u>			
	Circle on each Form VII the LCS percent recoveries outside control limits (80 - 120%) except for aqueous Ag and Sb.			
	Is any LCS recovery: less than 50%?	—	<input type="checkbox"/>	—
	between 50% and 79%?	—	<input type="checkbox"/>	—
	between 121% and 150%?	—	<input type="checkbox"/>	—
	greater than 150%?	—	<input type="checkbox"/>	—

ACTION: Less than 50%, reject (red-line) all data; between 50% and 79%, flag all associated data as estimated (J); between 121% and 150%, flag all positive (not flagged with a "U") results as estimated; greater than 150%, reject all positive results.

A.1.19.3 Solid LCS

- NOTE: 1. If "Found" value of LCS is rejectable due to duplicate injections or analytical spike recovery criteria, regardless of LCS recovery, flag the associated data as estimated (J).
 2. If IDL of an analyte is equal to or greater than true value of LCS, disregard the "Action" below even though LCS is out of control limits.

Is LCS "Found" value higher than the control limits on Form VII? — —

ACTION: If yes, qualify all associated positive data as estimated

Is LCS "Found" value lower than the Control limits on Form VII? — —

ACTION: If yes, qualify all associated data as estimated.

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		YES	NO	N/A
A.1.20	<u>Form IX (ICP Serial Dilution) -</u> <u>NOTE:</u> Serial dilution analysis is required only for initial concentrations equal to or greater than 10 x IDL.			
A.1.20.1	Was Serial Dilution analysis performed for: each SDG? <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	each matrix type? <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	each concentration range (i.e. low, med.)? <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>ACTION:</u> If no for any of the above, flag as estimated all the positive data $\geq 10 \times \text{IDL}$ or $\geq \text{CRDL}$ when $10 \times \text{IDL} \leq \text{CRDL}$ for which Serial Dilution Analysis was not performed.			
A.1.20.2	Was field blank(s) used for Serial Dilution Analysis? <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>ACTION:</u> If yes, flag all associated data $\geq 10 \times \text{IDL}$ as estimated (J). If $10 \times \text{IDL} \leq \text{CRDL}$, flag all data $\geq \text{CRDL}$.			
A.1.20.3	Are results outside control limit flagged with an "S" on Form I's and Form IX when initial concentration on Form IX is equal to 50 times IDL or greater. <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	<u>ACTION:</u> If no, write in the Contract-Problem/Non-Compliance section of the "Data Assessment Narrative".			
A.1.20.4	Circle on each Form IX all percent difference that are outside the control limits for initial concentrations equal to or greater than 10 x IDLs only. Are any % difference values:			
	> 10%? <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
	$\geq 100\%$? <input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

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	YES	NO	N/A
<p>ACTION: Flag as estimated (J) all the associated sample data $\geq 10 \times \text{IDLs}$ (or $\geq \text{CRDL}$ when $10 \times \text{IDL} \leq \text{CRDL}$) for which percent difference is greater than 10% but less than 100%. Reject (red-line) all the associated sample results equal to or greater than $10 \times \text{IDLs}$ (or $\geq \text{CRDL}$ when $10 \times \text{IDL} \leq \text{CRDL}$) for which PD is greater than or equal to 100%.</p> <p>Note: Flag or reject on Form I's only the sample results whose associated raw data are $\geq 10 \times \text{IDL}$ (or $\geq \text{CRDL}$ when $10 \times \text{IDL} \leq \text{CRDL}$)</p>			
A.1.21 Furnace Atomic Absorption (AA) OC Analysis			
A.1.21.1			
	Are duplicate injections present in furnace raw data (except during full Method of Standard Addition) for each sample analyzed by GFAA?		
	<input type="checkbox"/>	—	—
	ACTION: If no, reject the data on Form I's for which duplicate injections were not performed.		
A.1.21.2			
	Do the duplicate injection readings agree within 20% Relative Standard Deviation (RSD) or Coefficient of Variation (CV) for concentration greater than CRDL?		
	<input type="checkbox"/>	—	—
	Was a dilution analyzed for sample with analytical spike recovery less than 40%?		
	<input type="checkbox"/>	—	—
	ACTION: If no for any of the above, flag all the associated data as estimated.		
A.1.21.3			
	Is analytical spike recovery outside the control limits (85-115%) for any sample?		
	—	<input type="checkbox"/>	—
	ACTION: If yes, flag as estimated the affected sample results if the recovery is between 10-84%; if the recovery is between 115-200%, flag the associated positive sample results as estimated; reject the associated sample results if the recovery is less than 10%; reject positive sample results if the recovery is greater than 200%.		

* Analytical spike is not required on the pre-digestion spiked sample.

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	YES	NO	N/A
<p><u>NOTE:</u> Reject or flag the data only when the affected sample(s) was not subsequently analyzed by Method of Standard Addition.</p>			
<p><u>Form VIII (Method of Standard Addition Results)</u></p>			
A.1.22	<input type="checkbox"/>	—	—
A.1.22.1	Present?	<input type="checkbox"/>	—
	If no, is any Form I result coded with "S" or a "+"?	—	—
	<u>ACTION:</u> If yes, write request on Telephone Record Log and contact laboratory for submittal of Form VIII.		
A.1.22.2	Is coefficient of correlation for MSA less than 0.990 for any sample?	—	<input type="checkbox"/>
	<u>ACTION:</u> If yes, reject (red-line) the affected data.		
A.1.22.3	Was *MSA required for any sample but not performed?	—	<input type="checkbox"/>
	Is coefficient of correlation for MSA less than 0.995?	—	<input type="checkbox"/>
	Are MSA calculations outside the linear range of the calibration curve generated at the beginning of the analytical run?	—	<input type="checkbox"/>
	<u>ACTION:</u> If yes for any of the above, flag all the associated data as estimated (J).		
A.1.22.4	Was proper quantitation procedure followed correctly as outlined in the SOW on page E-23?	<input type="checkbox"/>	—
	<u>ACTION:</u> If no, note exception under Contract Problem/ Non-Compliance section of the "Data Assessment Narrative", and prepare a separate list.		

* MSA is not required on LCS and prep. blank.

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		YES	NO	N/A
A.1.23	<u>Dissolved/Total or Inorganic/Total Analytes -</u>			
A.1.23.1	Were any analyses performed for dissolved as well as total analytes on the same sample(s).	—	<input type="checkbox"/>	—
	Were any analyses performed for inorganic as well as total (organic + inorganic) analytes on the same sample(s)?	—	<input type="checkbox"/>	—
	<p>NOTE: 1. If yes, prepare a list comparing differences between all dissolved (or inorganic) and total analytes. Compute the differences as a percent of the total analyte only when dissolved concentration is greater than CRDL as well as total concentration.</p> <p>2. Apply the following questions only if inorganic (or dissolved) results are (i) above CRDL, and (ii) greater than total constituents.</p> <p>3. At least one preparation blank, ICS, and LCS should be analyzed in each analytical run.</p>			
A.1.23.2	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 10%?	—	<input type="checkbox"/>	—
A.1.23.3	Is the concentration of any dissolved (or inorganic) analyte greater than its total concentration by more than 50%?	—	<input type="checkbox"/>	—
	<p>ACTION: If more than 10%, flag both dissolved (or inorganic) and total values as estimated (J); if more than 50%, reject (red-line) the data for both values.</p>			
A.1.24	<u>Form I (Field Blank) -</u>			
	<u>Note: Designate "Field Blank" as such on Form I.</u>			
A.1.24.1	Circle all field blank values on Form I that are greater than CRDL, (or 2 x IDL when IDL > CRDL).			
	Is field blank concentration less than CRDL (or 2 x IDL when IDL > CRDL) for all parameters of associated aqueous and soil samples?		<input type="checkbox"/>	—

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If no, was field blank value already rejected
due to other QC criteria?

YES	NO	N/A
<input type="checkbox"/>	—	—

ACTION: If no, reject (except field blank results)
all associated positive sample data less
than or equal to five times the field blank
value. Reject on Form I's the soil sample
results that when converted to ug/L on wet
basis are less than or equal to five times
the field blank value in ug/L.

A.1.25 Form I, XI, XII (Verification of Instrumental Parameters).

A.1.25.1 Is verification report present for:

Instrument Detection Limits (quarterly)?	<input type="checkbox"/>	—	—
ICP Interelement Correction Factors (annually)?	<input type="checkbox"/>	—	—
ICP Linear Ranges (quarterly)?	<input type="checkbox"/>	—	—

ACTION: If no, contact TPO of the lab.

A.1.25.2 Form X (Instrument Detection Limits) - (Note: IDL is not
required for Cyanide.)

A.1.25.2.1 Are IDLs present for:			
all the analytes?	<input type="checkbox"/>	—	—
all the instruments used?	<input type="checkbox"/>	—	—
For both AA and ICP when both are used for the same analyte?	<input type="checkbox"/>	—	—

ACTION: If no for any of the above, prepare
Telephone Record Log and contact
laboratory.

A.1.25.2.2 Is IDL greater than CRDL for any analyte?

If yes, is the concentration on Form I of the sample analyzed on the instrument whose IDL exceeds CRDL, greater than 5 x IDL.	<input type="checkbox"/>	—	—
---	--------------------------	---	---

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	<u>YES</u>	<u>NO</u>	<u>N/A</u>
<u>Action</u> : If no, flag as estimated all values less than five times IDL of the instrument whose IDL exceeds CRDL.			

A.1.25.3 Form XI (Linear Ranges)

A.1.25.3.1 Was any sample result higher than high linear range of ICP.	—	[]	—
Was any sample result higher than the highest calibration standard for non-ICP parameters?	—	[]	—
If yes for any of the above, was the sample diluted to obtain the result on Form I?	[]	—	—

ACTION: If no, flag the result reported on Form I as estimated (J).

A.1.26 Percent Solids of Sediments

A.1.26.1 Are percent solids in sediment(s):			
< 50%?	—	[]	—
< 10%?	—	[]	—

ACTION: If yes, qualify as estimated all the results of a sample that has per cent solids between 10%-50% (i.e. moisture content between 50%-90%). Reject all the results of a sample that has per cent solids less than 10% (i.e. moisture content greater than 90%).

NOTE: Reject or flag (J) only the sample results that were not previously rejected or flagged due to other QC criteria.

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL, INC. Contract: 68-D5-0169
ab Code: SENTIN Case No.: 25601 SAS No.: SDG No.: MBQK29
OW No.: ILM04.0

Table with 2 columns: EPA Sample No. and Lab Sample ID. Rows include MBQK29 (07025S), MBQK30 (07026S), MBQK30D (07026S2), MBQK30S (07026DS), MBQK33 (07027S), and MBQK46 (07028S).

Were ICP interelement corrections applied? Yes/No YES
Were ICP background corrections applied? Yes/No YES
If yes-were raw data generated before application of background corrections? Yes/No NO

Comments:

Three horizontal lines for handwritten comments.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the Laboratory Manager's designee, as verified by the following signature.

Signature: [Handwritten Signature] Name: Melvin V. Kilgore, Jr.
[Handwritten Date: 8-9-97] Title: Lab Director

INORGANIC ANALYSIS DATA SHEET

MBQK29

ab Name: SENTINEL, INC.

Contract: 68-D5-0169

ab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK29

atrix (soil/water): WATER

Lab Sample ID: 070255

evel (low/med): LOW

Date Received: 07/31/97

Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	19200		E J	P
7440-36-0	Antimony	7.7	B	N	P
7440-38-2	Arsenic	32.0			P
7440-39-3	Barium	1380			P
7440-41-7	Beryllium	0.73	B	J	P
7440-43-9	Cadmium	11.2			P
7440-70-2	Calcium	150000			P
7440-47-3	Chromium	117			P
7440-48-4	Cobalt	13.9	B		P
7440-50-8	Copper	499			P
7439-89-6	Iron	66500			P
7439-92-1	Lead	1020			P
7439-95-4	Magnesium	40600			P
7439-96-5	Manganese	726			P
7439-97-6	Mercury	7.8			CV
7440-02-0	Nickel	82.4			P
7440-09-7	Potassium	18600			P
7782-49-2	Selenium	2.4	U	N J	P
7440-22-4	Silver	15.8			P
7440-23-5	Sodium	77100			P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	81.6			P
7440-66-6	Zinc	1520			P
	Cyanide				NR

olor Before: COLORLESS

Clarity Before: CLEAR

Texture:

olor After: COLORLESS

Clarity After: CLEAR

Artifacts:

omments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK30

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK29

Matrix (soil/water): WATER

Lab Sample ID: 07026S

Level (low/med): LOW

Date Received: 07/31/97

Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	14900		E	P
7440-36-0	Antimony	8.2	B	N	P
7440-38-2	Arsenic	31.9			P
7440-39-3	Barium	839			P
7440-41-7	Beryllium	0.45	B		P
7440-43-9	Cadmium	12.8			P
7440-70-2	Calcium	257000			P
7440-47-3	Chromium	160			P
7440-48-4	Cobalt	15.5	B		P
7440-50-8	Copper	549			P
7439-89-6	Iron	52200			P
7439-92-1	Lead	1590			P
7439-95-4	Magnesium	56700			P
7439-96-5	Manganese	1700			P
7439-97-6	Mercury	6.2			CV
7440-02-0	Nickel	115			P
7440-09-7	Potassium	21600			P
7782-49-2	Selenium	2.4	U	N	P
7440-22-4	Silver	11.1			P
7440-23-5	Sodium	102000			P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	87.2			P
7440-66-6	Zinc	1640			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK33

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK29

Matrix (soil/water): WATER

Lab Sample ID: 07027S

Level (low/med): LOW

Date Received: 07/31/97

Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20800		E	P
7440-36-0	Antimony	5.1	B	N	P
7440-38-2	Arsenic	38.9			P
7440-39-3	Barium	1470			P
7440-41-7	Beryllium	0.84	B		P
7440-43-9	Cadmium	13.2		I	P
7440-70-2	Calcium	151000			P
7440-47-3	Chromium	130			P
7440-48-4	Cobalt	14.6	B		P
7440-50-8	Copper	602			P
7439-89-6	Iron	70400			P
7439-92-1	Lead	1180			P
7439-95-4	Magnesium	40900			P
7439-96-5	Manganese	748			P
7439-97-6	Mercury	8.7			CV
7440-02-0	Nickel	91.6			P
7440-09-7	Potassium	18500			P
7782-49-2	Selenium	2.4	U	N	P
7440-22-4	Silver	17.6			P
7440-23-5	Sodium	75500			P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	90.8			P
7440-66-6	Zinc	1710			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

Field Sample
 MBQK46

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK29

Matrix (soil/water): WATER

Lab Sample ID: 07028S

Level (low/med): LOW

Date Received: 07/31/97

Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	20.4	B	E	P
7440-36-0	Antimony	4.7	U	N	P
7440-38-2	Arsenic	2.0	U		P
7440-39-3	Barium	1.0	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	1.7	B		P
7440-70-2	Calcium	91.6	B		P
7440-47-3	Chromium	1.9	B		P
7440-48-4	Cobalt	1.4	U		P
7440-50-8	Copper	27.8	B		P
7439-89-6	Iron	72.8	B		P
7439-92-1	Lead	34.9	U		P
7439-95-4	Magnesium	35.1	B		P
7439-96-5	Manganese	2.2	B		P
7439-97-6	Mercury	0.17	B		CV
7440-02-0	Nickel	17.5	B		P
7440-09-7	Potassium	185	B		P
7782-49-2	Selenium	2.4	U	N	P
7440-22-4	Silver	1.6	B		P
7440-23-5	Sodium	141	U		P
7440-28-0	Thallium	3.4	U		P
7440-62-2	Vanadium	1.5	U		P
7440-66-6	Zinc	46.7	U		P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-DS-0169

Lab Code: Sentin Case No.: 25601

Full Sample Analysis Price in Contract:

SDG No./First Sample in SDG: MBQK29 Sample Receipt Date: 09/31/97
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY)

Last Sample in SDG: MBQK46 Sample Receipt Date: 07/31/97
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

1	<u>MBQK29</u>	11
2	<u>MBQK30</u>	12
3	<u>MBQK33</u>	13
4	<u>MBQK46</u>	14
5		15
6		16
7		17
8		18
9		19
10		20

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order
(i.e., the order listed on this form).

John Paisan
Signature

08/02/97
Date

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN Case No.: 25601

SAS No.:

SDG No.: MBQK34

DW No.: ILM04.0

EPA Sample No.	Lab Sample ID.
MBQK34	07029S
MBQK35	07030S
MBQK35D	07030S2
MBQK35S	07030DS
MBQK36	07085S
MBQK37	07086S
MBQK38	07031S
MBQK39	07087S
MBQK40	07088S
MBQK41	07089S
MBQK42	07090S
MBQK43	07091S
MBQK44	07032S
MBQK45	07033S
MBQK47	07092S
MBQK48	07034S
MBQK49	07093S
MBQK66	07094S
MBQK67	07095S
MBQK68	07096S

Were ICP interelement corrections applied? Yes/No YES
 Were ICP background corrections applied? Yes/No YES
 If yes-were raw data generated before application of background corrections? Yes/No NO

Comments: Concentrations are estimated for calcium, cadmium, magnesium, and potassium due to possible sample matrix interferences.

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above. Release of the data contained in this hardcopy data package and in the computer-readable data submitted on floppy diskette has been authorized by the Laboratory Manager or the manager's designee, as verified by the following signature.

Signature: M V Kilgore Jr

Name: MELVIN V. KILGORE, JR.

8/12/97

Title: LABORATORY DIRECTOR

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK34

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07029S

Level (low/med): LOW

Date Received: 07/31/97

Solids:

42.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	12400			P
7440-36-0	Antimony	3.8	B	N	P
7440-38-2	Arsenic	27.9			P
7440-39-3	Barium	374			P
7440-41-7	Beryllium	0.72	B		P
7440-43-9	Cadmium	5.3		E	P
7440-70-2	Calcium	5080			P
7440-47-3	Chromium	103			P
7440-48-4	Cobalt	7.3	B		P
7440-50-8	Copper	447		N	P
7439-89-6	Iron	23100			P
7439-92-1	Lead	1130			P
7439-95-4	Magnesium	3680		E	P
7439-96-5	Manganese	255			P
7439-97-6	Mercury	10.8			CV
7440-02-0	Nickel	50.2			P
7440-09-7	Potassium	1310	B	E	P
7782-49-2	Selenium	2.1	B		P
7440-22-4	Silver	7.0			P
7440-23-5	Sodium	996	B		P
7440-28-0	Thallium	1.4	U		P
7440-62-2	Vanadium	74.2			P
7440-66-6	Zinc	873			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK35

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07030S

Level (low/med): LOW

Date Received: 07/31/97

Solids: 49.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11100			P
7440-36-0	Antimony	2.5	B	N	P
7440-38-2	Arsenic	11.8			P
7440-39-3	Barium	312			P
7440-41-7	Beryllium	0.42	B		P
7440-43-9	Cadmium	5.8		E	P
7440-70-2	Calcium	14800			P
7440-47-3	Chromium	125			P
7440-48-4	Cobalt	6.1	B		P
7440-50-8	Copper	279		N	P
7439-89-6	Iron	27300			P
7439-92-1	Lead	879			P
7439-95-4	Magnesium	3870		E	P
7439-96-5	Manganese	272			P
7439-97-6	Mercury	4.2			CV
7440-02-0	Nickel	44.0			P
7440-09-7	Potassium	945	B	E	P
7782-49-2	Selenium	0.85	U		P
7440-22-4	Silver	6.5			P
7440-23-5	Sodium	576	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	53.8			P
7440-66-6	Zinc	877			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

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U.S. EPA - CLP

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INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

MBQK36

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07085S

Level (low/med): LOW

Date Received: 08/02/97

Solids: 71.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7200			P
7440-36-0	Antimony	1.3	U	N	P
7440-38-2	Arsenic	2.6	B		P
7440-39-3	Barium	55.8			P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	1.3	B	E	P
7440-70-2	Calcium	1970			P
7440-47-3	Chromium	19.8			P
7440-48-4	Cobalt	5.0	B		P
7440-50-8	Copper	75.1		N	P
7439-89-6	Iron	10600			P
7439-92-1	Lead	164			P
7439-95-4	Magnesium	1790		E	P
7439-96-5	Manganese	335			P
7439-97-6	Mercury	1.1			CV
7440-02-0	Nickel	16.0			P
7440-09-7	Potassium	762	B	E	P
7782-49-2	Selenium	0.67	U		P
7440-22-4	Silver	1.1	B		P
7440-23-5	Sodium	459	B		P
7440-28-0	Thallium	0.95	U		P
7440-62-2	Vanadium	20.6			P
7440-66-6	Zinc	290			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK37

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07086S

Level (low/med): LOW

Date Received: 08/02/97

Solids:

28.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	8410			P
7440-36-0	Antimony	71.5		N	P
7440-38-2	Arsenic	17.9			P
7440-39-3	Barium	511			P
7440-41-7	Beryllium	0.91	B		P
7440-43-9	Cadmium	13.9		E	P
7440-70-2	Calcium	21000			P
7440-47-3	Chromium	229			P
7440-48-4	Cobalt	12.2	B		P
7440-50-8	Copper	588		N	P
7439-89-6	Iron	47400			P
7439-92-1	Lead	27700			P
7439-95-4	Magnesium	2240	B	E	P
7439-96-5	Manganese	266			P
7439-97-6	Mercury	1.7			CV
7440-02-0	Nickel	157			P
7440-09-7	Potassium	691	B	E	P
7782-49-2	Selenium	1.7	U		P
7440-22-4	Silver	8.6			P
7440-23-5	Sodium	1600	B		P
7440-28-0	Thallium	2.4	U		P
7440-62-2	Vanadium	94.8			P
7440-66-6	Zinc	1130			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

5

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK38

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07031S

Level (low/med): LOW

Date Received: 07/31/97

Solids:

44.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	9820			P
7440-36-0	Antimony	2.8	B	N	P
7440-38-2	Arsenic	18.9			P
7440-39-3	Barium	339			P
7440-41-7	Beryllium	0.56	B		P
7440-43-9	Cadmium	4.3		E	P
7440-70-2	Calcium	3570			P
7440-47-3	Chromium	61.7			P
7440-48-4	Cobalt	5.2	B		P
7440-50-8	Copper	302		N	P
7439-89-6	Iron	17900			P
7439-92-1	Lead	844			P
7439-95-4	Magnesium	2650		E	P
7439-96-5	Manganese	99.5			P
7439-97-6	Mercury	7.5			CV
7440-02-0	Nickel	35.3			P
7440-09-7	Potassium	1050	B	E	P
7782-49-2	Selenium	2.1			P
7440-22-4	Silver	5.8			P
7440-23-5	Sodium	779	B		P
7440-28-0	Thallium	1.3	U		P
7440-62-2	Vanadium	51.3			P
7440-66-6	Zinc	662			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

6

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK39

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07087S

Level (low/med): LOW

Date Received: 08/02/97

Solids: 57.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6320			P
7440-36-0	Antimony	1.6	U	N	P
7440-38-2	Arsenic	4.6			P
7440-39-3	Barium	131			P
7440-41-7	Beryllium	0.35	B		P
7440-43-9	Cadmium	1.1	B	E	P
7440-70-2	Calcium	3490			P
7440-47-3	Chromium	19.8			P
7440-48-4	Cobalt	2.8	B		P
7440-50-8	Copper	55.8		N	P
7439-89-6	Iron	10900			P
7439-92-1	Lead	92.2			P
7439-95-4	Magnesium	1180	B	E	P
7439-96-5	Manganese	89.1			P
7439-97-6	Mercury	0.30			CV
7440-02-0	Nickel	12.9	B		P
7440-09-7	Potassium	494	B	E	P
7782-49-2	Selenium	0.81	U		P
7440-22-4	Silver	0.95	B		P
7440-23-5	Sodium	643	B		P
7440-28-0	Thallium	1.2	U		P
7440-62-2	Vanadium	13.0	B		P
7440-66-6	Zinc	148			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK40

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07088S

Level (low/med): LOW

Date Received: 08/02/97

Solids:

17.4

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	15200			P
7440-36-0	Antimony	23.2	B	N	P
7440-38-2	Arsenic	93.0			P
7440-39-3	Barium	1740			P
7440-41-7	Beryllium	0.70	B		P
7440-43-9	Cadmium	22.2		E	P
7440-70-2	Calcium	23400			P
7440-47-3	Chromium	441			P
7440-48-4	Cobalt	39.1	B		P
7440-50-8	Copper	1560		N	P
7439-89-6	Iron	71200			P
7439-92-1	Lead	2250			P
7439-95-4	Magnesium	4600	B	E	P
7439-96-5	Manganese	590			P
7439-97-6	Mercury	7.1			CV
7440-02-0	Nickel	468			P
7440-09-7	Potassium	872	B	E	P
7782-49-2	Selenium	2.7	U		P
7440-22-4	Silver	16.4			P
7440-23-5	Sodium	2100	B		P
7440-28-0	Thallium	3.9	U		P
7440-62-2	Vanadium	145			P
7440-66-6	Zinc	3620			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK41

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07089S

Level (low/med): LOW

Date Received: 08/02/97

Solids:

9.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	2260			P
7440-36-0	Antimony	9.2	U	N	P
7440-38-2	Arsenic	4.9	B		P
7440-39-3	Barium	174	B		P
7440-41-7	Beryllium	0.20	U		P
7440-43-9	Cadmium	1.5	B	E	P
7440-70-2	Calcium	16200			P
7440-47-3	Chromium	49.2			P
7440-48-4	Cobalt	2.7	U		P
7440-50-8	Copper	98.8		N	P
7439-89-6	Iron	6300			P
7439-92-1	Lead	215			P
7439-95-4	Magnesium	4550	B	E	P
7439-96-5	Manganese	114			P
7439-97-6	Mercury	0.82	B		P
7440-02-0	Nickel	21.7	B		P
7440-09-7	Potassium	701	B	E	P
7782-49-2	Selenium	4.7	U		P
7440-22-4	Silver	2.8	B		P
7440-23-5	Sodium	4730	B		P
7440-28-0	Thallium	6.7	U		P
7440-62-2	Vanadium	51.7	B		P
7440-66-6	Zinc	264			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

9

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK42

b Name: SENTINEL, INC.

Contract: 68-D5-0169

b Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07090S

Level (low/med): LOW

Date Received: 08/02/97

Solids:

10.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6390			P
7440-36-0	Antimony	15.9	B	N	P
7440-38-2	Arsenic	31.4			P
7440-39-3	Barium	297	B		P
7440-41-7	Beryllium	0.49	B		P
7440-43-9	Cadmium	3.4	B	E	P
7440-70-2	Calcium	22100			P
7440-47-3	Chromium	143			P
7440-48-4	Cobalt	3.1	B		P
7440-50-8	Copper	239		N	P
7439-89-6	Iron	12000			P
7439-92-1	Lead	518			P
7439-95-4	Magnesium	4750	B	E	P
7439-96-5	Manganese	123			P
7439-97-6	Mercury	0.89	B		CV
7440-02-0	Nickel	43.9	B		P
7440-09-7	Potassium	1080	B	E	P
7782-49-2	Selenium	4.7	U		P
7440-22-4	Silver	2.3	B		P
7440-23-5	Sodium	4340	B		P
7440-28-0	Thallium	6.7	U		P
7440-62-2	Vanadium	112			P
7440-66-6	Zinc	492			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK43

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07091S

Level (low/med): LOW

Date Received: 08/02/97

Solids: 43.8

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	13100			P
7440-36-0	Antimony	6.6	B	N	P
7440-38-2	Arsenic	9.2			P
7440-39-3	Barium	389			P
7440-41-7	Beryllium	0.59	B		P
7440-43-9	Cadmium	8.4		E	P
7440-70-2	Calcium	90200			P
7440-47-3	Chromium	54.9			P
7440-48-4	Cobalt	7.5	B		P
7440-50-8	Copper	247		N	P
7439-89-6	Iron	20500			P
7439-92-1	Lead	319			P
7439-95-4	Magnesium	6530		E	P
7439-96-5	Manganese	377			P
7439-97-6	Mercury	1.2			CV
7440-02-0	Nickel	56.2			P
7440-09-7	Potassium	2030	B	E	P
7782-49-2	Selenium	1.1	U		P
7440-22-4	Silver	1.9	B		P
7440-23-5	Sodium	1180	B		P
7440-28-0	Thallium	1.5	U		P
7440-62-2	Vanadium	49.3			P
7440-66-6	Zinc	979			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK44

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07032S

Level (low/med): LOW

Date Received: 07/31/97

Solids: 58.1

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7300	-		P
7440-36-0	Antimony	1.7	B	N	P
7440-38-2	Arsenic	4.5			P
7440-39-3	Barium	129			P
7440-41-7	Beryllium	0.27	B		P
7440-43-9	Cadmium	3.3		E	P
7440-70-2	Calcium	6850			P
7440-47-3	Chromium	57.0			P
7440-48-4	Cobalt	6.0	B		P
7440-50-8	Copper	177		N	P
7439-89-6	Iron	29900			P
7439-92-1	Lead	463			P
7439-95-4	Magnesium	1710		E	P
7439-96-5	Manganese	272			P
7439-97-6	Mercury	2.1			P
7440-02-0	Nickel	27.3			P
7440-09-7	Potassium	645	B	E	P
7782-49-2	Selenium	0.76	U		P
7440-22-4	Silver	2.5	B		P
7440-23-5	Sodium	308	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	23.1			P
7440-66-6	Zinc	528			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

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INORGANIC ANALYSIS DATA SHEET

MBQK45

b Name: SENTINEL, INC.

Contract: 68-D5-0169

b Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07033S

Level (low/med): LOW

Date Received: 07/31/97

Solids: 59.2

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	16900			P
7440-36-0	Antimony	4.0	B	N	P
7440-38-2	Arsenic	60.5			P
7440-39-3	Barium	85.1			P
7440-41-7	Beryllium	0.17	B		P
7440-43-9	Cadmium	0.87	B	E	P
7440-70-2	Calcium	21200			P
7440-47-3	Chromium	28.9			P
7440-48-4	Cobalt	3.5	B		P
7440-50-8	Copper	4870		N	P
7439-89-6	Iron	15000			P
7439-92-1	Lead	91.4			P
7439-95-4	Magnesium	2560		E	P
7439-96-5	Manganese	370			P
7439-97-6	Mercury	0.15	B		CV
7440-02-0	Nickel	13.8			P
7440-09-7	Potassium	637	B	E	P
7782-49-2	Selenium	0.80	U		P
7440-22-4	Silver	0.80	B		P
7440-23-5	Sodium	435	B		P
7440-28-0	Thallium	1.1	U		P
7440-62-2	Vanadium	24.3			P
7440-66-6	Zinc	436			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

13

U.S. EPA - CLP

1

INORGANIC ANALYSIS DATA SHEET

EPA SAMPLE NO.

Field Blank

MBQK47

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): WATER

Lab Sample ID: 07092S

Level (low/med): LOW

Date Received: 08/02/97

Solids: 0.0

Concentration Units (ug/L or mg/Kg dry weight): UG/L

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	119	B		P
7440-36-0	Antimony	4.7	U		P
7440-38-2	Arsenic	3.0	B		P
7440-39-3	Barium	3.3	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	1.6	B		P
7440-70-2	Calcium	337	B		P
7440-47-3	Chromium	1.0	B		P
7440-48-4	Cobalt	1.4	U		P
7440-50-8	Copper	74.5			P
7439-89-6	Iron	81.2	B		P
7439-92-1	Lead	21.2			P
7439-95-4	Magnesium	151	B		P
7439-96-5	Manganese	7.6	B		P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	5.3	B		P
7440-09-7	Potassium	368	B		P
7782-49-2	Selenium	2.4	U		P
7440-22-4	Silver	0.92	B		P
7440-23-5	Sodium	353	B		P
7440-28-0	Thallium	6.5	B		P
7440-62-2	Vanadium	1.5	U		P
7440-66-6	Zinc	44.1			P
	Cyanide				NR

Color Before: COLORLESS

Clarity Before: CLEAR

Texture:

Color After: COLORLESS

Clarity After: CLEAR

Artifacts:

Comments:

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U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK48

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07034S

Level (low/med): LOW

Date Received: 07/31/97

Solids: 71.9

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	10500			P
7440-36-0	Antimony	215		N	P
7440-38-2	Arsenic	39.6			P
7440-39-3	Barium	1110			P
7440-41-7	Beryllium	1.1	B		P
7440-43-9	Cadmium	22.4		E	P
7440-70-2	Calcium	4590			P
7440-47-3	Chromium	118			P
7440-48-4	Cobalt	11.8	B		P
7440-50-8	Copper	443		N	P
7439-89-6	Iron	116000			P
7439-92-1	Lead	1200			P
7439-95-4	Magnesium	1100	B	E	P
7439-96-5	Manganese	598			P
7439-97-6	Mercury	3.7			CV
7440-02-0	Nickel	82.3			P
7440-09-7	Potassium	662	B	E	P
7782-49-2	Selenium	0.65	U		P
7440-22-4	Silver	5.4			P
7440-23-5	Sodium	385	B		P
7440-28-0	Thallium	0.92	U		P
7440-62-2	Vanadium	106			P
7440-66-6	Zinc	1580			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

15

U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK49

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07093S

Level (low/med): LOW

Date Received: 08/02/97

Solids: 79.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	6000			P
7440-36-0	Antimony	3.9	B	N	P
7440-38-2	Arsenic	12.1			P
7440-39-3	Barium	704			P
7440-41-7	Beryllium	0.36	B		P
7440-43-9	Cadmium	5.4		E	P
7440-70-2	Calcium	4570			P
7440-47-3	Chromium	34.2			P
7440-48-4	Cobalt	6.9	B		P
7440-50-8	Copper	154		N	P
7439-89-6	Iron	51800			P
7439-92-1	Lead	522			P
7439-95-4	Magnesium	1450		E	P
7439-96-5	Manganese	225			P
7439-97-6	Mercury	1.1			CV
7440-02-0	Nickel	24.0			P
7440-09-7	Potassium	656	B	E	P
7782-49-2	Selenium	0.53	U		P
7440-22-4	Silver	2.3			P
7440-23-5	Sodium	194	B		P
7440-28-0	Thallium	0.76	U		P
7440-62-2	Vanadium	30.4			P
7440-66-6	Zinc	862			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture:

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

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U.S. EPA - CLP

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EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK66

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07094S

Level (low/med): LOW

Date Received: 08/02/97

Solids:

34.5

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	11400			P
7440-36-0	Antimony	4.7	B	N	P
7440-38-2	Arsenic	2.7	B		P
7440-39-3	Barium	236			P
7440-41-7	Beryllium	0.65	B		P
7440-43-9	Cadmium	8.2		E	P
7440-70-2	Calcium	8390			P
7440-47-3	Chromium	281			P
7440-48-4	Cobalt	6.4	B		P
7440-50-8	Copper	545		N	P
7439-89-6	Iron	15200			P
7439-92-1	Lead	1330			P
7439-95-4	Magnesium	4130		E	P
7439-96-5	Manganese	150			P
7439-97-6	Mercury	5.0			CV
7440-02-0	Nickel	71.1			P
7440-09-7	Potassium	1150	B	E	P
7782-49-2	Selenium	1.4	B		P
7440-22-4	Silver	7.2			P
7440-23-5	Sodium	866	B		P
7440-28-0	Thallium	1.9	U		P
7440-62-2	Vanadium	72.4			P
7440-66-6	Zinc	1090			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

U.S. EPA - CLP

1

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK67

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07095S

Level (low/med):

LOW

Date Received: 08/02/97

Solids:

34.3

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	7510			P
7440-36-0	Antimony	2.6	U	N	P
7440-38-2	Arsenic	1.8	B		P
7440-39-3	Barium	118			P
7440-41-7	Beryllium	0.43	B		P
7440-43-9	Cadmium	1.7	B	E	P
7440-70-2	Calcium	4100			P
7440-47-3	Chromium	35.1			P
7440-48-4	Cobalt	6.3	B		P
7440-50-8	Copper	90.6		N	P
7439-89-6	Iron	12400			P
7439-92-1	Lead	282			P
7439-95-4	Magnesium	2480	B	E	P
7439-96-5	Manganese	691			P
7439-97-6	Mercury	0.75			CV
7440-02-0	Nickel	24.6			P
7440-09-7	Potassium	1110	B	E	P
7782-49-2	Selenium	1.3	U		P
7440-22-4	Silver	1.5	B		P
7440-23-5	Sodium	1630	B		P
7440-28-0	Thallium	1.9	U		P
7440-62-2	Vanadium	35.7			P
7440-66-6	Zinc	281			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

EPA SAMPLE NO.

INORGANIC ANALYSIS DATA SHEET

MBQK68

Lab Name: SENTINEL, INC.

Contract: 68-D5-0169

Lab Code: SENTIN

Case No.: 25601

SAS No.:

SDG No.: MBQK34

Matrix (soil/water): SOIL

Lab Sample ID: 07096S

Level (low/med): LOW

Date Received: 08/02/97

Solids:

21.6

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	4420			P
7440-36-0	Antimony	4.1	U	N	P
7440-38-2	Arsenic	5.4	B		P
7440-39-3	Barium	323			P
7440-41-7	Beryllium	0.37	B		P
7440-43-9	Cadmium	5.9		E	P
7440-70-2	Calcium	13100			P
7440-47-3	Chromium	44.2			P
7440-48-4	Cobalt	10.6	B		P
7440-50-8	Copper	390		N	P
7439-89-6	Iron	23400			P
7439-92-1	Lead	754			P
7439-95-4	Magnesium	1910	B	E	P
7439-96-5	Manganese	207			P
7439-97-6	Mercury	4.0			CV
7440-02-0	Nickel	299			P
7440-09-7	Potassium	839	B	E	P
7782-49-2	Selenium	2.1	U		P
7440-22-4	Silver	4.7	B		P
7440-23-5	Sodium	1500	B		P
7440-28-0	Thallium	3.0	U		P
7440-62-2	Vanadium	59.6			P
7440-66-6	Zinc	1000			P
	Cyanide				NR

Color Before: BROWN

Clarity Before:

Texture: MEDIUM

Color After: COLORLESS

Clarity After:

Artifacts:

Comments:

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REFERENCE NO. 15

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	PROJECT NOTE
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TO: Kelbros, Inc. File	DATE: 06/28/00	Page 1 of 1
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FROM:
Joanne D'Onofrio

SUBJECT:
Groundwater Population Use Summary

REFERENCE:
Groundwater within 4-mile radius from the site is utilized as a source of potable water supply; the table presented below provides information regarding these sources. According to representatives of the various water companies, drinking water is obtained from the upper, middle, and lower Potomac-Raritan-Magothy (PRM) aquifer. The well locations have been transcribed onto the 4-Mile Radius Map of this report. Population apportionments, where necessary are shown on the applicable attached telecons and/or project notes. A portion of the City of Philadelphia is located within 4 miles from the site. The City derives its drinking water supply from three surface water intakes, with one intake located on the Delaware River upstream of the site, and two intakes located on the Schuylkill River. An estimated 706,944 people are served by Philadelphia's Baxter Plant intake on the Delaware River (Att. G). The East Camden and Cramer Hill areas of New Jersey are served by New Jersey-American Water Company's (NJAWC) surface water intake, which is also located on the Delaware River. The surface water intake went on-line in 1996/1997, and replaced NJAWC's five groundwater wells at Cleveland & Reeves Avenues. This intake is directly across the river from the Baxter Plant and serves an estimated 24,300 persons (Att. H). Although the Delaware River is tidal to an extent, available information indicates that salt water does not normally reach the Camden area (Att. I).

Distance Ring (mi)	Water Source	Population Served	Population Per Ring	Attachments
0 - 1/4	None Identified	0	0	N/A
>1/4 - 1/2	None Identified	0	0	N/A
>1/2 - 1	None Identified	0	0	N/A
>1 - 2	City of Camden (Parkside Well Nos. 17 & 18)	6,352	6,352	B
>2 - 3	Collingswood Water Dept.	2,475		C
	Gloucester City Water Dept.	6,200		D
			8,675	N/A
>3-4	Collingswood Water Dept.	17,525		C
	Gloucester City Water Dept.	6,200		D
	Mechantville-Pennsauken Water Commission	10,500		E
	Brooklawn Public Works	699		F
			34,924	N/A

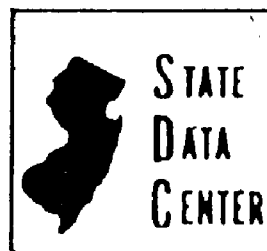
Total population served by public water supply wells within 4 miles of the site is 49,951 persons.

Ref. No. 15, p. 1

NJSDC-P1190-2

NJSDC 1990 CENSUS PUBLICATION

HOUSING UNITS AND HOUSEHOLD POPULATION
NEW JERSEY, COUNTIES AND MUNICIPALITIES: 1990



State of New Jersey
Jim Florio, Governor

Department of Labor
Raymond L. Bramucci, Commissioner

Division of Labor Market and Demographic Research
New Jersey State Data Center
CN 388
Trenton, New Jersey 08625-0388

March 1991

AH, A, p. 1 of 4

Ref. 15, p. 2

Table 2. Housing Units, Households, and Persons in Households and Group Quarters: 1990 (Cont.)
New Jersey Municipalities by Counties

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

	(1) Total Housing Units	(2) Vacant Housing Units	(3) Total Persons	(4) Persons in Group Quarters	(5) Total Households (1)-(2)	(6) Persons in Households (3)-(4)	(7) Persons per Household (6)/(5)
CAMDEN County Municipalities	190,145	11,387	502,824	8,891	178,758	493,933	2.76
CAMDEN COUNTY							
Audubon borough	3,756	134	9,205	0	3,622	9,205	2.54
Audubon Park borough	498	0	1,150	0	498	1,150	2.31
Barrington borough	2,765	77	6,774	0	2,688	6,774	2.52
Bellmawr borough	4,789	110	12,603	0	4,679	12,603	2.69
Berlin borough	2,015	65	5,672	0	1,950	5,672	2.91
Berlin township	1,838	61	5,466	13	1,777	5,453	3.07
Brooklawn borough	763	48	1,805	0	715	1,805	2.52
Camden city	30,138	3,512	87,492	3,573	26,626	83,919	3.15
Cherry Hill township	25,786	1,257	69,348	1,538	24,529	67,810	2.76
Chesilhurst borough	501	25	1,526	74	476	1,452	3.05
Clementon borough	2,420	160	5,601	0	2,260	5,601	2.48
Collingswood borough	6,734	335	15,289	77	6,399	15,212	2.38
Gibbsboro borough	762	12	2,383	29	750	2,354	3.14
Gloucester township	19,893	1,366	53,797	547	18,527	53,250	2.87
Gloucester City city	4,934	333	12,649	26	4,601	12,623	2.74
Haddon township	6,389	147	14,837	0	6,242	14,837	2.38
Haddonfield borough	4,652	161	11,628	171	4,491	11,457	2.55
Haddon Heights borough	3,154	112	7,860	0	3,042	7,860	2.58
Hi-Nella borough	512	43	1,045	0	469	1,045	2.23
Laurel Springs borough	859	38	2,341	0	821	2,341	2.85

continued ...

Att. 2 of 4

Ref. 15, p. 3

Table 2. Housing Units, Households, and Persons in Households and Group Quarters: 1990 (Cont.)
New Jersey Municipalities by Counties

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CAMDEN County Municipalities	Total Housing Units	Vacant Housing Units	Total Persons	Persons in Group Quarters	Total Households (1)-(2)	Persons in Households (3)-(4)	Persons per Household (6)/(5)
Lawnside borough	1,078	46	2,841	0	1,032	2,841	2.75
Lindenwold borough	8,527	585	18,734	0	7,942	18,734	2.36
Magnolia borough	1,852	77	4,861	0	1,775	4,861	2.74
Merchantville borough	1,656	74	4,095	35	1,582	4,060	2.57
Mount Ephraim borough	1,844	56	4,517	0	1,788	4,517	2.53
Oaklyn borough	1,887	41	4,430	11	1,846	4,419	2.39
Pennsauken township	12,715	309	34,738	351	12,406	34,387	2.77
Pine Hill borough	3,943	135	9,854	0	3,808	9,854	2.59
Pine Valley borough	18	8	19	0	10	19	1.90
Runnemede borough	3,524	104	9,042	11	3,420	9,031	2.64
Somerdale borough	2,150	82	5,440	0	2,068	5,440	2.63
Stratford borough	2,881	167	7,614	110	2,714	7,504	2.76
Tavistock borough	11	0	35	0	11	35	3.18
Voorhees township	9,905	798	24,559	917	9,107	23,642	2.60
Waterford township	3,564	113	10,940	177	3,451	10,763	3.12
Winslow township	10,493	757	30,087	1,231	9,736	28,856	2.96
Woodlynne borough	939	39	2,547	0	900	2,547	2.83

Source: 1990 Census of Population and Housing.

Att. A, p. 3 of 4

Ref. 15, p. 4

Table 2. Housing Units, Households, and Persons in Households and Group Quarters: 1990 (Cont.)
New Jersey Municipalities by Counties

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
GLOUCESTER County Municipalities	Total Housing Units	Vacant Housing Units	Total Persons	Persons in Group Quarters	Total Households (1)-(2)	Persons in Households (3)-(4)	Persons per Household (6)/(5)
GLOUCESTER COUNTY	82,459	3,614	230,082	4,111	78,845	225,971	2.87 ←
Clayton borough	2,177	108	6,155	0	2,069	6,155	2.97
Deptford township	8,872	318	24,137	405	8,554	23,732	2.77
East Greenwich township	1,750	37	5,258	125	1,713	5,133	3.00
Elk township	1,380	101	3,806	72	1,279	3,734	2.92
Franklin township	4,878	199	14,482	111	4,679	14,371	3.07
Glassboro borough	5,440	421	15,614	1,949	5,019	13,665	2.72
Greenwich township	1,865	34	5,102	5	1,831	5,097	2.78
Harrison township	1,726	116	4,715	44	1,610	4,671	2.90
Logan township	1,725	60	5,147	20	1,665	5,127	3.08
Mantua township	3,619	156	10,074	26	3,463	10,048	2.90
Monroe township	9,622	452	26,703	208	9,170	26,495	2.89
National Park borough	1,145	35	3,413	20	1,110	3,393	3.06
Newfield borough	570	10	1,592	0	560	1,592	2.84
Paulsboro borough	2,584	161	6,577	20	2,423	6,557	2.71
Pitman borough	3,526	131	9,365	286	3,395	9,079	2.67
South Harrison township	644	18	1,919	26	626	1,893	3.02
Swedesborg borough	784	50	2,024	0	734	2,024	2.76
Washington township	13,807	657	41,960	120	13,150	41,840	3.18
Wenonah borough	837	11	2,331	0	826	2,331	2.82
West Deptford township	7,638	231	19,380	131	7,407	19,249	2.60
Westville borough	1,907	73	4,573	0	1,834	4,573	2.49
Woodbury city	4,335	180	10,904	509	4,155	10,395	2.50
Woodbury Heights borough	1,130	23	3,392	0	1,107	3,392	3.06
Woolwich township	498	32	1,459	34	466	1,425	3.06

Att. A, p. 4 of 4

Ref. 15, p. 5

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	PROJECT NOTE
TO: Kelbros, Inc. File	DATE: 06/28/00 Page 1 of 1
FROM: Joanne D'Onofrio	
SUBJECT: City of Camden Water Supply Summary	
<p>REFERENCE:</p> <p>Region II START received the attached documentation from the City of Camden Department of Engineering. The City receives its drinking water from both public supply wells and New Jersey-American Water Company (NJAWC). The City owns and operates a water supply and distribution system providing for residential, commercial, industrial and fire protection needs of its residents. Approximately 54,000 people are served by the City's distribution systems. According to the attached City of Camden documentation, the City has permits for 26 water supply wells, 24 of these water supply wells are existing. Of the 24 existing wells, the City operates 17 wells on a normal basis. The City's wells are primarily located in four wellfields: Morris, Delair, Puchack, and Parkside. All of the City's supply wells are screened in the Potomac-Raritan-Magothy (PRM) aquifer. No single well provides more than 40 percent of the total supply.</p> <p>The Morris Wellfield contains 12 permitted wells (Well Nos. 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, and 13) and proposed wells (Well Nos. 14 and 15). With the exception of Well Nos. 2, 6 and 9 which are out of service due to either lack of service piping, low production and/or lack of wellhouse, all existing wells are operational.</p> <p>The Delair Wellfield contains three permitted wells (Well Nos. 1, 2 and 3), all of which are operational.</p> <p>Groundwater from the Puchack Wellfield is reported to be contaminated with hexavalent chromium. The Puchack Wellfield contains six permitted wells (Well Nos. 1, 2, 3, 5, 6 and 7). Of the six permitted wells, only Well No. 1 is operational. Well No. 1 is operated under the direction of the NJDEP to contain the chromium plume and is not being used for drinking water purposes.</p> <p>The Parkside Wellfield contains three permitted wells (Well Nos. 13, 17 and 18). Parkside Well Nos. 17 and 18 are operational.</p> <p>Of all of the City of Camden wells identified above, Parkside Well Nos. 17 and 18 are the only two wells located within 4 miles of the site. Population apportionments will be calculated for these two wells (Att. B, p. 2).</p>	

Att. B, p. 1 of 9

Ref. 15, p. 6

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		PROJECT NOTE						
TO: Kelbros, Inc. File	DATE: 06/28/00	Page 1 of 1						
FROM: Joanne D'Onofrio								
SUBJECT: City of Camden - Parkside Water Treatment Plant								
REFERENCE:								
<p>The Parkside Wellfield is owned by the City of Camden, and contains three permitted wells (Well Nos. 13, 17 and 18). Groundwater from Parkside Well No. 13 is not being utilized due to the presence of VOCs. Well No. 13 has not been included in the apportionment calculations. Information regarding Parkside Well Nos. 17 and 18; both of which are operational and located within 4 miles of the site is as follows:</p> <table border="0"> <thead> <tr> <th><u>Well Designation</u></th> <th><u>Distance Ring (mi)</u></th> </tr> </thead> <tbody> <tr> <td>Parkside Well No. 17</td> <td>1 - 2</td> </tr> <tr> <td>Parkside Well No. 18</td> <td>1 - 2</td> </tr> </tbody> </table> <p>The well locations have been transcribed on the 4-Mile Radius Map (Ref. No. 14) of this report.</p> <p><u>Population Apportionment</u></p> <p>Approximately 3,176 people are supplied by each well (54,000 total population served ÷ 17 wells = 3,176 people served per well). Therefore, an estimated 6,352 people are served by Parkside Well Nos. 17 and 18 (3,176 people served per well x 2 wells = 6,352 people served).</p>			<u>Well Designation</u>	<u>Distance Ring (mi)</u>	Parkside Well No. 17	1 - 2	Parkside Well No. 18	1 - 2
<u>Well Designation</u>	<u>Distance Ring (mi)</u>							
Parkside Well No. 17	1 - 2							
Parkside Well No. 18	1 - 2							

Att. B p. 2 of 9

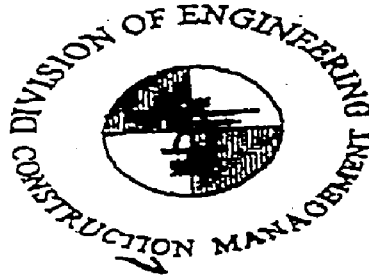
Ref. 15, p. 7



CITY OF CAMDEN
DEPARTMENT OF UTILITIES

MILTON MILAN
MAYOR

1056 WHIGHT AVENUE
CAMDEN, NEW JERSEY 08103



KEITH WALKER
ACTING DIRECTOR

TEL: (609) 757-7336

FAX #: TEL: (609) 757-7620

FACSIMILE TRANSMITTAL

F
A
X

TO: KATHY A. CAMPBELL

OF: ROY F WESTON, INC.

FAX #: 1-732-225-7037

FROM: UZO AHIAKWE, P.E., SENIOR ENGINEER

SUBJECT

MESSAGE: PER YOUR REQUEST SEE ATTACHMENT. HOPE YOU FIND IT USEFUL.

NUMBER OF PAGES INCLUDING THIS SHEET:

32

Att. 8, p-3/9

Ref. 15, p-8

SCHEDULE 1
PROGRAM INFORMATION

1.1 BACKGROUND INFORMATION

The purpose of this Section is to provide the Operator with an overview and general understanding of the City's System(s).

1.1.1 City of Camden.

The City of Camden, New Jersey is located in the southwest region of New Jersey, directly across the Delaware River from Philadelphia, Pennsylvania. The 1990 Census population of the City is approximately 87,500. The City provides water service to approximately 54,000 residents as well as commercial, institutional and industrial customers within the portion of the City which comprises the City's water service area which is defined in Section 1.3 and Figure 1-1 of this Schedule 1.

Water is pumped to the City's three treatment plants (Morris-Delair, Parkside and Puchack Run) by 26 existing groundwater wells. All of the City's wells are screened in the Potozaco-Raritan-Magothy formation. The Morris-Delair treatment plant is the City's largest treatment facility with a 1960 design capacity of 18 million gallons per day (MGD). The Parkside treatment plant is currently out-of-service and is undergoing substantial renovation. Once completed, the Parkside Water Treatment Plant will have a hydraulic design capacity of three MGD. The well field serving the Puchack Run treatment plant is contaminated with chromium and is currently operated under the direction of New Jersey Department of Environmental Protection (NJDEP) for containment of the chromium plume. The water produced by the Puchack Run treatment plant is currently discharged directly to Puchack Run. The City operates two storage tanks, (five and two million gallons) located within the City limits. A third storage facility, a 0.5 million gallon standpipe located at Whitman Park is not currently operated.

The City provides wastewater collection service to the residential, commercial, institutional and industrial customers located within the City and to approximately 249 customers in Pennsauken Township.

1.2 WATER SYSTEM

The City owns and operates a water supply and distribution system providing for the residential, commercial, industrial and fire protection needs of the residents. Water service is provided for all portions of the City except the area north of the Cooper River. The water service area comprises about six square miles and is shown in Figure 1-1 herein. The Water System serves an estimated 54,000 residents out of a City population of approximately 87,500 (1990 Census), plus industrial, institutional and commercial water users. A total of approximately 13,000 customers use the Water System. In addition, 1,255 fire hydrants serve as the primary source of water supply for fire protection in the Water System's service area.

Att. 8, p. 4/9

Ref. 15, p. 9

Adjacent water service districts include:

- New Jersey American Water Company
- Merchantville-Pennsauken Water Commission
- Collingswood Water Department
- Gloucester City Water Department

The City of Camden Department of Utilities staff is responsible for maintaining all parts of the Water System asset, including groundwater supply wells, treatment plants, and the distribution and storage system.

The balance of this section is a summary of the City's Well Fields, treatment plants, distribution and storage systems.

1.2.1 Well Field Description

The City has permits for 26 water supply wells, 24 of these water supply wells are existing. Two wells, Morris Well Nos. 14 and 15 are proposed. Of the 24 existing wells, the City operates 17 wells on a normal basis. Six other permitted wells are currently out of service due to poor water quality or low well production. Two permitted wells are maintained for emergency use only and one permitted well is out of service due to a lack of service piping. The City's wells are primarily located in four well fields: Morris, Delair, Puchack, and Parkside. Two additional wells, Well No. 7 and Well No. 11 are located at Jefferson and 9th Streets and Bulson and 9th streets in the City, respectively. The location of each well at the Morris, Delair, and Puchack Well Fields is shown in Figure 1-2, and the locations of the Parkside and two City wells are shown in Figure 1-3.

1.2.1.1 Morris-Delair Well Field

The Morris Well Field is located adjacent to the Delaware River and is approximately 95 acres. The Morris Well Field is commonly identified as either the Morris North or the Morris South Well Field. This designation is not based on geographic location, but rather on the electric services and water main to which the wells are connected. The Morris North Well Field contains six permitted wells (Well Nos. 1, 2, 3, 4, 12 and 13). Of these six wells, only Well No. 2 is not operational due to lack of service piping, low production and lack of wellhouse.

The Morris South Well Field contains six existing and two proposed permitted wells. The existing wells are Nos. 6, 7, 8, 9, 10, 11 and proposed wells 14 and 15. With the exception of Well Nos. 6 and 9 which are out of service due to a low rate of production, all existing wells in the Morris South Well Field are operational.

The Delair Well Field is located just south of the Betsy Ross Bridge and occupies approximately 15 acres. The Delair Well Field contains three permitted wells. The permitted wells are Well Nos. 1, 2 and 3. All three wells are operational. Therefore, of the 17 permitted wells located in the Morris and Delair Well Fields, 12 wells (five

Att. B, p-5/9

Ref. 15, p-10

wells at Morris North, four wells at Morris South and three wells at Delair) are currently operated on a daily basis.

Operational Concerns

The Morris and Delair Well Fields are collectively referred to as the Morris-Delair Well Field. Operational and maintenance issues that currently exist in the Morris-Delair Well Field include but are not limited to:

• Security Needs - These well fields are accessible by trespassers and are used by dirt bikes. Vandalism risks must be dealt with.

• Raw Water Pipelines - The raw water transmission line extending to Morris Well No. 2 is absent, and in general, existing transmission pipelines are subject to tuberculation and leakage.

• Well Rehabilitation - Due to the age and physical condition of some of the wells, a rehabilitation program must be addressed. Production rates for many of the wells has decreased and efforts to increase well production have had limited success.

• Flooding and Wetlands Issues - Due to the proximity of the Morris-Delair Well Field to the Delaware River, wellheads of two wells in Delair Well Field and one well in the Morris North Well Fields subject to high water levels. Raising of the wellheads of those wells that are in danger of or experiencing flooding will be necessary. In addition, a significant portion of the City's Morris-Delair Well Field is within or adjacent to wetlands. The City's two proposed wells are within or adjacent to wetlands which must be addressed appropriately.

1.2.1.2 Puchack Well Field

The Puchack Well Field is located southeast of the Morris and Delair Well Fields, approximately 2,000 feet southeast of the Delaware River. Groundwater from the Puchack Well Field is reported to be contaminated with hexavalent chromium. The Puchack Well Field contains six permitted wells. The permitted wells are Nos. 1, 2, 3, 5, 6 and 7. Of the six permitted wells, only Well No. 1 is operational. The pumps and motors from three of the four non-operational wells have been removed. Well No. 1 is operated at the direction of NJDEP to contain the chromium plume and as of late 1997, is currently discharged directly to Puchack Run and bypasses the treatment plant.

Upon completion of a new Puchack Run Treatment Plant, contingent upon State funding, the wells are to be rehabilitated and new or re-built pumps are to be installed.

Att. B, p. 6/9

Ref-15, p-11

1.2.1.3 Parkside Well Field

The Parkside Well Field is located within the City limits approximately four miles to the southwest of the Puchack Well Field. The Parkside Well Field contains three permitted wells (Well Nos. 13, 17 and 18).

Operational Issues

Due to volatile organic compound contamination, only Well Nos. 17 and 18 will be operated on a normal basis. Well No. 13 has not been in service for several years and in addition, a segment of the raw water piping leading to the Parkside treatment plant has been removed. Parkside Wells Nos. 17 and 18 are currently operational.

1.2.1.4 Other City Wells

In addition to the Parkside wells, the City operates two other wells within the City limits. Well No. 7 is dedicated to supplying process water to the Camden County Resource Recovery Facility (approximately 0.8 MGD) and Well No. 11 is used for emergency water supply. Well No. 11 is disinfected at the well head and discharged directly to the distribution system. Use of Well No. 11 is minimized in conformance with the City's corrosion control strategy due to the corrosive nature of this supply. It is the City's practice to operate City Well No. 11 only if sufficient system pressures can not be maintained using the Morris-Delair, Puchack and Parkside Well Fields operable wells.

1.2.2 Water Production

A summary of the permitted capacity, 1996 pumping capacity and original yield for each permitted well is provided in Table 1-1. The water production data for each well presented in Table 1-1 is not based on information from meters, but rather on flow tests and the number of hours of operation for each well.

1.2.3 Water Allocation Permit

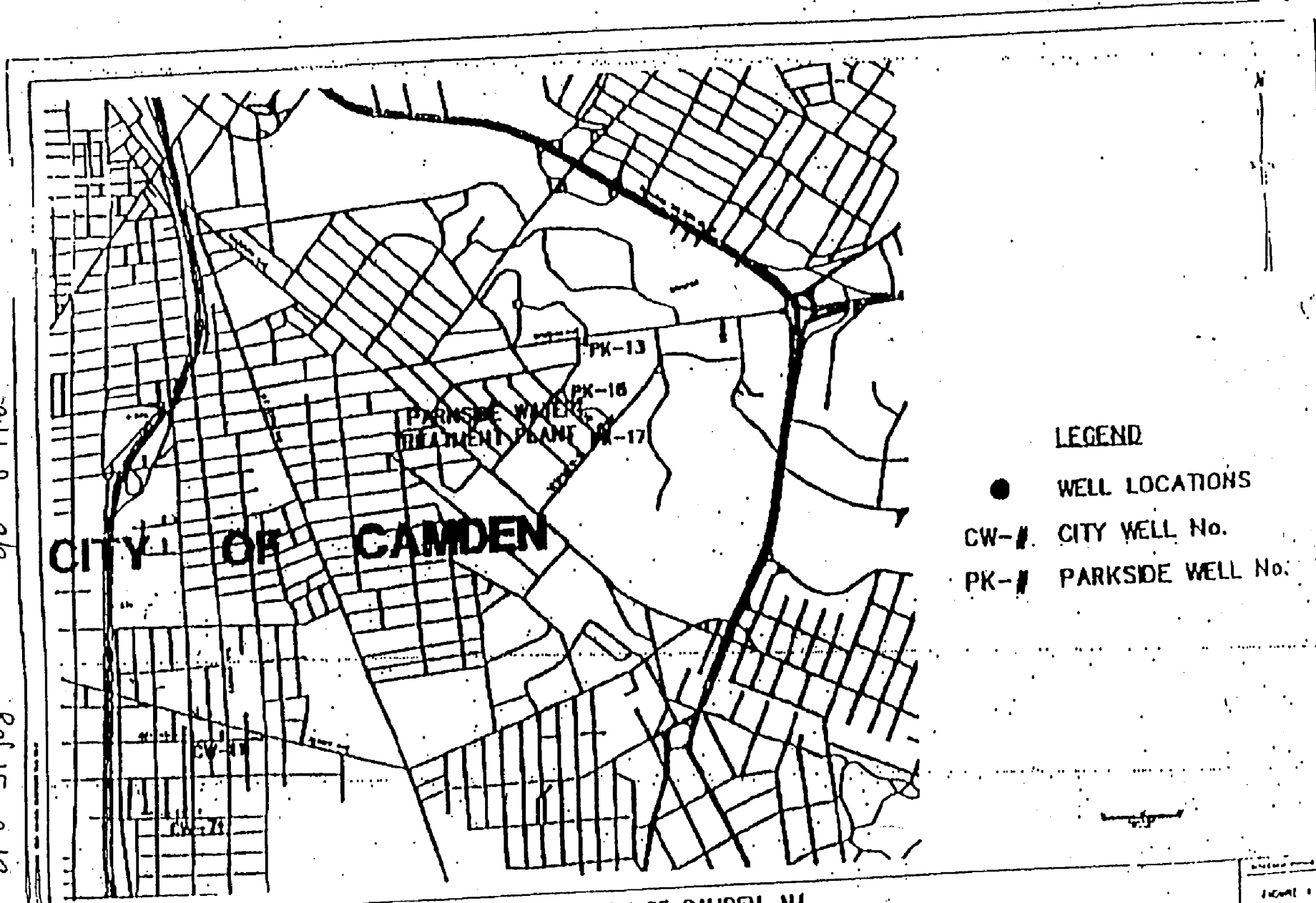
The City operates its Water System under Water Allocation Permit No. 5302 (expires December 31, 1998). In accordance with the Water Allocation Permit, the total permitted diversion from the sources identified in Table 1-1 shall not exceed 664 million gallons per month at a rate of 30,000 gpm and shall not exceed 6,928 million gallons per year. The total diversion from City Well Nos. 7 and 11, Parkside Well Nos. 13, 17 and 18 and Puchack Well Nos. 1, 2, 3, 5, 6 and 7 shall not exceed 2,117,343 million gallons per year. The base allocation, if withdrawn at a constant daily rate, represents an average withdrawal rate of approximately 5.8 MGD for the combined total withdrawal from the Puchack Run and Parkside Well Fields and City Wells. The planned Puchack Run Plant may operate partially or fully under a separate permit.

Att. B, p. 7/9

Ref. 15, p. 12

Att. B, p. 8/9

Ref. 15, p. 13



LEGEND

- WELL LOCATIONS
- CW-# CITY WELL No.
- PK-# PARKSIDE WELL No.

CITY OF CAMDEN, NJ

SCALE

WELLS LOCATED BY PARKSIDE AND CITY WELLS

Table 1-1
Groundwater Withdrawal Wells

Permit No.	Well No.	Year Drilled	Depth (feet)	June 1996 Production (gpm) (1)	Permitted Pump Capacity (gpm) (2)	Original Yield (gpm) (3)
------------	----------	--------------	--------------	--------------------------------	-----------------------------------	--------------------------

Morris Wellfield:

5100050	1	1961	107	750	1600	1000
3151984	2	1941	115	no pump	1000	1000
3100945	3	1953	107	800	1800	1000
3104252	4	1960	130	1200	1600	1585
5100051	6	1932	133	325	1700	1944
5100052	7	1960	120	1056	1680	1630
3100944	8	1953	124	603	1670	1000
5100076	9	1932	143	700	1670	1900
3104251	10	1960	115	1230	1400	1529
3115745	11	1979	144	815	2030	2030
3116814	12	1981	117.6	887	2030	2030
3116813	13	1980	130	800	2060	2060
Proposed	14				2060**	
Proposed	15				2060**	

nearest well →

Delair Wellfield:

5100053	1	1930	138	1100	1680	1980
5100054	2	1930	141	350	1830	1330
5100055	3	1930	135	650	1830	1850

Phelan Wellfield:

5100056	1	1924	140	1080	1500	1320
5100057	2	1924	169	996	1000	1440
5100058	3	1924	175	1280	1280	1184
5100059	5	1924	186	1120	1324	1119
3105450	6	1970	220	1831	2260	1800
3108526A	7	1975	180	1284	1681	1287

City Wells:

5100060	7	1966	163	1023	1500	1023
5100061	11	1942	159	791	1010	1005
3100904	13	1953	230	690	1200	1000
3101250	17	1954	270	0	1500	1000
3109574	18	1976	290	1062	1200	1250

Notes:

* - Assigned Pump Capacity...

** - Proposed

(1) - As reported by City personnel 7/1/96.

(2) - As reported in NJDEP Water Allocation Diversion Permit No. 5302 effective 10/2/97

(3) - As reported in NJDEP Staff Reports (dated 6/91) regarding Application No. 5302, updated by City personnel 7/1/96 and original construction details.

Att. B, p. 9/9

Ref. 15, p. 14

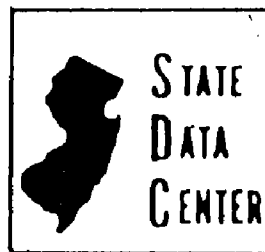
SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM			TELECON NOTE		
CONTROL NO:	DATE:	TIME:			
	March 1, 2000	745			
DISTRIBUTION:					
TDD file 02-00-02-0005					
CONVERSATION WITH:	OF	PHONE			
John Meyer	Collingswood Water Dept	(856) 854-2332			
RECORDED BY:					
Gerald Gilliland, Region II START					
DISCUSSION:					
Public Water Supply - Collingswood					
Collingswood obtains 100% of its drinking water from six groundwater wells screened in the lower PRM aquifer. Another well (no. 6) is currently off-line due to high iron. That well hasn't been used in more than a year and he doesn't expect to use it for drinking water purposes again. The well depths range from 250 to 325 feet. The total population served by the interconnected system is 20,000 persons through 6,000 connections. The wells and recent pumpage data are as follows:					
	Alternate		Approx. Pumpage (gallons)		
<u>Well #</u>	<u>Well #</u>	<u>Permit #</u>	<u>Jul-99</u>	<u>Aug-99</u>	<u>Sep-99</u>
1	5	31-00079	0.007	0.048	0.086
2	2R	31-04053	(numbers above are for Wells 1 and 2 combined)		
3	3R	31-04054	3.1	0.064	0.115
4	4R	51-00030	14	5	3
5	6	51-00031	47	45	42
6	7	31-04799	0	0	0
7	8	<u>31-04797</u>	<u>18</u>	<u>16</u>	<u>12</u>
Total			83.107	66.112	57.201
The numbers show that well 5 provides more than 40% of the total supply (Mr. Meyer said these numbers are typical). Therefore, approximate population apportionment is:					
<u>Well #</u>	<u>Calculation</u>				<u>Pop. Served</u>
1	$[(0.007 + 0.048 + 0.086) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$				6.86
2	$[(0.007 + 0.048 + 0.086) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$				6.86
3	$[(3.1 + 0.064 + 0.115) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$				319.25
4	$[(14 + 5 + 3) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$				2,141.95
5	$[(47 + 45 + 42) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$				13,046.44
7	$[(18 + 16 + 12) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$				4,478.63

Signature: 

NJSDC-P1190-2

NJSDC 1990 CENSUS PUBLICATION

HOUSING UNITS AND HOUSEHOLD POPULATION
NEW JERSEY, COUNTIES AND MUNICIPALITIES: 1990



State of New Jersey
Jim Florio, Governor

Department of Labor
Raymond L. Bramucci, Commissioner

Division of Labor Market and Demographic Research
New Jersey State Data Center
CN 388
Trenton, New Jersey 08625-0388

March 1991

AH. A, p. 1 of 4

Ref. 15, p. 2

Table 2. Housing Units, Households, and Persons in Households and Group Quarters: 1990 (Cont.)
New Jersey Municipalities by Counties

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

	(1) Total Housing Units	(2) Vacant Housing Units	(3) Total Persons	(4) Persons in Group Quarters	(5) Total Households (1)-(2)	(6) Persons in Households (3)-(4)	(7) Persons per Household (6)/(5)
CAMDEN County Municipalities							2.76 ←
CAMDEN COUNTY	190,145	11,387	502,824	8,891	178,758	493,933	
Audubon borough	3,756	134	9,205	0	3,622	9,205	2.54
Audubon Park borough	498	0	1,150	0	498	1,150	2.31
Barrington borough	2,765	77	6,774	0	2,688	6,774	2.52
Bellmawr borough	4,789	110	12,603	0	4,679	12,603	2.69
Berlin borough	2,015	65	5,672	0	1,950	5,672	2.91
Berlin township	1,838	61	5,466	13	1,777	5,453	3.07
Brooklawn borough	763	48	1,805	0	715	1,805	2.52
Camden city	30,138	3,512	87,492	3,573	26,626	83,919	3.15
Cherry Hill township	25,786	1,257	69,348	1,538	24,529	67,810	2.76
Chesilhurst borough	501	25	1,526	74	476	1,452	3.05
Clementon borough	2,420	160	5,601	0	2,260	5,601	2.48
Collingswood borough	6,734	335	15,289	77	6,399	15,212	2.38
Gibbsboro borough	762	12	2,383	29	750	2,354	3.14
Gloucester township	19,893	1,366	53,797	547	18,527	53,250	2.87
Gloucester City city	4,934	333	12,649	26	4,601	12,623	2.74
Haddon township	6,389	147	14,837	0	6,242	14,837	2.38
Haddonfield borough	4,652	161	11,628	171	4,491	11,457	2.55
Haddon Heights borough	3,154	112	7,860	0	3,042	7,860	2.58
Hill-Nella borough	512	43	1,045	0	469	1,045	2.23
Laurel Springs borough	859	38	2,341	0	821	2,341	2.85

continued ...

AH: A.P. 2 of 4

Ref. 15, p. 3

Table 2. Housing Units, Households, and Persons in Households and Group Quarters: 1990 (Cont.)
New Jersey Municipalities by Counties

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
CAMDEN County Municipalities	Total Housing Units	Vacant Housing Units	Total Persons	Persons in Group Quarters	Total Households (1)-(2)	Persons in Households (3)-(4)	Persons per Household (6)/(5)
Lawnside borough	1,078	46	2,841	0	1,032	2,841	2.75
Lindenwold borough	8,527	585	18,734	0	7,942	18,734	2.36
Magnolia borough	1,852	77	4,861	0	1,775	4,861	2.74
Merchantville borough	1,656	74	4,095	35	1,582	4,060	2.57
Mount Ephraim borough	1,844	56	4,517	0	1,788	4,517	2.53
Oaklyn borough	1,887	41	4,430	11	1,846	4,419	2.39
Pennsauken township	12,715	309	34,738	351	12,406	34,387	2.77
Pine Hill borough	3,943	135	9,854	0	3,808	9,854	2.59
Pine Valley borough	18	8	19	0	10	19	1.90
Runnemede borough	3,524	104	9,042	11	3,420	9,031	2.64
Somerdale borough	2,150	82	5,440	0	2,068	5,440	2.63
Stratford borough	2,881	167	7,614	110	2,714	7,504	2.76
Tavistock borough	11	0	35	0	11	35	3.18
Voorhees township	9,905	798	24,559	917	9,107	23,642	2.60
Waterford township	3,564	113	10,940	177	3,451	10,763	3.12
Winslow township	10,493	757	30,087	1,231	9,736	28,856	2.96
Woodlynne borough	939	39	2,547	0	900	2,547	2.83

Source: 1990 Census of Population and Housing.

Att. A, p. 3 of 4

Ref. 15, p. 4

Table 2. Housing Units, Households, and Persons in Households and Group Quarters: 1990 (Cont.)
New Jersey Municipalities by Counties

The population counts set forth herein are subject to possible correction for undercount or overcount. The United States Department of Commerce is considering whether to correct these counts and will publish corrected counts, if any, not later than July 15, 1991.

GLOUCESTER County Municipalities	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Total Housing Units	Vacant Housing Units	Total Persons	Persons in Group Quarters	Total Households (1)-(2)	Persons in Households (3)-(4)	Persons per Household (6)/(5)
GLOUCESTER COUNTY	82,459	3,614	230,082	4,111	78,845	225,971	2.87 ←
Clayton borough	2,177	108	6,155	0	2,069	6,155	2.97
Deptford township	8,872	318	24,137	405	8,554	23,732	2.77
East Greenwich township	1,750	37	5,258	125	1,713	5,133	3.00
Elk township	1,380	101	3,806	72	1,279	3,734	2.92
Franklin township	4,878	199	14,482	111	4,679	14,371	3.07
Glassboro borough	5,440	421	15,614	1,949	5,019	13,665	2.72
Greenwich township	1,865	34	5,102	5	1,831	5,097	2.78
Harrison township	1,726	116	4,715	44	1,610	4,671	2.90
Logan township	1,725	60	5,147	20	1,665	5,127	3.08
Mantua township	3,619	156	10,074	26	3,463	10,048	2.90
Monroe township	9,622	452	26,703	208	9,170	26,495	2.89
National Park borough	1,145	35	3,413	20	1,110	3,393	3.06
Newfield borough	570	10	1,592	0	560	1,592	2.84
Paulsboro borough	2,584	161	6,577	20	2,423	6,557	2.71
Pitman borough	3,526	131	9,365	286	3,395	9,079	2.67
South Harrison township	644	18	1,919	26	626	1,893	3.02
Swedesboro borough	784	50	2,024	0	734	2,024	2.76
Washington township	13,807	657	41,960	120	13,150	41,840	3.18
Wenonah borough	837	11	2,331	0	826	2,331	2.82
West Deptford township	7,638	231	19,380	131	7,407	19,249	2.60
Westville borough	1,907	73	4,573	0	1,834	4,573	2.49
Woodbury city	4,335	180	10,904	509	4,155	10,395	2.50
Woodbury Heights borough	1,130	23	3,392	0	1,107	3,392	3.06
Woolwich township	498	32	1,459	34	466	1,425	3.06

Att. A, p. 4 of 4

Ref. 15, p. 5

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM	PROJECT NOTE
TO: Kelbros, Inc. File	DATE: 06/28/00 Page 1 of 1
FROM: Joanne D'Onofrio	
SUBJECT: City of Camden Water Supply Summary	
<p>REFERENCE:</p> <p>Region II START received the attached documentation from the City of Camden Department of Engineering. The City receives its drinking water from both public supply wells and New Jersey-American Water Company (NJAWC). The City owns and operates a water supply and distribution system providing for residential, commercial, industrial and fire protection needs of its residents. Approximately 54,000 people are served by the City's distribution systems. According to the attached City of Camden documentation, the City has permits for 26 water supply wells, 24 of these water supply wells are existing. Of the 24 existing wells, the City operates 17 wells on a normal basis. The City's wells are primarily located in four wellfields: Morris, Delair, Puchack, and Parkside. All of the City's supply wells are screened in the Potomac-Raritan-Magothy (PRM) aquifer. No single well provides more than 40 percent of the total supply.</p> <p>The Morris Wellfield contains 12 permitted wells (Well Nos. 1, 2, 3, 4, 6, 7, 8, 9, 10, 11, 12, and 13) and proposed wells (Well Nos. 14 and 15). With the exception of Well Nos. 2, 6 and 9 which are out of service due to either lack of service piping, low production and/or lack of wellhouse, all existing wells are operational.</p> <p>The Delair Wellfield contains three permitted wells (Well Nos. 1, 2 and 3), all of which are operational.</p> <p>Groundwater from the Puchack Wellfield is reported to be contaminated with hexavalent chromium. The Puchack Wellfield contains six permitted wells (Well Nos. 1, 2, 3, 5, 6 and 7). Of the six permitted wells, only Well No. 1 is operational. Well No. 1 is operated under the direction of the NJDEP to contain the chromium plume and is not being used for drinking water purposes.</p> <p>The Parkside Wellfield contains three permitted wells (Well Nos. 13, 17 and 18). Parkside Well Nos. 17 and 18 are operational.</p> <p>Of all of the City of Camden wells identified above, Parkside Well Nos. 17 and 18 are the only two wells located within 4 miles of the site. Population apportionments will be calculated for these two wells (Att. B, p. 2).</p>	

Att. B, p. 1 of 9

Ref. 15, p. 6

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		PROJECT NOTE						
TO: Kelbros, Inc. File	DATE: 06/28/00	Page 1 of 1						
FROM: Joanne D'Onofrio								
SUBJECT: City of Camden - Parkside Water Treatment Plant								
REFERENCE: The Parkside Wellfield is owned by the City of Camden, and contains three permitted wells (Well Nos. 13, 17 and 18). Groundwater from Parkside Well No. 13 is not being utilized due to the presence of VOCs. Well No. 13 has not been included in the apportionment calculations. Information regarding Parkside Well Nos. 17 and 18; both of which are operational and located within 4 miles of the site is as follows:								
<table border="0"> <thead> <tr> <th><u>Well Designation</u></th> <th><u>Distance Ring (mi)</u></th> </tr> </thead> <tbody> <tr> <td>Parkside Well No. 17</td> <td>1 - 2</td> </tr> <tr> <td>Parkside Well No. 18</td> <td>1 - 2</td> </tr> </tbody> </table>			<u>Well Designation</u>	<u>Distance Ring (mi)</u>	Parkside Well No. 17	1 - 2	Parkside Well No. 18	1 - 2
<u>Well Designation</u>	<u>Distance Ring (mi)</u>							
Parkside Well No. 17	1 - 2							
Parkside Well No. 18	1 - 2							
The well locations have been transcribed on the 4-Mile Radius Map (Ref. No. 14) of this report.								
<u>Population Apportionment</u>								
Approximately 3,176 people are supplied by each well (54,000 total population served ÷ 17 wells = 3,176 people served per well). Therefore, an estimated 6,352 people are served by Parkside Well Nos. 17 and 18 (3,176 people served per well x 2 wells = 6,352 people served).								

Att. B p. 2 of 9

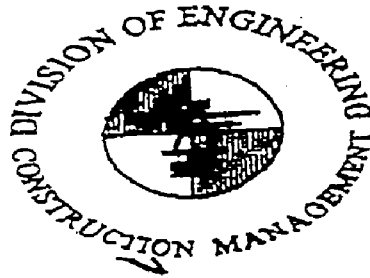
Ref. 15, p. 7



CITY OF CAMDEN
DEPARTMENT OF UTILITIES

MILTON MILAN
MAYOR

1056 WHIGHT AVENUE
CAMDEN, NEW JERSEY 08103



KEITH WALKER
ACTING DIRECTOR

TEL: (609) 757-7336

FAX #: TEL: (609) 757-7620

FACSIMILE TRANSMITTAL

F
A
X

TO: KATHY A. CAMPBELL

OF: ROY F WESTON, INC.

FAX #: 1-732-225-7037

FROM: UZO AHIAKWE, P.E., SENIOR ENGINEER

SUBJECT

MESSAGE: PER YOUR REQUEST SEE ATTACHMENT. HOPE YOU FIND IT USEFUL.

NUMBER OF PAGES INCLUDING THIS SHEET:

32

Att. 8, p-3/9

Ref. 15, p-8

SCHEDULE 1
PROGRAM INFORMATION

1.1 BACKGROUND INFORMATION

The purpose of this Section is to provide the Operator with an overview and general understanding of the City's System(s).

1.1.1 City of Camden.

The City of Camden, New Jersey is located in the southwest region of New Jersey, directly across the Delaware River from Philadelphia, Pennsylvania. The 1990 Census population of the City is approximately 87,500. The City provides water service to approximately 54,000 residents as well as commercial, institutional and industrial customers within the portion of the City which comprises the City's water service area which is defined in Section 1.3 and Figure 1-1 of this Schedule 1.

Water is pumped to the City's three treatment plants (Morris-Delair, Parkside and Puchack Run) by 26 existing groundwater wells. All of the City's wells are screened in the Potoimaac-Raritan-Magothy formation. The Morris-Delair treatment plant is the City's largest treatment facility with a 1960 design capacity of 18 million gallons per day (MGD). The Parkside treatment plant is currently out-of-service and is undergoing substantial renovation. Once completed, the Parkside Water Treatment Plant will have a hydraulic design capacity of three MGD. The well field serving the Puchack Run treatment plant is contaminated with chromium and is currently operated under the direction of New Jersey Department of Environmental Protection (NJDEP) for containment of the chromium plume. The water produced by the Puchack Run treatment plant is currently discharged directly to Puchack Run. The City operates two storage tanks, (five and two million gallons) located within the City limits. A third storage facility, a 0.5 million gallon standpipe located at Whitman Park is not currently operated.

The City provides wastewater collection service to the residential, commercial, institutional and industrial customers located within the City and to approximately 249 customers in Pemsauken Township.

1.2 WATER SYSTEM

The City owns and operates a water supply and distribution system providing for the residential, commercial, industrial and fire protection needs of the residents. Water service is provided for all portions of the City except the area north of the Cooper River. The water service area comprises about six square miles and is shown in Figure 1-1 herein. The Water System serves an estimated 54,000 residents out of a City population of approximately 87,500 (1990 Census), plus industrial, institutional and commercial water users. A total of approximately 13,000 customers use the Water System. In addition, 1,255 fire hydrants serve as the primary source of water supply for fire protection in the Water System's service area.

Att. B, p. 4/9

Ref. 15, p. 9

Adjacent water service districts include:

- New Jersey American Water Company
- Merchantville-Pennsauken Water Commission
- Collingswood Water Department
- Gloucester City Water Department

The City of Camden Department of Utilities staff is responsible for maintaining all parts of the Water System asset, including groundwater supply wells, treatment plants, and the distribution and storage system.

The balance of this section is a summary of the City's Well Fields, treatment plants, distribution and storage systems.

1.2.1 Well Field Description

The City has permits for 26 water supply wells, 24 of these water supply wells are existing. Two wells, Morris Well Nos. 14 and 15 are proposed. Of the 24 existing wells, the City operates 17 wells on a normal basis. Six other permitted wells are currently out of service due to poor water quality or low well production. Two permitted wells are maintained for emergency use only and one permitted well is out of service due to a lack of service piping. The City's wells are primarily located in four well fields: Morris, Delair, Puchack, and Parkside. Two additional wells, Well No. 7 and Well No. 11 are located at Jefferson and 9th Streets and Bulson and 9th streets in the City, respectively. The location of each well at the Morris, Delair, and Puchack Well Fields is shown in Figure 1-2, and the locations of the Parkside and two City wells are shown in Figure 1-3.

1.2.1.1 Morris-Delair Well Field

The Morris Well Field is located adjacent to the Delaware River and is approximately 95 acres. The Morris Well Field is commonly identified as either the Morris North or the Morris South Well Field. This designation is not based on geographic location, but rather on the electric services and water main to which the wells are connected. The Morris North Well Field contains six permitted wells (Well Nos. 1, 2, 3, 4, 12 and 13). Of these six wells, only Well No. 2 is not operational due to lack of service piping, low production and lack of wellhouse.

The Morris South Well Field contains six existing and two proposed permitted wells. The existing wells are Nos. 6, 7, 8, 9, 10, 11 and proposed wells 14 and 15. With the exception of Well Nos. 6 and 9 which are out of service due to a low rate of production, all existing wells in the Morris South Well Field are operational.

The Delair Well Field is located just south of the Betsy Ross Bridge and occupies approximately 15 acres. The Delair Well Field contains three permitted wells. The permitted wells are Well Nos. 1, 2 and 3. All three wells are operational. Therefore, of the 17 permitted wells located in the Morris and Delair Well Fields, 12 wells (five

Att. B, p. 5/9

Ref. 15, p. 10

wells at Morris North, four wells at Morris South and three wells at Delair) are currently operated on a daily basis.

Operational Concerns

The Morris and Delair Well Fields are collectively referred to as the Morris-Delair Well Field. Operational and maintenance issues that currently exist in the Morris-Delair Well Field include but are not limited to:

- Security Needs - These well fields are accessible by trespassers and are used by dirt bikes. Vandalism risks must be dealt with.

- Raw Water Pipelines - The raw water transmission line extending to Morris Well No. 2 is absent, and in general, existing transmission pipelines are subject to tuberculation and leakage.

- Well Rehabilitation - Due to the age and physical condition of some of the wells, a rehabilitation program must be addressed. Production rates for many of the wells has decreased and efforts to increase well production have had limited success.

- Flooding and Wetlands Issues - Due to the proximity of the Morris-Delair Well Field to the Delaware River, wellheads of two wells in Delair Well Field and one well in the Morris North Well Fields subject to high water levels. Raising of the wellheads of those wells that are in danger of or experiencing flooding will be necessary. In addition, a significant portion of the City's Morris-Delair Well Field is within or adjacent to wetlands. The City's two proposed wells are within or adjacent to wetlands which must be addressed appropriately.

1.2.1.2 Puchack Well Field

The Puchack Well Field is located southeast of the Morris and Delair Well Fields, approximately 2,000 feet southeast of the Delaware River. Groundwater from the Puchack Well Field is reported to be contaminated with hexavalent chromium. The Puchack Well Field contains six permitted wells. The permitted wells are Nos. 1, 2, 3, 5, 6 and 7. Of the six permitted wells, only Well No. 1 is operational. The pumps and motors from three of the four non-operational wells have been removed. Well No. 1 is operated at the direction of NJDEP to contain the chromium plume and as of late 1997, is currently discharged directly to Puchack Run and bypasses the treatment plant.

Upon completion of a new Puchack Run Treatment Plant, contingent upon State funding, the wells are to be rehabilitated and new or re-built pumps are to be installed.

Att. 8, p. 6/9

Ref. 15, p. 11

1.2.1.3 Parkside Well Field

The Parkside Well Field is located within the City limits approximately four miles to the southwest of the Puchack Well Field. The Parkside Well Field contains three permitted wells (Well Nos. 13, 17 and 18).

Operational Issues

Due to volatile organic compound contamination, only Well Nos. 17 and 18 will be operated on a normal basis. Well No. 13 has not been in service for several years and in addition, a segment of the raw water piping leading to the Parkside treatment plant has been removed. Parkside Wells Nos. 17 and 18 are currently operational.

1.2.1.4 Other City Wells

In addition to the Parkside wells, the City operates two other wells within the City limits. Well No. 7 is dedicated to supplying process water to the Camden County Resource Recovery Facility (approximately 0.8 MGD) and Well No. 11 is used for emergency water supply. Well No. 11 is disinfected at the well head and discharged directly to the distribution system. Use of Well No. 11 is minimized in conformance with the City's corrosion control strategy due to the corrosive nature of this supply. It is the City's practice to operate City Well No. 11 only if sufficient system pressures can not be maintained using the Morris-Delair, Puchack and Parkside Well Fields operable wells.

1.2.2 Water Production

A summary of the permitted capacity, 1996 pumping capacity and original yield for each permitted well is provided in Table 1-1. The water production data for each well presented in Table 1-1 is not based on information from meters, but rather on flow tests and the number of hours of operation for each well.

1.2.3 Water Allocation Permit

The City operates its Water System under Water Allocation Permit No. 5302 (expires December 31, 1998). In accordance with the Water Allocation Permit, the total permitted diversion from the sources identified in Table 1-1 shall not exceed 664 million gallons per month at a rate of 30,000 gpm and shall not exceed 6,928 million gallons per year. The total diversion from City Well Nos. 7 and 11, Parkside Well Nos. 13, 17 and 18 and Puchack Well Nos. 1, 2, 3, 5, 6 and 7 shall not exceed 2,117,343 million gallons per year. The base allocation, if withdrawn at a constant daily rate, represents an average withdrawal rate of approximately 5.8 MGD for the combined total withdrawal from the Puchack Run and Parkside Well Fields and City Wells. The planned Puchack Run Plant may operate partially or fully under a separate permit.

Att. B, p. 7/9

Ref. 15, p. 12

Att. B, p. 8/9

Ref. 15, p. 13

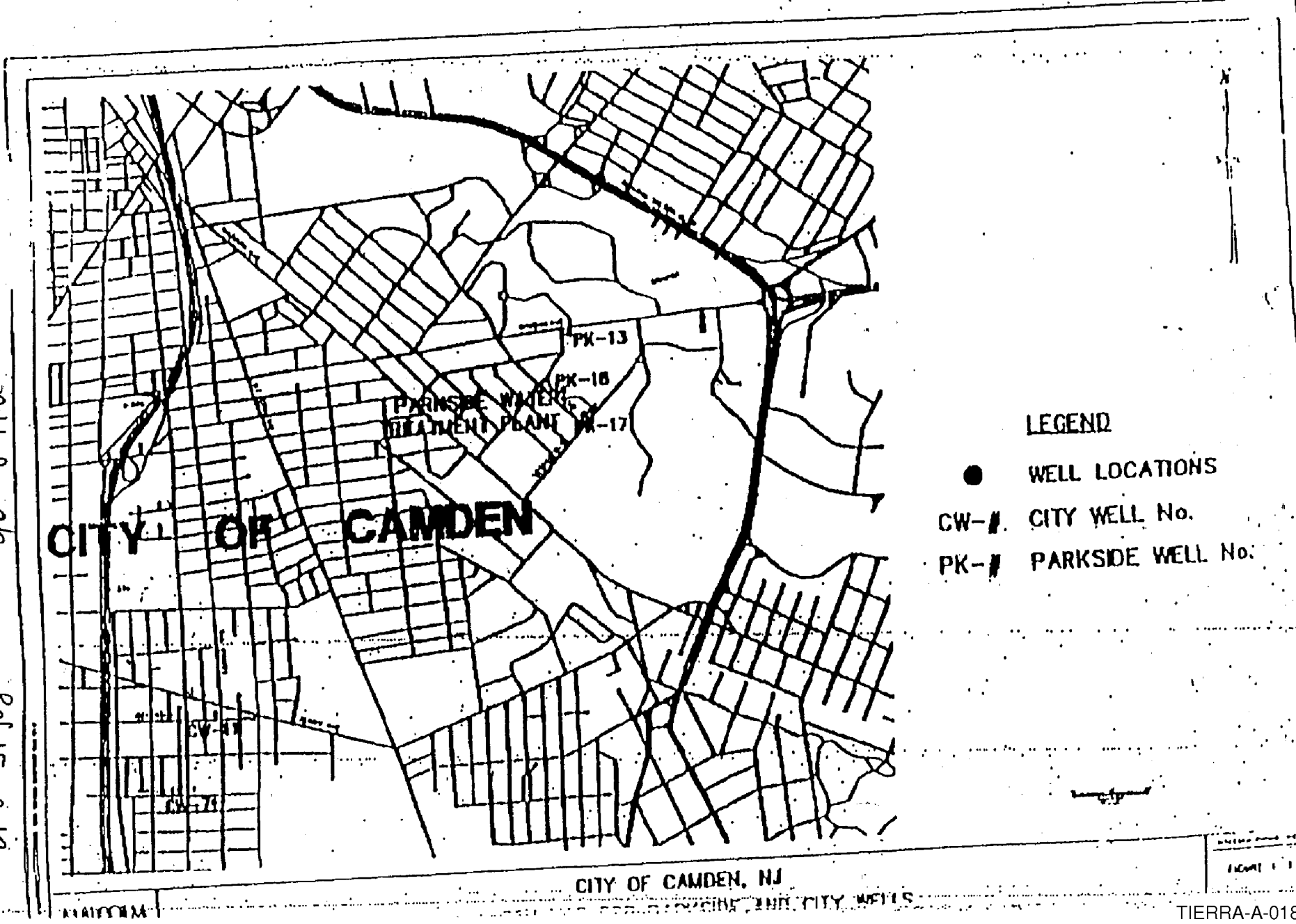


Table 1-1
Groundwater Withdrawal Wells

Permit No.	Well No.	Year Drilled	Depth (feet)	June 1996 Production (gpm) (1)	Permitted Pump Capacity (gpm) (2)	Original Yield (gpm) (3)
Morris Wellfield:						
5100050	1	1961	107	750	1600	1000
3151984	2	1941	115	no pump	1000*	1000
3100945	3	1953	107	800	1800	1000
3104252	4	1960	130	1200	1600	1585
5100051	6	1932	133	325	1700	1944
5100052	7	1960	120	1056	1680	1630
3100944	8	1953	124	603	1670	1000
5100076	9	1932	143	700	1670	1900
3104251	10	1960	115	1230	1400	1529
3115745	11	1979	144	815	2030	2030
3116814	12	1981	117.6	857	2030	2030
3116813	13	1980	130	800	2060	2060
Proposed	14				2060**	
Proposed	15				2060**	
Dclair Wellfield:						
5100053	1	1930	138	1100	1680	1980
5100054	2	1930	141	550	1830	1330
5100055	3	1930	135	650	1830	1850
Francis Wellfield:						
5100056	1	1924	140	1080	1500	1320
5100057	2	1924	169	996	1000	1440
5100058	3	1924	175	1280	1280	1184
5100059	5	1924	186	1120	1324	1119
3105450	6	1970	220	1831	2260	1800
3108526A	7	1975	180	1284	1681	1287
City Wells:						
5100060	7	1966	163	1023	1500	1023
5100061	11	1942	159	791	1010	1005
3100904	13	1953	230	690	1200	1000
3101250	17	1954	270	0	1500	1000
3109574	18	1976	290	1062	1200	1250

nearest well →

Notes:

* - Anticipated Pump Capacity...

** - Proposed

(1) - As reported by City personnel 7/1/96.

(2) - As reported in NJDEP Water Allocation Diversion Permit No. 5302 effective 10/2/97

(3) - As reported in NJDEP Staff Reports (dated 6/91) regarding Application No. 5302, updated by City personnel 7/1/96 and original construction details.

Att. B. p. 9/9

Ref. 15, p. 14

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM **TELECON NOTE**

CONTROL NO: _____ DATE: March 1, 2000 TIME: 745

DISTRIBUTION:
TDD file 02-00-02-0005

CONVERSATION WITH: _____ OF _____ PHONE _____
John Meyer Collingswood Water Dept (856) 854-2332

RECORDED BY:
Gerald Gilliland, Region II START

DISCUSSION:

Public Water Supply - Collingswood

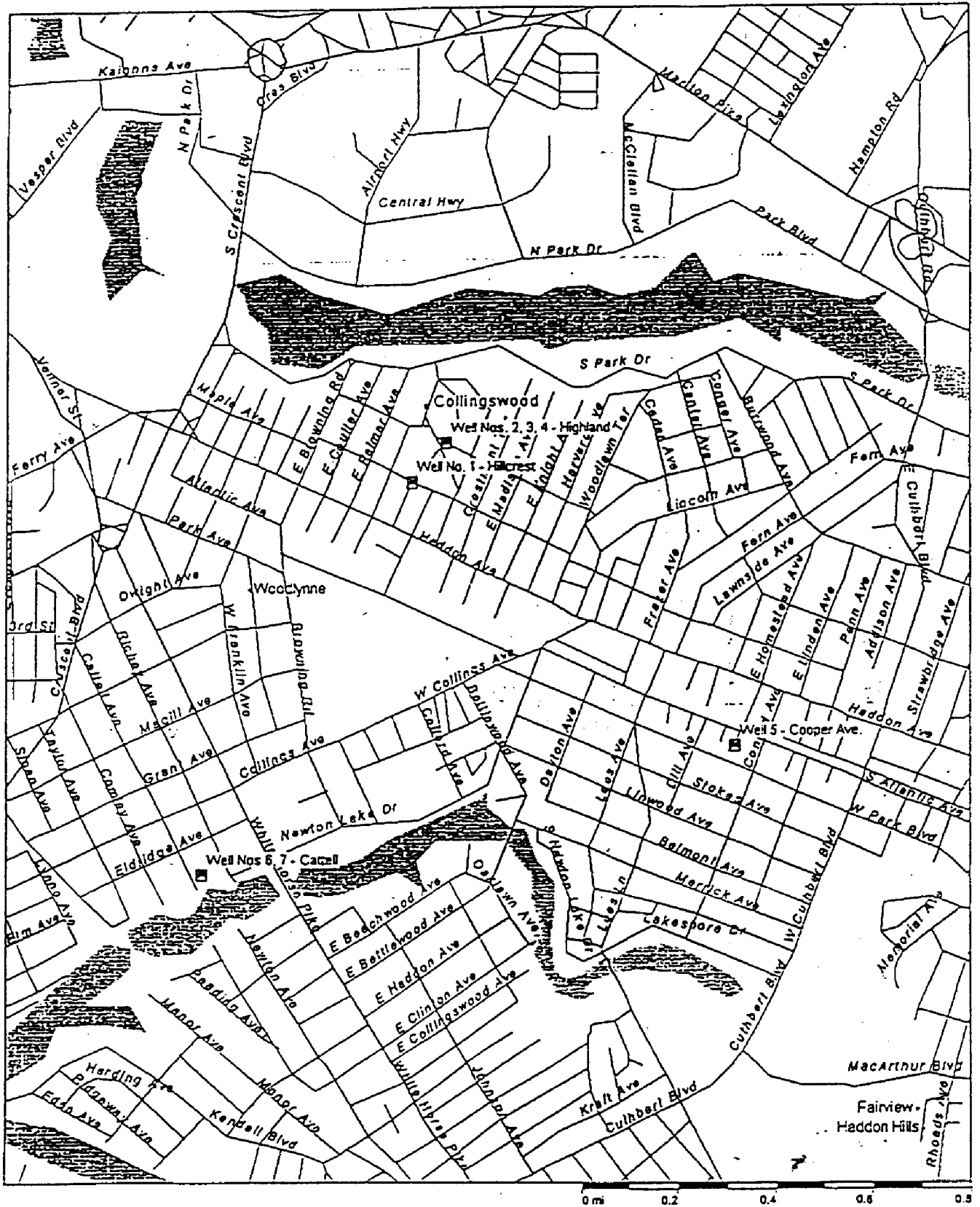
Collingswood obtains 100% of its drinking water from six groundwater wells screened in the lower PRM aquifer. Another well (no. 6) is currently off-line due to high iron. That well hasn't been used in more than a year and he doesn't expect to use it for drinking water purposes again. The well depths range from 250 to 325 feet. The total population served by the interconnected system is 20,000 persons through 6,000 connections. The wells and recent pumpage data are as follows:

Well #	Alternate Well #	Permit #	Approx. Pumpage (gallons)		
			Jul-99	Aug-99	Sep-99
1	5	31-00079	0.007	0.048	0.086
2	2R	31-04053	(numbers above are for Wells 1 and 2 combined)		
3	3R	31-04054	3.1	0.064	0.115
4	4R	51-00030	14	5	3
5	6	51-00031	47	45	42
6	7	31-04799	0	0	0
7	8	<u>31-04797</u>	<u>18</u>	<u>16</u>	<u>12</u>
Total			83.107	66.112	57.201

The numbers show that well 5 provides more than 40% of the total supply (Mr. Meyer said these numbers are typical). Therefore, approximate population apportionment is:

Well #	Calculation	Pop. Served
1	$[(0.007 + 0.048 + 0.086) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$	6.86
2	$[(0.007 + 0.048 + 0.086) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$	6.86
3	$[(3.1 + 0.064 + 0.115) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$	319.25
4	$[(14 + 5 + 3) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$	2,141.95
5	$[(47 + 45 + 42) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$	13,046.44
7	$[(18 + 16 + 12) \div (83.107 + 66.112 + 57.201)] \times 20,000 =$	4,478.63

Signature: Gerald V. Gilliland



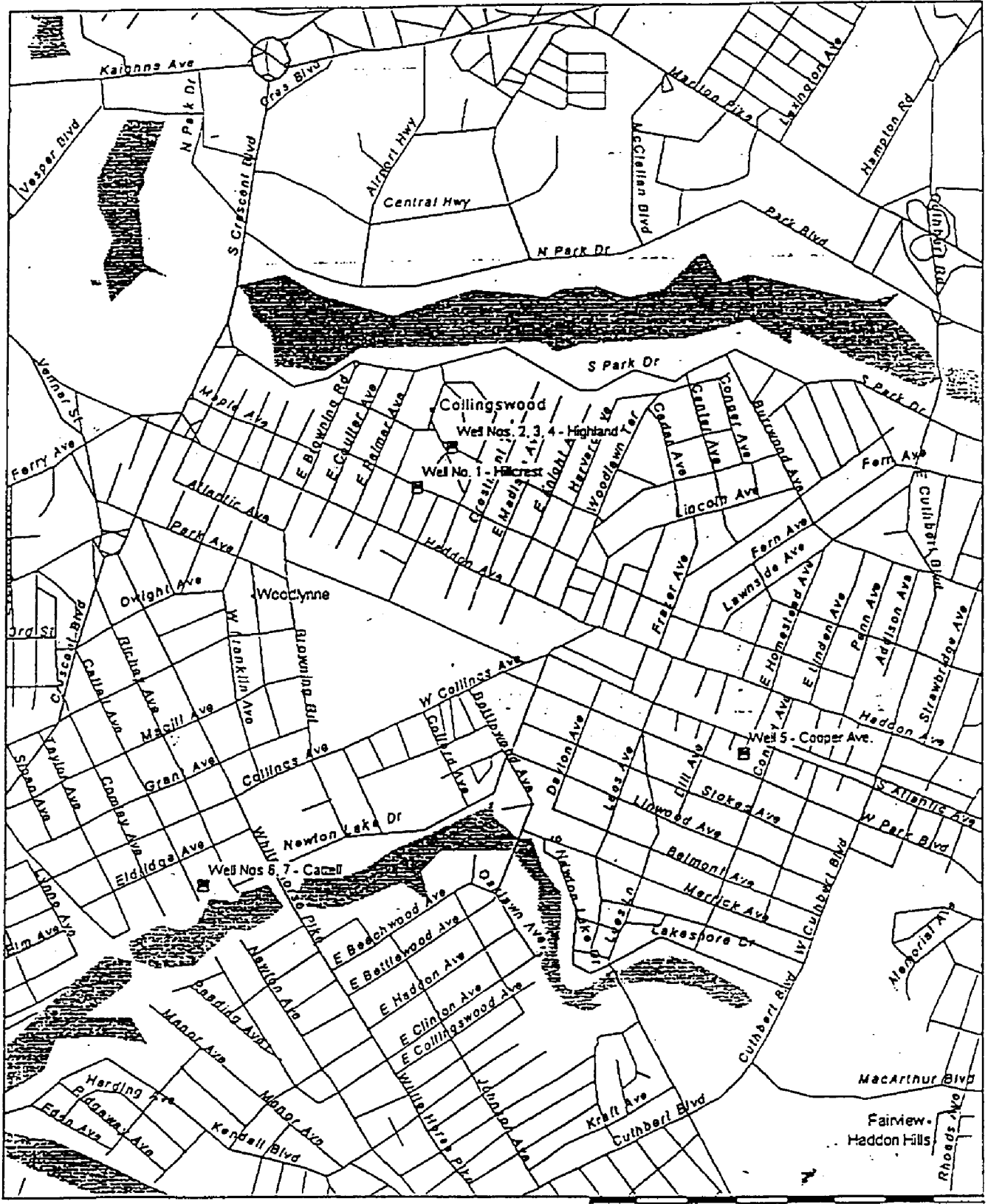
Streets Plus

Collingswood WD
Well Locations

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Att. Exp. 2 of 2

Ref. 15, p. 16



Streets Plus

Collingswood WD
Well Locations

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Att. p. 2 of 2

Ref. 15, p. 16

SAMPLE DELIVERY GROUP (SDG) TRAFFIC REPORT (TR) COVER SHEET

Lab Name: Sentinel Contract No.: 68-D5-0169

Lab Code: Sentin Case No.: 25601

Full Sample Analysis Price in Contract: _____

SDG No./First Sample in SDG: MBQK34 Sample Receipt Date: 07/31/97
(Lowest EPA Sample Number in first shipment of samples received under SDG.) (MM/DD/YY)

Last Sample in SDG: MBQK68 Sample Receipt Date: 08/02/97
(Highest EPA Sample Number in last shipment of samples received under SDG.) (MM/DD/YY)

EPA Sample Numbers in the SDG (listed in alphanumeric order)

- | | | | |
|----|---------------|----|------------------|
| 1 | <u>MBQK34</u> | 11 | <u>MBQK44</u> |
| 2 | <u>MBQK35</u> | 12 | <u>MBQK45</u> |
| 3 | <u>MBQK36</u> | 13 | <u>MBQK47</u> |
| 4 | <u>MBQK37</u> | 14 | <u>MBQK48</u> |
| 5 | <u>MBQK38</u> | 15 | <u>MBQK49</u> |
| 6 | <u>MBQK39</u> | 16 | <u>MBQK66</u> |
| 7 | <u>MBQK40</u> | 17 | <u>MBQK67</u> |
| 8 | <u>MBQK41</u> | 18 | <u>MBQK68</u> |
| 9 | <u>MBQK42</u> | 19 | _____ |
| 10 | <u>MBQK43</u> | 20 | _____ |

Note: There are a maximum of 20 field samples in an SDG.

Attach Traffic Reports to this form in alphanumeric order
(i.e., the order listed on this form).

Susan Russell
Signature

08/02/97
Date

167

SENTINEL, Inc.

Industrial Hygiene and Environmental Services

2800 Bob Wallace Avenue, Ste. L3

Huntsville, AL 35805

(205) 534-9800

FAX TRANSMITTAL

DATE: August 4, 1997

TO: Dyncorp

ATTN: Mistie Sisson

FAX NUMBER: (703) 519-8626

NO. OF PAGES: 1 (Including Transmittal Page)

FROM: Susan Pearsall
Sentinel, Inc.
2800 Bob Wallace Avenue, Suite L-3
Huntsville, AL 35805
Telephone No.: (205) 534-9800
Fax No.: (205) 534-9878

COMMENTS: Concerning Case 25601:

Sample MBQK48 (LW TM) was incorrectly labeled on the
COC. The actual sample number is MBQK47.

If you have any questions regarding this transmittal, or you need any additional information, please do not hesitate to call.

p.390

100

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		PROJECT NOTE										
TO: Kelbros, Inc. File	DATE: 06/28/00	Page 1 of 1										
FROM: Joanne D'Onofrio												
SUBJECT: Gloucester City Water Treatment Plant - Water Supply Summary												
REFERENCE:												
<p>Region II START used the information contained in the attached telecon note dated 02/29/00 to calculate the population apportionment for the Gloucester City distribution system. The Gloucester City Water Treatment Plant receives its drinking water supply from 4 wells drawing from the Potomac-Raritan-Magothy (PRM) aquifer. The population served by this distribution system is 12,400 persons.</p>												
<table border="0"> <thead> <tr> <th><u>Well Designation</u></th> <th><u>Distance Ring (mi)</u></th> </tr> </thead> <tbody> <tr> <td>Gloucester City Well No. 40</td> <td>2 - 3</td> </tr> <tr> <td>Gloucester City Well No. 41</td> <td>2 - 3</td> </tr> <tr> <td>Gloucester City Well No. 42</td> <td>3 - 4</td> </tr> <tr> <td>Gloucester City Well No. 43</td> <td>3 - 4</td> </tr> </tbody> </table>			<u>Well Designation</u>	<u>Distance Ring (mi)</u>	Gloucester City Well No. 40	2 - 3	Gloucester City Well No. 41	2 - 3	Gloucester City Well No. 42	3 - 4	Gloucester City Well No. 43	3 - 4
<u>Well Designation</u>	<u>Distance Ring (mi)</u>											
Gloucester City Well No. 40	2 - 3											
Gloucester City Well No. 41	2 - 3											
Gloucester City Well No. 42	3 - 4											
Gloucester City Well No. 43	3 - 4											
<p>The well locations have been transcribed on the 4-Mile Radius Map (Ref. No. 14) of this report.</p>												
<p><u>Population Apportionment</u></p>												
<p>Approximately 3,100 people are supplied by each well (12,400 total population served ÷ 4 wells = 3,100 people served per well).</p>												
<p>Two wells are located in the 2 - 3 mile radius; these wells serve an estimated population of 6,200 people (3,100 people served per well × 2 wells = 6,200 people served by these two wells).</p>												
<p>Two wells are located in the 3 - 4 mile radius; these wells serve an estimated population of 6,200 people (3,100 people served per well × 2 wells = 6,200 people served by these two wells).</p>												

Att. D p. 1 of 3

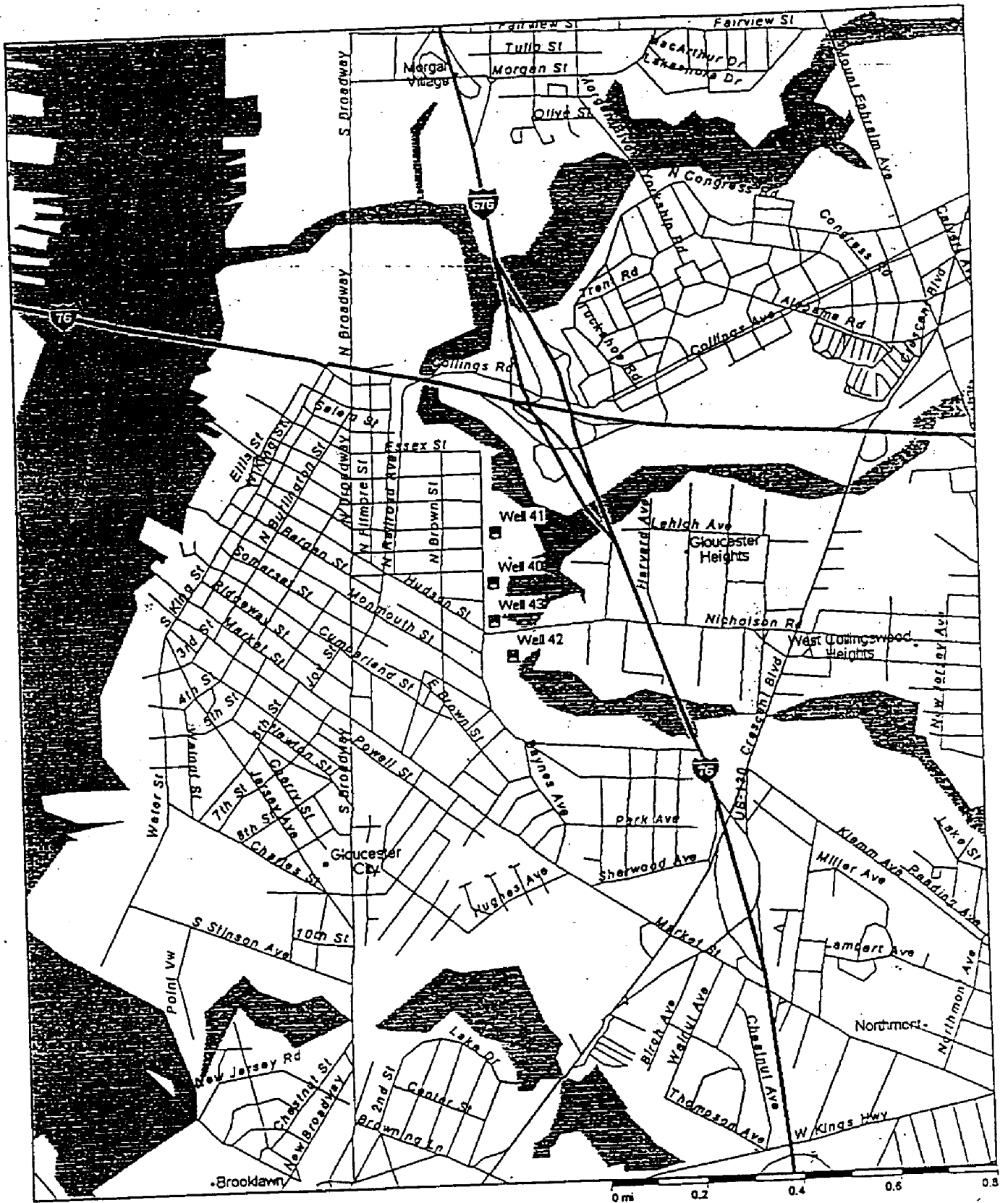
Ref. 15, p. 17

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO:	DATE:	TIME:
	February 29, 2000	1130
DISTRIBUTION:		
TDD file 02-00-02-0005		
CONVERSATION WITH:	OF	PHONE
Fred Schindler	Gloucester City Water Treatment Plant	(856) 456-0169
RECORDED BY:		
Gerald Gilliland, Region II START		
DISCUSSION:		
<p><u>Public Water Supply - Gloucester City</u></p> <p>The water supply for Gloucester City is obtained from four wells near the water treatment plant. Wells 40 and 41 are north of the plant and Wells 42 and 43 are south of the plant. The wells range in depth from 300 to 380 feet. No single well provides more than 40% of the total supply. The population served is 12,400 persons.</p>		

Signature: Gerald V. Gilliland

Att. D p. 2 of 3

Ref. No. 15, p. 18



Streets Plus


Gloucester City Wells

A.H.D., p 3 of 3

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Ret. 15, p. 19

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE															
CONTROL NO:	DATE:	TIME:															
	February 29, 2000	1130															
DISTRIBUTION:																	
TDD file 02-00-02-0005																	
CONVERSATION WITH:	OF	PHONE															
Leo Holland	Merchantville-Pennsauken Water Commission (MPWC)	(856) 663-0043															
RECORDED BY:																	
Gerald Gilliland, Region II START																	
DISCUSSION:																	
<p><u>Public Water Supply - Merchantville-Pennsauken</u></p> <p>MPWC has 14 active public supply wells, as follows:</p> <table> <tbody> <tr> <td>Browning Road</td> <td>3 wells</td> <td>1A, 2A, 3A</td> </tr> <tr> <td>Woodbine/Victoria</td> <td>2 wells</td> <td></td> </tr> <tr> <td>Marion RR</td> <td>2 wells</td> <td></td> </tr> <tr> <td>National Highway</td> <td>2 wells</td> <td></td> </tr> <tr> <td>Park Ave</td> <td>5 wells</td> <td></td> </tr> </tbody> </table> <p>I confirmed the addresses for the wells listed in the PSW2000 database (Browning Rd and Woodbine).</p> <p>The wells range in depth from 150 to 250 feet, and he believes they tap the lower PRM. The total population served is 49,000 persons, and no single well provides more than 40% of the total water supply. That works out to 3,500 persons per well (49000/14).</p> <p>The two wells at Delaware Gardens are inactive and haven't been used in 8 years due to high manganese. He's trying to reopen them as an alternate supply, but that hasn't been approved yet and he estimates that it would take at least a year after approval to build the treatment plant.</p>			Browning Road	3 wells	1A, 2A, 3A	Woodbine/Victoria	2 wells		Marion RR	2 wells		National Highway	2 wells		Park Ave	5 wells	
Browning Road	3 wells	1A, 2A, 3A															
Woodbine/Victoria	2 wells																
Marion RR	2 wells																
National Highway	2 wells																
Park Ave	5 wells																

Signature: 

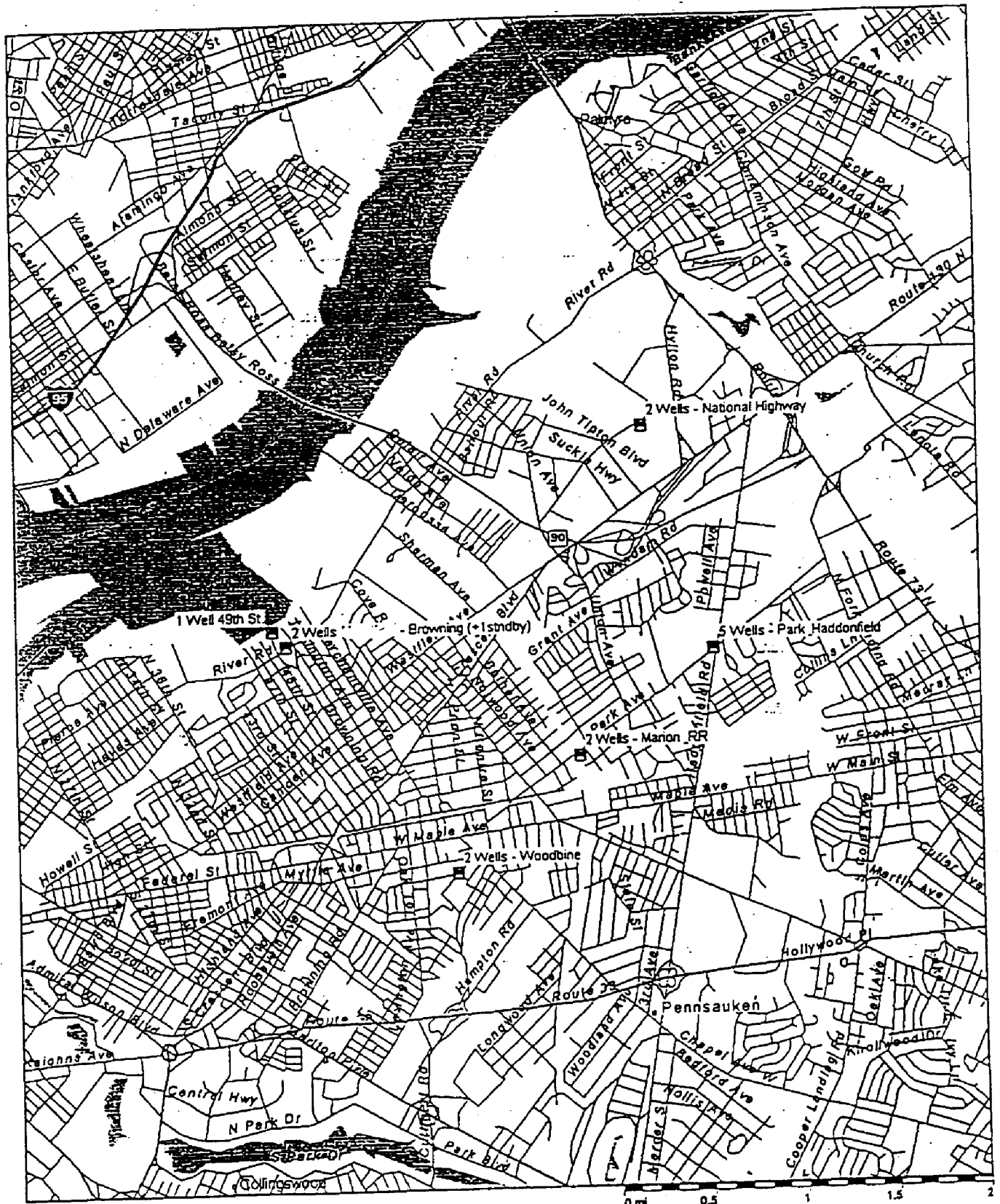
AH. E p. 1 of 3

Ref. No. 15, p. 20

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		PROJECT NOTE																		
TO: Kelbros, Inc. File	DATE: 06/28/00	Page 1 of 1																		
FROM: Joanne D'Onofrio																				
SUBJECT: Merchantville-Pennsauken Water Commission (MPWC) - Water Supply Summary																				
REFERENCE:																				
<p>Region II START used the information contained in the attached telecon note dated 02/29/00 to calculate the population apportionment for the Merchantville-Pennsauken distribution system. The MPWC receives its drinking water supply from 14 active wells drawing from the lower Potomac-Raritan-Magothy (PRM) aquifer. The total population served by this distribution system is 49,000 persons.</p>																				
<table border="1"> <thead> <tr> <th><u>Location</u></th> <th><u>No. of Wells</u></th> <th><u>Distance Ring (mi)</u></th> </tr> </thead> <tbody> <tr> <td>Browning Road</td> <td>3 wells</td> <td>3 - 4</td> </tr> <tr> <td>Woodbine & Victoria Aves.</td> <td>2 wells</td> <td>> 4</td> </tr> <tr> <td>Marion Ave. & RR tracks</td> <td>2 wells</td> <td>> 4</td> </tr> <tr> <td>National Highway & Hylton Rd.</td> <td>2 wells</td> <td>> 4</td> </tr> <tr> <td>Haddonfield Rd. & Park Ave.</td> <td>5 wells</td> <td>> 4</td> </tr> </tbody> </table>			<u>Location</u>	<u>No. of Wells</u>	<u>Distance Ring (mi)</u>	Browning Road	3 wells	3 - 4	Woodbine & Victoria Aves.	2 wells	> 4	Marion Ave. & RR tracks	2 wells	> 4	National Highway & Hylton Rd.	2 wells	> 4	Haddonfield Rd. & Park Ave.	5 wells	> 4
<u>Location</u>	<u>No. of Wells</u>	<u>Distance Ring (mi)</u>																		
Browning Road	3 wells	3 - 4																		
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Marion Ave. & RR tracks	2 wells	> 4																		
National Highway & Hylton Rd.	2 wells	> 4																		
Haddonfield Rd. & Park Ave.	5 wells	> 4																		
<p>The well locations have been transcribed on the 4-Mile Radius Map (Ref. No. 14) of this report.</p>																				
<p><u>Population Apportionment</u></p>																				
<p>Approximately 3,500 people are supplied by each well (49,000 total population served ÷ 14 wells = 3,500 people served per well).</p>																				
<p>Three wells are located in the 3 - 4 mile radius; these wells serve an estimated population of 10,500 people (3,500 people served per well × 3 wells = 10,500 people served by these three wells).</p>																				

Att. E p. 2 of 3

Ref. 15, p. 21



Streets Plus

Merchantville-Pennsauken Water Commission
Well Locations

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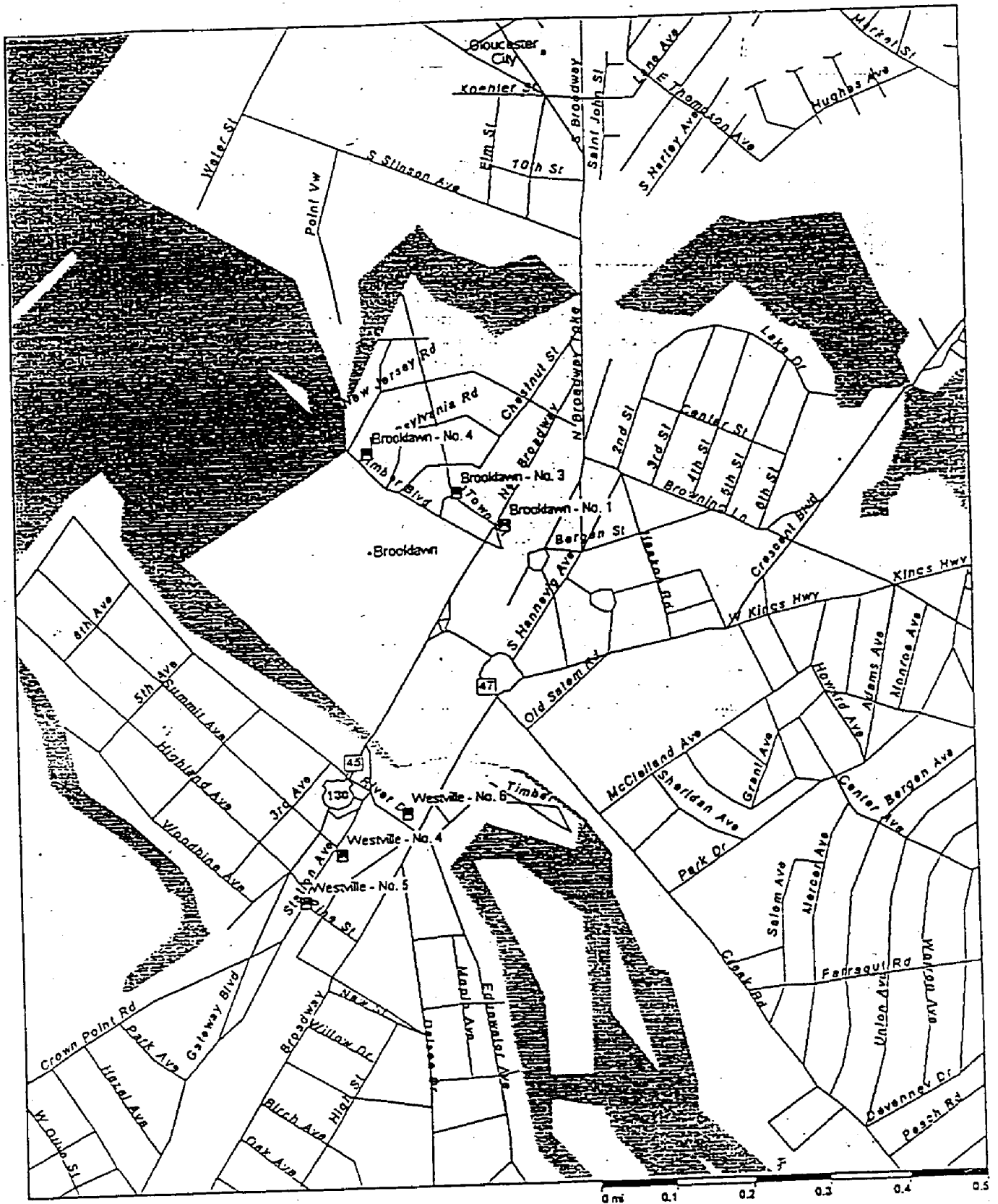
A.H.E.p. 3 of 3

Ref. 15, p. 22

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO.: 02-00-02-0005	DATE: 06/01/00	TIME: 1030
DISTRIBUTION: Kelbros, Inc. File	SUBJECT: Public Water Supply Summary	
BETWEEN: Donna D'Amico, Superintendent	OF: Westville/Brooklawn Public Works	PHONE: (856) 456-7785
AND: Joanne D'Onofrio	OF: Region II START	
<p>DISCUSSION: I telephoned the Public Works Department to obtain drinking water supply information for Westville (Gloucester County) and Brooklawn (Camden County). Ms. D'Amico explained that the two water systems entities; she is the current superintendent of both independent systems. Each system has three supply wells, which are used on a lead/lag schedule. She is not aware of the presence of any private drinking water wells in the two communities. The Westville system has approximately 1,875 service connections, while the Brooklawn system has approximately 760 service connections. The well depths are approximately 300 feet below ground surface. The well designations, capacities, and aquifers are as follows:</p>		
<u>Westville System</u>		
<u>Well Designation</u>	<u>Location</u>	<u>Capacity/Aquifer</u> <u>Distance Ring (mi)</u>
Well No. 4	Pine St. & Crown Pt. Rd.	800 gpm/Lower PRM > 4
Well No. 5	Pine St. & Crown Pt. Rd.	800 gpm/Up & Low PRM > 4
Well No. 6	River Dr. (Broadway & RR)	800 gpm/Lower PRM > 4
<u>Brooklawn System</u>		
Well No. 1	Broadway & Town Center	300-400 gpm/Lower PRM > 4
Well No. 3	Town Center & Chestnut St.	300-400 gpm/Lower PRM > 4
Well No. 4	Timber Blvd. & New Jersey Rd.	300-400 gpm/Lower PRM 3 - 4
<p>The well locations have been transcribed on the 4-mile Radius Map (Ref. No. 14) of this report.</p>		
<u>Population Apportionment</u>		
<p>The averages of persons per household for Gloucester County and Camden County are 2.87 and 2.76, respectively (Att. A). An estimated 5,381 people are served by the Westville system (1,875 service connections x 2.87 county average number of persons per household = 5,381 people served). An estimated 2,098 people are served by the Brooklawn system (760 service connections x 2.76 county average number of persons per household = 2,098 people served). As some of the wells are outside of the 4-mile distance ring, the populations will not be apportioned for these wells.</p>		
<p>Brooklawn Well No. 4 is located within the 3 - 4 mile radius; this well serves 699 people (2098 total population served ÷ 3 wells = 699 people served per well).</p>		
ACTION ITEMS:		

Att. F p. 1 of 2

Ref. 15, p. 23



Streets Plus

Westville/Brooklawn Public Works
Well Locations

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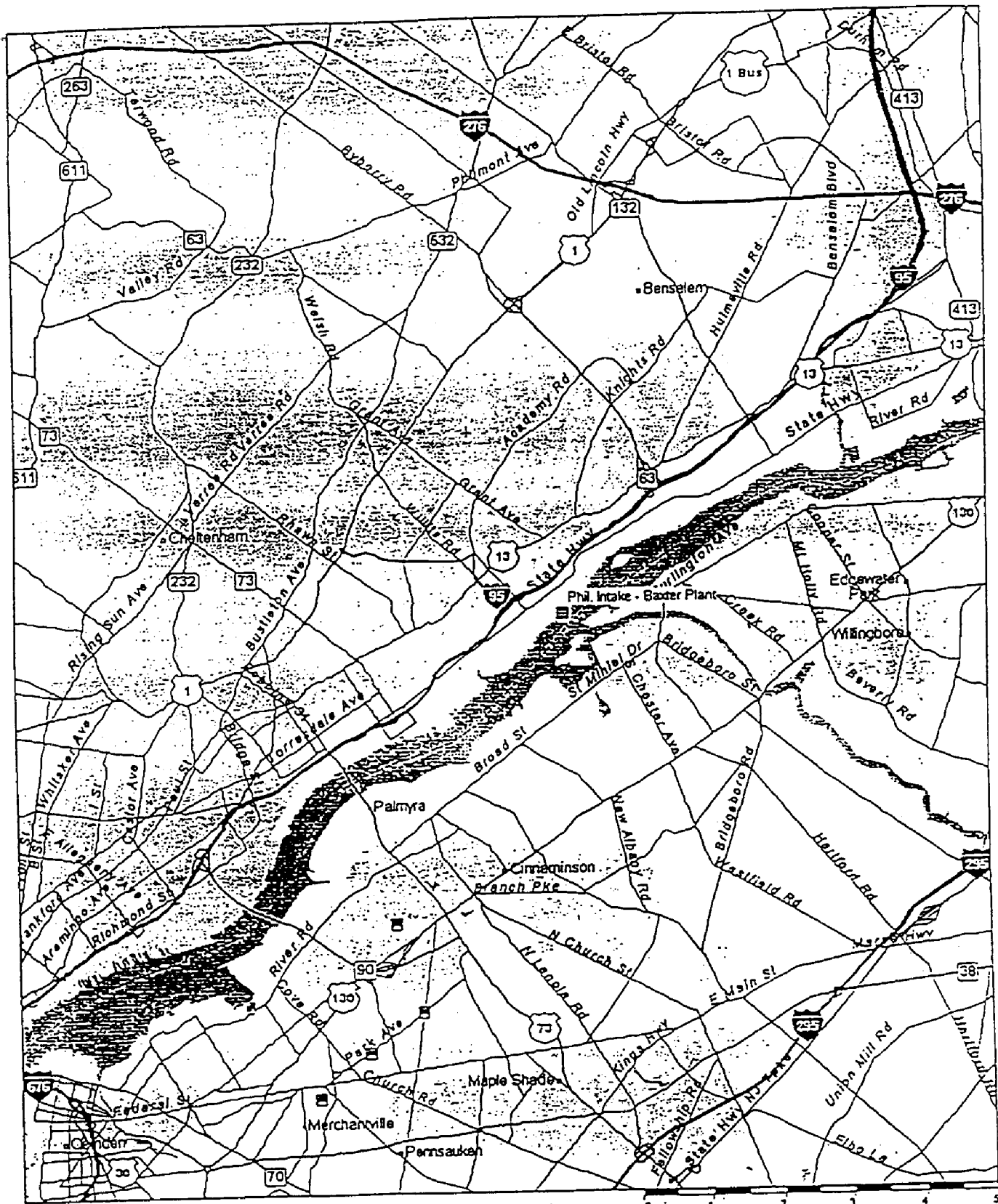
Att. F, p. 2 of 2

Ref. 15, p. 24

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE												
CONTROL NO: 02-98-11-0005	DATE: 03/11/99	TIME: 1033												
DISTRIBUTION: Martin Aaron, Inc. file														
BETWEEN: Norman Jadczyk	OF Philadelphia Water Department - Baxter Water Treatment Plant	PHONE (215) 685-8022												
AND K. Campbell														
DISCUSSION														
<p>I telephoned the Water Department to obtain drinking water supply information for the City of Philadelphia. Mr. Jadczyk stated that they receive their drinking water supply from three surface water intakes. The City also sells water to Bucks County. The intake designations, locations, and average withdrawals (million gallons per day (mgd)) are as follows:</p> <table style="width:100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Intake</u></th> <th style="text-align: left;"><u>Location</u></th> <th style="text-align: left;"><u>Average Withdrawal (mgd)</u></th> </tr> </thead> <tbody> <tr> <td>Baxter Plant</td> <td>½ mile north of Linden Ave. - Delaware River</td> <td>200 (56% of total)</td> </tr> <tr> <td>Belmont Plant</td> <td>Schuylkill River</td> <td>60 (17% of total)</td> </tr> <tr> <td>Clean Lane Plant</td> <td>Schuylkill River</td> <td>100 (27% of total)</td> </tr> </tbody> </table> <p>The two intakes on the Schuylkill River are not located within the surface water migration limit. The Delaware River intake is situated approximately 12 miles upstream of a point on the river which is parallel to the site. The approximate location of the Baxter Plant is identified on the attached map (p. 2 of this note).</p> <p>For information regarding the number of service connections, he suggested contacting Kevin McNichols, Philadelphia Water Department - Load Control at (215) 685-9656.</p>			<u>Intake</u>	<u>Location</u>	<u>Average Withdrawal (mgd)</u>	Baxter Plant	½ mile north of Linden Ave. - Delaware River	200 (56% of total)	Belmont Plant	Schuylkill River	60 (17% of total)	Clean Lane Plant	Schuylkill River	100 (27% of total)
<u>Intake</u>	<u>Location</u>	<u>Average Withdrawal (mgd)</u>												
Baxter Plant	½ mile north of Linden Ave. - Delaware River	200 (56% of total)												
Belmont Plant	Schuylkill River	60 (17% of total)												
Clean Lane Plant	Schuylkill River	100 (27% of total)												
<p style="text-align: center; font-size: 2em; opacity: 0.5;">/</p>														
ACTION ITEMS:														

AH.G, p.1 of 4

Ref. 15, p. 25



Streets Plus

Philadelphia - Baxter Plant
Approximate Intake Location

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Att. G, p. 2 of 4

Ref. 15, p. 26

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO: 02-98-11-0005	DATE: 03/18/99	TIME: 1046
DISTRIBUTION: Martin Aaron, Inc. file		
BETWEEN: Roy Romano	OF Philadelphia Water Department	PHONE (215) 685-6321
AND K. Campbell <i>(cc)</i>		
DISCUSSION Mr. Romano returned my telephone call (3/17/99); I had called him to obtain the number of service connections for the City's distribution system. He stated that there are approximately 480,000 service connections. He mentioned that there are some private wells in the far northwest portion of the City. These wells are situated greater than four miles from the site. According to census data for Philadelphia County, PA, the average number of persons per household is 2.63 (1,585,577 people ÷ 603,075 households = 2.63 people per household (p. 4 of this note). Therefore, it is estimated that 1,262,400 people are served by the City's water distribution system (480,000 service connection x 2.63 persons per household = 1,262,400 people served). Since the Baxter Plant on the Delaware River provides approximately 56 percent of the City's supply, it is estimated that 706,944 people are served by the Baxter Plant (1,262,400 total population served x 56% of total water supply = 706,944 people served by the Delaware River intake). It should be noted that, although the Delaware River is tidal, background literature indicates that salt water does not reach the Camden area under normal circumstances (pp. 4, 5 of this note).		
ACTION ITEMS:		

Att. G, p. 3 of 4

Ref. 15, P. 27

(URL reload)

1990 US Census Data
Database: C90STF1A
Summary Level: state--County

Philadelphia County: FIPS.STATE=42, FIPS.COUNTY90=101

PERSONS

Universe: Persons

Total.....1585577

HOUSEHOLDS

Universe: Households


Total.....603075

<http://venus.census.gov/cdrom/lookup/921785700>

Att G p 4 of 4

Ref. 15, p. 28

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO:	DATE:	TIME:
	February 29, 2000	1430
DISTRIBUTION:		
TDD file 02-00-02-0005		
CONVERSATION WITH:	OF	PHONE
Bob Fonash	NJ American Water Co	(856) 764-4931
RECORDED BY:		
Gerald Gilliland, Region II START		
DISCUSSION:		
<p><u>Public Water Supply - Camden Area</u></p> <p>The NJ American groundwater wells at Cleveland/Reeves Avenues are no longer in use. They haven't been used in at least 2 years and are only available as emergency back-up. There's a lot of iron and manganese in the water and there's a filtration plant at that site. The wells were replaced by a surface water intake directly across the river from Philadelphia's Baxter Plant intake, south of Dredge Harbor and north of the Tacony-Palmyra Bridge. The intake currently provides 100% of the water for the East Camden and Cramer Hill area served by NJ American, serving a total of 24,300 persons (21,300 in Camden City and 3,000 in Pennsauken).</p>		

Signature: 

Att. H p. 1 of 2

Ref. No. 15, p. 29

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO:	DATE:	TIME:
	February 29, 2000	1130
DISTRIBUTION:		
TDD file 02-00-02-0005		
CONVERSATION WITH:	OF	PHONE
Joe Dugandzic	NJ American Water Co	(856) 346-8200
RECORDED BY:		
Gerald Gilliland, Region II START		
DISCUSSION:		
<p><u>Public Water Supply - Camden Area</u></p> <p>The NJ American groundwater wells at Cleveland/Reeves Avenues are secondary supply wells, only used for peak times. Bob Fonash at (856) 764-4931 would have more information on the recent use of the wells. The wells have iron and a couple of wells have VOCs. There's an aerator, pressure filters, and air strippers to treat the water. The wells were replaced by a surface water intake that went on-line in 1996/1997. It is directly across the river from Philadelphia's Baxter Plant intake.</p>		

Signature: 

A# H p. 2 of 2

Ref. No. 15, p. 30

CITY OF CAMDEN
DIVERSION RIGHT APPLICATION
TO
STATE OF NEW JERSEY
DIVISION OF WATER RESOURCES
W.S. Application No. 1799

July 23, 1979

REPORT ON GROUND WATER HYDROLOGY

Introduction

This is a report on the ground water hydrology to furnish information as required by the New Jersey Department of Environmental Protection - Division of Water Resources and by the Delaware River Basin Commission when applying for additional water supply.

The application for ground water allocation is for an additional 8.5 mgd from the existing Morris Delair Puchack field complex. It is estimated that at least four new wells would be required. They would be located along the Delaware River in Pensauken Township, New Jersey just south and north of the Betsy Ross Bridge to depths of approximately 130 feet, pumping from the lower aquifer of the Potomac Raritan Magothy aquifer system.

The study indicates that diversion of 8.5 mgd of water from this project will not unduly interfere with other existing supplies. The diversion is not likely to exceed the natural replenishment of the water resources beyond a reasonable

Att. I p. 1 of 2

Ref. 15, p. 31

Salt Water Intrusion

The ground water in the proximity of this area in the Potomac-Raritan-Magothy and Pleistocene aquifers is not salty. Salt water in the lower aquifer is located more than 12 miles to the south of the City of Camden and poses no threat in the foreseeable future. In the Delaware River, which is tidal, normally salt water from the ocean does not reach the vicinity of Camden. Rarely in an extended drought such as in 1966 the salt front of 250 ppm of chloride reached the vicinity of Benjamin Franklin Bridge. But this front or tongue of relatively low levels of salt is only temporary and would only raise the salt content of the recharged ground water slightly. With time it would eventually be flushed out by pumping with the salt content getting back to normal concentration. A content of 250 ppm salt is generally used as the limit for potable supplies and that level was set merely for aesthetic reasons of taste, and is not considered harmful. *

Last year complete chemical analyses were run on every operating well for the City of Camden. The water from the nearby wells at Delair and Morris, which have been in operation for over 30 years, were found to be suitable for drinking after treatment for iron and manganese. This is the best performance information that could be expected for concern of other chemical intrusions. There is no guarantee that chemical intrusions may not occur in the future from some unknown source. The only safeguard is a constant periodic monitoring in the future of the water quality of a new water supply as well as the existing supply.

Att I p. 2 of 2

Ref. 15, p. 32
(last page)

REFERENCE NO. 16

FROST ASSOCIATES

88 Founders Village, Clinton, CT 06413
(860) 669-5859 FAX (860) 669-5869

March 7, 2000

To: Roy F. Weston Inc - Region II START
1090 King Georges Post Road, Suite 201
Edison, NJ

Attn: Harry Allen

NEW JERSEY PORTION

Fr: Frost Associates
Founders Village
Clinton, Conn 06413

Tel: (203) 669-5859
Fax: (860) 669-5859

Sub: Kelbros, Inc
Camden, NJ

CERCLIS:

Job: 6520

Site Longitude: 75-07-38.5 75.127357
Site Latitude : 39-56-17 39.938061

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. A CENTRACTS report may have up to six radii of any length and 1500 block groups.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from The Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, 88 Founders Village, Clinton Conn 06413. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

A method to solve for the area of a polygon is to take one-half the sum of the pro-

Ref. No. 16, p. 1

TIERRA-A-018279

=====
Site Data
=====

Population: 151654.17
Households: 56043.09
Drilled Wells: 40.45
Dug Wells: 189.00
Other Water Sources: 69.00

=====
Partial (RING) data
=====

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population: 47084.87
Households: 18994.01
Drilled Wells: 7.14
Dug Wells: 18.45
Other Water Sources: 5.76

** Population On Private Wells: 63.45

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population: 50871.48
Households: 18936.85
Drilled Wells: 25.03
Dug Wells: 137.72
Other Water Sources: 1.24

** Population On Private Wells: 437.21

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population: 37840.11
Households: 12491.17
Drilled Wells: 8.28
Dug Wells: 32.83
Other Water Sources: 16.00

** Population On Private Wells: 124.51

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population: 10866.80
Households: 3970.47
Drilled Wells: 0.00
Dug Wells: 0.00
Other Water Sources: 42.39

** Population On Private Wells: 0.00

----- Within Ring: .5 Mile(s) and .25 Mile(s) -----

Population:	4202.46
Households:	1306.71
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	3.61

** Population On Private Wells: 0.00

----- Within Ring: .25 Mile(s) and 0 Mile(s) -----

Population:	788.46
Households:	343.87
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 0.00

** Total Population On Private Wells: 625.17

FROST ASSOCIATES

88 Founders Village, Clinton, CT 06413
(860) 669-5859 FAX (860) 669-5869

March 7, 2000

To: Roy F. Weston Inc - Region II START
1090 King Georges Post Road, Suite 201
Edison, NJ

Attn: Harry Allen

PENNSYLVANIA PORTION

Fr: Frost Associates
Founders Village
Clinton, Conn 06413

Tel: (203) 669-5859
Fax: (860) 669-5859

Sub: Kelbros, Inc
Camden, NJ

CERCLIS:

Job: 6520

Site Longitude: 75-07-38.5 75.127357
Site Latitude : 39-56-17 39.938061

The CENTRACTS report below identifies the population, households, and private water wells of each Block Group that lies within, or partially within, the 4, 3, 2, 1, .5, and .25, mile "rings" of the latitude and longitude coordinates above. A CENTRACTS report may have up to six radii of any length and 1500 block groups.

CENTRACTS uses the 1990 Block Group population and Block Group house count data found in the Census Bureau's 1990 STF-1A files. The sources of water supply data are from The Bureau's 1990 STF-3A files. The boundary line coordinates of the Block Groups were extracted from the Census Bureau's 1990 TIGER/Line Files.

CENTRACTS reports are created with programs written by Frost Associates, 88 Founders Village, Clinton Conn 06413. The code was written using Microsoft's Quick-Basic Ver. 4.5.

Latitude and Longitude coordinates identifying a site are entered in degrees and decimal degrees. One or more county files holding Block Group boundary lines are selected for use by CENTRACTS by determining whether the site coordinates fall within the minimum and maximum Lat\Lon coordinates of each county in the state.

Each Block Group line segment has Lat\Lon coordinates representing the "From" and "To" ends of that line. All coordinates from the selected county files are read and converted from degrees, decimal degrees to X\Y miles from the site location. Each line segment is then examined whether it lies within or partially within the maximum ring from the site.

The unique Block Group ID numbers of each line segment that lie within the maximum ring are retained. All Block Group boundary lines matching the Block Group numbers are then extracted from the respective county files to obtain all sides of the included Block Groups. Boundary records are then sorted in adjacent side order to determine the shape and area of each Block Group polygon.

----- Site Data -----

Population: 403686.84
Households: 190857.64
Drilled Wells: 46.00
Dug Wells: 50.80
Other Water Sources: 143.46

----- Partial (RING) data -----

---- Within Ring: 4 Mile(s) and 3 Mile(s) ----

Population: 173473.75
Households: 71998.16
Drilled Wells: 19.00
Dug Wells: 5.80
Other Water Sources: 77.46

** Population On Private Wells: 59.75

---- Within Ring: 3 Mile(s) and 2 Mile(s) ----

Population: 160801.27
Households: 80946.50
Drilled Wells: 10.28
Dug Wells: 27.56
Other Water Sources: 66.00

** Population On Private Wells: 75.17

---- Within Ring: 2 Mile(s) and 1 Mile(s) ----

Population: 67532.48
Households: 36690.90
Drilled Wells: 9.38
Dug Wells: 17.44
Other Water Sources: 0.00

** Population On Private Wells: 49.35

---- Within Ring: 1 Mile(s) and .5 Mile(s) ----

Population: 1876.64
Households: 1219.68
Drilled Wells: 7.35
Dug Wells: 0.00
Other Water Sources: 0.00

** Population On Private Wells: 11.31

----- Within Ring: .5 Mile(s) and .25 Mile(s) -----

Population:	2.71
Households:	2.40
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: 0.00

----- Within Ring: .25 Mile(s) and 0 Mile(s) -----

Population:	0.00
Households:	0.00
Drilled Wells:	0.00
Dug Wells:	0.00
Other Water Sources:	0.00

** Population On Private Wells: Not Applicable

** Total Population On Private Wells: 195.57

REFERENCE NO. 17

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
TDD NO.: 02-00-02-0005	DATE: 07/26/00	TIME: 1545
DISTRIBUTION: Kelbros, Inc. File	SUBJECT: Wellhead Protection Areas - Camden County	
BETWEEN: Eric Roman	OF: New Jersey Geological Survey	PHONE: (609) 984-6587
AND: Joanne D'Onofrio	OF: Region II START	
DISCUSSION:		
<p><u>Wellhead Protection Area</u></p> <p>The Wellhead Protection Program was taken over by the Source Water Assessment Program. The Source Water Assessment Program defines the sources of water; therefore, the source of water obtained from wells would be groundwater. A Preliminary Assessment Plan was submitted to the EPA in 1998. All of the Wellhead Protection Areas (WHPAs) in New Jersey have not been delineated yet. The following counties in New Jersey have WHPA maps that are/or will be approved: Hunterdon, Burlington, Cape May, Essex, Gloucester, Mercer, Salem, and Somerset. Other areas (counties) have WHPA maps in draft form. WHPAs have been delineated for Camden County, however the maps are in draft form and have not yet been approved. ER can determine if site overlies WHPA or if WHPA is located within 4 miles of the site; ER indicated that it was very likely that a WHPA is located within 4 miles of the site since there is a public supply well 1.9 miles from the site. To obtain specific information - fax a copy of a topo map showing the location of the site with a request (i.e., does the site overlie a designated or proposed WHPA and/or is a designated or proposed WHPA located within 4 miles of the site) to him at FAX # (609) 633-1004.</p>		
ACTION ITEMS:		

Signature: Joanne D'Onofrio

Ref. No. 17

REFERENCE NO. 18

PHONE CONVERSATION RECORD

Conversation with:

Date 10 / 18 / 96

Name Kimberly Lemo

Time 2:20 AM PM

Company NJ DEP, Bureau of Environmental Planning

Address 401 East State Street

Originator Placed Call

Trenton NJ 08625

Originator Received Call

Phone (609) 633-1179

W.O. NO. 1194

Subject Wellhead Protection Areas

Notes: Ms. Lemo returned the calls I had made to Dan Van
Abs of the above office regarding the establishment of
wellhead protection areas in New Jersey. She said that
wellhead protection areas had not yet been officially
delineated, as the regulations had not yet been promulgated.
The Wellhead Protection Program Plan was approved by the
DEP and EPA in December 1991 - this document is the plan of
action that is being used to actually develop the delineations.
Tom McKee of the Bureau of Environmental Planning is working
on writing the rules and regulations in conjunction with Steve
Spade of the New Jersey Geological Survey, who is actually
drawing up the delineations (he can be reached at 609-984-
0587). The NJGS will be establishing WHPAs for public supply
wells; nonpublic community supply wells may be addressed by
the individual municipalities involved. After the rules and
regulations have been promulgated, the Wellhead Protection Areas
delineated by the NJGS/Bureau of Env. Planning will be subject
to a public hearing process for formal adoption. For more
details, she suggested we speak with Tom McKee at the phone
number above.

File National Standard W.
TDN No. 02-002-0102A

Follow-Up-Action: _____

Tickle File _____

Follow-Up By: _____

Copy/Route To: Dennis Foerster

Joe Filosa

Originator's Initials [Signature]

Ref. No. 18

REFERENCE NO. 19

SUPERFUND TECHNICAL ASSESSMENT AND RESPONSE TEAM		TELECON NOTE
CONTROL NO.: 02-00-02-0005	DATE: 07/28/00	TIME: 1415
DISTRIBUTION: Kelbros, Inc. File	SUBJECT: Sewers in the Vicinity of Kelbros Inc. Site	
BETWEEN: Richie	OF: Camden Water & Sewer Dept.	PHONE: (856) 635-1527
AND: Joanne D'Onofrio	OF: Region II START	
DISCUSSION:		
<p>The area that I mentioned (site address: 537 South 2nd Street, Camden, NJ) is served by combined sewers. The combined sewer system carries all stormwater and sewage from the site and surrounding area to the Camden County Utilities Authority (CCUA) Treatment Plant, where it is subject to sanitary treatment before its discharge to the Delaware River.</p>		
ACTION ITEMS: None		

Ref. No 19

REFERENCE NO. 20



The Record **N.J. GIVES FIRST OK FOR REVIVAL OF DUMP**

Article from: The Record (Bergen County, NJ) Article date: December 8, 1992
Author: DAVID VOREACOS, Record Staff Writer

The Record (Bergen County, NJ)

12-08-1992

N.J. GIVES FIRST OK FOR REVIVAL OF DUMP -- HMDC SEES \$500M SAVING

By DAVID VOREACOS, Record Staff Writer

Date: 12-08-1992, Tuesday

Section: NEWS

Edition: 3 Star, Also in 2 Star B, 1 Star Late, 1 Star Early

A plan to develop an inactive Kearny dump into a regional landfill and recycling center for non-burnable waste has received preliminary approval from state regulators.

The Hackensack Meadowlands Development Commission estimates that the landfill could save North Jersey counties \$500 million in disposal costs over the next two decades.

The HMDC's plans for the Keegan landfill drew stiff opposition from Kearny residents early this year. They opposed any new landfill activities and the truck traffic that goes with them. The dump lies in an industrial area near Route 280, the New Jersey Turnpike, and the Hackensack River.

The Kearny Council later "unequivocally" opposed the project and favored commercial development there instead.

The landfill would take 1,500 tons of bulk waste that is currently shipped out of state each day. It also would recycle 300 tons of construction debris daily.

The HMDC would first have to close the Keegan landfill, which is leaching into nearby marshes a substantial flow of pollution from its 100 acres. That cleanup is projected to cost more than \$60 million over two decades. The new landfill would be atop the Keegan dump.

The state Department of Environmental Protection and Energy approved the concept last week but questioned the HMDC's financial analysis and said the HMDC would need permits based on far more detailed information.

"The HMDC proposal . . . represents significant positive benefits locally and to the state," DEPE Commissioner Scott Weiner wrote. "At the local level, existing sources of pollution would be remediated."

Weiner said that the recycling facility would further New Jersey's goals of recycling 60 percent of its waste. It would also help the state dispose of all of its waste within its own borders at a time when landfills are closing.

"This facility can be a cornerstone to solving the state's deficiencies in disposal capacity, thereby greatly reducing our dependence on out-of-state landfills," he wrote in a nine-page opinion.

However, Weiner questioned the HMDC's projection that it would charge \$75 per ton to dump at the new landfill, a rate that he said "does not appear to be sufficient to cover all of the facility's costs."

Beyond spending more than \$60 million in the next 20 years on sealing and maintaining the Keegan landfill, the HMDC wants to spend more than \$60 million to close and maintain another Kearny dump known as the 1-D Landfill. It also wants to buy and protect 320 acres of marsh around the Keegan landfill.

To finance the project, the HMDC would issue bonds that would probably be repaid through funds generated by tipping fees, said spokesman Bob Grant. Officials estimate it would be two years before the facility could be opened, and that it could operate for at least a

decade.

Weiner's opinion does not address the 1-D Landfill plan, but does note some of the environmental hazards at Keegan, which has not accepted trash for 20 years but remains uncovered.

The HMDC has estimated that the landfill, most of which is owned by Kearny, discharges 65 million gallons of tainted water annually into the Kearny freshwater marsh and Frank's Creek, which drains into Newark Bay.

Underground fires, fed by methane, plague the site, which is full of hazardous materials. A 1989 report prepared for the U.S. Environmental Protection Agency found the presence of mercury, lead, chromium, and polychlorinated biphenyls (PCBs) on the site.

However, the dump remains accessible, and people continue to hunt and fish there, according to the HMDC. The HMDC is charged with promoting development, environmental protection, and waste management in a 32-mile district.

Under its plans, the HMDC would install an underground system that would collect the escaping leachate and ultimately pipe it to a sewage plant.

Though opposed in Kearny, the HMDC's plans are backed by the Bergen County Utilities Authority, which could lower its garbage costs by using the Kearny facility.

"At some point, we have to come to grips with being sincere about in-state self-sufficiency with waste," said BCUA Executive Director Larry J. McClure.

McClure said he also hopes that the Kearny facility would cover new waste with chemically stabilized sludge produced at the BCUA's sewage plant.

Keywords: KEARNY. GARBAGE. NEW JERSEY. MEADOWLAND

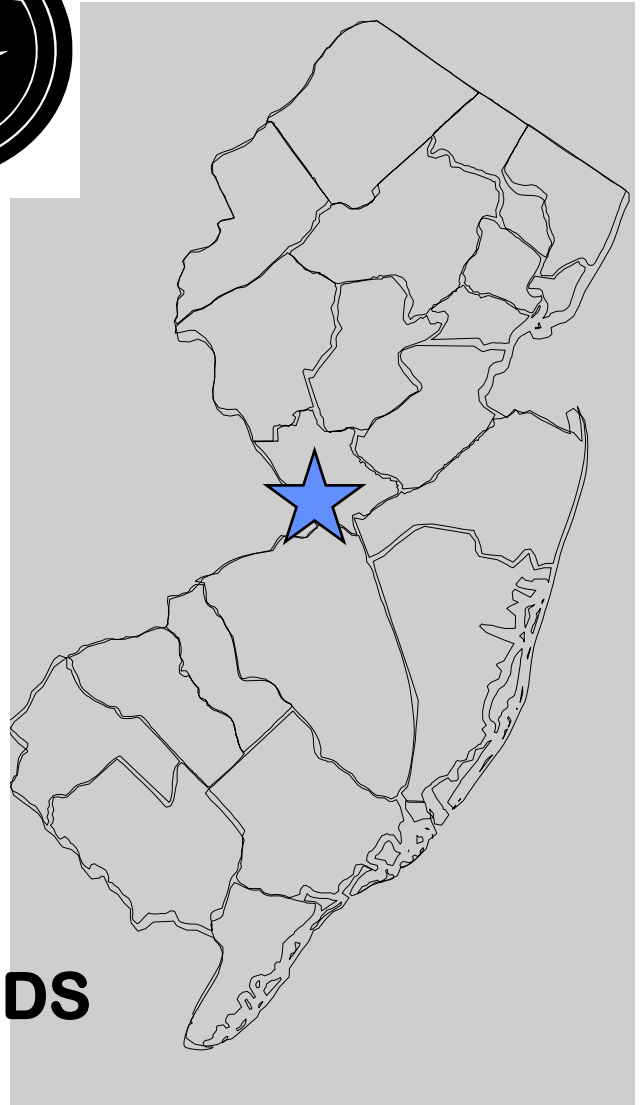
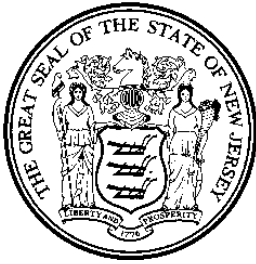
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STATE OF NEW JERSEY
DEPARTMENT OF THE TREASURY
DEPARTMENT OF ENVIRONMENTAL PROTECTION



BID DOCUMENTS
MSLA 1D
LANDFILL SITE
REMEDIAL
CONSTRUCTION

INVITATION FOR BIDS
09-X-20957

VOLUME 4 – *TECHNICAL SPECIFICATIONS*

Date Issued: MAY 2009

**TECHNICAL SPECIFICATIONS
MSLA-1D LANDFILL SITE IMPROVEMENTS PROJECT**

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1.1 General Description of the Work

The New Jersey Department of Environmental Protection (NJDEP) will be performing remedial closure measures for the MSLA 1-D Landfill. The MSLA 1-D Landfill is located in Kearny, Hudson County, New Jersey. The general project location is shown in the location plan on the Drawings Title Sheet. Due to difficult site conditions, pre-closure site improvements are required to provide suitable working areas for the landfill closure construction. Therefore, the MSLA 1-D landfill closure has been separated into two phases: pre-closure site improvement and landfill closure. This Contract is for the pre-closure site improvement phase of work.

The (Site Improvements Project) includes: construction of the perimeter access road, 6” Penn Energy gas line re-location, 12” PSE&G abandoned gas line removal, grading for new Transco gas line easement along eastern portion of landfill, pile foundation & concrete slab construction, preparation of future staging areas, filling of wetlands to accommodate the roadway, installation of site access and control features, and other miscellaneous activities.

The perimeter access road has been designed to provide a suitable surface for the future installation of the slurry wall and leachate collection system during the second phase of construction. The perimeter access road will be constructed using two gradations of recycled aggregate (RA). RA shall be obtained from a NJDEP certified Class B recycling facility. The RA will be produced from crushed concrete, concrete blocks, brick, tile and masonry material, and glass.

The abandoned gas line running along the southern portion of the landfill will be removed to ensure that it is not encountered during landfill closure. The exact location of the gas line is unknown and the location shown has been approximated. PSE&G, who owns the line, will locate the abandoned gas line and drill it to vent any gas. The Contractor shall then excavate and expose the pipeline, remove the portion within the project area for offsite disposal, cap the ends of the portion that will remain in place, and backfill. PSE&G has indicated that a mechanical cap, such as a “Dresser” Cap will be acceptable.

The Contractor is advised that the two existing (10” and 20”) gas lines to the south of the site are to be avoided during construction, and a 10’ minimum offset shall be maintained between the pipelines and the toe of the slope created by the access road. On the eastern side of the site the Penn Energy gas pipeline will be relocated, and the Transco Pipeline easement will be shifted (the plans reflect the shifted, and final Easement location). The new easement requires filling of ponded water to make the easement accessible. The work includes filling the ponds that are within the limits of the current Transco Easement, installing a safe crossing over the two pipelines, removing the existing Penn Energy gas pipeline and installing the new pipeline. The contractor will be required to follow the requirements of the pipeline owners. Copies of the requirements can be found in the Exhibit portion of these specifications

END OF SECTION

1.2 General Requirements

1.2.1 Definitions

The terms used in the Specifications and Drawings have the definitions given in Article I of the General Conditions, as supplemented by Section SC-1 of the Supplementary Conditions and below. Wherever the words defined in this Section or pronouns used in their stead occur in the Specifications and Drawings, they shall have the meanings herein given.

Survey

The figures given on the Drawings or in the other Contract Documents after the word "elevation" or abbreviation of it shall mean the distance in feet above the National Geodetic Vertical Datum 1929, also known as Mean Sea Level Datum 1929.

The elevations indicated on the Drawings and other locations pertaining to design and construction (unless noted otherwise) indicate the finish grade/elevation. Contractor shall adjust subgrade elevations, bottom of trenches, etc., accordingly

All control points shall be tied horizontally to the New Jersey State Plane Coordinate System (NAD 1983) with horizontal accuracy to at least the nearest 0.01-foot and vertically to the National Geodetic Vertical Datum 1929 (100NGVD 29), with elevation accuracy to the nearest 0.01-foot. Mapping shall be scaled at 1" = 50' (or an appropriate scale to fit 36" x 42" sheets) with an elevation contour interval of 1-foot as well as spot elevations. A sketch generalizing the desired survey limits and typical content shall be included for clarity. Topographic mapping shall, at a minimum, show all final site features including structures, utility lines, drainage facilities (e.g., stormwater outfalls, combined sewer overflows, tide gates, etc.), tree and brush lines, banks, and all other significant physical and environmentally sensitive features evident at the time of survey. The Contractor shall establish and verify all ground control required for Surveying purposes.

1.2.2 Abbreviations

Where any of the following abbreviations are used in the Contract Documents, they shall have the meaning set forth.

AASHTO American Association of State Highway and Transportation Officials

ACI American Concrete Institute

AFBMA Anti-Friction Bearing Manufacturers Association

AGA American Gas Association

AGMA American Gear Manufacturer Association

AIHC	American Industrial Health Council
AISC	American Institute of Steel Construction
AMCA	Air Moving and Conditioning Association
AMRL	American Material Reference Laboratory
ANS	American National Standard
ANSI	American National Standards Institute
API	American Petroleum Institute
ASCE	American Society of Civil Engineers
ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers
ASME	American Society of Mechanical Engineers
ASTM	American Society for Testing and Materials
AWPA	American Wood-Preservers' Association
AWWA	American Water Works Association
CS	Commercial Standard
FTM	Federal Test Method
IBR	Institute of Boiler and Radiator Manufacturers
IEEE	Institute of Electrical and Electronics Engineers, Inc.
JIC	Joint Industry Conference Standards
NRC	Nuclear Radiation Commission
NDB	National Bureau of Standards
NEC	National Electrical Code; latest edition
NEMA	National Electrical Manufacturers Association
NFPA	National Fire Protection Association

NICET	National Institute for Certification of Engineering Technologies
NJDOT	New Jersey Department of Transportation
NSF	National Sanitation Foundation
SMACNA	Sheet Metal and Air Conditioning Contractors National Association, Inc.
Fed. Spec.	Federal Specifications issued by the Federal Supply Service of the General Services Administration, Washington, D.C.
125-lb. ANS	American National Standard for Cast-iron Pipe
250-lb. ANS	Flanges and Flanged Fittings, Designation B16.1-1975, for the appropriate class
AWG	American or Brown and Sharpe Wire Gage
NPT	National Pipe Thread
OS&Y	Outside screw and yoke
Stl. WG	U.S. Steel Wire, Washburn and Moen, American Steel and Wire or Roebling Gage
UL	Underwriters' Laboratories
USCE	United States Army Corps of Engineers
USSG	United States Standard Gage
WOG	Water, Oil, Gas
WSP	Working steam pressure

1.2.3 Handling and Distribution of Materials

The Contractor shall handle, haul, and distribute all materials and all surplus materials on the different portions of the work; shall provide suitable and adequate storage room for materials and equipment during the progress of the work, and be responsible for the protection, loss of, or damage to materials and equipment furnished by them, throughout the duration of the contract.

Storage, transport, and demurrage charges by transportation companies and vendors shall be borne by the Contractor.

1.2.4 Materials - Samples - Inspection

Unless otherwise expressly provided on the Drawings or in any of the other Contract Documents, only new materials shall be incorporated in the work. All materials furnished by the Contractor to be incorporated in the work shall be subject to the inspection of the Engineer. No material shall be processed or fabricated for the work or delivered to the work site without prior concurrence of the Engineer.

All costs for the storage, handling, and inspection of all materials shall be furnished by the Contractor. Defective materials shall be removed immediately from the site of the work.

Either prior to or after commencement of the work, the Contractor shall submit samples of materials for such tests as the Engineer deems necessary to demonstrate that they conform to the Specifications. Such samples, including but not limited to pipe and soil samples, shall be furnished, taken, stored, packed, and shipped by the Contractor's Independent QA/QC Consultant as directed by the Engineer.

All samples shall be packed so as to reach their destination in good condition, and shall be labeled to indicate the material represented, the name of the work and location for which the materials are intended, and the name of the Contractor submitting the sample. To ensure consideration of samples, the Contractor shall notify the Engineer by letter that the samples have been shipped and shall properly describe the samples in the letter. The letter of notification shall be sent separate from and should not be enclosed with the samples.

The Contractor shall submit data and samples, or place their orders, sufficiently early to permit consideration, inspection and testing before the materials and equipment are needed for incorporation in the work. The consequences of their failure to do so shall be solely the Contractor's responsibility.

To demonstrate the proficiency of workmen, or to facilitate the choice among several textures, types, finishes, surfaces, etc., the Contractor shall provide such samples of workmanship as may be required.

When required, the Contractor shall furnish to the Engineer five sworn copies of manufacturer's shop or mill tests (or reports from independent testing laboratories) relative to materials and equipment performance ratings and test data.

After review of the samples, data, etc., the materials and equipment used on the work shall in all respects conform therewith.

All acceptance testing shall be performed in the presence of the Engineer and State. The Engineer and/or State will independently perform confirmatory QA/QC chemical testing on imported fill (other than recycled aggregate), topsoil, and general fill. This testing will not excuse the Contractor from performing the testing as indicated in the specifications. If exceedances are found in any of the QA/QC tests, the Contractor will be responsible for segregating and properly disposing of the failing material at no cost to the State.

The security of stockpiled materials is the responsibility of the Contractor.

1.2.5 Inspection of Work Away From the Site

If work to be done away from the construction site is to be inspected on behalf of the State during its fabrication, manufacture, or testing, or before shipment, the Contractor shall give notice to the Engineer of the place and time where such fabrication, manufacture, testing, or shipping is to be done. Such notice shall be in writing and delivered to the Engineer at least one week in advance so that the necessary arrangements for the inspection can be made.

1.2.6 Contractor's Shop and Working Drawings

The shop drawings are interpretations of and are supplemental to the Contract Drawings and Specifications. Their intent shall demonstrate that this Contractor understands the design concept, and to provide the detailed information necessary for the fabrication, assembly, and installation of the products or materials specified. Neither the shop drawings nor comments placed on them by the Engineer shall be construed as being "Change Orders". If any deviations, discrepancies or conflicts between the Shop Drawings and the Contract Drawings and Specifications are discovered, either "prior to" or "after" the shop drawings have been reviewed, the Contract Drawings and Specifications shall have control and shall be implemented.

The Contractor shall submit shop and working drawings of all materials, including but not limited to, riprap, aggregate, structural details, piping layout, wiring, materials fabricated especially for the Contract, and materials and equipment for which such drawings are specifically requested. Such submittals shall meet the requirements of Article 6.14 - Shop Drawings and Samples of the Terms and Conditions and Specification Section 1.3 - Submittals.

When shop and working drawings are required as specified below, the Contractor shall submit data in sufficient detail to enable the Engineer to determine whether the manufacturer and/or the supplier have the ability to furnish a product meeting the Specifications. The Contractor shall submit data relating to the materials and equipment they propose to incorporate into the work in sufficient detail to enable the Engineer to identify and evaluate the particular product and to determine whether it conforms to the design concept and Contract requirements. Such data shall be submitted as specified for submission of shop and working drawings.

Such drawings shall show the principal dimensions, weight, structural and operating features, space required, clearances, type and/or brand of finish or shop coat, etc., depending on the subject of the drawing. When it is customary to do so, when the dimensions are of particular importance, or when so specified, the drawings shall be certified by the manufacturer or fabricator as correct for the Contract.

When so specified or if considered by the Engineer to be acceptable, manufacturer's specifications, catalog data, descriptive matter, illustrations, etc., may be submitted in place of shop and working drawings. In such case the requirements shall be as specified for shop and working drawings, insofar as applicable, except that five copies shall be submitted one of which shall be an original, two of which shall be returned to the Contractor.

The Contractor shall be responsible for the prompt and timely submittal of all shop and working drawings so that there shall be no delay to the work due to the absence of such drawings. Prior to the submittal of any shop drawings, the Contractor shall submit a schedule of proposed shop drawing transmittals. The schedule shall identify the subject matter of each transmittal, the corresponding specification section number and the proposed date of submission. During the progress of the work the schedule shall be revised and updated monthly or more frequently if needed. A revised and updated schedule shall be submitted with the monthly invoice package. Current changes to the shop drawing submittal schedule shall be shown in bold, shading or otherwise highlighted. The revised schedule shall be properly numbered for identification. The schedule shall also include a numbering system for the shop drawings and revisions.

No material or equipment shall be purchased or fabricated specifically for the Contract until the required shop and working drawings have been submitted as provided above and approved for conformance to the Contract requirements. All such materials and equipment and the work involved in their installation or incorporation into the work shall then be as shown in and represented by said drawings.

The Engineer shall review all critical shop and working drawings within 15 working days of their receipt and return marked up prints to the Contractor indicating approval, conditional approval or disapproval. Review time shall start upon receipt of the submittal by the Engineer. Until the necessary review has been made, the Contractor shall not order any materials nor proceed with any portion of the work (such as the construction of foundations), the design or details which are dependent upon the design or details of work, materials, equipment or other features for which review is required.

All shop and working drawings shall be submitted to the Engineer by and/or through the Contractor, who shall be responsible for obtaining shop and working drawings from their subcontractors and returning reviewed drawings to them. All shop and working drawings shall be prepared on standard size, 24-in. by 36-in. sheets, in AutoCAD Version 2000i or compatible, except those which are made by changing existing standard shop or working drawings. All drawings shall be clearly marked with the names of the State, Contractor, and building, equipment, or structure to which the drawing applies, and shall be suitably numbered. Each shipment of drawings shall be accompanied by a letter of transmittal giving a list of the drawing numbers and the names mentioned above and a diskette containing the corresponding *.DXF or *.DWG files.

Only drawings which have been checked and corrected by the fabricator shall be submitted to the Contractor by their subcontractors and vendors. Prior to submitting drawings to the Engineer, the Contractor shall check thoroughly all such drawings to satisfy themselves that the subject matter thereof conforms to the Drawings and Specifications in all respects. All drawings which are correct shall be marked with the date, checker's name, and indication of the Contractor's approval, and then shall be submitted to the Engineer; other drawings shall be returned for correction.

If a shop drawing shows any deviation from the Contract requirements, the Contractor shall make specific mention of the deviations in their letter of transmittal.

The review of shop and working drawings hereunder will be general only, and nothing contained in the Technical Specifications shall relieve, diminish or alter in any respect the responsibilities of the Contractor under the Contract Documents and in particular, the specific responsibility of the Contractor for details of fabrication and dimensions necessary for proper fitting and construction of the work as required by the Contract and for achieving the result and performance specified hereunder.

Should the Contractor submit equipment that requires modifications to the structures, piping, electrical conduit, wires and appurtenances, layout, etc., detailed on the Drawings, they shall also submit details of the proposed modifications. If such equipment and modifications are accepted, the Contractor, at no additional cost to the State, shall do all work necessary to make such modifications.

The marked-up reproducible of the shop and working drawings or two marked-up copies of catalog cuts will be returned to the Contractor. The Contractor shall furnish additional copies of such drawings or catalog cuts when so requested.

1.2.7 Occupying Private Land

The Contractor shall not (except after written consent from the proper parties) enter or occupy with persons, tools, materials, or equipment, any properties outside of which NJDEP has secured access to for the Contractor or property of the Owner. A copy of the written consent shall be given to the Engineer.

1.2.8 Interference with and Protection of Streets/Roadways

The Contractor shall not close or obstruct any portion of a street, road, or private way without obtaining permits from the proper authorities. If any street, road or private way shall be rendered unsafe by the Contractor's operations, they shall make such repairs or provide such temporary ways or guards as shall be acceptable to the proper authorities.

Streets, roads, private ways, and walks not closed shall be maintained passable and safe by the Contractor, who shall assume and have full responsibility for the adequacy and safety of provisions made therefore.

The Contractor shall, at least two weeks in advance, notify The Town of Kearny in writing, with a copy to the Engineer, if the closure of a street or road is necessary. The Contractor shall cooperate with the Police Department in the establishment of alternate routes and shall provide adequate detour signs, plainly marked and well lighted, to minimize confusion. The Contractor shall be responsible to provide, obtain and pay for all required permits, police officers, traffic control providers and vendors required, due to such closures. The costs for the police officers shall be reimbursed through Allowance Item 1.4.1. The costs to coordinate and obtain the police protection shall be borne by the Contractor.

The Contractor shall not block or impede access to the gas plant by their personnel at any time.

1.2.9 Storage of Materials and Equipment

All materials and equipment to be incorporated in the work shall be placed so as not to injure any part of the work or existing facilities and so that free access can be had at all times to all parts of the work and to all public utility installations in the vicinity of the work. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants and occupants.

The Contractor shall not store any construction equipment and materials in front of the gas plant without making arrangements with the plant operators.

1.2.10 Sanitary Regulations

The Contractor shall provide adequate sanitary facilities for the use of those employed or involved on the work, including the State and Engineer. Such facilities shall be made available when the first employees arrive on the site of the work, shall be properly secluded from public observation, and shall be constructed and maintained during the progress of the work in suitable numbers and at such points and in such manner as may be required.

The Contractor shall maintain the sanitary facilities in a satisfactory and sanitary condition at all times and shall enforce their use. The Contractor shall rigorously prohibit the committing of nuisances on the site of the work, on the lands of the State, or on adjacent property.

1.2.11 Lines, Grades and Measurements

The Contractor shall employ a competent surveyor licensed by the State of New Jersey as a Professional Land Surveyor. The Contractor shall require said surveyor to establish all lines, elevations, reference marks, batter boards, etc., needed by the Contractor during the progress of the work, and to verify such marks by instruments or other appropriate means.

The Engineer shall be permitted at all times to check the lines, elevations, reference marks, batter boards, etc., set by the Contractor, who shall correct any errors in lines, elevations, reference marks, batter boards, etc., disclosed by such check. Such a check shall not be construed to be an approval of the Contractor's work and shall not relieve or diminish in any way the responsibility of the Contractor for the accurate and satisfactory construction and completion of the entire work.

The Contractor shall make, check, and be responsible for all measurements and dimensions necessary for the proper construction of and the prevention of misfittings in the work.

Separate payment will not be made for layout, measurement for payment, checking lines, grades, and measurements. The Contractor shall include such costs in individual line items.

1.2.12 Dimensions of Existing Structures

Where the dimensions and locations of existing structures are of importance in the installation or connection of any part of the work, the Contractor shall verify such dimensions and locations in the field before the fabrication of any material or equipment, which is dependent on the correctness of

such information. Such dimensions and locations shall be indicated on the Record Drawings.

1.2.13 Work to Conform

During its progress and on its completion, the work shall conform truly to the lines, levels, and grades indicated on the Drawings or given by the Engineer and shall be built in a thoroughly substantial and workmanlike manner, in strict accordance with the Drawings, Specifications, and other Contract Documents, including approved change orders or field orders.

All work done without proper lines or levels, or performed during the absence of the Engineer, will not be estimated or paid for except when such work is authorized by the Engineer in writing. Work so done may be ordered uncovered or taken down, removed, and replaced at the Contractor's expense.

1.2.14 Pipe Location

The proposed 6" PENN Energy/Algonquin pipeline alignment is within close proximity of the existing pipelines and utilities, which are currently under operation. The Contractor must exercise all possible caution while working within/over the existing pipelines. All safety and construction standards and procedures of the Engineer, State, PSE&G and TRANSCO must be followed. No excavation with mechanical equipment shall be allowed within 24" of the existing pipelines without clearly identifying the pipelines. All pipelines shall be field verified, by hand excavating to determine exact location and depth prior to any mechanical excavation. No more than 170 feet in length of open cut shall be opened at one time when a foreign pipeline is within 5 feet from the edge of the trench. This is to avoid any operational impact to the existing pipelines in services. It is also the responsibility of the Contractor to coordinate all construction activities with PSE&G and TRANSCO.

Pipelines will be located as indicated on the Drawings, but the right is reserved to the State, acting through the Engineer, to make such modifications in location as may be found desirable to avoid interference with existing structures or for other reasons. Where fittings, etc., are noted on the Drawings, such notation is for the Contractor's convenience and does not relieve them from laying and jointing different or additional items where required.

PSE&G and TRANSCO are expected to be onsite during work and the Contractor shall adhere to any restrictions which they might require on work.

1.2.15 Guarantees and Warranties

The Contractor shall comply with Article 15 of the General Conditions pertaining to guarantees and warranties for all work completed. The Contractor shall warranty work associated with the 6" pipeline for two (2) years from the date of Final Completion and shall promptly repair, correct, replace, and re-perform any work that fails to conform with the Bid Contract at no additional cost to the State. All such warranty work shall be performed on a schedule acceptable to the current operators of the landfill gas plant and shall be warranted for two (2) additional years from the date of repair, correction, replacement, or re-performance. Neither the State's acceptance of said Work, nor

final payment therefore, shall relieve Contractor of its responsibility to provide conforming Work. Contractor shall reimburse the State for any and all costs, expenses, and direct and reasonably foreseeable consequential losses incurred by the State due to non-conforming Work or any other failure by Contractor or any Subcontractor to comply with this Contract. Copies of required inspection certificates and guarantees or warranties shall be provided to the Engineer within 30 days after the installation of materials or products, in accordance with Section 1.3 and Table 1.3-1.

1.2.16 Computation of Quantities

Measurements for payment will be made in accordance with United States standard measure (National Bureau of Standards). The method of measurement and computations to be used in determination of quantities of work performed under the Contract are those methods generally recognized as conforming to good engineering practice. The methods of weight and measurement listed below may be used as an alternate method.

The method of measurement and computations to be used in determination of quantities of Work performed under the Contract are those methods generally recognized as conforming to good engineering practice.

Longitudinal measurements for area computations are made horizontally and deductions are not made for individual fixtures having an area of 9 square feet or less. Transverse measurements for area computations are the neat dimensions shown on the Plans or ordered in writing by the Engineer.

All items which are measured by the linear foot, such as pipe culverts, are measured parallel to the base or foundation upon which such items are placed.

In computing volumes of excavation, the average end area method is used.

The thickness of plates and galvanized sheet used in the manufacture of corrugated metal pipe, metal plate pipe culverts and arches, and metal cribbing is measured in millimeters.

Materials measured by volume in the hauling vehicle are measured at the point of delivery. Vehicles for this purpose may be of any size or type acceptable to the Engineer, provided that the body is of such shape that the actual contents may be readily and accurately determined.

When requested by the Contractor and approved by the Engineer, in writing, material specified to be measured by the cubic yard may be weighed and such weights converted to cubic yard for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined and shall be agreed to by the Contractor before such method of measurement of pay quantities is used.

Net certified scale weights will be used as a basis of measurement for all imported soil and recycled aggregate, subject to correction when material has been lost, wasted, or otherwise not incorporated in the Work.

The term "lump sum" when used as a basis of payment means complete payment for the Work of that item, and that item will not be measured.

When standard manufactured items are specified, such as fence, wire, plates, rolled shapes, and pipe conduit, and these items are identified by gauge, unit weight, section dimensions, etc, such identifications are considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances indicated in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

Whenever the phrase "quantity in the Proposal" is used in this Subsection, it is construed to mean the quantity in the Proposal adjusted for Change Orders.

When the quantity in the Proposal is specified to be the pay quantity, either the Engineer or the Contractor may request that the quantity be measured. If such a request is made by the Contractor, it shall be accompanied by drawings, calculations, or other information indicating that the quantity in the Proposal is not correct.

In computing volumes of excavation, the average end area method is used. When cut and fill areas are mixed, the separate volumes of cut and fill shall be computed using a straight line interpolation between the end areas. A reasonable spacing between end areas shall be selected by the Contractor and approved by the Engineer.

When the installation depth of an imported borrow fill is predetermined as with the cap components, roadways, and channels, measurement shall be in the square yard plan dimension.

Defined volumes of fill for structural items shall be calculated as in-situ volume as placed at the specified density or unit weight. When requested by the Contractor and approved by the Engineer in writing, materials specified to be measured by cubic yard may be weighed and such weights converted to cubic yards for payment.

All materials will be measured for payment. Factors for conversion from weight measurement to volume measurement will be determined and shall be agreed to by the Engineer before such method of measurement of pay quantities is used.

For estimating quantities in which the computation of areas by geometric methods would be comparatively laborious, it is agreed that the planimeter shall be considered an instrument of precision adapted to the measurement of such areas.

Net certified scale weights or weights based on certified volumes will be used as a basis of measurement for payment. The State reserves the right to correct tonnage amount subject if material has been lost, wasted, or otherwise not incorporated in the Work.

1.2.17 General Slope Stability

The Contractor's attention is called to the fact that some of the side slopes of the wastefill are steep and may be marginally stable. The Contractor shall exercise caution in performing work in and around the wastefill so as not to adversely affect the stability of the wastefill, including but not limited to:

- limiting dynamic forces on top of any slopes steeper than 15%;
- limiting equipment speeds to less than 10 mph;
- avoiding hard braking by equipment on or near slopes steeper than 15%;
- limiting work on slopes steeper than 15% when wet or precedent saturated conditions exist;
- use low ground pressure (LGP) equipment on slopes steeper than 15%; and
- safeguarding/maintaining the cap cover soils around the toe of slopes from erosion.

1.2.18 Precautions During Adverse Weather

During adverse weather and against the possibility thereof, the Contractor shall take all necessary precautions so that the work may be properly accomplished and satisfactory in all respects at no additional cost to the State. When required, protection shall be provided by use of tarpaulins, wood and building-paper shelters, or other suitable means.

During cold weather, materials shall be preheated, if required, and the materials and adjacent structure into which they are to be incorporated shall be made and kept sufficiently warm so that a proper bond will take place and a proper curing, aging, or drying will result. Protected spaces shall be artificially heated by suitable means which will result in a moist or a dry atmosphere according to the particular requirements of the work being protected. Ingredients for concrete and mortar shall be sufficiently heated so that the mixture will be warm throughout when used.

1.2.19 Temporary Heat

If temporary heat is required for the protection of the work, the Contractor shall provide and install suitable heating apparatus, shall provide adequate and proper fuel, and shall maintain heat as required and/or directed by the Engineer.

Temporary heating apparatus shall be installed and operated in such manner that finished work will not be damaged thereby.

After the heating system has been installed, tested, and made ready for operation, the Contractor may, at their own risk and expense, use it for providing heat for protection of the work. They shall provide and pay for all fuel and care necessary, and when the work is ready for acceptance, they shall, at their own expense, put the system into first-class condition, even to the extent of replacing worn or damaged parts as directed. Separate payment will not be made for temporary heating.

1.2.20 Traffic Control

The site access point is located off of Harrison Avenue. The Contractor shall follow all conditions of the site access easement agreements. The contractor will also be required to coordinate with utility line companies and New Jersey Turnpike Authority to facilitate site access for portions of the work. Copies of the site access agreements are included in Appendix A.

The Contractor shall submit a site specific Traffic Control Plan for approval by the State as per Section 3.2.6. The Traffic Control Plan shall include, but not be limited to, on-site and off site traffic control, the use of traffic flagmen, sign posting, cones, fencing, and barrier. The Traffic Control Plan shall in no way relieve the Contractor of any responsibility or liability which is a result of their operations under the terms of the contract. Payment for this item will be made under Payment Item 3.2.1.

All truck traffic entering the site shall approach the Harrison Avenue entrance on Harrison Avenue/Route 508 East and turn right into the site at the driveway that is to be constructed at the start of the project. All truck traffic leaving the site shall exit at the constructed driveway and turn right onto Harrison Avenue/Route 508 East. Traffic conditions are hazardous at the site entrance on Harrison Avenue and deviations from this traffic patterns will not be permitted. In addition, the Contractor should be aware that the existing driveway is steep and that low trailers may “bottom out.” In order to get trailer mounted equipment into the site, it may have to be offloaded on Harrison Avenue. This will require the assistance of the Kearny Police Department and is best performed at off-peak traffic hours. The cost for use of local police will be reimbursed, at cost, from the Payment

Allowance Item 1.4.1.

1.2.21 Pre-Construction and Post-Construction Videos

The Contractor shall take Pre-Construction and Post-Construction videos to adequately document pre-existing and final conditions of all work areas and easements. The Engineer shall be present during these activities and provided four copies of the videos. The cost of this activity shall be included in Section 1.4 Mobilization and Section 1.4 Demobilization, respectively.

1.2.22 Interference with Existing Works

The Contractor shall at all times conduct their operations so as to interfere as little as possible with existing works. All work of connecting with, cutting into, and reconstructing existing pipes or structures shall be planned to interfere with the operation of the existing facilities for the shortest possible time when the demands on the facilities best permits such interference, even though it may be necessary to work outside of normal working hours to meet these requirements. Before starting work which will interfere with the operation of existing facilities, the Contractor shall do all possible preparatory work and shall see that all tools, materials, and equipment are made ready and at hand.

The Contractor shall make such minor modifications in the work relating to existing structures as may be necessary, without additional compensation.

The Contractor shall have no claim for additional compensation by reason of delay or inconvenience in adapting his operations to meet the above requirements.

1.2.23 Permits, Access Agreements and Easements

The Contractor shall take out and maintain all necessary permits from the state, county, township or other public authorities; shall give all notices required by law; and shall post all bonds and pay all fees and charges incidental to the due and lawful prosecution of the work. The following are a list of some of the known permits which may be required to be obtained by the Contractor in the execution of the project.

- Local police, fire chief and construction approvals.
- All appropriate permits for transportation and disposal of wastes (solid or liquid), including transportation licenses, transfer station licenses, and Treatment, Storage and Disposal Facilities Permits.
- Electrical permits – Town of Kearny
- NJDEP Well Abandonment Permits
- Trailer occupancy permit – New Jersey Meadowlands Commission

- Road Opening Permit – Hudson County

The Contractor is required to comply with the following permits which have been obtained (Copies are included in Appendix B).

- NJDEP Freshwater Wetlands Permit / Water Quality Certificate
- NJDEP Flood Hazard Area Permit
- NJDEP Coastal General Permit #24.
- USACE Jurisdictional Determination and Nationwide General Permit No. 38
- NJDEP Major Landfill Disruption Permit
- NJDEP Tidelands License
- Hudson-Essex-Passaic Soil Conservation District – Soil Erosion and Sediment Control Certification.

The Contractor is also required to comply with access/easement agreements, including insurance requirements, of the following property owners:

- New Jersey Department of Transportation
- Town of Kearny
- PSE&G
- Williams-TRANSCO

1.2.24 Record Drawings

The Contractor shall keep one record copy of all Contract Documents, at the site in good order and annotated to show all revisions made during construction. Such annotations shall be kept current and may be inspected by the State or Engineer monthly or more frequently. Failure to maintain current record drawings will be cause to delay progress payments. Record drawings shall be available to the Engineer at all times during the life of the Contract.

Prior to pre-final inspection, furnish a reproducible copy of the record drawings. At the completion of the Contract and before final payment is made, furnish the Engineer one set of reproducibles and five CD disks of the corresponding AutoCAD Version 2000i (or compatible) files of the final approved record drawings reflecting all revisions herein described below:

Record drawings shall be based on the construction design drawings and shall include, at a minimum:

- Notations of material changes, if other than that specified
- Incorporation of Field Order Details
- Incorporation of Approved Change Orders
- Specific horizontal and vertical surveyed locations of all items constructed and any existing items that were found in discrepancy of the design plans and
- Notations of pay item quantity changes and or adjustments.

Record drawings shall contain a copy of all drawings included in the construction documents. Drawings warranting “no changes made or noted during construction” shall be so noted and included in the set of record drawings. Record drawings shall be signed and sealed by the Professional Licensed Engineer retained by the Contractor, and by the Contractor’s responsible representative. Record drawings will undergo an extensive review and approval process with the NJDEP before they are finalized and accepted.

This task will be paid for under Bid Item 1.5 – Demobilization.

1.2.25 Other Contracts

The Contractor shall coordinate their work to eliminate conflicts with any other on-site contractors including those for gas pipeline owners and the State. Other known on-site operations which may affect construction include, but are not limited to:

- General operations of the active landfill gas venting system.
- General operations of PSE&G and Transco-Williams.

The Contractor shall contact the operators of the active gas venting system to coordinate all work (including, but not limited to, the disabling of the existing 6” Penn Energy Gas Pipeline and activation of the new 6” Penn Energy Gas Pipeline). Access to the gas venting system shall be provided to the operators at all times.

The contractor shall comply with the PSE&G and Transco-Williams access agreements at all times.

1.2.26 Health and Safety

The attention of the bidders is directed to the fact that the submission of a site specific Health and Safety Plan (HASP) is required for this project. Minimum requirements for the submittal are presented in Section 3.1 of these Specifications.

1.2.27 Utilities

The attention of the bidders is directed to the fact that there is no water service on the property. The Contractor will be required to provide any water to the site necessary for completion of the work and

for sanitary facilities and trailers. There is non-potable water in a fire line located in front of the gas plant. A Town permit is required to utilize the fire line hydrant. The Contractor shall be responsible for obtaining a permit from the Town of Kearny and all associated fees if he chooses to utilize the fire hydrant.

Additionally, there is no electric service available in the office trailer area. There is no separate pay item for this task. The cost for this task should be included in Bid Item 1.4 – Mobilization and Bid Item 1.7 – Field Office Maintenance, as detailed in these sections.

There is currently no telephone and internet available in the proposed office trailer area. The Contractor shall install telephone and DSL Internet lines of sufficient quantity from the office trailer area to the Verizon telephone pole at the entrance to the site. The Contractor will be reimbursed for any Verizon connection fees and the monthly costs for internet and phone service under Payment Item 1.8.

1.2.28 Cleaning Up

During its progress of the work and the adjacent areas affected thereby shall be kept clean and all rubbish, surplus materials, and unneeded construction equipment shall be removed and all damage repaired so that the public and private property owners will be inconvenienced as little as possible.

Where material or debris has washed or flowed into, or been placed in, existing watercourses, ditches, gutters, drains, pipes structures, work done under this contract, or elsewhere during the course of the Contractor's operations, such material or debris shall be entirely removed and satisfactorily disposed of during the progress of the work, and the ditches, channels, drains, pipes, structures, and work, etc., shall, upon completion of the work, be left in a clean and neat condition.

On or before the completion of the work, the Contractor shall, unless otherwise especially directed or permitted in writing, tear down and remove all temporary buildings and structures built by them; shall remove all temporary works, tools, and machinery or other construction equipment furnished by them; shall remove, acceptably disinfect, and cover all organic matter and material containing organic matter in, under, and around toilet facilities, houses, and other buildings used by them; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by their operations, including temporary roads, staging and support areas, in a neat and satisfactory condition.

The Contractor shall thoroughly clean all materials and equipment installed by them and their subcontractors, and on completion of the work shall deliver it undamaged and in fresh and new-appearing condition. All mechanical equipment shall be left fully charged with lubricant and ready for operation.

The Contractor shall restore or replace any public or private property damaged by their work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall perform all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as

practicable as work progresses and shall not be left until the end of the contract period.

1.2.29 If and Where Directed Items

The Price Schedule may request bids on one or more Pay Items to be incorporated into the Project "if and where directed" by the Engineer. Such items or quantities may not be located on the Plans. The estimated quantities set out in the Price Schedule for such items are presented solely for the purpose of obtaining a representative bid price, but are not intended to indicate the State's anticipation as to the quantities of such items which are to be actually incorporated into the Project. Depending on field conditions, such "if and where directed" items may or may not be incorporated into the Project and if incorporated may be many times the estimated quantity or only a fraction thereof.

Incorporation of such items shall only be made on written directions of the State. In the absence of written directions, no such items shall be incorporated into the Project and if incorporated will not be paid for. The State may order incorporation of such items at any location within the Project, and at any time during the Contract Time. Claims for additional compensation shall not be made because of any increase, decrease or elimination of such items, nor because of an increase or decrease in the amount of work due to the field conditions encountered in incorporating such items into the Project.

1.2.30 Project Meetings

The Contractor shall anticipate attending the following meetings during construction. The Cost for attending these meetings shall be incorporated in the contract bid items. No additional payment will be made for attending meetings.

1.2.30.1 Pre-Construction and Construction Conferences

Before construction is started, preconstruction conferences shall be held. During the first conference The State, the Engineer, and the Contractor will discuss the procedures to be followed by the Contractor during the construction process.

A second conference, if necessary, may include representatives of The State, Engineer, Contractor, State and Local Authorities and would concern compliance with State and Federal regulations and the environmental plans and specifications.

1.2.30.2 Job Meetings

During construction, job meetings shall be held to review construction and restoration progress and to resolve difficulties, which might delay completion of the work. Attendees at these meetings shall include representatives of the State, the Engineer, the Contractor, and any appropriate subcontractors.

The Engineer may schedule regular job meetings at least weekly during the life of the Contract. The time and location of meetings is to be set by the Engineer. The Contractor, unless otherwise notified by the Engineer, is to have an authorized

representative attend each meeting.

The purpose of these meetings is for maintaining communication between the State, Engineer and Contractor, including the Contractor's subcontractors and suppliers. The meetings are to be used to coordinate various parts of the work, update construction schedules, prepare progress estimates and respond to questions that may be raised by the various participants.

END OF SECTION

1.3 Submittals

The following, Table 1.3-1 is a representative list of submittals to the Engineer that are required of the Contractor. The list may not be definitive and is included so the Contractor will be aware of the large number of submittals required of them. Material and sample requirements shall comply with Section 1.2.4 of these specifications. Submittal status should be updated monthly by the Contractor. Separate payment for this task will not be made.

**TABLE 1.3-1
SUBMITTALS**

Item	Tech. Spec. Section No.	Time of Submittal	To Be Submitted
· Initial Project Manning Report	General Conditions Article SC 3	Within 3 days of the effective date of the Agreement	1 original 4 copies
· Material Safety Data Sheets for all potentially hazardous materials to be used or provided during construction	3.1	Within 30 days of the effective date of the Agreement	1 original 4 copies
· Construction Plan, including Site Operation Plan and Schedule	3.2		
· Health and Safety Plan	3.1		
· Disposal of any Materials Off-Site	2.1	Within 5 working days after disposal.	Copy of disposal agreement (prior to disposal) Bills of Lading Disposal Receipts 1 original, 4 copies
· Shop Drawings Submittal Schedule	1.2.6	Prior to submittal of shop drawings. Schedule to be updated monthly or more frequent if needed	1 original 4 copies
· Field Office	1.6	*	**
· E&S Control Structures	2.2	*	**
· Roadway Aggregate Materials	2.3	*	**
· Infill Recycled Aggregate	2.3	*	**
· Gates	2.4	*	**

Item	Tech. Spec. Section No.	Time of Submittal	To Be Submitted
· Bollards	2.4	*	**
· Fencing	2.4	*	**
· Waste Disposal Areas	2.5	*	**
· Project Signs	2.7	*	**
· Gas Pipe	2.6	*	**
· Slab Crossing	2.6	*	**
· Piles	2.13	*	**
· Concrete	2.12	*	**
· Decontamination Facilities	3.2	*	**
· Topsoil	2.8	*	**
· Straw Mulching	2.8	*	**
· Fertilizer, Seed, Lime	2.8	*	**
· Geotextiles	2.9	*	**
· Coarse Aggregate (#57)	2.11	*	**
· Product Data Sheets and all requested relevant information, including proposed guarantees and warranties	---	At least one month prior to intended installation. Product data sheets must be approved by Engineer prior to installation.	1 original 4 copies
· Testing and Inspection Reports	1.9	Within 12 hours of completion	5 copies
· Laboratory Testing Results	1.9	Within 12 hours of testing	4 copies (2 copies each to the Engineer and NJDEP)
· Field Inspection and Testing Reports	1.9	At end of each work day	4 copies (2 copies each to the Engineer and NJDEP)
· Guarantees, Warranties, Inspection Certificates, Installation Instructions, Permits,		Within 30 days of installation	1 original 4 copies

Item	Tech. Spec. Section No.	Time of Submittal	To Be Submitted
and Quality Control Manuals for all installed products			
· Regulatory Inspection Certificates	1.6, 1.7, 1.10, 1.11	Within 30 days of installation	1 original 4 copies
· Survey Drawings	1.5	Within 15 days of Substantial Completion	1 Reproducible Set (4 sets of copies), 5 Copies of the Digital File Version
· Record Drawings	1.2, 1.5, 2.3	Within 15 days of Substantial Completion	1 Reproducible Set (4 sets of copies), 5 Copies of the Digital File Version
· Health and Safety Closeout Report	3.1	Within 15 days of Substantial Completion	1 Reproducible Set (4 sets of copies)
· Pre-Construction and Post-Construction Videos	1.2.21	Prior to mobilizing on site and at Final Construction Completion	4 copies
· O&M Manual		1 Month Prior to Final Construction Completion	1 original 6 copies

* - At least fifteen days prior to intended installation. Shop drawings must be approved by Engineer prior to installation.

** - 1 Original and 4 copies

END OF SECTION

1.4 Mobilization

1.4.1 General Description

Installation of temporary protective fence for the TRANSCO and PSE&G lines, as indicated in the drawings, shall be included in Mobilization. Temporary fencing shall consist of blaze orange, ultraviolet stabilized HDPE with a minimum tensile strength of 5000 lbs/in² in accordance with ASTM 648. Posts shall be flanged leg U-bar or flanged leg channel section having a uniform thickness of 0.118 inches or more. Posts shall be of sufficient length and reasonably anchored to support the entire barrier fence. Blaze orange construction fencing shall be installed on both sides of the TRANSCO pipeline on the East side of the Site. Fencing shall be installed at 10 feet from the line with a minimum height of 48". After the proposed 6" gas pipeline has been installed the contractor shall move the western-most construction fencing to 10 feet west of the newly installed gas pipeline.

Temporary chain-link fence shall be required around the trailers in the staging area. The temporary fencing shall be erected before construction activity in the staging area. Temporary fencing shall be constructed according to the requirements for permanent fence except used materials may be used. The fence shall be installed on stands made of hot dipped galvanized steel pipe at grade. Temporary fence shall be maintained as directed during construction and shall be removed and disposed of/recycled when no longer required on the Project. The Contractor shall also provide pedestrian access gates and locks for the access gates at the office trailer staging area. Temporary fencing and pedestrian access gates shall be paid for as a part of the mobilization.

There is currently no telephone and internet available in the proposed office trailer area. The Contractor shall install telephone and DSL Internet lines of sufficient quantity from the office trailer area to the Verizon telephone pole at the entrance to the site. However, the Contractor will be reimbursed for any Verizon connection fees and the monthly costs for internet and phone service under Payment Item 1.8

1.4.2 Traffic Police

A police officer shall be provided, if required by the Town of Kearny and/or the County, as approved by the Engineer, to assist with traffic control during construction. The police officer will be from the Kearny Township Police Department.

At the onset of the project the Contractor shall make application to, and establish an escrow account with, the Town of Kearny Police Department; contact Ms. Sharon Dominguez, 201-955-7893. The Town will be paid from that account for the officers involved in traffic control at the site. The Contractor shall maintain sufficient funds in the escrow account throughout the construction period for payment of the police officers involved. The Contractor will be reimbursed by the State from the Allowance set forth in Item 1.4.1.

The Contractor shall provide a minimum of two days advance notice to the Kearny Police Department Traffic Bureau, 201-998-1313 to have an officer on site for that day's work. The Contractor shall telefax the Engineer a confirmation of the phone call with the date and time of

request, number of officers requested, and name of the person at the police station who took the request.

1.4.3 Measurement and Payment

The Contractor will not be permitted to proceed with mobilization until the Contractor's Health and Safety and Construction Plans are complete and accepted by the NJDEP. Furthermore, no payments for any line item work will be processed until these plans are completed and the Notice to Proceed has been issued. Mobilization shall consist of preparatory work and operations, necessary for the initiation of the Contract, movement of personnel, equipment, supplies and incidentals to the Project site, and other work performed or costs incurred prior to beginning work. Mobilization shall include a pre-construction video, the construction of initial staging and support areas in the southwest corner of the site; construction entrances/exits; temporary access roads; generator electric power, installation and maintenance of temporary fencing around trailers, and water for the construction trailers. Mobilization shall also include installation of protection of gas lines required by TRANSCO and PSE&G (with the exception of the concrete mats which will be paid under Item 2.6.4). Mobilization shall not include payment for the roadway aggregate material, filter fabric, and clearing and grading associated with the mobilization activities. These items will be paid for under the unit price bid for each item.

Payment for Mobilization will be made on a lump sum basis upon completion of all the work items listed above, regardless of the fact that the Contractor may have, for any reason, shut down his work on the Project or moved equipment away from the Project and back again.

Payment for Bid Item 1.4 will be made in accordance with the following schedule:

- Upon completion of work required under Mobilization - the price bid for Mobilization, up to 5% of the Total Bid Price will be paid;
- Upon substantial completion of all work on the Project, payment for the amount bid for Mobilization in excess of 5% of the Total Bid Price will be made.

Payment for Bid Item 1.4.1 Traffic Police will be made monthly based on the actual cost as evidenced by paid bills from the Town of Kearny Police Department. An estimated amount to cover these reimbursements has been included on the Bid page as an allowance. The allowance is only for services provided by the police. The Contractor's overhead and profit costs, coordination costs, etc, associated with the effort are to be included in the Contractor's bid price under Item 1.4, Mobilization.

For Traffic Police, the Contractor will be paid for documented deposits made to the escrow account. Copies of invoices, the Contractor's payment checks, and paid receipts from the Police Department, must be submitted with the Contractor's invoice. Copies of the Officer's daily time sheets as well as a summary spreadsheet accounting for the various officers involved, their rates, hours per day, total hours, and charges for the period they are involved at the site, shall also be obtained by the Contractor from the Town of Kearny Police Department and submitted with the Contractor's invoices. Allowance in Item 1.4.1 not paid for traffic police will not be paid to the Contractor, and will result in a reduction in cost to the contract price.

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.4	Mobilization	Lump Sum
1.4.1	Traffic Police	Allowance

END OF SECTION

1.5 Demobilization

1.5.1 General Description

Site cleanup shall be performed in accordance with Section 1.2.28 and with any requirements in the Site Access/Use Agreements. A pre-final inspection will then be conducted to identify any remaining tasks to be completed. From these tasks, a punch list of remaining tasks will be prepared. These items must be finished before Demobilization is completed. Record drawing submissions and any other final submissions (paper work, warranties, health and safety closeout report, etc.) are required as part of this task.

Before pre-final inspection and after substantial completion, all areas occupied and/or disturbed by the Contractor in connection with the work shall be cleaned of all rubbish, excess materials, geotextiles, trailers, temporary structures and other equipment or materials and the area shall then be restored to the condition that existed prior to mobilization.

1.5.2 Record Drawings

Per the requirements of Section 1.2.24 and this section, the Contractor shall provide Record Drawings, which will be based on the construction design plans, and shall include, at a minimum:

- Notations of material changes, if other than that specified
- Incorporation of Field Order Details
- Incorporation of Approved Change Orders
- Specific horizontal and vertical surveyed locations of all items constructed and any existing items that were found in discrepancy of the design plans and
- Notations of pay item quantity changes and or adjustments.

The Contractor shall deliver six (6) copies of the draft Record Drawings for the State and Engineers comment. Record Drawings will undergo an **extensive** review period during which, the Contractor shall incorporate review comments into the final Record Drawings, including a re-survey if necessary.

1.5.3 Record Drawings Deliverables

Bond Paper Prints

Final delivery for the project site shall include five (5) sets of white bond paper prints (36" x 42") of the survey maps scaled at 1" = 50' (or an appropriate scale to fit 36" x 42" sheets). Each set shall be signed and sealed by a licensed surveyor. It is understood that several drawings will be required to make up one complete map, including a cover sheet with plan sheet key map.

Electronic Files

Final delivery for the site shall include five (5) electronic file of the survey photography and mapping on a CD-ROM. This electronic file shall either be in 2000i AutoCAD native format (also known as DWG format), or in AutoCAD's drawing exchange format

(also known as DXF format). Electronic delivery of the survey photography and mapping shall include a digital coverage of each layer in New Jersey State Plane Coordinates suitable to be uploaded directly into NJDEP's Geographic Information System. Contours shall be zero-width 3D polylines, layer separated into intermediate and index intervals and contour labels shall follow the same scheme. All contours shall be assigned elevations. Spot elevations shall be AutoCAD points with appropriate Z-values. All entities on the topographic maps shall be included in separate layers with appropriate names, such as "gas line" or "tree line", etc.

Backup Information

In addition to the electronic file deliverable, the following backup information shall be provided:

- One (1) copy of all field notes, sketches, and calculations;
- Tie details for all established benchmarks and ground control;
- One (1) copy of all relevant documents associated with the site survey;

1.5.4 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.5	Demobilization	Lump Sum

Payment for final cleanup and Demobilization will be made on a lump sum basis upon completion of all the work items listed in this section and the post-construction video.

END OF SECTION

1.6 Field Office Setup

1.6.1 Description

Along with the separate office and equipment needed by the Contractor, the Contractor shall provide 1 office trailer to be used exclusively by the State and the Engineer.

The final location of the trailer shall be approved by the Engineer.

1.6.2 General requirements for field office are:

Adequate free parking shall be provided and maintained for the field office.

Materials

General Construction: The office shall be an approved and weatherproof building or mobile trailer of the type specified in the contract documents. The trailer shall have insulated double walls, floors and roof. The structure shall have a minimum ceiling height of 7 feet and shall be provided with weatherproof windows and weatherproof doors each equipped with adequate locking devices, each with 4 keys. All internal doors will be provided with locks and keys. Each window shall have a minimum area of eight square feet, shall be screened, equipped with vinyl blinds and of a type that will open and close to provide adequate ventilation. The office shall be placed on concrete blocks and leveled, with full-length skirts provided. A firmly secured railed entrance platform and steps shall be provided at each exterior door. The office shall have heavy-duty security screens bolted from the interior. Horizontal locking bars, with like keyed master locks, and shall be provided on all exterior doors. The field office and their associated equipment shall be new, or recently renovated to new condition subject to Engineer's approval. Full length skirts will not be permitted on trailers. Trailer shall be strapped and anchored to the ground.

- **Lighting:** Electrical light, non-glare type luminaries to provide a minimum illumination level of 100-foot candles at desk height level.
- **Heating and Cooling:** Adequate equipment to maintain an ambient air temperature of 70° F. $\pm 5^\circ$.
- **Water Cooler and Heater** with bottled water supply and paper cup dispenser.
- **Adding Machine:** Tape type registering to at least ten digits, four function, and supply of paper as needed.
- **First Aid Kit:** Containing the following minimum list of supplies:

Quantity	Size	Item
32	19 by 75 mm	Brand sheer bandages
20	25 by 75 mm	Brand fabric bandages

4	Medium	Non-stick pads
2	50 mm	Soft-gauze bandages
2		Oval eye pads
1	1300 mm	Triangular bandage
1	13 by 4500 mm	Hypo-allergenic first-aid tape
10		Antiseptic wipes
1	3.5 g	Burn cream, foil pack
1	227 g	First-aid cream
1	100 caplets	Tylenol Extra-Strength caplets
1		Scissors
1		Tweezer
1		First-aid guide
1	15 mL	Ophthalmic irrigation solution
1		Contents cards
10		Disposable gloves
10	0.33 mL	Ammonia inhalants

- Toilet: A portable sanitation unit, ADA Compliant, H 90" x W 77" x D77" shall be provided near the State/Engineer Trailer. This unit shall be for the exclusive use of the State and Engineer Personnel and shall be padlocked after hours to prevent vandalism. Toilet facilities shall be cleaned and sanitized a minimum of once per week except from May 15 through September 15 in which these facilities shall be cleaned and sanitized a minimum of twice per week.
- Lockers: A heavy metal locker (with lock and keys) of sufficient size for storage of surveying instruments, cameras and testing equipment and a wooded locker or closet for storage of clothes, hats, and boots. The heavy metal locker shall be securely fastened to the trailer body.
- Fire Extinguisher: Non-toxic, dry chemical, fire extinguisher meeting Underwriters Laboratories, Inc., approval for Class A, Class B and Class C fires with a minimum rating of 2A: 10B: 10C.
- Thermometer: An outdoor minimum - maximum thermometer.
- Pencil Sharpener: One battery or electrically operated pencil sharpener.
- Photocopying Machine: Heavy duty, electric, dry process photocopying machine with automatic feed and enlargement/reduction capacity capable of making photocopies ranging in size from 8 1/2" X 11" to 11" X 17" and an adequate supply of copy paper (8 1/2" x 11", 8 1/2" x 14", 11 x 17") and toner. The supply of copy paper and toner shall be replenished by the Contractor as required by the Engineer.
- Signs: The Contractor shall furnish and install necessary signs to locate and identify the State/Engineer office.

1.6.3 Additional Requirements, State/Engineer Office:

Type A field office shall be of weatherproof construction located on or in the immediate vicinity of the Project, having a floor area of not less than 520 square feet and a ceiling height of not less than 7 feet, and having partitions and doors providing three communicating rooms, one with a floor area of not less than 260 square feet and two with a floor area of not less than 130 square feet each. And furnished as follows:

State/Engineer Office

- 4 - Suitable office desks with drawers and locks.
- 4 - High Quality Swivel Chairs.
- 1 - 3' x 6' High Quality Folding Table.
- 6 - Metal Cushioned Office chairs.
- 1 - Or more clothes closets of ample size for maximum office requirements.
- 1 - Heavy Duty 3 hole paper punch.
- 1 - Refrigerator (Frigidaire 4.4 Cu. Ft. Compact Refrigerator or approved equal).
- 1 - Coffee Maker.
- 1 - Microwave Oven.
- 4 - Three-shelf book cases 3' w x 3' h x 1'd.
- 4 - Waste-paper receptacles.
- 3 - High Quality File Cabinets, 4 drawers each, legal size, with lock and keys.
- 1 - Drafting-type tables each 3 feet by 6 feet and supported by wall brackets and legs.
- 1 - Draftsman's stools.
- 1 - Calculator, printing, 12 digit.
- 1 - Metal storage cabinet with 4 adjustable shelves, tumbler lock and two keys (approximate size 72 inches high by 36 inches wide by 18 inches deep).
- 2 - Standard pencil sharpeners.
- 3 - Fire extinguishers, one mounted in each room
- 1 - Paper Towel Dispenser
- 1 - Broom and dust pan
- 1 - Multifunction Fax/Printer/Scanner Machine, Color Canon Pixma MX850 or equal acceptable to the Engineer. Contractor shall provide all paper, toner, cartridges, ink or parts to keep the machine fully functional for the duration of the project. Machine shall be repaired or replaced as needed to provide uninterrupted service. Machine shall modified and/or all additional equipment be provided to allow unit to send/receive faxes from wireless communication services provided in Section 1.8.
- 1 - Porcelain on steel markerboard (4'h x 8'w, Dry Erase Type) for dual use as a magnetic bulletin board and writing surface. Steel shall be 24 gauge standard steel. Shall include, a full-length map rail and accessory tray with silicone rubber Dura-Safe™ corners, Smooth low-gloss surface, dust-free surface without ghosting and factory framed in anodized aluminum or solid wood. Shall include L-clips, rawl plugs and screws for installation and warranty.
- 24 - Heavy-duty three ring binders, 4" width minimum.

1.6.4 Office Construction Details

General Requirement: The buildings shall be fully equipped and made available for use and occupancy by the State and Engineer immediately after roadway surface is installed in the site

support area and before any other contract work.

All buildings shall be maintained in good condition and appearance by the Contractor for the designated period after which all portable buildings or trailers, fencing, surfacing and utilities shall be removed from the location, the areas cleaned, and left in a neat and acceptable condition.

1.6.5 Other Equipment

The Contractor shall also provide the following:

- A Topcon AT-G auto level (or equal), level tripod stand, rod, and 200 foot long surveyor's chain, all with carrying cases, to spot check long areas with less man power.

1.6.6 Submittals

Submittals shall be according to Section 1.3.

1.6.7 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.6	Field Office Setup	Lump Sum

All field office items will also become the property of the Contractor at the conclusion of the project.

Separate payment will not be made for setup or maintenance of the Contractor's field office(s).

END OF SECTION

1.7 Field Office Maintenance

1.7.1 General Description

Maintenance of the construction offices, for the time required, shall consist of maintaining the furniture, equipment, supplies and utilities, providing lavatory supplies, janitorial and waste disposal services weekly, and snow removal services. Maintenance of the field office shall include the monthly rent. The fax machine and related equipment shall be repaired or replaced within 48 hours of becoming inoperable or defective. Equipment should be maintained in working order for the duration of the contract.

Contractor shall provide these services for both State and Engineer's offices including:

- janitor and waste disposal services (weekly)
- maintenance of all equipment provided with the trailers
- furniture maintenance and repair as needed
- bathroom supplies as needed
- coffee service (as needed)
- bottled water (as needed)
- snow removal (>1" snowfall in 24 hours)
- office equipment removed/replaced (as needed)

The Contractor shall be responsible, until use and occupancy of the Engineer's and State's offices are relinquished, for any and all damage, direct or indirect, of whatever nature, occurring to property which is kept in State's and Engineer's offices that the Contractor is required to furnish as an item(s) of the contract. Such damages would include any loss caused by, but not limited to, fire, theft, vandalism, or malicious mischief.

1.7.2 Electricity

The Contractor shall provide electrical service provided with generators during the contract period for the State's, Engineer's, and Contractor's power uses. The Contractor is required to provide sufficient electrical power via generator(s) to meet all Field Office needs during working hours and as needed by the Contractor, State, or Engineer. The Contractor shall follow all regulatory requirements for proper generator usage.

1.7.2 Submittals

Submittals shall be according to Section 1.3.

1.7.3 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.7	Field Office Maintenance	Month

Payment for Bid Item 1.7 Field Office Maintenance, including the use and maintenance of the field offices and various types of surveying equipment will be made for each month or fraction thereof that the field office is required, starting with the first month after Bid Item 1.6, Field Office Setup, is complete, except that payment will not be made for any month or fraction thereof due to the Contractor's delays. HVAC, water, providing electrical service to the trailers, and sanitary service shall be considered incidental to field office maintenance and not paid for separately. The Contractor shall not be paid additional monthly maintenance costs beyond the Contract limits due to his delays.

END OF SECTION

1.8 Internet / Telephone Service

1.8.1 Telephone Description

The intent of this section is to provide the Contractor with the needs required by the NJDEP for this Contract. The NJDEP will provide the Contractor with the actual service system specifications at time of Contract award.

The Contractor shall provide a separate phone for each room. Each phone will be a multi-line type. Phones shall have a "speaker" phone capability. The location of telephone line jacks will be approved by the Engineer.

The phone service will include the following services at a minimum:

- A nationwide long distance plan.
- Voice Mail with the capability of answering any of the voice telephone lines within the respective office. Callers will be able to leave messages that can be retrieved by using the touch-tone phone, anytime. The service will automatically provide an alert when a message has been left on the Voice Mail.
- Caller ID that will display the number of the person calling (for all unblocked numbers). It may also display the name of the person if they are stored in the phone's memory.
- Call Waiting that will provide an alert of an incoming call when the phone is in use.
- Call forwarding service that will allow calls to be automatically forwarded to another phone number, including home, office or pager. Airtime charges apply for the duration of the forwarded call.
- 3-Way Calling capable of speaking with two other people at the same time.
- 411 Connect capable of dialing information.

1.8.2 Internet Description

The internet connection shall be wireless high-speed DSL service capable of connecting up to 3 concurrent users simultaneously. The Contractor shall provide five email accounts, and provide spam and virus protection.

1.8.3 Measurement and Payment

Payment for Bid Item 1.8 Internet / Telephone Service will be made monthly based on the actual cost as evidenced by paid bills from the internet and telephone companies, including Verizon connection fees to establish service. An estimated amount to cover these reimbursements has been included on the Bid Documents.

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.8	Internet / Telephone Service (State and Engineers Office)	Allowance

END OF SECTION

1.9 Gas Pipeline Engineering and Inspection

1.9.1 General Description

The Contractor shall notify the Williams-TRANSCO Gas Pipeline Company and PSE&G prior to working on their easements and/or over or on their gas pipelines. If required by Williams-TRANSCO or PSE&G, the Contractor shall obtain their gas pipeline engineering and inspection services. Payment for the gas pipeline engineering and inspection service fees will be made by the Contractor and reimbursed by the State from Pay Item 1.9.

1.9.2 Submittals

A copy of the fully executed Agreement shall be provided to the Engineer.

1.9.3 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
1.9	Gas Pipeline Engineering & Inspection	Allowance

The Contractor will be reimbursed for Williams-TRANSCO Gas Pipeline Company and PSE&G engineering and inspection service fees under Bid Item 1.9, Gas Pipeline Engineering and Inspection, upon submission of a copy of the bills to NJDEP. No payment will be made for the Contractor's handling or administrative and overhead expenses under this Pay Item. The Contractor is responsible to pay Williams-TRANSCO Gas Pipeline Company or PSE&G promptly, and the State will not be responsible for interest or penalty charges due to late payments as a result of the Contractor's delays.

END OF SECTION

1.10 Geotechnical Testing

1.10.1 Description

The Contractor shall retain an Independent Testing Agency (ITA), as approved by the Engineer, to perform QA/QC testing. The ITA shall perform or subcontract QA/QC tests to a qualified laboratory as approved by the Engineer. Testing locations shall be as designated and/or approved by the Engineer.

1.10.2 Reference Standards

- A. NJDOT Standard Specifications.
- B. ASTM Standards for Soil and Rock; Building Stones Section 4, Volume 04.08.
- C. ASTM Standards for Concrete and Aggregates
- D. ASTM Standards for Geosynthetics, latest edition.
- E. AASHTO Standards for soils, aggregates, pavement structures.
- F. USCE Manual - EM1110-2-1906, Appendix VII and X.
- G. OSHA Standards for Health and Safety issues.

1.10.3 Independent Testing Agency

The Independent Testing Agency shall provide qualified experienced personnel as necessary to perform field testing and sampling of on and off-site materials. At a minimum these personnel shall be individually licensed as nuclear gauge operators by the Nuclear Regulatory Commission (NRC), be certified at minimum grade 1 level by the American Concrete Institute (ACI) and have at least two (2) years experience in the sampling and testing of construction materials as applicable to the assigned task of responsibility.

The agency's laboratory shall be adequately equipped and manned to meet the requirements of testing, be accredited by the American Materials Reference Laboratory (AMRL) and participate in yearly AMRL reviews.

The testing agency shall at a minimum be capable of performing the following testing.

1. ASTM Standard Tests:

- C39: Test Method for Compressive Strength of Cylindrical Concrete Specimens (“Concrete Compressive Strength”)
- C109: Test Method for Compressive Strength of Grout (“Grout Compressive Strength”)
- C143: Test Method for Slump of Hydraulic Cement Concrete
- C231: Test Method for Air Content of Freshly Mixed Concrete by Pressure Method
- C1064: Test Method for Temperature of Freshly Mixed Portland Cement Concrete
- D418: Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils (Atterberg Limits)
- D422: Particle Size Analysis of Soils (AASHTO T27)
- D427: Shrinkage Factors of Soils
- D698: Test for Moisture-Density Relationship of Soils and Soil-Aggregate Mixtures Using 5.5-lb. (2.49-kg.) Rammer and 12-in. (305-mm) Drop. (AASHTO T99, Method C) (“Standard Proctor”)
- D1556: Test for Density of Soil in Place by the Sand Cone Method (or D2167)
- D1557: Test for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10-lb. (4.54-kg) Rammer and 18-in. (457-mm) Drop (“Modified Proctor”)
- D2167: Test for Density of Soil in Place by the Rubber-Balloon Method (or D1556)
- D2216: Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
- D2922: Tests for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- D2950: Density of Bituminous Concrete in Place by Nuclear Method
- D3017: Test for Moisture Content of Soil and Soil Aggregate in Place by

Nuclear Methods (Shallow Depth)

D4253: Relative Density (or D4254)

D4437 Field Seam Destructive Testing (Peel and Shear) (or D3083, D413)

2. Other tests: All other tests as specified.

Testing equipment shall be calibrated in accordance with manufacturer recommendations and frequency or at a minimum once per year. Certificates of calibration shall be available for the Engineer's review.

The Testing Agency laboratory shall be adequately staffed with qualified personnel to perform required testing in sufficient turnaround time so as not to delay or interfere with the Contractor schedule. Minimum testing turnaround time capabilities shall be defined as part of the subcontractor (testing agency) bid to the general Contractor. It shall be the Contractor's responsibility to meet construction schedules as approved by the Engineer.

The ITA shall maintain an in-house P.E. to review all testing reports and data prepared by ITA.

1.10.4 Testing Agency Responsibilities

Procure samples as required by the testing and sampling requirements of each work item. Sample locations shall be as approved by the Engineer.

Perform specified inspection, sampling, and testing of products in accordance with specified standards.

Test materials and mixes for the compliance requirements of the Contract Documents.

Promptly report testing results to the State/Engineer and Contractor within the agreed upon turnaround time in accordance to the requirements of Section 1.3.

Perform additional inspections and tests required by the State/Engineer, in accordance with Contract requirements.

1.10.5 Testing and Inspection Reports

A. Laboratory testing results shall be submitted to the Engineer and Contractor in duplicate within 12 hours of completion of testing. Reports shall include at a minimum the following:

1. Name, address and phone number of testing agency
2. Project title and number
3. Name of inspector/sampler/person performing analysis
4. Date, time, location, and description of sample
5. Date, type and procedure of testing performed

6. Testing results
 7. Report date
- B. Field Inspection and Testing Reports shall be completed and submitted to the Engineer at the end of each day in the form of a Daily Field Report (DFR). DFR's shall be completed by each individual inspector on-site and may be accompanied by a summary report prepared by the inspection supervisor. Daily Field Reports shall include at a minimum:
1. Name of testing agency
 2. Project title and number
 3. Name of Inspector/name and classification of person completing the report.
 4. Testing that may have been performed that day, along with results, location and material tested.
 5. Date and weather conditions
 6. Contractor, Supervisor and equipment
 7. Duration of time on-site
 8. Signature of person completing report
 9. Detailed documentation of activities observed, monitored and tested during the day and any problems that may have arisen and corrective action taken.

Submittals shall be in accordance with Section 1.3.

1.10.6 Limits of Testing Agency Authority

- A. Testing Agency may not release, revoke, alter, or enlarge on requirements of Contract Documents.
- B. Testing Agency may not approve or accept any portion of the work.
- C. Testing Agency may not assume any duties of Contractor.
- D. Testing Agency has no authority to stop the work.

1.10.7 Contractor Responsibilities

- A. It shall be the Contractor's responsibility to provide full cooperation to the Testing Agency, State, and Engineer in accessing areas of testing and inspection.
- B. Provide incidental labor, equipment and facilities to provide access for QA/QC personnel for work to be tested, to obtain and handle samples at the site or at source of products to be tested, and to facilitate tests and inspections, storage and curing of test samples.
- C. Notify Engineer and testing agency 24 hours prior to expected time for operations requiring inspection and testing services.

1.10.8 Schedule of Tests and Inspections

A. Inspection and testing requirements are detailed in the individual sections of this specification.

1.10.9 Testing Frequencies

The following Table 1.10-1 provides general testing frequencies. Individual specification sections may provide additional testing and frequency requirements. Contractor shall perform the more stringent testing frequency required in the event there is a contradiction between Table 1.10-1 and the individual material specification section.

**TABLE 1.10-1
TESTING FREQUENCIES**

Material	Testing Frequency	Specification Section
Recycled Aggregate Fill (Type A and B)	1 Sample/3000 Tons	2.3
Topsoil	One 10 Pound sample/Source	2.8
Geotextile Type B	1 Sample/10,000 Square Feet	2.9
Geogrid	1 Sample/10,000 Square Feet	2.9
Fill I-11	1 Sieve Analysis / Proposed Borrow Source	2.10
Fill I-13	1 Sieve Analysis and 1 Proctor/ Proposed Borrow Source 1 Compaction Density Test/2,500 Square Feet of Each Lift	2.10
Concrete	1 Set of 4 Cylinders per 50 Cubic Yards with at least 1 set of Cylinders Collected for each day that Concrete is placed. First 5-25 Cubic Yards of Pour per day/ Composite Sample Each Additional 50 Cubic Yards of Pour per day/ Composite Sample	2.12

1.10.10 Measurement and Payment

The cost of performing the required testing and sampling, including personnel, consumable supplies, power, utilities, and report preparation will be paid under the individual work items for

which testing is required.

The State will pay the bid unit prices for the following additional ex-situ tests that pass which may be requested by the State Construction Manager. The State will not pay for tests that fail or for tests not requested by the State.

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
1.10.1	Sieve Analysis, (ASTM D422), if and where Directed	Passing Test
1.10.2	Relative Density (ASTM D2922, Method B), if and where directed	Passing Test
1.10.3	Modified Proctor (ASTM D1557), if and where directed	Passing Test
1.10.4	Concrete Compressive Strength (ASTM C39), if and where directed	Passing Test

END OF SECTION

1.11 Soil Borings

1.11.1 General Description

The Contractor shall perform two Soil borings to confirm slope stability investigations previously conducted at the site. The locations and depths of the additional proposed soil borings are as follows:

- Along the proposed access road at Station 7+30, 80 feet deep
- Along the proposed access road at Station 12+50, 80 feet deep
- Along the proposed access road at Station 18+00, 80 feet deep
- Along the proposed access road at Station 72+50, 80 feet deep

1.11.2 Execution

When the varved clay layer is encountered, the Contractor shall collect a total of forty (40) soil samples at depths as directed by the Engineer and NJDEP. A Denison Core Barrel shall be used for sampling with the cutting bit having a 1.5" minimum lead behind the sampler nose cone. Each Denison sample shall be a minimum of 24" long, with a minimum 4" diameter, and contained within a clear plastic liner. Sample ends are to be sealed with plastic caps and taped to prevent loss of moisture. The soil samples will be retained by wall friction and not with a basket type retainer. Samples will be turned over to the Engineer and DEP for testing. The State will not be responsible for the damage to the Denison Sampler during drilling or costs incurred due to delays caused by damaged or defective equipment.

If borings are performed prior to construction of the access road, the Contractor shall be aware that access to boring locations is difficult due to very soft and unstable ground conditions. The driller is responsible to notify the NJ One call System to locate any buried utilities prior to any drilling.

1.11.3 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
1.11	Soil Borings	Linear Foot

Payment for this work will be per linear foot of drilled boring. If a boring is abandoned, due to an obstruction as approved by the Engineer, Contractor will be paid the bid unit price per linear foot for drilling and abandonment. This includes mobilization, all costs involved with obtaining permits, drilling, sampling, cleanup, and demobilization.

END OF SECTION

2.1 Site Clearing and Grubbing

2.1.1 General Description

This work shall consist of clearing the site area of vegetation, debris and above-ground site improvements as indicated on the plans by the limits of disturbance in preparation for construction operations.

2.1.2 Existing Conditions

Variations to conditions or discrepancy in actual conditions as they apply to site preparation operations are to be brought to the attention of the Owner prior to the commencement of any site work.

The Contractor is alerted that existing grades around the base of the landfill are soft, wet and offer poor stability. In addition, the Contractor will have limited access for turning. The Contractor shall familiarize himself with the existing conditions prior to the start of work. The Contractor shall anticipate difficulties with equipment maneuvering, material delivery, material installation, and all other items that may be encountered due to the site conditions.

Later claims for additional compensation due to additional labor, equipment or material required on account of difficulties encountered or underground water conditions will not be considered.

2.1.3 Protection

Locate, protect, and maintain bench marks, monuments, and other reference points. Repair if damaged or destroyed, at no cost to the State.

Locate and identify existing utilities that are to remain and protect them from damage. Protect existing utilities during clearing operations. Re-establish if disturbed or destroyed, at no cost to the Owner.

Notify the New Jersey One Call System between 5 and 10 days prior to any excavation. Phone: 1-800-272-1000.

Conduct operations with minimum interference to public or private accesses and facilities. Maintain access and egress at all times and clean or sweep any roadways daily or as required by the governing authority. At such times as deemed necessary by the State, dust control shall be provided in accordance with the Dust Control Plan (Section 3.2.3).

Locate and protect bench marks, property corners and all other survey monuments from damage or displacement. If a marker needs to be removed it shall be referenced by a Licensed Land Surveyor and replaced, as necessary, by the same.

Provide traffic control as required and as indicated on the Traffic Control Plan, in accordance with the Contract Documents, the U.S. Department of Transportation "Manual of Uniform Traffic

Control Devices" and the New Jersey State Department of Transportation requirements.

2.1.4 Materials

Protection Materials: May be new or used, suitable and adequate for the intended purpose.

2.1.5 Erosion and Sedimentation Control

Contractor shall refer to the Erosion and Sedimentation Control Plan for Staging of Construction Activities.

If Contractor would like to revise the Staging of Construction Activities as shown on the E&S Control Plan, approval of revised staging must be obtained from the Hudson, Essex & Passaic County Soil Conservation District, and the New Jersey Department of Environmental Protection. Costs for this work shall be borne by the Contractor.

Submittals shall be in accordance with Section 1.3.

2.1.6 Preparation

Verify that existing plant life and clearing limits are clearly tagged, identified and marked in such a manner as to insure their safety throughout construction operations.

The Contractor shall cut through the brush to provide easy access for their surveyors. While cutting through the brush, extreme care must be taken by the Contractor to avoid damaging the existing gas collection system. The Contractor should be aware of hidden debris in the brush that can damage to their equipment.

2.1.7 Clearing

Clear areas required for access to site and execution of work. The Contractor shall dispose of vegetative waste within the waste relocation area shown on the plans.

Depressions caused by clearing and grubbing operations are to be filled with Common Fill to existing elevation to avoid water ponding. There is no separate payment item for materials and installation of common fill for this work. This cost shall be incorporated into the Site Clearing and Grubbing line item.

All slopes of cuts, embankments, ditches, channels, waterways and all structures, both old and new, shall be cleared of all brush, hedge, weeds, heavy vegetation and other objectionable material growth. Clearing shall extend to a maximum of 5 feet beyond the top of slopes of roadway excavation and top of slopes of ditches and channels. No clearing shall be performed beyond the limits of disturbance indicated on the plans.

The Contractor has the option of removing trees (above grade) from the site if they are to be recycled or processed for use. Any roots or stumps that are removed from below grade shall be considered waste and disposed of in the disposal area on top of the landfill, as indicated on the

drawings. The Contractor shall remove grass, trees and stumps and all other debris from the site to the waste disposal area indicated on the drawings (except for as noted above). Trees, stumps, and other woody and compressible debris shall be chipped before disposal. All disposed debris shall be treated as waste material and the contractor shall ensure that it is placed under a soil cap.

Contractor has option to fill over the existing landfill cap, using Common Fill or RA Type B, as approved by the Engineer, to provide stable access for trucks into the Waste Relocation Area. Cuts into the landfill cap are not permitted. Disposal of Waste Fill on existing roads will not be allowed.

The fence removed from the north side of the landfill, and any other electrical poles and electric wires shall be disposed of off site at an approved NJDEP facility. All materials shall be reasonably cleaned and power washed of landfill material and debris prior to offsite disposal.

Any exposed waste materials shall be covered with six (6) inches of clean soil or approved alternative cover material at the end of each working day (or more frequently if odors or vectors are a problem). A minimum of twelve (12) inches of clean soil shall be applied to all wastes exposed for any period exceeding 24 hours and extending up to six months. A minimum of two (2) feet of final cover shall be applied and maintained over the waste material upon project completion.

The existing gas collection system shall not be damaged. The Contractor shall meet with the Operator of the Gas Plant to discuss the layout of the landfill gas collection system and make every effort to protect the gas system from their own truck traffic including placing markers, flags, cones and barricades. Any damage caused to the system shall be repaired immediately by the contractor at no charge to the State. In the event that there is damage to a well or pipe, the Contractor shall not make any repairs without first notifying the Operator so the plant can be shut down without damage to the system. Repairs shall not be made without the Operator's concurrence.

Appropriate health and safety measures shall be employed during the site clearing work, in accordance with Section 3.1 of these Specifications, since explosive gases and waste or contaminated materials may be encountered.

Abandoned trailers located at station 53+00 on Lot 1C shall be removed and disposed off-site. The chain-link fence shall be removed from the north side of the landfill. Any such materials or scrap recycling which has salvage value MUST be documented and a credit given to the State. A receipt for the amount received by the Contractor for these materials, from the recycling facility where it is disposed, must be provided to the Engineer. This amount will be a credit for the State to be deducted from the Contractor's payment invoices.

Contractor shall provide bill of lading/manifests to the Engineer at the end of each work day for all materials disposed offsite.

2.1.8 Pruning

When pruning is required, prune tree branches injured during clearing operations, or when directed by Engineer by making clean cuts, free from splinters, flush with parent branch or trunk.

Do not disturb branches or roots of any trees which are to remain.

2.1.9 Tires

Tires encountered within the limits of work shall be staged on top of the landfill, in a designed part of the waste relocation area, as approved by the Engineer. Tires shall not be reburied onsite but cut in quarters and pressure washed to remove all surficial dirt, as approved by the Engineer. Contractor shall assume 300 tires for bidding purposes. After staging and washing NJDEP will sample tires for disposal purposes. NJDEP will then negotiate a Change Order with the Contractor, or another vendor, for offsite disposal.

2.1.10 Well Abandonment

The Contractor shall abandon the existing groundwater monitoring wells where indicated on the plans. The Contractor shall abandon the wells as per NJDEP regulations for abandonment of monitoring wells, including obtaining permits. Existing well records are available in Appendix E. The following wells shall be abandoned:

- MW-2D
- MW-2S
- MW-01D2
- MW-1S
- MW-1D
- MW-4S
- MW-4D
- MW-04D2

2.1.11 Wetlands

The Contractor shall locate and mark out the wetlands situated along the south and east sides of the landfill prior to any clearing operations. The Contractor shall not perform any clearing of the wetlands located on or off site, except as noted in the paragraphs below. The Contractor shall protect the wetlands from damage due to clearing operations and shall be responsible to restore any damage to these wetlands from his operations as well as pay any fines that may arise due to failure to protect them.

During the construction of the proposed perimeter access road, the Contractor will clear and grub wetland areas F1 and F2 which are located to north of the landfill (see plans). These wetland areas will eventually be filled to proposed roadway elevations. Therefore, it is not necessary for the Contractor to protect these wetlands during clearing and grubbing operations. Wetland disturbance shall be limited to the areas within the Limit of Disturbance as shown on the drawings.

2.1.12 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.1	Site Clearing and Grubbing	Lump Sum

The Contractor shall be paid the lump sum bid price for Bid Item 2.1, Site Clearing and Grubbing, upon completion of clearing the areas as shown on the Drawings. Separate payment will be made for Common Fill or RA Type B according to Bid Items 2.3.2 and 2.10.2.

A receipt for the amount received by the Contractor for the trailers, fencing, and any other materials to be removed off-site for which there is salvage value, from the recycling facility where it is disposed, must be provided to the Engineer. This amount will be a credit for the State to be deducted from the Contractor's payment invoices.

END OF SECTION

2.2 Erosion and Sedimentation Control

2.2.1 General Description

The Contractor shall employ soil erosion and sediment control measures during the life of the project to control erosion and minimize sedimentation of rivers, streams, lakes, reservoirs, wetlands, floodplains, bays, and coastal waters. This work shall consist of the construction and maintenance of various temporary soil erosion and sediment control measures, including relocating them as required for stage construction. The Soil Erosion and Sediment Control Permit has been obtained (the approval is included in Appendix B) and the Contractor is to comply with its conditions.

The Contractor shall incorporate all permanent pollution control features into the project at the earliest practicable time. The Contractor shall install temporary sediment control devices in addition to those required to be installed in accordance with the Erosion and Sediment Control Plan, including but not limited to silt fence, hay or straw bales, and rock filters, if and where directed by the Engineer. Silt Fence or hay bales shall include furnishing and installation of sediment barriers and the maintenance of the same in accordance with subsection 2.2.3.

2.2.2 Materials

2.2.2.1 General

Wood stakes, posts and boards shall be solid, reasonably knot-free lumber conforming to the nominal size specified on the plans.

Coarse aggregate #57 shall consist of broken stone or washed gravel. Broken stone shall be uniform in texture and quality in accordance to Sections 2.11 of these specifications.

Other materials shall conform to the following Sections:

Mulch	2.8
Seed Mixtures	2.8
Geotextiles	2.9

2.2.2.2 Silt Fence

Silt fence shall consist of geotextile fabric, Mirafi 100X, or approved equivalent by the Engineer. Silt Fence height shall be at least 3 feet to provide for a 2.0 foot high fence after 1.0 foot of fabric is buried in the existing soil. Fence posts shall be installed at a slight angle toward the anticipated runoff source. Sections of fabric shall be overlapped a minimum of 1'-6", then joined in such a manner that, when in operation, the sections work effectively as a continuous fence.

2.2.2.3 Haybale Barriers

Haybales shall be of timothy, redtop, or native grasses. Straw shall be stalks of oats, wheat, rye, or barley relatively free from seeds, noxious weeds, and other foreign matter, free from decay matter

and from organic matter soluble in water and shall be bound with wire or baling twine. The twine shall be an ultraviolet light stabilized polypropylene which has a knot strength of 170 pounds and straight break strength of 300 pounds.

Haybale barriers shall be installed around the waste relocation pile, and, utilized by the Contractor on an as-needed basis as an emergency erosion control measure. Haybales shall be embedded 4 inches into the ground and anchored in place with 2 wood stakes per bale.

2.2.2.4 Stabilized Construction Entrance

A temporary construction entrance constructed of aggregate on top of roadway geotextile type B shall be used to reduce or eliminate tracking of soils material onto paved streets and other paved areas.

Contractor shall install the stabilized construction entrance at locations where construction traffic enters and leaves construction site from or onto paved street or paved area, as shown on the plans.

Contractor shall place roadway geotextile, type B, over entire graded area and cover with a minimum 12" thick layer of 1 to 2-1/2 inch stone or recycled concrete.

Contractor shall perform maintenance on Stabilized Construction Entrance as follows:

- a. Periodically and as directed by Engineer, apply layer of stone or recycled concrete to maintain entrance.
- b. Immediately remove soils material or debris tracked onto areas of adjacent street or paved areas.

Contractor shall remove and restore stabilized construction entrance area following restoration schedule upon completion of project and when entrance is no longer required.

2.2.2.4 Turbidity Barrier

Contractor shall furnish, install, and maintain Floating Turbidity Barriers at the locations indicated on the plans. The intent of this work is to intercept silt caused by construction operations, so that the project can be completed. Barrier shall consist of 10 mil thick polyethylene plastic sheets suspended from floats as shown on the details in the Contract Plans. Contractor to submit catalog cut of Floating Turbidity Barrier for approval prior to installation as per the requirements in Section 1.3

Prior to the commencement of construction operations and/or excavation activities the floating turbidity barrier must be installed at the locations indicated on the plans. The end stakes, bottom anchors, and associated anchor buoys shall be installed first. The end stakes shall be located well into the shoreline above the mean high water line, so as to fully enclose the area where sediment may enter the pond. When the anchors are secure, the furled fence should be secured to the upstream end point and then subsequently attached to the next downstream anchor point until the

entire curtain is in position and attached to the downstream end stake. Prior to unfurling, the lay of the barrier should be assessed, and anchors adjusted as necessary. The furling lines shall then be cut to allow the curtain to drop.

Anchor buoys shall be employed on all anchors to prevent the current from submerging the flotation device at the anchor points. Care shall be taken to ensure that anchor points are of sufficient holding power to retain the curtain in the water. An anchor line shall run from the top load line (never attached to the bottom of the curtain) to a floating anchor buoy to the associated bottom anchor. The manufacturer's recommendations shall be followed with regard to bottom anchor spacing. The top load lines must contain enough slack to allow the anchor buoy and curtain to float freely without being pulled down.

A minimum gap of one (1) foot shall exist between the bottom of the curtain fabric and the bottom of the water body. An excessive number of joints in the curtain shall be avoided by using a minimum continuous span of fifty (50) feet between joints. The floating turbidity barrier shall be installed using a maximum span of one-hundred (100) feet between anchor or stake locations.

The floating turbidity barrier is required to remain intact during the life of the contract at the location shown on the plans.

The Contractor shall continuously maintain the integrity of the floating turbidity barrier, including providing all necessary labor, equipment and materials, until the earthwork construction is completed and permanent erosion control measures are in place. The Contractor shall inspect the barrier on a daily immediately after each storm event and at least daily during prolonged rainfall to determine if the barrier is functioning as designed. The Contractor shall immediately correct any deficiencies and make any repairs, replace any defective or damaged components and/or the entire turbidity barrier to the satisfaction of the Engineer to assure a fully functional floating turbidity barrier is in place until the completion of the work as described above. At the completion of the project the Contractor shall remove the floating turbidity barrier and restore the area. The turbidity barrier materials shall become the property of the Contractor and shall be removed from the site.

2.2.3 Soil Erosion and Sediment Control Maintenance

Soil erosion and sediment control measures shall be maintained during the construction season as well as during winter months and other times when the project is closed down, throughout the life of the project, to ensure that the measures function properly. Soil erosion and sediment controls shall be immediately inspected after each rain and any corrective work shall immediately be performed to return the soil erosion and sediment control measures to proper function, as directed. Coarse aggregate, silt fence, or haybales damaged due to washouts or siltation shall be replaced as necessary or as directed by the Engineer.

The Contractor shall install erosion and sedimentation control devices in accordance with this Section and the Erosion and Sediment Control Plan.

2.2.4 Submittals

Submittals shall be in accordance with Section 1.3.

2.2.5 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.2	Erosion and Sedimentation Control	Month
2.2.1	Additional Silt Fence, if and where directed	Linear Foot
2.2.2	Additional Hay or Straw Bales, if and where directed	Each

The Contractor will be paid the bid unit price for Erosion and Sedimentation Control, for each month, or fraction thereof, that soil erosion and sediment control is required. All temporary and permanent sediment control devices, labor, and equipment shall be considered part of Pay Item 2.2. Separate payment will not be made for maintenance, repair or replacement of erosion and sedimentation control devices or for relocation. Separate payment will be paid per Bid Item 2.2.1, and 2.2.2 for additional Silt Fence , Hay or Straw Bales installed, maintained, and removed, if and where directed. Refer to Section 1.2.29 for addition language regarding if and where directed items.

END OF SECTION

2.3 Access Road

2.3.1 General Description

This work includes furnishing all material, labor and equipment necessary for providing the construction of temporary roadway embankment for the future construction of the perimeter slurry wall and leachate collection system. This work shall consist of subgrade preparation, construction of the subbase course of Recycled Aggregate Fill Types A and B to varying depths as shown on the drawings, and construction of the surface course of Recycled Aggregate Type B, 25" thick at the locations shown on the Drawings.

2.3.2 Applicable Publications

American Society for Testing of Materials (ASTM)

- ASTM C 136 Test Method for Sieve analysis for Fine and Coarse Aggregate

American Association of State Highway and Transportation Officials (AASHTO)

- M288-96 Geotextile Specification for Paving Fabrics

2.3.3 Materials

Recycled aggregate can be produced by crushing concrete, pieces of concrete blocks, brick, tile, masonry material, and glass to reclaim the aggregate. Recycled aggregate shall be free from reinforcing bars, both plastic and metal pipes, tires, paper and cardboard, insulation, foam, windows, plumbing fixtures, cabinets, carpets, and other material of compressible nature. The longest dimension of any recycled material shall not exceed three times its shortest dimension. Acceptability of recycled aggregate will be determined by the recycling agency gradation/weight reports. The engineer reserves the right to require the contractor to retest the RA material if it appears to be in noncompliance with the specification during installation. If materials do not meet specifications they will be rejected and the contractor shall remove the RA from the site at no cost to the State. The minimum testing frequency shall be one (1) sample per 3000 tons yards of recycle aggregate as per Section 1.10. The Contractor shall submit source and test reports for approval.

Recycled aggregate must be obtained from a NJDEP certified Class B recycling facility. The Contractor may substitute natural earth and rock materials of the same gradation for Recycled Aggregate, as approved by the Engineer.

A. Recycled Aggregate Fill Type A: Roadway embankment subbase as shown on the Drawings shall conform to the following gradation requirements:

Particle Size in Inches	Percent Passing	Weight (pounds)
42	100	1,100
36	85	750
22	50	625
18	15	375
11	0	100

B. Recycled Aggregate Fill Type B: Roadway embankment subbase, base and surface courses as shown on the drawings. The material shall conform to the following gradation requirements:

Sieve Size in Inches	Percent Passing
4	100
3	75-90
2-1/2	40-60
1-3/4	10-20
1	0-5

C. Infill Recycled Aggregate: Infill Recycled Aggregate shall be placed over the Recycled Aggregate Type A, and spread with a dozer, to a minimum thickness of 12 inches. After spreading the Infill Recycled Aggregate shall be compacted by 10 overlapping passes of a minimum 13 ton vibratory roller, as approved by the Engineer. Additional Infill Recycled Aggregate shall be added in 12 inch lifts, as described above, until the Recycled Aggregate Type A voids are sufficiently filled, and a level surface has been created for placement of the Recycled Aggregate Type B surface course. There is no separate payment item for the Infill Recycled Aggregate. The Contractor shall incorporate the costs associated with provision and installation of Infill Recycled Aggregate in the price bid per unit ton for Item 2.3.1 Recycled Aggregate, Fill Type A and Item 2.3.3 Recycled Aggregate, Fill Type A, If and Where Directed.

Sieve Size in Inches	Percent Passing
2	100
1 1/2	75-90
1	40-60
3/4	10-20
1/2	0-5

D. Separation Fabric, Geotextile Type B

Separation Fabric (Geotextile Type B) shall be placed as shown on the drawings between the existing prepared subgrade and the proposed roadway. Refer to Section 2.9 for additional information and guidance.

In the event that the Contractor encounters exceptionally soft soils, the Engineer or State may require the Contractor to provide and install a geogrid (refer to Section 2.9 for material description) between the separation fabric and the first lift of roadway material. Payment for installation of the geogrid shall be made under Item 2.9.5.

2.3.4 Material Sources

All imported recycled aggregate shall be from DEP licensed or approved recycling facilities. All material shall be selected from a commercial recycling center and shall meet the material description above.

2.3.5 Requirements for Clean Fill

Recycled aggregate shall come from a NJDEP Certified Class B recycling facility. Prior to the acceptance onsite of any recycled aggregate the Contractor shall allow the Engineer to visit the proposed source of the material.

Natural earth and rock materials, if substituted for recycled aggregate, will be subject to the chemical testing requirements for clean fill specified in Section 2.10. Testing frequency will be one sample per 3000 tons. The Contractor shall allow the Engineer to visit the proposed source of the material and, if requested, obtain samples of the material for chemical analysis. Natural earth and rock materials shall not be brought to the site until the Engineer's analysis of the material is complete and contaminant levels are found not to exceed requirements for clean fill in Section 2.10.

2.3.6 Documentation

The Contractor shall provide a Quantity Control Officer to document all material delivered to the site. The Quantity Control Officer shall provide the Engineer a copy of all certified scale tickets, and time of material delivery on site at the end of each work day. The cost associated with this work shall be included in the per Ton price bid for the recycled aggregate material.

2.3.7 Execution

2.3.7.1 Subgrade Preparation

Prior to placement of recycled aggregate or geotextile, the contractor shall clear the site in accordance with Section 2.1.

Separation fabric (Geotextile Type B) shall be placed as shown on the drawings between the prepared subgrade and the proposed roadway. It shall be placed longitudinally in runs from top of slope to toe, with downstream edge of the upstream run overlapping the upstream edge of the downstream run. Geotextile rolls shall be laid so there is 2 feet of overlap on all sides adjacent with another roll. Equipment is not allowed on unprotected Geotextile Type B. To protect the geotextile and prevent degradation due to exposure, the geotextile shall be covered with roadway material within 21 days of placement.

2.3.7.2 Material Placement

The intent of this work is to provide a stable work platform for a future slurry wall construction project. This will be accomplished by placing Geotextile Type B on the subgrade and filling over it with Recycled Aggregate Type B. On the downslope side, a compact layer of Recycled Aggregate Type A will be added, where required, for slope stabilization.

Recycled Aggregate Type B shall be placed on the ground in front of the deployed geotextile, no material shall be dumped directly on the geotextile. Then the Recycled Aggregate Type B shall be spread over the geotextile to a thickness of 6 inches in order to create a cushion layer to protect the geotextile.

Recycled Aggregate Type A and Recycled Aggregate Type B shall then be added to attain the top of subbase elevation in the manner shown on the drawings using equipment having a ground pressure that minimizes damage to the underlying geotextile and as approved by the Engineer. Type A and Type B of the Recycled Aggregate used for roadway subbase, shall be placed to their full course thickness in one lift, excluding the 6 inch cushion layer, and in such a manner as to avoid displacement of the underlying material except where shown on the drawings. In general, Recycled Aggregate shall be placed from the lower elevations to the higher elevations. Recycled Aggregate shall not be dropped onto the geotextile or the cushion layer.

Infill Recycled Aggregate shall be placed over the Recycled Aggregate Type A, and spread with a dozer, to a minimum thickness of 12 inches. After spreading the Infill Recycled Aggregate shall be compacted by 10 overlapping passes of a minimum 13 ton vibratory roller, as approved by the Engineer. Additional Infill Recycled Aggregate shall be added in 12 inch lifts, as described above, until the Recycled Aggregate Type A voids are sufficiently filled, and a level surface has been created for placement of the Recycled Aggregate Type B surface course.

After attaining subbase elevations, and before the roadway base and surface courses are placed, the subbase shall be proof rolled using a maximum 10 ton smooth roller, as directed by the Engineer. Next, the Recycled Aggregate Type B (i.e. base and surface courses) shall be placed in two lifts of equal thickness (for a total of 25") until the final roadway elevation is achieved. Each lift of the surface course shall be compacted using a 10 ton dynamic smooth roller compactor with 2 to 6 overlapping passes, as directed by the Engineer.

Recycled Aggregate Type B shall be used as fill for grading between the proposed access road and below the Gas Blower and Flare concrete pads to achieve elevations to 6" below bottom of concrete pads. A 6" bedding layer of Coarse Aggregate #57 will then be placed as described in specification section 2.12 and in the Contract Plans. Recycled Aggregate Type B shall be placed in 12" lifts to 6" below bottom of concrete pads. Each lift of Recycled Aggregate Type B placed below the Blower and Flare concrete pads shall be compacted using a 10 ton dynamic smooth roller compactor with 2 to 6 overlapping passes, as directed by the Engineer.

2.3.7.3 Dewatering

Prior to placing Recycled Aggregate Type B in ponds along the southern toe of the landfill or as backfill for the abandoned 12" PSE&G gas pipeline, the Contractor shall pump leachate contaminated surface water from the ponds and excavations onto the top of the landfill so it can percolate back into the waste as per Section 3.2.7. The Contractor shall ensure these waters percolate into the waste and not run off the landfill. The Contractor may need to perform this operation in stages by damming sections of the ponds due to the volume of water. The placement of Geotextile Type B and Recycled Aggregate Type B will be permitted when the area is sufficiently dry, as approved by the Engineer.

2.3.8 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.3.1	Recycled Aggregate, Fill Type A	Ton
2.3.2	Recycled Aggregate, Fill Type B	Ton
2.3.3	Recycled Aggregate, Fill Type A, If and Where Directed	Ton
2.3.4	Recycled Aggregate, Fill Type B, If and Where Directed	Ton

The Contractor will be paid the bid unit prices per ton of in place material, as accepted by the Engineer, for Pay Items 2.3.1 and 2.3.2. The Contractor shall provide certified scale tickets for the recycled aggregate delivered to the site. No payment will be made for material brought on site without a certified scale ticket. Separate payment will not be made for analytical testing, subgrade preparation, compaction, and fill material installed and measured in place. Separate payment will not be made for temporary roads or for stockpiling, double handling, or roadway reworking that is performed. Separate payment will not be made for labor and equipment needed to repair the roadway during or after construction due to erosion from storm events. The Contractor is required to repair any damage he causes to the roadway during construction, as a result of not following these specifications, at no cost to the State. The Contractor is required to repair and maintain the roadway throughout the project in a condition as shown on the drawings and required in the specifications. Separate payment will not be made for repair and maintenance of the roadway after its construction, but before substantial completion of the project.

Payment for installation of Geotextile Type B shall be made under Item 2.9.1. Payment for installation of the geogrid shall be made under Item 2.9.4.

Separate payment will be paid per Bid Item 2.3.3, and 2.3.4 for If and Where Directed items. Refer to Section 1.2.29 for addition language regarding if and where directed items.

Separate payment will not be made for dewatering of ponds and excavations around the toe of the landfill prior to backfilling or filling. The cost of dewatering shall be included in the costs of the respective bid items needing dewatering and at no additional cost to the State.

END OF SECTION

2.4 Fencing, Gates, and Bollards

2.4.1 General Description

Fencing, gates, and bollards shall consist of the installation of a temporary and permanent chain link fence, including post holes, concrete, and posts, gates, and bollards furnished and installed in accordance with the plans and these specifications. Temporary fencing shall be installed around the trailers, as detailed in Section 1.4. Permanent fencing shall be installed as shown on the plans.

2.4.2 Materials

Materials shall meet the requirements of ASTM A491 for aluminum coated steel chain link fencing (9 gauge wire with 2 inch mesh); ASTM F900 or F1184 for gates; ASTM F1083 for posts; ASTM A824 for tension wire (9 gauge); and ASTM F626 for accessories.

Fence shall consist of aluminum-coated 8' high chain link fence.

Gates shall include aluminum-coated 8' high chain link fence gates (3 gates - 20' wide and 1 gate - 30' wide). Gates shall be the same height as the fence to which the gates are attached. Contractor shall provide gate locks and six sets of keys which fit all gate locks. All locks should be keyed alike. Note: There is a quantity of four (4) twenty (20) foot wide gates for Payment Item 2.4.2.

Bollards shall consist of 8" diameter steel pipe, extend 3'-6" above grade and be filled with 4,000 psi concrete to be installed two at the 30' wide site access gate by Harrison Ave to a depth of 4' and shall include post holes, concrete, pipe, primer, and paint (two coats of yellow exterior grade epoxy paint). Bollard footing holes shall have a 3 foot minimum diameter.

Submittals shall be according to Section 1.3.

2.4.3 Installation

The chain link fence shall conform to The American Association of State Highway and Transportation Officials (AASHTO) M181 and shall include, the following requirements:

1. The fence shall be installed along lines and/or locations as specified by NJDEP.
2. Installation of fence will include any alterations or modifications to the ground surface which must be performed and all necessary tools normally used in fence installation. These alterations may require the use of hand tools as well as hand-held power equipment such as chain saws, power augers, powered brush cleaning devices, etc.

Alterations will also include the removal to ground level of stumps, rocks, etc. protruding above the ground surface and in the line of the fence. The Contractor is to perform the required work in such a manner as to minimize erosion that would occur as a result.

3. The height of the fence shall be eight feet (8') for line items 2.4.1, 2.4.2, and 2.4.4. The 8' fencing shall be all metal, constructed of wire fabric fastened to vertical line posts.

4. The entire fence shall be installed within site boundary lines, and the fabric shall be installed on the side of the posts facing away from the area enclosed by said lines.
5. All posts, frames and rails shall be round, hot dipped galvanized, Schedule 40, steel pipe per ASTM F 1083 with strength requirements in accordance with ASTM F 669. In addition, the fencing shall conform, at a minimum to the following sizes and lengths:

	<u>Outside Diameter</u>	<u>Length</u>
Line Posts	2- ½ inches	11 feet
Corner Posts	3 inches	11 feet, 6 inches
Gate Posts for gate leaves less than 8 feet	3 inches	11 feet, 6 inches
Gate Posts for gate leaves 8 feet or larger	4 inches	12 feet
Top Rail	1-5/8 inches	
Gate Frame	2 inches	

Note:

- 1) Additional lengths for the above posts may be required when fencing is installed over channel crossings and other surface irregularities, and when fencing is installed with drive anchors, and for barbed wire installations.
6. Line posts shall be spaced not more than ten (10) feet on centers. Line post footings shall have a minimum diameter of ten (10) inches and shall extend at least six (6) inches below the bottom of the posts. Corner and gate post footings shall have a minimum diameter of fifteen (15) inches and shall extend at least six (6) inches below the bottom of the posts.
7. The bottom of the corner posts shall be a minimum of three and one-half (3-1/2) feet below finished grade; and the bottom of the line posts shall be at least three (3) feet below grade. Gate posts shall extend at least four (4) feet below grade level.
8. All posts shall be plumbed vertical before holes are filled with concrete, and held vertical while concrete is installed so that finished posts shall be plumb.
9. Concrete shall have aggregate no larger than one and one-half (1-1/2) inches and have minimum compressive strength of no less than two thousand (2,000) psi at twenty-eight (28) days.
10. Post holes shall be completely filled with concrete which shall extend not more than three (3) inches above grade, and will be neatly crowned to shed water.
11. When conditions require, and NJDEP personnel directs, drive anchors will be used in lieu of concrete filled post holes. The installation will require the complete assembly of the anchor shoes, fastening hardware and blades. Each drive anchor assembly will be complete for each post.

12. Pull shall not be applied to posts set in concrete foundations until concrete has cured a minimum of seventy-two (72) hours.
13. All parts of the fence shall be galvanized steel, except that fittings may be of galvanized malleable iron, wrought iron or steel. Posts, rails, braces, and gate frames shall be zinc coated at 1.8 oz. per square foot.
14. Tops of posts shall be provided with caps to exclude moisture. Tension wire shall connect post tops and bottoms. Tension wire shall be seven gauge coil spring steel wire and shall be galvanized.
15. Wire fabric shall be of No. 9 gauge wire helical wound and interwoven with a mesh of two inches (2"). The fabric shall conform to Fed. Spec. RR-F-191, Type 11, 1.2 ounce per square foot coating. Top of fabric shall have knuckled selvage, bottom shall have barbed selvage.
16. Wire fabric shall be fastened to line posts with preformed clips of 9-gauge, zinc coated steel wire, spaced not more than twelve (12) inches on center. Fabric shall be fastened to top and bottom tension wires with wire ties or hog rings spaced at eighteen (18) inches.
17. Wire fabric shall be installed in gate frames by means of high carbon steel stretcher bars.
18. Wire fabric shall be securely fastened to all terminal posts using one-quarter (1/4) inch by three-quarter (3/4) inch tension bars and 11 gauge pressed steel bands spaced at twelve (12) inches.
19. Barbed wire shall be furnished along the top of the fence, and shall be supported at the posts by arms inclining away from the area enclosed at an angle of forty-five degrees. Arms shall be strong enough to support a weight of two hundred pounds (200 lbs.) applied at outer strand of the bared wire. The arms shall have tongues to receive three (3) strands of double twisted 4-point thickest barbed wire, the barbs spaced about four (4) inches apart. The barbed wire shall conform to ASTM A2 1.
20. End and corner panels, and panels adjacent to gates shall have intermediate horizontal rails and diagonal bracing rods which shall be at least three-eighths (3/8) inch in diameter and shall be provided with turnbuckles. Straight runs between braced posts (posts that have attached hardware including the intermediate horizontal rails and diagonal bracing rods) shall not exceed five hundred (500) feet.
21. All gate frames shall be of welded construction. All rails used for gate construction shall be factory galvanized with 1.8 ounce zinc coating per square foot. Gate frames shall be galvanized after fabrication where possible or painted with suitable rust-preventative. Gate leaves more than eight (8) feet wide shall have either intermediate members as necessary to provide rigid construction, free from sag or twist. Diagonal bracing shall be at least three eighths (3/8) of an inch in diameter and shall be provided with turnbuckles.

22. Three (3) twenty (20) foot wide gates and one (1) thirty (30) foot wide gate shall be provided for road openings. See plans and details for locations and additional dimensions. Note: There is a quantity of four (4) twenty (20) foot wide gates for Payment Item 2.4.2. The fourth gate is provided in the event that the Engineer determines a need. This gate is not depicted on the plans.
23. Gate hinges shall be of the double clamping offset type. Gates shall swing through ninety degrees from closed to open. To hold the gate in open or closed positions, each gate shall be provided with a keeper which automatically engages a gate shoe set in concrete. Gates shall have a drop bolt latch with provision for a padlock. Latches shall be arranged so that the padlock will be accessible from both sides of the gate regardless of the latching arrangement.
24. Each gate shall be provided with a brass body padlock suitable for outdoor use. The lock shall have a hardened shackle, and shall be of the five (5) pin tumbler type, Master Lock No Pro Series 6321KA or 6125KALJ or NJDEP approved equivalent. Die cast locks are not acceptable.

All locks on a site must be keyed alike and six (6) copies of the key must be provided to NJDEP. Chain of the appropriate gauge and length for site-specific conditions may be specified for use with the locks by the NJDEP.

25. In the event unusual digging conditions such as rubble, cement covered areas, etc. are encountered, existing mechanical means must be used to dig holes for footings of the same dimensions as described in paragraphs 6 and 7 above. Core drilling of holes and embedding posts in pourable concrete or the use of bolted on plates will not be permitted without the express written approval of NJDEP.
26. Bolts on gate hinges and stretcher bar bands shall be tack welded to prevent it from being taken down. Welded areas shall be recoated with a suitable rust preventative. The price for tack welding and corrosion protection shall be included in the price of the fence or gate to be welded.

2.4.4 Temporary Fence

In accordance with Section 1.4 Mobilization, temporary chain-link fence and pedestrian access gates will be required around the trailer staging area. The temporary fencing shall be erected before construction activity in the staging area. Temporary fence shall be constructed according to the requirements for permanent fence except used materials may be used. The fence shall be installed on stands made of hot dipped galvanized steel pipe at grade. This stand is intended to go on the ends of the fence. Temporary fence shall be maintained as directed during construction and shall be removed and disposed of/ recycled when no longer required on the Project.

2.4.4 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.4.1	Chain Link Fence with Barbed Wire, 8' high	Linear Feet
2.4.2	Chain Link Gate with Barbed Wire, 20' wide	Each
2.4.3	Chain Link Gate with Barbed Wire, 30' wide	Each
2.4.4	Bollards	Each

The Contractor will be paid the bid unit price per linear foot of permanent fencing installed per Bid Item 2.4.1, Chain Link Fence with Barbed Wire, 8' high. These bid unit prices shall include the complete installation of fencing as specified.

The Contractor will be paid the bid unit price per each of gates installed per Bid Item 2.4.2, Chain Link Gate with Barbed Wire, 20' wide. This bid unit price shall include the complete installation of gates as specified.

The Contractor will be paid the bid unit price per each of gates installed per Bid Item 2.4.3, Chain Link Gate with Barbed Wire, 30' wide. This bid unit price shall include the complete installation of gates as specified.

The Contractor will be paid the bid unit price per each of bollard installed per Bid Item 2.4.4, Bollard. This bid unit price shall include the complete installation of bollards as specified.

END OF SECTION

2.5 Waste Fill and Earth Excavation

2.5.1 General Description

Waste Fill and earth excavation consists of excavation of Waste Fill, landfill cover and earth below existing grade (hereafter referred to as Waste Fill), other than temporary erosion and sediment controls, within the approximate extent of Waste Fill to the neat lines shown on the Drawings. Excavated Waste Fill will be relocated on top of the landfill and covered with a vegetated soil cover. The Contractor shall be responsible for surveying pre-excavation and post-excavation cross sections.

Waste Fill and earth excavation does not include excavation for channels above existing grade, or for temporary erosion and sediment control structures.

2.5.2 Construction

The Contractor shall conduct this operation to minimize Waste Fill excavation and odors in accordance with Section 3.2. The Contractor will not be compensated for excavation beyond the lines shown on the drawings.

Cross sections at the excavation surveyed by the Contractor pre- and post-excavation will be used for measurement and payment of Waste Fill and earth excavation, in accordance with these Specifications. The information on the cross sections and plans shall show final grades and any field adjustments. Contractor shall secure the services of a Professional Surveyor Licensed in New Jersey for completing this task. It is brought to the Contractor's attention that existing grading may vary from that shown on the Plans. Therefore, Contractor shall "field confirm" existing grades before starting grading operations. When there are variations between the existing grade shown on the Plans and the "field confirmed" grades, the contractor shall immediately bring this to the attention of the Engineer.

The Contractor shall employ appropriate health and safety procedures during the Waste Fill excavation, in accordance with the Health and Safety Plan to be prepared according to Section 3.1 of these specifications, since explosive gases, drums, buried hazardous waste and contaminated materials may be encountered. Excavated Waste Fill material shall be contained and prevented from spilling onto cleaned or capped areas prior to disposal in uncapped areas on top of the Waste Fill.

Large items of Waste Fill which extend across limits of excavation shall be cut or broken to avoid disturbance of waste below the excavation surfaces. Disinterred containers of hazardous substances shall be handled in accordance with Sections 3.3, 3.4, and 3.5 of these Specifications.

All tires found within the regraded waste and on the surface of the regraded waste handled as per Section 2.1.9.

2.5.3 Waste Fill Placement, Compaction, and Cover

Waste Fill Placement and Compaction shall consist of: initial compaction to stabilize the existing waste materials in the waste relocation area, as noted in Section 2.5.3.2; placement and compaction of Waste Fill materials removed from the landfill and placed as fill in the waste disposal areas designated on the drawings; and soil cover provided for the waste relocation area daily and at the end of the project.

2.5.3.1 Waste Fill Placement

The Contractor shall place excess Waste Fill materials generated as part of the grading construction activities on the prepared waste disposal area shown on the drawings. The Waste Fill shall be placed evenly on the top of the landfill so that it conforms to the existing topography. The Contractor will not be allowed to pile the Waste Fill. Once placed, Waste Fill shall be covered with a soil cover as described in Section 2.5.3.3. At all times, Waste Fill shall be segregated from fill materials obtained from off-site.

It will not be necessary to check the density and/or moisture content of placed and compacted Waste Fill material by use of nuclear/non-nuclear density equipment. However, if in the opinion of the Engineer, the Waste Fill materials or underlying Waste Fill is too wet to permit adequate compaction, the wet areas shall be stabilized by removing water or blending with Coarse Aggregate (#57). Water removed from the Waste Fill must be handled in accordance with Section 2.3.7.3 and the Contractor's Soil Erosion and Sediment Control Plan.

2.5.3.2 Waste Fill Compaction

Prior to waste placement, the existing Waste Fill in the designated waste relocation area shall be compacted to create a stable work platform with a non-vibratory, 20 ton compactor (non-rubber tired) with 2 to 6 overlapping passes, as directed by the Engineer.

Waste Fill relocated to the top of the landfill shall be placed and compacted in lift thicknesses not exceeding 24", and waste materials exceeding 12" in smallest dimension shall be buried within the previously compacted Waste Fill material so as to permit continuous fill layer placement. Compaction shall be with a non-vibratory, 20 ton compactor (non-rubber tired) with 2 to 6 overlapping passes, as directed by the Engineer.

2.5.3.3 Waste Fill Cover

In accordance with the Landfill Disruption Permit requirements, relocated waste and any other waste exposed by the Contractor's operations shall be covered with a 6" layer of clean soil (Fill, I-13) at the end of each day. At the completion of this project the relocated Waste Fill shall be covered with a final cover of 24" thick layer of soil that consists of 18" Fill, I-13 as per Section 2.10, and 6" of topsoil as per Section 2.8. The topsoil shall be vegetated as per Section 2.8.

2.5.4 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.5	Waste Fill and Earth Excavation	Cubic Yard
2.5.1	Waste Fill and Earth Excavation, if and where directed	Cubic Yard

Bid Item 2.5, Waste Fill and Earth Excavation, will be measured by the cubic yard of excavation as determined from the cross sections at the excavation, and paid according to the bid unit price per cubic yard. Separate payment will not be made for surveying, regrading, placement, and compaction of Waste and Earth Excavation.

Fill, I-13, Topsoil 6" thick, and Revegetation, as required by the Landfill Disruption Permit for the final waste fill cover, will be paid in accordance with Bid Items 2.10.2, 2.8.1, and 2.8.2, respectively. Separate payment will not be made for interim daily cover of waste, and costs should be included in Items 2.5 and 2.5.1.

END OF SECTION

2.6 Gas Pipe

2.6.1 General Description

The work to be performed in accordance with these specifications and shall include all work necessary for, or incidental to, the installing, testing, cleaning, drying and tie-ins of the proposed Algonquin Power Systems (a.k.a. Penn Energy; EcoGas; Landfill Gas Plant) 6" gas pipeline, removal, and off-site disposal of the existing Algonquin Power Systems 6" gas pipeline, and removal and off-site disposal of the abandoned 12" PSE&G gas pipeline, as shown on the Drawings and described below. Contractor shall provide all of the necessary insurance, labor, supervision, overhead, equipment, services, materials, and supplies for the construction. The contractor and all subcontractors are expected, in the performance of work as required by this Contract, to comply with the rules of PSE&G, Williams Transco, and Algonquin Power Systems, in addition to the requirements set forth in these specifications.

The Contractor shall contact PSE&G and coordinate with them prior to pipeline removal and backfill operations. A PSE&G representative shall be on-site to verify actual location of the gas line. The Contractor shall excavate and expose the gas pipeline, as directed by PSE&G, and PSE&G will drill holes in it for venting. The pipeline will then be removed, to the limits shown on the Drawings, in sections short enough to ensure that removal will not damage adjacent active gas pipelines. The ends of the abandoned gas pipelines will be capped. PSE&G has indicated that a mechanical cap, such as a "Dresser" cap will be acceptable. Capping of the pipeline shall be as approved by PSE&G.

Both the 6" and 12" gas pipelines to be removed have salvage value and MUST be documented and a credit given to the State. A receipt for the amount received by the Contractor for these materials, from the recycling facility where it is disposed, must be provided to the Engineer. This amount will be a credit for the State to be deducted from the Contractor's payment invoices.

The Contractor shall furnish all supervision, labor, tools and equipment to prepare all necessary work spaces, access roads, environmental measures, timber mats, platform, stringing, unload pipe materials from the pipe coating mill, excavate, shoring and de-water, fabricate, weld, HDD new sections of pipe. The Contractor shall also clean, sandblast wire brush, coat and wrap all weld joints, tamp backfill around gas main, perform hydrostatic test on the new pipe, make main tie-ins, cut & remove the designated pipe segments, appropriate restoration and install cathodic protection testing stations and pipeline markers as directed by the State.

The Contractor shall obtain all necessary municipal construction permits, hot work permit, licenses, and approvals prior to mobilization to the job site. The Contractor shall comply with the soil erosion and sediment control permit and specifications.

The Contractor or Subcontractor shall be experienced and qualified in performing the work as outlined in this specification and as such shall have a minimum of 5 years of experience in the fabrication and installation of 6" and larger diameter steel gas transmission pipelines. The contractor shall provide competent supervision of the work and shall employ competent labor skilled in their trade.

All of the Work is more particularly described on the Drawings, and is to be performed in accordance with all the provisions of the Contract Documents, and is to include by way of illustration, but without limiting the generality of the foregoing provisions: Unloading all materials at the project location; clearing, grading, soil erosion and sediment control measures, and all associated right-of-way work; shoring/sheeting, excavation and backfilling of the ditch; welding; field joint coating; lowering the coated pipe into the ditch; installation of temporary access roadway, and working platform; installation and protection of all crossings of foreign lines; installation of pipe bends; welding and coating of above-ground in-line valve assemblies; Installation and coating of fabricated piping and valve assemblies; completion of all specified tie-ins, including hot taps; construction of new valve sites; filling, pressure testing, emptying, cleaning and drying of the completed pipelines and fabricated piping; filling completed lines with nitrogen; installation of cathodic protection insulators, and test leads; installation of pipeline marker warning signs; cut and remove all sections of the existing pipelines labeled as "To Be Removed" on the drawings, and cap the ends of the existing pipe that is to stay in place; restoring or cleaning up the right-of-way, removing working platform, and other premises on which the Contractor has worked; and any and all other work necessary or incidental to a complete and satisfactory installation of said facility.

Any material, equipment, or related work required to complete this installation which is not indicated or specified herein, shall be provided at no additional cost.

2.6.2 Materials

All material shall be of a commercially acceptable grade designated for their intended purpose in the designated end use environment.

The Contractor shall be responsible for the coordination and layout of the work to be performed as part of this contract.

All Contractor furnished material and articles incorporated into the work covered by this Contract shall be new and of the most suitable grade for the purpose intended.

The Contractor shall be responsible for all required surface preparation and materials, working platform, temporary access roads, and application of all required field coatings.

The Contractor, with a State representative, shall inspect material when transferred to Contractor's custody, and shall satisfy itself as to the quantity and condition of such material, and that it conforms to the specifications required by the Contract Documents. Results of this inspection shall be documented on material transfer records.

2.6.2.1 6" Gas Pipeline

The pipeline has been designed and will be constructed in accordance with Federal CFR 49, Part 192, Transportation of Natural and Other Gas By Pipeline: Minimum Federal Safety Standards, ASME B31.8, Gas Transmission and Distribution Systems and New Jersey State Administrative

Code (NJAC). The specification of the pipeline will be 6.25" OD x 0.28" Wall-thickness, A53 Grade B coated pipe.

2.6.2.2 Buried Warning and Identification Tape

Polyethylene plastic warning tape manufactured specifically for warning and identification of buried utility lines shall be used. Provide tape on rolls, 75 mm 3 inch minimum width, Yellow color and identification imprinted in bold black letters continuously over the entire tape length. Warning and identification to read: "CAUTION, BURIED GAS LINE BELOW". Color and printing shall be permanent, unaffected by moisture or soil.

2.6.3 Settlement Monitoring and 6" Gas Pipeline Construction

The gas pipeline relocation involves the installation of new 6" gas pipeline and removal of the existing 6" gas pipeline, as shown on the Drawings.

During construction of the proposed embankment in which the new 6" gas pipeline will be installed, 6 settlement platforms, as shown on the drawings, shall be installed in the Fill, I-11, as directed by the Engineer. Elevations of the settlement platforms shall be surveyed weekly to an accuracy of 0.01 ft, and the results provided to the Engineer. Installation of the new, 6" gas pipeline shall not proceed until settlements of the proposed embankment have decreased to acceptable rates, as determined by the Engineer.

All girth welds of the pipeline are subjected to 100% non-destructive testing and hydrostatic testing prior to and after putting it back into service. Please refer also to the route drawings.

The proposed pipeline alignment is within close proximity of the existing pipelines and utilities, which are currently under operation. The Contractor shall use caution when working near the 20" active gas pipeline and shall not jeopardize the ground stability that could disturb the 20" active gas pipeline. Recycled Aggregate Type B will be used to backfill the excavated trench. The contractor will utilize an excavator bucket to tamp down the backfill to achieve the necessary compaction. The contractor must exercise all possible caution while working within/over the existing pipelines. All safety and construction standards and procedures of the pipeline owners must be followed. No excavation with mechanical equipment shall be allowed within 24" of the existing pipelines without clearly identifying the pipelines. All pipelines shall be field verified, by excavating to determine exact location and depth prior to any mechanical excavation. No more than 170 feet in length of open cut shall be opened at one time when a foreign pipeline is within 5 feet from the edge of the trench. This is to avoid any operational impact to the existing pipelines in services. It is also the responsibility of the Contractor to coordinate all construction activities with all pipeline/utility owners.

Contractor shall comply with NJ one Call Law (1-800-272-1000) and notify all operators of the foreign utilities affected by the project. Contractor shall field verify locations and depths of the existing underground utilities prior to excavations. No mechanical equipment is allowed within 12" of the existing pipelines. All excavations within 12" of an existing pipeline shall be

performed by hand digging. All shoring methods and procedures shall be designed and submitted by a Professional Engineer licensed in the State of New Jersey.

The Contractor shall notify Williams Transco Company a minimum of 72 hours in advance of any work within their easement. A Williams Transco inspector will be on-site during the Contractor's work on their easement and the Contractor will perform work according to their requirements as shown on the drawings, and as directed by the inspector in the field. A minimum clearance of 18" must be maintained between the new 6" gas pipeline and the existing Williams Transco Gas Pipeline.

2.6.4 NOT IN CONTRACT

2.6.5 Backfill

All activities shall be confined to the provided work space. Contractor shall only clear an area within the right of way as necessary to install and remove the pipelines without comprising safety or pipeline integrity. Contractor shall offload the pipe at the site and may rack it within the work space. The pipe shall be welded, x-rayed, field joint coated, and lowered into the completed ditch.

After testing, cleaning, and drying, the pipelines shall be tied into the existing pipelines. After tie-in, the pipelines shall be buried and backfilled. Refer to Contract Plans for details for backfilling relocated 6" pipeline.

Following the removal of the 6" and 12" gas lines, the Contractor shall backfill the excavation with material excavated during the pipeline removal. Recycled Aggregate Type B can be installed into the excavation to meet the pre-existing grades. After attaining the pre-existing grades the backfill shall be compacted by 10 overlapping passes of a minimum 13 ton vibratory roller, as approved by the Engineer. The final 6" of backfill shall be topsoil which shall be revegetated.

2.6.6 Trenching

Minimum cover of the pipelines shall be 4'-0", with the exceptions specified in the Drawings, the ROW Restrictions, and the Permits.

The Contractor shall notify the representatives of all lines to be crossed a minimum of 48 hours prior to beginning the crossing work unless otherwise stated in the attached Right-of-way Restrictions and Permits. The Contractor shall notify the landfill gas plant operator, NJDEP and Engineer immediately upon any damage to any pipeline or utility.

Any section of ditch in which personnel will enter to perform work shall be constructed in accordance with OSHA standards. No additional compensation will be paid to Contractor for such construction.

Some hand ditching may be required near existing pipelines or other facilities in order to comply with permit or right-of-way conditions or to avoid damage to such existing facilities. No additional compensation will be paid to Contractor for such hand ditching.

Excavation and disposal of unsatisfactory backfill and miscellaneous debris is the responsibility of the contractor and no additional compensation will be awarded for this function. It is the responsibility of the Contractor to have an OSHA competent person at the job site to determine the need for sheeting and shoring of the trench excavation.

Sheeting and Dewatering. The Contractor shall be responsible for the design and installation of all sheeting and de-watering required for the installation and tie-ins. The sheeting methods shall be designed and submitted by a Professional Engineer licensed in the State of New Jersey. Any discharge of pumped water shall be filtered through an appropriate sedimentation filter set-up.

2.6.7 Dewatering

Dewatering shall be performed, as needed, to allow proper removal of the 12" PSE&G gas pipeline and the 6" landfill gas pipeline. Leachate contaminated water will be pumped from the excavation onto the landfill to percolate back into the waste. The Contractor shall confirm that these waters percolate into the waste and do not run off the landfill.

2.6.8 Welding

All welding shall be performed in accordance with the latest edition of API Standard 1104, "Standard for Field Welding of Pipelines", and the requirements set forth in Appendix X – Welding Procedures.

All joints (100%) shall be x-rayed by the Contractor. Unacceptable welds will be removed or repaired at the contractor's expense. The contractor will provide adequate space to perform testing at the site of all welding operations.

All welders testing shall be witnessed by the Engineer. All welder qualifications shall be destructive type testing including nick breaks. Contractor shall supply all equipment for welder tests and bear the cost of testing welders and qualifications.

The Contractor shall provide for radiographic inspection and other nondestructive testing of production welds. 100% radiographic inspection of all welds is required.

6" Pipelines - All welding and welder qualification testing shall be performed in accordance with the latest edition of API 1104 and Exhibit I. All non-destructive examinations will be performed and interpreted by qualified technicians, in accordance with API 1104.

Contractor shall proceed with caution and in accordance with the approved Health and Safety Plan, during welding operations due to possible explosive gas conditions at the landfill.

2.6.9 Coating

Pipe coatings shall be done in accordance with the requirements set forth in Exhibit B – Coating Requirements.

Pipe for below ground installations will be supplied with 14-16 mils of Fusion Bonded Epoxy (FBE). Field applied FBE or equal of the same thickness shall be used for all field joints and repairs as described in the Specifications. Heat Shrink sleeves shall be used to coat the field welds.

The contractor's prices shall include costs to apply and/or repair coating where necessary so that all coating will pass the holiday detector test. The contractor will make provisions so the coating can be checked prior to lowering the new section into the ditch. Any damage incurred to the coating during the lowering operation shall be repaired by the contractor.

2.6.10 Hydrostatic Testing

All pipeline facilities and their appurtenances will be hydrostatically tested in accordance with these specifications. Specifications require the successful completion of a 24 continuous hour test in accordance with the specifications.

The test pressures will be as follows:

Dia.	ANSI class	MAOP PSIG	Max test Pressure (PSIG)	Min Test Pressure (PSIG)
All	600	600	1,575	1,525

The proper time, method, and sequence of operation for the testing of the line shall be at PSE&G's direction and under direct PSE&G's Supervision. The contractor shall supply:

1. Water to fill the facilities to be tested. Water shall be clean and free from deleterious minerals or suspended matter.
2. The contractor shall be responsible for proper disposal of the water following completion of test. It is contractor's responsibility to take precautions to prevent water from freezing in any exposed pipe.
3. All required small fittings, weld caps, valves, hoses, pipe, etc. to connect the test equipment
4. Two (2) compressors to attain the required test pressures.
5. Canvas or burlap to cover exposed piping.
6. Qualified personnel and equipment required to install, operate, and remove equipment and temporary piping.

A PSE&G representative will supervise the test after the piping is pressurized; the section under test should be allowed to reach equilibrium before the test is started. If a pressure loss is observed, the contractor shall be responsible for locating and repairing all leaks at his own expense.

Contractor shall run a 1/4-inch thick gauging plate, 1" smaller than the minimum I.D. of the pipeline, through the pipeline on the front end of a wire brush cleaning pig, prior to final hydrotesting of the pipeline. Should the gauging plate become dented while running through the pipeline, Contractor shall run a Caliper type pig through the pipeline to determine the exact location of the dent or obstruction in the pipeline which caused the dent in the gauging plate. Contractor shall then dig up the pipeline and make all necessary repairs to eliminate the dent or obstruction in the pipeline. After the dent or obstruction in the pipeline has been repaired, additional gauging plates shall be run through the pipeline repeating this same procedure until a gauging plate is successfully run through the pipeline without becoming dented.

The disposal point of the test water shall be in compliance with the permitting agencies. Water shall be clean and free from deleterious minerals or suspended matter. Contractor shall be responsible for the proper disposal of test water at locations approved by and at a time satisfactory to the NJDEP. Any and all damage, including but not limited to the pipeline, the Right-of-way or adjacent property, resulting from such disposal shall be damage borne by Contractor.

Contractor shall bear all costs of repair and the replacement of all damaged materials and installations resulting from test failures attributable to negligence of Contractor, inferior workmanship by Contractor and defective or inadequate materials or equipment furnished by Contractor.

Contractor shall bear all costs for obtaining and disposing of water for cleaning and testing purposes. Contractor shall comply with all requirements of permits. Contractor shall also comply with all Federal, State and Local regulations governing the taking of the water used for testing and expulsion of the water from the pipeline following the tests.

Test of Appurtenances - Fabricated assemblies that cannot be tested with the pipeline shall undergo the same test performed in the same manner as the pipeline to which it is welded except that the ambient temperature shall be recorded instead of the pipe temperature. Should such assembly contain valves or fittings, the test pressure shall not exceed one and one-half times the maximum operating pressure of the valve or fitting. If the section is entirely exposed to the atmosphere during the test, the minimum test period shall be eight (8) hours.

Re-testing - If deficiencies are found, they shall be corrected and retested as soon as possible. All work and material required to rectify the deficiencies shall be performed at the contractor's own expense.

2.6.11 Cleaning and Drying

Following the dewatering of the pipe after the hydrostatic test, the pipelines shall be dried to a dew point of -40°F. Pigs may be propelled with air or nitrogen. Each displacement pig must be received before another is launched. Main Block and Side valves shall remain off the line during cleaning and drying of each pipeline. Cleaning and drying shall be in accordance with PSE&G specifications.

Upon completion of drying operations of drilling sections, Contractor shall install appropriate pressure gauges and supply and inject 10 psig of nitrogen into the pipelines.

2.6.12 Cathodic Protection

- a. Cathodic protection test leads and stations shall be installed by Contractor as directed by the Engineer and / or Williams Transco. No test leads or anodes are permitted within the Williams Transco easement.
- b. Insulating joints, miscellaneous fittings, shrink sleeves, anodes, pipeline markers, etc., shall be installed as directed by the Engineer. There shall be no extra payment for this work.

2.6.13 Pipeline Markers

The Contractor shall install pipeline marker posts and warning signs every 100 feet and wherever the new 6" gas pipeline enters and exits the Williams Transco easement.

2.6.14 Scheduling of Work and Interruption to Utilities

The work to be performed under this contract requires special attention to the scheduling and conduct of work in connection with the existing operations of pipeline and utility owners. The contractor and its employees and subcontractors shall work in harmony with the same and all other trades, employees and contractors engaged in any work on the premises.

- a. The contractor shall perform the work as specified herein in a diligent and timely fashion so as to minimize any adverse impact with other activities at the site and/or the Algonquin Power Systems and PSE&G personnel. Hence, the contractor shall coordinate his operations with the Algonquin Power Systems and PSE&G and the public, affording all reasonable cooperation and taking all prudent precautions in order to prevent excess hardship, noise or other nuisance.
- b. Insofar as practicable, contractor operations shall be confined to the immediate area and all work shall be segregated from activities. The contractor shall not use any more space than reasonably required and shall perform the complete work returning each area to normal usage as soon as practicable.
- c. The Contractor shall maintain proper notifications to the agencies, residents, and property owners at all time.

2.6.15 Tie-In and Gas Out

Contractor shall provide labor, material and equipment for the final tie-in and gas out of the pipeline installation in the form of compressor, backhoe and operator, supervisor, laborers and welding personnel. The Contractor shall be responsible for coordinating with Algonquin Power Systems for the purging of the pipeline and for cutting and removing existing pipe, marking the tie-in, welding and passing x-ray examination.

The contractor shall coordinate with the landfill gas plant and PSE&G, Ms. Barbara Altenburg, 973-430-7823, for a mutually agreeable gas pipeline switchover date.

Provide all labor, material and equipment necessary to set up and proceed with cutout and tie-in of the new pipeline.

First cut on the pipe shall be cold cut on all tie-ins.

Contractor shall make and have available all material, equipment and personnel needed to make simultaneous cut-outs and tie-ins as described on the drawings.

All tie-in work shall continue until the tie-ins are complete.

The Contractor will supply a holiday detector and assure the integrity of the pipe coating and repair coating as required prior to installation.

2.6.16 Owner's Requirements

PSE&G will locate the abandoned pipe to be removed. The Contractor shall be required to locate remove and dispose all abandoned pipe material within the limits shown on the drawings.

2.6.17 Pipeline Crossing Protection Slab

The construction activities proposed for this site involve vehicles traveling over an existing gas pipeline. To protect the piping from all vehicle traffic, a pipeline crossing protection slab made of concrete shall be installed. The contractor shall confirm the location of the gas lines and gain approval for the location from the pipeline owner and the Engineer prior to installation. The protection slab shall be installed as per details. A shop drawing shall also be submitted as per Section 1.3.

2.6.18 Quality Assurance

All work performed under this Section will be inspected by a representative of the PES&G. All work rejected because of defects or non-conformance with the drawings and/or specifications shall be corrected by the Contractor as directed, at no additional cost to the NJDEP.

2.6.19 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.6.1	Gas Pipeline Removal, 6" Dia.	Linear Foot
2.6.2	Gas Pipeline Removal, 12" Dia.	Linear Foot
2.6.3	Gas Pipeline Installation, 6" Dia.	Linear Foot
2.6.4	Pipeline Crossing Protection Slab	Each

Bid Items 2.6.1, Gas Pipeline Removal, 6” Dia., and 2.6.2, Gas Pipeline Removal, 12” Dia., will be measured by the Linear Foot of gas pipeline removed and disposed, respectively. The contractor will be paid for Recycled Aggregate Type B under bid item 2.3.2. A receipt for the amount received by the Contractor for the gas pipeline, from the recycling facility where it is disposed, must be provided to the Engineer. This amount will be a credit for the State to be deducted from the Contractor’s payment invoices.

Bid Item 2.6.3, Gas Pipeline Installation, 6” Dia., will be measured by the Linear Foot of gas pipeline installed, tested and approved. The cost for excavation, valves, connections, welding, tracing tape, testing, settlement platforms in the proposed embankment, surveying, and other work associated with Gas Pipeline Installation shall be included in the bid unit price for Linear Foot. Separate payment will be made for Fill I-13, (under Payment Item 2.10.2), revegetation (under Payment Items 2.8.1 and 2.8.2), and Recycled Aggregate Type B (under Payment Item 2.3.2).

Bid Item, 2.6.4, Pipeline Crossing Protection Slab, will be measured on an each basis. Such price shall include material, labor, and equipment required to furnish, install and inspect the protection slab.

END OF SECTION

2.7 Signs and Jersey Barriers

2.7.1 General Description

Signs and jersey barriers shall consist of purchase, delivery, and installation of jersey barriers and construction and directional signs, including sign supports. The following signs shall be provided as shown on the Drawings and posted no later than two weeks prior to the initiation of field activities associated with the Site:

One (1) project construction sign, is to be constructed at the entrance to the landfill along Harrison Ave, alerting people that there is a construction project underway if they attempt to access the utility rights-of-way that cross the property. The sign must have a NJDEP point of contact number to allow clear communication between the community and the person responsible for conducting the remediation. This number shall be provided to the Contractor by the NJDEP. The project sign shall meet the following specifications (see the drawings for sign content):

1. Size - The project signs shall be 4 feet high x 8 feet wide x 3/4 inches thick. The entire surface of the sign shall be primed in white. The reverse side of the sign will be finished in white paint.
2. Material - The sign will be exterior grade plywood with an aluminum overlay. The aluminum overlay will cover the entire front surface of the sign and its four edges. The aluminum overlay shall be type 040 with a factory-baked white enamel finish.
3. Lettering - Lettering will be upper and lower case in Standard Block Fashion. Letter size and sign design shall be determined by the bidder with final approval by the NJDEP.
4. Color - The sign will have a white background with blue letters and a blue border. The blue color shall be Sapphire Blue. All paint shall be high quality fade and weather resistant formulated for exterior applications.
5. Posts - The posts will be 12 feet high x 4 inches wide x 4 inches thick pressure treated wood. They will be primed and finished in white paint.
6. Hardware - All hardware will be first quality rust resistant cadmium plated. All hardware will be 3/8 inches in diameter.
7. Life Expectancy - The sign and its components should have a life expectancy of at least five years.

A total of twelve (12) "No Trespassing and No Dumping" signs (6 in English and 6 in Spanish) shall be posted at approximately equal intervals, as approved by the Engineer, along the proposed site perimeter fence.

1. Size - The signs shall be sized as shown on the Drawings. The entire surface of the sign shall be primed in white. The reverse side of the sign will be finished in white paint.

2. Material - Signs shall be made from 0.080 inch thick flat aluminum with engineer grade reflective sheeting applied over the surface. Signs shall come with standard mounting holes centered top and bottom for easy installations.
3. Lettering - Lettering will be upper and lower case in Standard Block Fashion. Letter size and sign design shall be determined by the bidder with final approval by the NJDEP.
4. Color - The sign will have a yellow background with black letters and a black border. All paint shall be high quality fade and weather resistant formulated for exterior applications.
5. Posts – The sign posts shall be (minimum) 6 ft. tall galvanized steel and tapered on end U channel posts. Minimum weight of 1.12lb/Ft.
6. Hardware - All hardware will be first quality rust resistant cadmium plated. All hardware will be 3/8 inches in diameter.
7. Life Expectancy - The sign and its components should have a life expectancy of at least five years.

A total of twelve (12) "No Smoking" signs (6 in English and 6 in Spanish) shall be posted at appropriate highly visible locations near the gates, and projects signs, and the trailer staging, as approved by the Engineer.

1. Size - The signs shall be sized as shown on the Drawings. The entire surface of the sign shall be primed in white. The reverse side of the sign will be finished in white paint.
2. Material - Signs shall be made from 0.080 inch thick flat aluminum with engineer grade reflective sheeting applied over the surface. Signs shall come with standard mounting holes centered top and bottom for easy installations.
3. Lettering - Lettering will be upper and lower case in Standard Block Fashion. Letter size and sign design shall be determined by the bidder with final approval by the NJDEP.
4. Color - The sign will have a white background with red letters and a red border. All paint shall be high quality fade and weather resistant formulated for exterior applications.
5. Posts – The sign posts shall be (minimum) 6 ft. tall galvanized steel and tapered on end U channel posts. Minimum weight of 1.12lb/Ft.
6. Hardware - All hardware will be first quality rust resistant cadmium plated. All hardware will be 3/8 inches in diameter.
7. Life Expectancy - The sign and its components should have a life expectancy of at least five years.

The contractor shall submit shop drawings showing the sign layout and material data sheets for all materials that will be used in constructing and erecting the signs. Submittals shall be in accordance with Section 1.3.

The project construction sign shall be in English. All other signs and all other signs shall be in both English and Spanish.

2.7.2 Jersey Barriers

Jersey Barriers shall be pre-cast concrete traffic barriers meeting the requirements of NJDOT Construction Barrier Curb, Type 1. Jersey barriers shall be placed in the locations shown on the plans. The intent of Jersey barriers is to control construction traffic near steep slopes and barriers do not need to be bolted or permanently secured to the ground. The Contractor is responsible for maintaining the integrity of Jersey barriers during the duration of construction.

2.7.2 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.7.1	Signs	Lump Sum
2.7.2	Jersey Barriers	Linear Foot

The Contractor shall be paid the lump sum bid price for the purchase and installation of signs required for the project under Bid item 2.7.1. The Contractor shall be paid the linear foot bid price for the purchase and installation of jersey barriers under Bid item 2.7.2 only after the perimeter road is installed and the jersey barriers are in place as shown on plans.

END OF SECTION

2.8 Revegetation

2.8.1 General Description

Contractor shall be responsible for revegetation of the proposed landfill gas pipeline area and waste relocation area disturbed during construction and as noted on the drawings.

2.8.2 Materials

A. Topsoil: Topsoil shall be imported from off-site and certified as clean. Topsoil shall not contain stones, lumps, roots, or similar objects larger than 50 millimeters in any dimension and shall have not less than a 6.5 pH value. Topsoil shall have a minimum organic content of not less than 2.75 percent by weight. Materials with the following qualities shall not be considered suitable for use as topsoil:

1. Soils having less than a 4.1 pH value.
2. Chemically contaminated soils (including all on-site topsoil).
3. Areas from which the original surface has been stripped and/or covered over such as borrow pits, open mines, demolition sites, dumps, and sanitary landfills.
4. Wet excavation.

The gradation of the topsoil will be determined using ASTM D422. 10 pounds from each source of topsoil shall be tested for soil gradation. The gradation of the topsoil shall be within the following:

1. Not more than 20 percent of the material submitted from an off-site sample shall be retained on a #10 sieve.
2. If more than one-half of the sand is smaller than #35 sieve:

	Percent
Sand (2.000 to 0.050 mm).....	40 - 80
Silt (0.050 to 0.005 mm).....	0 - 30
Clay (0.005 mm and smaller).....	0 - 30

3. If more than one-half of the sand is larger than 0.5 millimeters:

	Percent		Percent
Sand (2.000 to 0.050 mm).....	40 - 80	or	40 - 75
Silt (0.050 to 0.005 mm).....	0 - 30	or	0 - 30
Clay (0.005 mm and smaller).....	15 - 30	or	0 - 30

B. Sewage Sludge: A stabilized, screened mixture of wood chips and sewage sludge processed in accordance with NJDEP Interim Guidelines on General Conditions for the Processing and Distribution of Sewage Sludge Compost. Sewage sludge shall not have less than a 6.5 pH value. Stabilized sewage sludge products commonly called Marketable Residuals Products (MRP) and Water Treatment Plant Residuals (WTP) is also acceptable. These products shall be obtained from facilities operating in compliance with a New Jersey Pollutant

Discharge Elimination System Permit or under a NJDEP Permit Exemption – General Distribution Approval. Sewage sludge will not be tested provided it comes from an NJDEP approved facility.

- C. Lime: Ground limestone (Dolomite) containing not less than 85% total carbonates as determined by ASTM C602. Lime will be ground to a fineness that will pass through the following sieves:

<u>Sieve No:</u>	<u>Percent Passing:</u>
#20	90%
#100	50%

- D. Fertilizer: 10-20-10 complying with FS O-F-241D, Type I, Grade (b).

- E. Seed: Seed shall consist of a mixture of the following grasses:

50%	Rebel II Tall Fescue
20%	Plamer Perennial Ryegrass
5%	Alsike Clover
5%	Streaker Red Top
20%	Reliant Hard Fescue

Seed germination shall have been tested within 12 months of the planting date. No seed shall be accepted with a germination test date more than 12 months old unless retested.

- F. Mulch: Cereal straw free of objectionable weeds or other deleterious materials.

- G. Tackifier: Organic and Vegetable Based Binders complying with the requirements of the New Jersey Standards for Soil Erosion and Sediment Control.

- H. Water: Meeting the standards for drinking, and free of substances harmful to plant growth.

2.8.3 Submittals

Submittals shall be according to Section 1.3.

2.8.4 Application

The Contractor shall apply topsoil to all areas disturbed by construction and as noted on the drawings, other than permanent roads and structures. Six inches of topsoil shall be applied to the wastefill cover and to other disturbed or designated areas. Topsoil stripped from on-site waste fill construction areas and re-grading/excavation areas is considered contaminated and will not be reused as topsoil. On-site topsoil will be disposed of at the waste fill disposal area.

All topsoil brought from off-site must meet the following requirements (from NJAC 7:26D):

1. Fill shall be uncontaminated pursuant to the more stringent of DEP's Non-Residential Direct Contact Soil Remediation Standards or DEP's Default Leachate Criteria for Class II Ground

Water found in DEP's Guidance for the use of the Synthetic Precipitation Leaching Procedure to Develop Site-Specific Impact to Ground Water Remediation Standards and shall be free of extraneous debris or solid waste. Additional testing, sampling, and laboratory delays will result for all changes of source of imported fill.

2. Documentation shall be provided by certification stating that it is virgin material from a commercial or noncommercial source or decontaminated recycled soil.
3. All proposed sources of fill must be pre-approved by the Engineer. Bills of lading shall be provided to the Engineer to document the source(s) of fill. The documentation shall include: (1) the name of the affiant and relationship to the source of the fill, (2) location where the fill was obtained, including the street, town, lot, block, county and state and a brief history of the site which is the source of fill, and (3) a statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to #1 above and a description of the steps taken to confirm such.
4. The Engineer will acquire samples for analytical testing for compliance with the NJDEP Standards and Guidance for clean fill as described in Item (1) above. No fill may be brought to the site until the Engineer confirms that it meets the NJDEP Standards and Guidance. The Contractor should allow adequate time in his project schedule for the sampling, analysis, and review of analytical data.

When the organic content of the topsoil is less than 2.75 percent, it shall be increased by adding composted sewage sludge or another product approved by the Engineer, at a rate necessary to attain this minimum organic content. The organic content of soils will be determined in accordance with AASHTO T194 except that the sample is to be taken from oven-dried soil passing a #10 sieve. Shipments of composted sewage sludge, if used, shall be accompanied by delivery slips with the certified weight and the name of the producer or supplier.

A minimum of 2 tons lime and 500 pounds of 10-20-10 fertilizer per acre is to be applied. Incorporate the lime and fertilizer into the soil to a depth of 4" by discing across the slope to minimize erosion and runoff. Apply additional lime and fertilizer according to soil test recommendations such as offered by Rutgers Cooperative Extension. Soil tests should be conducted at a rate of 1 test per 2,500 square yards.

All seedbeds should be raked lightly to level the seedbed. All permanent seed should be applied during March 1 to May 15 or from August 15 to October 15. Good seed to soil contact must be obtained. Flat areas should be seeded with a drop seeder, drill, or cultipacker seeder, and rolled with a corrugated roller. The permanent seed mixture should be applied a rate of 220 pounds per acre. Slopes may be seeded with a hydroseeder. A one step hydroseeding operation will not be acceptable. All seeding shall be suspended when wind velocities exceed 5 miles per hour or as directed by the Engineer. Seeding on all areas shall be accomplished within 5 days after final grading and topsoil placement has been completed.

Mulching must be completed within 7 days after seeding on all seeded areas. All slopes of less than 15% must be covered with straw mulch which will be anchored by overspraying with a tackifier.

Mulch shall be applied at a rate of 1.5 tons per acre and spread such that approximately 85% of the soil surface is covered. The tackifier shall be applied at a rate of 194 gallons per acre and applied uniformly across the site.

Following applications of mulch, the seed bed shall be moistened by the Contractor. A muddy soil condition is not acceptable. Seeded areas shall be watered by the Contractor at no additional expense to the State as often as required to obtain and maintain a satisfactory stand of grass, practically weed free, and containing plants in reasonable proportion to the various kinds of seed in the grass seed mixture. Deficient areas shall be mowed, refertilized, reseeded and remulched at no cost to the State until a satisfactory stand of grass is established. Seeded areas shall be maintained until final acceptance of construction. Deficient, damaged or otherwise unsatisfactory areas shall be re-fertilized, re-seeded, and re-mulched at no additional cost to the State.

2.8.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.8.1	Topsoil 6" Thick	Square Yard
2.8.2	Revegetation	Square Yard

The Contractor shall be paid the Bid Item No. 2.8.1 at the unit price per square yard of topsoil installed (6"), as measured in the horizontal plane, according to 1.2.16. Such price shall be considered full payment for excavation and/or delivery, stockpiling and installation of topsoil.

The Contractor shall be paid under Bid Item No. 2.8.2 at the unit price per square yard for fertilizing, seeding, mulching, and watering as measured in the horizontal plane per Section 1.2.16. Separate or additional payment will not be made for areas of fertilizing and seeding disturbed by the Contractor, outside of the construction operations area or areas of deficient stands of grass. Fertilizing and Seeding shall include purchase, delivery, and application of lime, fertilizer, and seed to all areas where topsoil has been placed in accordance with the Soil Erosion and Sediment Control Plan. Straw Mulching shall consist of purchase, delivery, and placement of straw mulching on all areas to be seeded in accordance to these Specifications and the Soil Erosion and Sediment Control Plan. Watering shall include purchase, delivery, and application of water as needed to sustain vegetation. Contractor will not be paid separately for watering but is included in the cost of Revegetation.

Payment under bid items 2.8.1, Topsoil and 2.8.2, Revegetation, will be made only for the following areas:

- Within the limits shown on the drawings, over the proposed 6" landfill gas line.
- A maximum of four acres in the waste relocation area on top of the landfill.

Separate payment will not be made for Topsoil or Revegetation needed due to disturbances caused by the Contractor's operations.

END OF SECTION

2.9 Geotextiles

2.9.1 General Description

Geotextiles shall include the purchase, delivery, and installation of Type B geotextile (separation/stabilization/filter) in accordance with Appendix A5 of the Standards for Soil Erosion and Sediment Control in NJ; and as shown on the drawings. It shall also include the purchase, delivery and installation of geogrid if and where directed by the Engineer. The contractor shall submit manufacturer data sheets and test results for proposed materials, in accordance with section 1.3.

2.9.2 Materials

Geotextile Type B

Geotextile Type B, Typar 3601 or equal, as approved by the Engineer, and shall meet the requirements of roadway separation/stabilization geotextile as indicated in Table 2.9-1. The material, shall be 6 ounces/yard non-woven type configuration with a minimum apparent opening size of US sieve 140, conforming to AASHTO Specification M 288-96. The testing frequency shall be 1 sample per 10,000 square feet as per Section 1.10. Geotextile rolls shall be laid so there is 2 feet of overlap on all sides adjacent with another roll. To protect the geotextile and prevent degradation due to exposure, the geotextile shall be covered with roadway material within 21 days of placement.

Geogrid

Geogrid shall be Tenax MS 330 biaxial-oriented polypropylene geogrid or Tensar-BX-1200 geogrid, or equal, as approved by the Engineer, and shall meet the requirements of Geogrid as indicated in Table 2.9-1. The testing frequency shall be 1 sample per 10,000 square feet as per Section 1.10. Geogrid shall be placed under the fill in the Transco Easement area. Heavy equipment or vehicles shall not be operated on top of the easement geogrid to avoid damage. Geogrid shall be used "if and where directed" between the separation fabric and the first lift of roadway material as per the manufacturer's recommendations in the event that exceptionally soft soils are encountered.

2.9.3 Submittals

Manufacturer product data sheets and test results for parameters listed in table 2.9-1 shall be submitted to the Engineer and NJDEP for approval, prior to the delivery and use of geotextiles on the site.

Submittals shall be in accordance with Section 1.3.

2.9.4 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.9.1	Geotextiles, Type B	Square Yard
2.9.2	Geotextiles, Type B, If and Where Directed	Square Yard
2.9.3	Geogrid	Square Yard
2.9.4	Geogrid, If and Where Directed	Square Yard

The Contractor will be paid the bid unit price per square yard of Bid Item 2.9.1, Geotextiles, Type B (separation/stabilization/filter) installed at the site (not including overlap). The Contractor shall be paid the bid unit price per square yard for Bid item 2.9.3, Geogrid, installed at the site (not including overlap). Payments shall include purchase, delivery, installation, testing, and protection. Payment will not be made for waste or overlap.

Separate payment will be paid per Bid Item 2.9.2 and 2.9.4 for If and Where Directed items. Refer to Section 1.2.29 for addition language regarding if and where directed items.

TABLE 2.9 - 1
QUALITY ASSURANCE PLAN
GEOTEXTILES
TESTING FREQUENCY

PROPERTY	REQUIRED TEST/ TEST METHOD	ACCEPTANCE/REJECTION CRITERIA (Minimum)
Type B		
Grab Tensile Strength (lbs)	ASTM D4632	240
Grab Elongation (%)	ASTM D 4632	60
Trapezoidal Tear Strength (lbs)	ASTM D4533	90
Puncture Strength (lbs)	ASTM D4833	67
UV resistance @ 500 hrs	ASTM D4355	70
Apparent Opening Size (US Sieve)	ASTM D4751	140
Permittivity (sec ⁻¹)	ASTM D4491	0.1
Water Flow Rate (gal/min/ft ²)	ASTM D4491	15
Mass Per Unit Area (oz/yd ²)	ASTM D5261	6.0
Geogrid		
Thickness (in)	ASTM D1777	Junction 0.16 Rib-MD 0.059/Rib-TD 0.059
Mass Per Unit Area (oz/yd ²)	ASTM D5261	9.7
Peak Tensile Strength (lb/ft)	ASTM D6637	MD: 1,370 TD: 2,100
Flexural Rigidity (mg-cm)	ASTM D1388	750,000

MD – Machine Direction (longitudinal to the roll)

TD – Transverse Direction (across roll width)

END OF SECTION

2.10 Common Fill

2.10.1 General Description

Common fill designated as Fill, I-11 and Fill, I-13 shall be used for embankment construction, grading, and backfilling of excavations. Fill, I-11 shall be placed underwater and to within one foot above mean water line. Common fill shall be placed so as to not cause any damage to the underlying layers. Common Fill shall include purchase, excavation, stockpiling, hauling, placement, and compaction of pre-qualified material from an off-site borrow area.

2.10.2 Material

Common fill shall consist of bank-run sand and gravel, commercial sand and gravel combined, blast furnace slag, or stone, except that blast furnace slag will not be permitted when in contact with concrete.

Common fill from a single source shall be used in any one construction item, unless otherwise submitted and approved by the Engineer. Common fill from different sources may be considered, if the sources are of the same geological classification and have similar specific gravities and color.

Fill, I-11 will be used to create the new Williams-TRANSCO gas pipeline easement for filling below the mean waterline and up to 12" above the waterline. The gradation requirements shall apply to material prior to placement. The contractor shall provide one sieve analysis (ASTM D422) per proposed borrow source as per Section 1.10. Fill, I-11 shall conform to the following gradation requirements:

I-11 Gradation Designation	
Sieve Size	weight passing square mesh sieves
4"	100 %
2"	80-100 %
¾"	60-100 %
#4	40-100 %
#50	0-75 %
#200	0-9 %

The gradation requirements for Fill, I-13 shall apply to material prior to placement. The contractor shall provide the results of one sieve analysis (ASTM D422) and one Modified Proctor (ASTM D1557) test per borrow source as per Section 1.10. If bank-run or other materials conforming to these requirements are not available, materials that conform thereto may be produced by combining and mixing. Such combining and mixing shall not be performed on-site.

I-13 Gradation Designation	
Sieve Size	weight passing square mesh sieves
#4	100 %
#50	30-100 %
#200	0-12 %

All common fill brought from off-site must meet the following requirements (from NJAC 7:26D):

1. Fill shall be uncontaminated pursuant to the more stringent of DEP's Non-Residential Direct Contact Soil Remediation Standards or DEP's Default Leachate Criteria for Class II Ground Water found in DEP's Guidance for the use of the Synthetic Precipitation Leaching Procedure to Develop Site-Specific Impact to Ground Water Remediation Standards and shall be free of extraneous debris or solid waste. Additional testing, sampling, and laboratory delays will result for all changes of source of imported fill.
2. Documentation shall be provided by certification stating that it is virgin material from a commercial or noncommercial source or decontaminated recycled soil.
3. All proposed sources of fill must be pre-approved by the Engineer. Bills of lading shall be provided to the Engineer to document the source(s) of fill. The documentation shall include: (1) the name of the affiant and relationship to the source of the fill, (2) location where the fill was obtained, including the street, town, lot, block, county and state and a brief history of the site which is the source of fill, and (3) a statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to #1 above and a description of the steps taken to confirm such.
4. The Engineer will acquire samples for analytical testing for compliance with the NJDEP Standards and Guidance for clean fill as described in Item (1) above. No fill may be brought to the site until the Engineer confirms that it meets the NJDEP Standards and Guidance. The Contractor should allow adequate time in his project schedule for the sampling, analysis, and review of analytical data.

2.10.3 Submittals

Submittals shall be according to Section 1.3 and shall include the source location, copy of the borrow area permits, and results of analysis indicating material meets the criteria of these Technical Specifications.

2.10.4 Placement and Compaction

Embankments of Fill, I-11 in swamp or wet areas shall be constructed as follows. Fill, I-11 may be end-dumped and spread by a dozer. Fill, I-11 shall only be placed and spread to such an elevation that permits the use of compacting equipment, but not more than 1 foot above water elevation, unless otherwise directed by the Engineer. Fill, I-11 shall be placed and spread to full thickness and then compacted in 10 overlapping passes using a minimum 13 ton static weight roller.

The manner of filling and advancing the Fill, I-11 wedge shall be such as to displace any underlying soft and wet material laterally to the sides and not entrap it under the fill. If Fill, I-11 is spilled or otherwise deposited on the top or sides of the embankment during this operation, it shall be entirely removed without additional compensation. The formation of the embankment shall proceed

continuously from one end to the other in such manner that soft and wet underlying material is not entrapped under the new embankment.

Fill, I-13 will be used for the following purposes/locations (1) as fill material above the Fill, I-11 for the new gas pipeline easement embankment, (2) the final 12” of fill over the installed gas pipeline, and (3) as directed by the Engineer for backfill on other portions of the project. Note, Fill, I-13 cover material on the landfill is intended to provide a relatively high bearing capacity for future development, and should be well compacted.

Fill, I-13 shall be placed in maximum 12” loose lifts and compacted to 92% of the maximum dry density as measured using the Modified Proctor test (ASTM D1557). In place Fill, I-13 shall be within 5% of the optimum moisture content after compaction. Compaction density testing shall be conducted at a minimum rate of one (1) test per 2,500 square feet of each lift.

Precautions shall be taken to prevent settlement or dislocation of, or damage to, any existing structures. If structures are damaged by or as a result of the work, they shall be repaired, replaced, or otherwise restored, without additional compensation, to a condition as good as prevailed at the time the Project started.

2.10.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.10.1	Fill, I-11	Ton
2.10.2	Fill, I-13	Ton
2.10.3	Fill, I-11, If and Where Directed	Ton
2.10.4	Fill, I-13, If and Where Directed	Ton

The Contractor will be paid the bid price per ton for Pay Item 2.10.1 and 2.10.2 for the purchase, excavation, Proctor and particle size testing, stockpiling, handling, placement, compaction, and compaction testing of Fill, I-11 and Fill, I-13. Costs for obtaining off-site material shall be included in the Contractor’s unit price(s) for the specific use proposed. Separate payment will be made per Bid Item 2.10.3 and 2.10.4 for If and Where Directed items. Refer to Section 1.2.29 for additional language regarding if and where directed items.

The Contractor will NOT be paid under Item 2.10.2 Fill, I-13 for fill associated with daily cover to cover the relocated waste. The cost for daily shall be included in Pay Items 2.5 and 2.5.1. The Contractor will be paid under Item 2.10.2 Fill, I-13 for fill associated with the final waste cover.

END OF SECTION

2.11 Coarse Aggregate (#57)

2.11.1 General Description

Coarse Aggregate (#57) shall be used for a variety of applications for this project, including, fill under the gas blower and gas flare pads, and general fill in wet areas. Aggregates from a single source shall be used in any one construction item, unless otherwise authorized. Aggregates from different sources may be permitted, if they are of the same geological classification and have similar specific gravities and color. The coarse aggregate shall include purchase, stockpiling, hauling, and placement of pre-qualified material from off-site.

2.11.2 Material

Coarse aggregate (#57) shall be broken stone, washed gravel, blast furnace slag, and boiler slag graded as shown in the following table. Broken stone shall be uniform in texture and quality and shall be free of organic matter, wood, garbage, metal, debris, or lumps of clay. Blast furnace slag will not be permitted when in contact with concrete.

The gradation requirements shall apply to material prior to placement.

Coarse Aggregate (#57) Gradation Designation	
Sieve Size	Weight passing square mesh sieves
1 1/2"	100 %
1"	95-100 %
1/2"	25-60 %
#4	0-10%
#8	0-5%

Requirements for Clean Fill

All Coarse Aggregate (#57) brought from off-site must meet the following requirements (from NJAC 7:26D):

1. Fill shall be uncontaminated pursuant to the more stringent of DEP's Non-Residential Direct Contact Soil Remediation Standards or DEP's Default Leachate Criteria for Class II Ground Water found in DEP's Guidance for the use of the Synthetic Precipitation Leaching Procedure to Develop Site-Specific Impact to Ground Water Remediation Standards and shall be free of extraneous debris or solid waste. Additional testing, sampling, and laboratory delays will result for all changes of source of imported fill.
2. Documentation shall be provided by certification stating that it is virgin material from a commercial or noncommercial source or decontaminated recycled soil.

3. All proposed sources of fill must be pre-approved by the Engineer. Bills of lading shall be provided to the Engineer to document the source(s) of fill. The documentation shall include: (1) the name of the affiant and relationship to the source of the fill, (2) location where the fill was obtained, including the street, town, lot, block, county and state and a brief history of the site which is the source of fill, and (3) a statement that to the best of the affiant's knowledge and belief the fill being provided is not contaminated pursuant to #1 above and a description of the steps taken to confirm such.
4. The Engineer will acquire samples for analytical testing for compliance with the NJDEP Standards and Guidance for clean fill as described in Item (1) above. No fill may be brought to the site until the Engineer confirms that it meets the NJDEP Standards and Guidance. The Contractor should allow adequate time in his project schedule for the sampling, analysis, and review of analytical data.

2.11.3 Submittals

Submittals shall be according to Section 1.3 and shall include the source location, and results of analysis indicating material meets the criteria of these Technical Specifications.

2.11.4 Placement and Compaction

Material used for structure foundations within the blower pad area shall be placed in 8 inch loose lifts and then be compacted by 1 pass of a minimum 13 ton vibratory cylinder roller, as approved by the Engineer.

Within other confined areas, Coarse Aggregate (#57) shall be hand placed in layers 6 inch loose layers and each layer shall be compacted with flat-face mechanical tampers.

2.11.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.11	Coarse Aggregate (#57), if and where directed	Cubic Yard

The Contractor will be paid the bid price per cubic yard including material, labor, placement and compaction of Coarse Aggregate (#57) fill, if and where directed by the Engineer.

Separate payment will not be made for Coarse Aggregate (#57) included and paid under other pay items such as gas blower and flare pads.

END OF SECTION

2.12 Concrete Pads for Gas Blower, Transformer and Gas Flare

2.12.1 Related Documents

Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section. Additionally, the NJDOT Standard Specifications for Road and Bridge Construction (Revised December 2006) shall apply to this Section for all items associated with concrete work.

2.12.2 General Description

The gas blower, transformer, and flare pads shall be constructed in accordance with the Drawings and these specifications. In the future the gas blower pad will house a mechanical blower for the landfill gas venting system, a transformer station, and a flare. The pad is to be built on the piles which are described in Section 2.13. Construction of the Gas Blower Pads should be completed in the following general steps: preparation of subgrade, installation of piles, placement of base course, and finally construction of reinforced concrete pad.

2.12.2 Submittals

Mix Design: Submit proposed concrete production facility qualifications for acceptance by the Engineer prior to commencement of work. Concrete production facility qualifications can be found in section 2.12.9.

Ready-Mix Delivery Tickets: ANSI/ASTM C94.

Shop Drawings and Product Data: Submit in accordance with project documents.

Shop Drawings: Prior to fabrication and delivery, submit shop drawings clearly indicating:

1. Reinforcing bar sizes, spacing, location and quantities of reinforcing steel and wire fabric, bending and cutting schedules, and supporting and spacing devices.
2. Reinforcement Details: Details, splices, and lengths of laps shall be in accordance with ACI 315; CRSI - Manual of Standard Practice, and in accordance with Contract Drawing requirements.
3. Construction and control joints not shown on drawings.

Product Data: Submit manufacturer's descriptive literature and application/installation instructions and recommended procedures.

2.12.3 Environmental Requirements

Allowable Concrete Temperatures:

1. Cold Weather: Conform to maximum and minimum requirements of ANSI/ASTM C94 and ACI 306.

- a. Do not use frozen materials or materials containing ice or snow.
- b. Do not place concrete on frozen subgrade or on subgrade containing frozen materials.

Note: Use only specified non-corrosive, non-chloride accelerator. Calcium chloride, Thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.

2. Hot Weather: Maximum concrete temperature of 90° F, conform to requirements of ANSI/ASTM C94 and ACI 305.

- a. Prevent rapid drying during hot weather.

Do not place concrete during rain, sleet, or snow unless protection is provided.

2.12.4 Form Materials

Form work: Conform with requirements of ACI 347, Chapter 3, Materials and Form Work.

1. Material:

- a. Use either steel forms, designed specifically for the purpose, or wood forms of plywood or lumber not less than $\frac{3}{4}$ " thick.
- b. Non-Architectural Concrete: Unlined lumber or plywood may be used.

Corner Forms (when Applicable): $\frac{3}{4}$ " chamfer or profile indicated, made of plastic, rubber, or wood.

Ties: Snap type, carbon steel where not exposed and stainless steel for exterior or exposed concrete.

Nails, Spikes, Lag Bolts, Through Bolts, Anchors: Sized as required; of sufficient strength and character to maintain formwork in place while placing and curing concrete.

Form Release Agent: Colorless mineral oil which will not stain concrete or impair natural bonding, or color characteristics, or other coating intended for use on concrete.

1. Coating must be applied prior to placement of reinforcement.

2.12.5 Reinforcing

Fabrication: In accordance with CRSI - Manual of Standard Practice, ACI 315, and the drawings.

Reinforcing Steel: ANSI/ASTM A615, ANSI/ASTM A616, ANSI/ASTM A617, 60 ksi yield grade

steel bars; uncoated finish, sizes as indicated.

Tie Wire: FS QQ-W-46G, annealed black steel, 16 gauge minimum.

Chairs, Bolsters, Bar Supports, Spacers: Adequately sized and shaped for strength and support of reinforcing during concrete operations.

No welding of reinforcing bars will be permitted without approval of Engineer.

All reinforcement shall be continued across joints, except for slabs-on-grade.

2.12.6 Concrete Materials

Concrete (Ready-mixed): Shall conform to requirements of ACI 301, ACI 318, and ANSI/ASTM C94.

Cement: ANSI/ASTM C150, normal Type I or II, Portland, gray color. Cement for concrete exposed to view shall be of one manufacturer.

Coarse Aggregate: ANSI/ASTM C33, with a maximum size limited to requirements of ACI 318.

Fine Aggregate: ANSI/ASTM C33, washed, hard sand.

Water: Fresh, clean, potable, and not detrimental to concrete.

2.12.7 Admixtures

Water Reducing Admixture: ANSI/ASTM C494, Type A, containing no more chloride ions than present in municipal drinking water, "Eucon WR-75", as manufactured by the Euclid Chemical Company, Cleveland, OH; "Pozzolith 200" by Master Builders; or "Plastocrete 160" by Sika Chemical Corp.

Water Reducing, Retarding Admixture: ANSI/ASTM C494, Type D, containing no more chloride ions than present in municipal drinking water, "Eucon Retarder-75" as manufactured by the Euclid Chemical Company; "Pozzolith 100XR" by Master Builders; or "Plastiment" by Sika Chemical Corporation.

Air Entrainment Admixture: ANSI/ASTM C260.

Prohibited Admixtures: Calcium chloride, thiocyanates or admixtures containing more than 0.05% chloride ions are not permitted.

Certification: Written conformance with the above mentioned requirements, and the chloride ion content of the admixture will be required from the admixture manufacturer prior to mix design review by the Engineer.

2.12.8 Curing Materials

Liquid Membrane Forming Compound Type: Do not use curing and sealing compounds which are not compatible with adhesives and cements for finish materials when scheduled to go over concrete substrates, and where concrete is scheduled to receive special coatings or toppings.

1. Type: Clear styrene acrylate type, 30% solids content minimum. Sodium Silicate compounds are prohibited.
2. Moisture Loss: Test data from independent testing laboratory indicating a maximum moisture loss of 0.030 grams per sq. cm. when applied at a coverage rate of 300 sq.ft. per gallon.
3. Manufacturer: "Super Rez Seal" as manufactured by The Euclid Chemical Co.; "Vulkem 2101" by Mameco International, Inc.; or "Masterkure 30" by Master Builders.
4. Certificate: Manufacturer's certification required.

Non-Liquid Membrane Type: When Liquid Membrane Type curing compounds are not compatible, or specified not to be used, use one of the following materials.

1. Regular concrete "CURING PAPER", ANSI/ASTM C171.
2. Polyethylene film, ANSI/ASTM D2103, 6 mil thick, "WHITE" opaque type.
 - a. Black or Clear-type polyethylene-type films will not be acceptable.

2.12.9 Accessories

Expansion Joint Material: Preformed asphalt, ANSI/ASTM D994; or FS HH-F-341F, Type II, 1/4" thick by full depth of concrete.

Control Joint Materials: Use for exterior sawed control joints.

1. Joint Sealant: ASTM C290, Type M, Grade NS, Class 25, two component type, urethane sealant, requiring no primer, "Eucolastic II" by Euclid Chemical Co., or "Vulkem - 922" by Mameco International.
2. Joint Filler: Compatible with sealant, closed cell polyethylene foam, PVC foam or other fillers not containing asphalt or tar, as approved by Engineer.

Waterstops (as applicable): Rubber or polyvinylchloride; type and width as indicated by maximum possible lengths, with electrically welded splice joints.

Splash blocks (as applicable): Precast concrete type, of size(s) indicated and as required to properly collect and remove storm water.

2.12.10 Concrete Mix

Mix concrete only in quantities for immediate use, and in accordance with ANSI/ASTM C94.

The concrete shall be poured within 90 minutes from leaving the plant.

Mix Proportioning: Concrete design mixes are based on a minimum 28 day compressive strength as follows:

<u>Location</u>	<u>Req'd 28 day Compressive Strength P.S.I.</u>	<u>Max. Water Cem. Ratio</u>	<u>Air Content</u>
Exterior site concrete unless noted otherwise on the Drawings	4,000	0.40	4.0%-6.0%

Notes: All coarse aggregate size shall be AASHTO #57.

Proportions for concrete mixes shall be selected by ACI 301, Section 3.9. All mixes will be permitted without prior approval of the Engineer.

Where the concrete production facility can establish the uniformity of its production for concrete of similar strength and materials based on recent test data, the average strength and materials based on recent test data, the average strength used as a basis for determining mix design proportions shall exceed the specified strength by the requirements of ACI-318-83, Section 4.3 or ACI-301-84, Section 3.9.

When a concrete production facility does not have test records for calculation of standard deviation, the required average strength shall be at least 1200 psi greater than the specified design strength.

All concrete shall have a maximum slump of 3" for slabs and 4" for other members. This maximum slump may not be exceeded.

- A. Ready-Mixed Concrete: Measure, batch, mix, and deliver concrete according to ASTM C 94/C 94M and ASTM C 1116, and furnish batch ticket information.
 - 1. When air temperature is between 85 and 90 deg F, reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F, reduce mixing and delivery time to 60 minutes.

2.12.11 Subgrade Preparation

Grade area to where concrete gas blower pad it so be installed. Grading shall be done in accordance with methods described in Section 2.5. Area shall be compacted in accordance with compaction method described in Section 2.3.7.2, before placement of base course. Place and compact 6" coarse aggregate #57 base course over prepared subgrade. Unsuitable areas identified during compaction shall be repaired before placement of concrete. All compaction testing must be completed before pouring base course.

Surface Preparation: Remove loose material from compacted base material surface to produce a firm, smooth surface immediately before placing concrete.

2.12.12 Formwork Erection

Placement: Conform to requirements of ACI-347

Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with drawings.

Construct formwork, shoring and bracing to meet design and code requirements accurately so that resultant finished concrete conforms to shapes, lines and dimensions indicated on drawings.

Arrange and assemble formwork so as to permit easy dismantling and stripping, so that concrete is not damaged during form removal.

Align form joints and make watertight, to prevent leakage of mortar and disfigured appearance of concrete. Keep form joints to minimum.

Arrange forms to allow stripping without removal of principal shores, where these are required to remain in place.

Provide bracing to ensure stability of formwork as a whole. Prop or strengthen all previously constructed parts liable to be overstressed by construction loads.

Apply form release agent on formwork in accordance with manufacturer's recommendations. Apply prior to placing reinforcing steel, anchoring devices and embedded parts. Do not apply form release agent where concrete surfaces are to receive special finishes or applied coverings which are affected by agent.

2.12.13 Inserts/Embedded Parts/Openings

Provide formed openings where required for pipes, conduits, sleeves and other work to be embedded in and passing through concrete members.

Accurately locate and set in place items which are to be cast directly into concrete.

Coordinate work of other sections and cooperate with trade involved in forms and/or setting openings, slots, recesses, chases, sleeves, bolts, anchors and other inserts. Do not perform work unless specifically indicated on drawings or approved prior to installation.

Install all concrete accessories in accordance with drawings and manufacturer's recommendations; straight, level, and plumb. Ensure items are not disturbed during concrete placement.

Install waterstops, when appropriate to project, continuous without displacing reinforcement. Heat

weld all joints watertight.

Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection. Locate openings at bottom of forms to allow flushing water to drain. Close temporary ports or openings with tight fitting panels, flush with inside face of forms, neatly fitted so that joints will not be apparent in exposed concrete surfaces.

2.12.14 Cleaning Forms

Clean forms as erection proceeds, to remove foreign matter. Remove cuttings, shavings and debris from within forms. Flush completely with water to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out completed forms, unless formwork and concrete construction proceed within a heated enclosure. Use compressed air or other means to remove foreign matter.

2.12.15 Reinforcing Placement

Placement of Steel Bar Reinforcing:

1. Conform to CRSI - Manual of Standard Practice.
2. Place reinforcing as indicated on drawings, adequately supported and secured against displacement.
3. Do not deviate from true alignment.

Adjustment:

1. Move within allowable tolerances to avoid interference with other reinforcing steel, conduits, or other embedded items.
2. Do not move bars beyond allowable tolerances without approval by Engineer.
3. Do not heat, bend, or cut bars in the field without approval by Engineer.

Splices:

1. Lap Splices: Tie securely with wire to prevent displacement of splices during placement of concrete.
2. Splice Devices: Install in accordance with manufacturer's instructions.
3. Do not splice bars except at locations shown on approved shop drawings.
 - a. If splice locations are not shown, then only at locations and types as directed by Engineer.

Cleaning:

1. Remove all dirt, grease, oil, loose mill scale, excessive rust, and foreign matter that will reduce bond with concrete.

Protection:

1. Keep reinforcing steel in proper position during concrete placement and operations.

2.12.16 Placing Concrete

Place concrete in accordance with lines and levels indicated on drawings and in accordance with requirements of ACI 304.

Ensure all expansion joint material, anchors, sets, plates, and other items to be cast into concrete are in place and held securely.

Ensure reinforcements, inserts, embedded parts, formed expansion and contraction joints, and other items are not disturbed during concrete placement.

Convey concrete from mixer or transporting vehicle to place of final deposit as rapidly as practical by methods which will prevent separation or loss of the material.

Regulate rate of placement so concrete remains plastic and flows into position.

Do not deposit concrete that has partially hardened.

Deposit concrete in continuous operation until panel or section is completed.

Place concrete in continuous horizontal layers.

Slabs-On-Grade: Place slabs in "long strip pattern", in accordance with ACI 302.1R, Chapter 6. Pattern shall be formed by use of prefabricated tongue and grooved metal key joints. Divide placed concrete strips into approximate square sections by making transversed "control joints" as specified below.

2.12.17 Concrete Joints

Control (contraction) Joints: Provide control joints for sectioning concrete into areas to eliminate shrinkage and thermal cracking.

1. Form weakened-plane control joints to a depth equal to a minimum of $\frac{1}{4}$ the concrete thickness, using one of the following methods:
 - a. Tooled Joints: Form joints in fresh concrete by hand grooving top portion of surface.
 - b. Insert Joints: Form joints by inserting preformed plastic or metal control joint strips into the top surface of freshly placed concrete.
 - c. Sawed Joints: Form joints by using power saw equipped with shatterproof or

diamond-rimmed blades. Cut joints into hardened concrete as soon as surface will not be torn, abraded, or otherwise damaged by the cutting action.

- 1) Soft-Cut Saw: Shall be used immediately after final finishing and to a depth of 1 1/4".
 - 2) Conventional Saw: Shall be used as soon as possible without dislodging aggregate, to a depth of 1/4 slab thickness.
 - 3) Immediately after saw cutting, clean and dry joints, place joint filler and apply sealant in accordance with manufacturer's instructions.
2. At all construction joints of slabs on grade, discontinue slab reinforcement.
 3. Place vertical wall construction joints at 20' intervals for walls over 30' in length.

Isolation Joints:

1. Separate floor slabs from vertical surfaces with 15 lb. roofing felt paper.
2. Isolate structural columns, when applicable, by forming diamond-shaped isolation joints.
 - a. Install joint filler around diamond shaped formwork, placing floor slab before placing diamond around column.
 - b. Extend joint filler from bottom of slab to within 1/4" of finished slab surface.
3. Install isolation joints at all locations as may be indicated on drawings.

Construction Joints (Bonding):

1. Clean and roughen surface of hardened concrete, and remove laitance.
2. Dampen surface, if required. Surface shall be prepared in accordance with the bonding material manufacturer's directions.
3. Bonding compound, bonding admixture, or epoxy adhesive shall be used in strict accordance with the directions of the manufacturer.
 - a. Type shall be as approved by Engineer.
4. Fresh concrete shall be placed after bonding compound has dried and while bonding admixture grout or epoxy adhesive is still tacky.

2.12.18 Consolidating Concrete

During and immediately after depositing, all concrete shall be thoroughly consolidated by means of suitable tools, as recommend by ACI.

2.12.19 Concrete Finishing

Formed Concrete:

1. Tops of Forms:
 - a. Strike off concrete smooth at tops of forms.
 - b. Float to texture comparable to formed surfaces.
2. Formed Surfaces:

- a. Spade Finish: Surfaces not exposed to view shall be given a spade finish.
 - 1) Patch tie holes and other defects after form removal.
 - 2) During placement of concrete, force spade or similar device into concrete adjacent to form and then pulling away from form, to bring mortar to form surface.
 - 3) Remove fins from finish surface.
- b. Rubbed Finish: Surfaces exposed to view shall be given a rubbed finish.
 - 1) On patched surface specified above, rub surface with carborundum stone to eliminate fins and irregularities, but not to cut the general surface of the concrete.
 - 2) Brush finishing or painting with grout or neat cement will not be permitted.
 - 3) Corners or edges shall be slightly rounded by use of the carborundum stone.

Flatwork:

1. Tolerances: Place, consolidate, strike off level, float and trowel smooth, and maintain surface flatness with maximum variation of $\frac{1}{8}$ " in 10'. Pitch to drains $\frac{1}{4}$ " per ft. unless noted otherwise on drawings.
2. General:
 - a. Place, consolidate, strike off and level concrete.
 - b. Do not work surface until ready for floating.
 - c. Power float surface on disappearance of water sheen.
 - d. Hand float areas inaccessible to power float.

2.12.20 Curing and Protection

Beginning immediately after placement, and final finishing, cure and protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

Liquid Membrane Curing Compounds: Curing shall be by application of specified curing and sealing compound, the specified dissipating resin-type compound, or by application of waterproof sheet materials conforming to ASTM C171. Liquid membrane-forming curing and sealing compounds shall be applied in accordance with the manufacturer's recommendations. Curing compounds must be applied immediately after final finishing. For curing by the waterproof sheet material, the concrete must be continually moist-cured for a minimum of seven days. The curing process must begin immediately after final finishing.

The curing period shall be continuous for a minimum duration of seven days when the ambient temperature exceeds 50° F.

When concrete slab placement is subject to high temperatures, wind and/or low humidity the Engineer may require the use of the specified evaporation retarder to minimize plastic cracking.

The compound may be required to be applied one or more times during the finishing operation. The initial application is usually made after the strike-off operation.

2.12.21 Final Sealing

Sealer Finish: Apply a coat of the specified water-based acrylic emulsion compound to all new slabs which are scheduled to be left exposed. The compound shall be applied just prior to completion of project.

2.12.22 Form Removal

Do not remove forms, shores and bracing for a minimum of 12 hours, and until concrete has gained sufficient strength to carry its own weight, construction loads, and design loads which are liable to be imposed upon it. Verify strength of concrete by field cured compressive test results.

Remove formwork progressively and in accordance with code requirements and so that no shock loads or unbalanced loads are imposed on structure.

Loosen forms carefully. Do not wedge pry bars, hammers or tools against concrete surfaces.

Reshore structural members where required due to design requirements or construction conditions and as required to permit progressive construction. Remove load supporting forms only after concrete has attained 75% of required 28 day compressive strength, provided construction is reshored.

Remove forms not directly supporting weight of concrete as soon as stripping operations will not damage concrete.

Backfilling: Do not backfill against concrete walls for a minimum of seven days, or until the concrete has attained 70% of its design strength.

2.12.23 Defective Concrete

With prior approval of Engineer, as to method and procedures, all repair of defective areas shall conform to ACI 301, Chapter 9, except bond shall be achieved by use of one of the specified bonding materials.

All structural repairs, with prior approval of Engineer, as to method and procedures, shall be made by use of the specified epoxy adhesive and/or epoxy mortar.

2.12.24 Concrete Testing

Testing will occur as per Section 1.10. The Contractor will take a minimum of one set of four cylinders per 50 Cubic Yards, with at least one cylinder collected for each day that concrete is placed. Test one cylinder in compression at 7 days and two at 28 days in accordance with ASTM C 39; keep one cylinder in reserve for additional testing.

2. Testing Frequency: Obtain one composite sample for each day's pour of each concrete mixture exceeding 5 cu. yd., but less than 25 cu. yd., plus one set for each additional 50 cu. yd. or fraction thereof.
 - a. When frequency of testing will provide fewer than five compressive-strength tests for each concrete mixture, testing shall be conducted from at least five randomly selected batches or from each batch if fewer than five are used.
3. Slump: ASTM C 143/C 143M; one test at point of placement for each composite sample, but not less than one test for each day's pour of each concrete mixture. Perform additional tests when concrete consistency appears to change.
4. Air Content: ASTM C 231, pressure method, for normal-weight concrete; one test for each composite sample, but not less than one test for each day's pour of each concrete mixture.
5. Concrete Temperature: ASTM C 1064/C 1064M; one test hourly when air temperature is 40 deg F and below and when 80 deg F and above, and one test for each composite sample.
6. Compression Test Specimens: ASTM C 31/C 31M.
 - a. Cast and laboratory cure two sets of two standard cylinder specimens for each composite sample.
 - b. Cast and field cure two sets of two standard cylinder specimens for each composite sample.
7. Compressive-Strength Tests: ASTM C 39/C 39M; test one set of two laboratory-cured specimens at 7 days and one set of two specimens at 28 days.
 - a. Test one set of two field-cured specimens at 7 days and one set of two specimens at 28 days.
 - b. A compressive-strength test shall be the average compressive strength from a set of two specimens obtained from same composite sample and tested at age indicated.
8. When strength of field-cured cylinders is less than 85 percent of companion laboratory-cured cylinders, Contractor shall evaluate operations and provide corrective procedures for protecting and curing in-place concrete.
9. Strength of each concrete mixture will be satisfactory if every average of any three consecutive compressive-strength tests equals or exceeds specified compressive strength and no compressive-strength test value falls below specified compressive strength by more than 500 psi.
10. Test results shall be reported in writing to the Engineer, concrete manufacturer, and Contractor within 48 hours of testing. Reports of compressive-strength tests shall contain Project identification name and number, date of concrete placement, name of concrete testing and inspecting agency, location of concrete batch in

Work, design compressive strength at 28 days, concrete mixture proportions and materials, compressive breaking strength, and type of break for both 7- and 28-day tests.

11. Nondestructive Testing: Impact hammer, sonoscope, or other nondestructive device may be permitted by Architect but will not be used as sole basis for approval or rejection of concrete.
12. Additional Tests: Testing and inspecting agency shall make additional tests of concrete when test results indicate that slump, air entrainment, compressive strengths, or other requirements have not been met, as directed by Engineer. Testing and inspecting agency may conduct tests to determine adequacy of concrete by cored cylinders complying with ASTM C 42/C 42M or by other methods as directed by Engineer.
13. Additional testing and inspecting, at Contractor's expense, will be performed to determine compliance of replaced or additional work with specified requirements.
14. Correct deficiencies in the Work that test reports and inspections indicate does not comply with the Contract Documents.

2.12.25 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.12	Concrete Pad for Gas Blower and Gas Flare	Lump Sum

The Contractor shall be paid Lump Sum for the Bid Item No. 2.12 - Concrete Pad for Gas Blower. This includes all labor and materials for the concrete pad for the gas blower. This also includes the installation of the condensate drain pipe, electric conduit, and the Coarse Aggregate #57 bedding for the condensate drain pipe, reinforcing steel, formwork, and the 6" layer of Coarse Aggregate #57 bedding for the concrete pad as shown on the Contract Drawings. Separate payment will not be made for any other site concrete work.

END OF SECTION

2.13 Closed-End Steel Pipe Piles

2.13.1 General

Closed-End Steel Pipe Piles will be installed in order to support the concrete pad for the blower and gas flare.

2.13.1.1 Related Documents

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Specification Sections, apply to this Section.
- B. The provisions of the AASHTO Standard Specifications for Highway Bridges and the New Jersey Department of Transportation Standard Specifications for Road and Bridge Construction, Section 505 relating to Pile Foundations shall in general govern the work of this section, except that where more severe requirements than those contained in the Specifications are given in this section, the more severe requirements shall govern.

2.13.1.2 Summary

- A. This Section includes the foundation pilings for the Concrete Pad for Gas Blower.
- B. Types of driven Closed-End Steel Pipe Piles include the following:
 - 1. 7.875 in. diameter, 0.500 in. wall thickness, closed end steel pipe piles filled with concrete
- C. Site Conditions: The work shall be performed at a former landfill, near the existing gas plant. Contractor shall be familiar with all existing site conditions and health and safety concerns (Reference Section 3.1, Health and Safety Plan).

Contractor shall fully examine the existing site conditions to ensure that his equipment can operate without damage to or relocation of existing utilities, structures or structural members. The Contractor shall provide all required equipment, modified if needed to accommodate site conditions.

In order to alleviate concerns of vibration induced malfunctioning, vibration monitoring shall be performed during pile driving operations.

2.13.1.3 Submittals

- A. Driving records of each pile shall be submitted to Engineer within 24 hours after driving. Include the following data:
 - 1. Project name and number.
 - 2. Name of Contractor.

3. Pile location, number and date driven.
 4. Type and size of hammer used.
 5. Type of pile driving cap used.
 6. Rate of operation of pile driving equipment.
 7. Pile dimensions.
 8. Elevation of point.
 9. Elevation of butt before and after cut-off.
 10. Ground elevation.
 11. Vibration velocity measurements at existing structures within 200 feet of the pile
 12. Continuous record of number of blows for each foot of penetration.
 13. Pile deviation.
 14. Pile uplift and reaction.
 15. Unusual occurrences during pile driving.
- B. Pile location survey. See section 2.13.1.4 B for details.
- C. Certificate of welder's qualifications.

2.13.1.4 Quality Assurance

- A. The Contractor shall ultimately be responsible to insure and verify the Closed-End Steel Pipe Piles are installed in accordance with design and specifications' requirements and as per the approval of the Engineer and State.
- B. Pile Location Survey
1. The installed location of each pile shall be established by a licensed surveyor and shown on drawings. Copies of which shall be submitted by the Contractor in accordance with the provisions as hereinafter specified in this paragraph.
 2. Survey information may be submitted on several drawings, each covering a partial area only, as the job progresses, in order to expedite the approval of the pile cap work, but upon completion of all pile driving, the Contractor shall submit to Engineer drawings, showing installed locations of all Closed-End Steel Pipe Piles, including obstructed, damaged and compensating Closed-End Steel Pipe Piles, as related to their respective design centers, percentage out of plumb and the cut-off elevations and length below cut-off for each pile.
- C. Welder Qualifications: Qualify welders, welding processes, and procedures in accordance with American Welding Society (AWS) D1.1 "Structural Welding Code – Steel."

2.13.1.5 Delivery, Storage, and Handling

- A. All submittals related to the pile order should be approved before placing the order; otherwise the Contractor may order the Closed-End Steel Pipe Piles at their own risk.

- B. Store pile in orderly groups above ground and blocked to prevent distortion of members.

2.13.1.6 Project Conditions

- A. Site Information: The proposed Concrete Pad for Gas Blower is adjacent to the existing Gas Plant. Prior to start of any site construction activity, the Contractor shall perform a Pre-construction condition survey with video documentation, which shall be used as the reference in case the building sustains damage during pile driving activities. The Contractor shall also perform a post construction survey for filing and comparison purposes. These survey documents shall be the main reference in case of any discrepancy.
- B. Data on indicated subsurface conditions are not intended as representations or warranties of continuity of such conditions. It is expressly understood that NJDEP or Engineer will not be responsible for interpretations or conclusions drawn by the Contractor. The data are made available for convenience of Contractor.
- C. Protection: Protect structures, underground utilities, and other construction from damage caused by pile driving operations.
- D. During installation of the Closed-End Steel Pipe Piles near the existing Gas Plant and buildings, vibrations shall be monitored continuously, and observe the conditions in the vicinity of the construction site on a daily basis. In case the vibration velocity (as peak particle velocity) exceeds 1 in/s, and/or frequency is less than 2 Hertz, all pile driving operations should be stopped. An alternative method should be developed to reduce vibration velocity and frequency to below set levels. No additional payment will be made for delays due to pile installation means and methods or changes in pile installation methods.

2.13.2 Materials and Equipment

2.13.2.1 Closed-End Steel Pipe Piles

- A. Pile: 7.875 in diameter by .500-in wall thickness Grade III Steel with a minimum yield stress of 50 ksi or better (complying with ASTM A 252), concrete filled, closed- end with welded end closure plates (boot).
- B. Closure plates: shall be equal to pile outside diameter with a tolerance of plus or minus 1/16 inch and shall be 1.0 inch minimum thickness. The closure plates shall be made of similar or better grade material and shall be welded **all** around.
- C. Splices: Splices shall be made of similar or better material than the Closed-End Steel Pipe Piles. Splices where required shall be of internal type and full penetration butt welds shall be made all around.

- D. Steel: Hot-rolled, carbon steel structural shapes and plates, complying with ASTM-A36.
- E. Each pile shall be filled with 4,000 psi concrete within 24 hours of it being driven to its full length. Concrete shall not be placed until the driven pile has been approved by the Engineer. The maximum allowed size of coarse aggregate in concrete shall be ¾-inch. Provide vibration to, at least, the top 25 feet of each pile. A temporary pile cap shall be placed on top of each installed pile and maintained until the pile is approved by the Engineer and is filled with concrete.

2.13.2.2 Driving Equipment

- A. General: Provide pile driving equipment of type generally used in standard pile driving practice, operated at manufacturer's specified rate, to develop required rated energy per blow. The energy required to drive the pile shall be based on one PDA testing and Wave Equation Analysis. The PDA should show an ultimate capacity of 60 tons, (equal to 2.5 times the design capacity of 24 tons).
- B. Hammer: Provide pile driving hammers of sufficient capacity, size, and type to be able to deliver consistently effective dynamic energy, suitable to Closed-End Steel Pipe Piles to be driven, and to sub grade material into which they are to be driven, when operating at not more than 75 percent efficiency of rated driving energy.
- C. Driving Caps: Equip hammer with cast steel or structural steel driving cap with grooved base conforming to pile shape. Keep bearing surfaces of grooves true and smooth. The cushion cap or cap block shall be a solid block of hardwood with its grain parallel to the axis of the pile, and enclosed in a tight fitting steel housing. Cap blocks shall be replaced if burnt, crushed or otherwise damaged. Change packing often to ensure that the hammer energy is transmitted to the pile efficiently.
- D. Leads: Use fixed or rigid-type pile driver leads that will hold pile firmly in position and alignment and in axial alignment with hammer. Extend leads to within 2 ft. of elevation at which the pile enters ground.

2.13.3 Execution

2.13.3.1 Preliminary Work

- A. Site Conditions: Do not drive Closed-End Steel Pipe Piles until earthwork in area in which Closed-End Steel Pipe Piles are to be driven has been completed, as follows:
 - 1. Pre-boring (if required): Near surface obstacles shall be pre-bored using non-vibratory tool/ equipment.
 - 2. Leveling excavations: Level excavation will be stopped at an elevation of 6 to 12 inches above bottom of pile cap before Closed-End Steel Pipe Piles are driven. Final excavation of required elevation of footing bottoms will be done as part of

earthwork for building, after Closed-End Steel Pipe Piles have been driven and tested.

3. Fills: Fills will be constructed and compacted to elevation of grade indicated.
- B. Pile Length Markings: Mark each pile length with horizontal line at 1-foot intervals, and the number of feet from pile point at 5-foot intervals. Mark the final pile section at 1-0 inch intervals to verify pile installed capacity by hammer blows.
- C. Splices: Clean surfaces to be spliced of rust, scale, oil, paint, and foreign material. Use only pile members with identical cross-sections for splicing. No splicing shall be provided in the upper ten (10) feet of the pile section. All splices, unless welded, shall be checked and tested for tightness.

Make splices before starting driving operations wherever possible.

Splices shall produce straight pile alignment through splice and developing full strength of pile in both bearing and bending.

2.13.3.2 Driving Closed-End Steel Pipe Piles

- A. General: Continuously drive Closed-End Steel Pipe Piles at locations indicated. The load bearing capacity of Closed-End Steel Pipe Piles shall be demonstrated by a PDA test. The pile length is estimated to be on the order of 60 feet. The Closed-End Steel Pipe Piles shall be driven to an ultimate axial capacity of 60 kips in compression. The refusal, defined as at least 36 blows foot per the final foot and a minimum of 3 blows for the last two inches, to be verified by a PDA test, using a 15,000 ft-lbs hammer (nominal energy). If a heavier hammer is used, the contractor shall obtain approval of the Engineer who will re-define the refusal criteria. Any waste/refusal generated shall be handled in accordance with Section 2.5.
- B. Obstruction to Driving: In parts of the site, obstructions may be encountered in soil above the accepted bearing stratum, making it difficult to drive Closed-End Steel Pipe Piles, in locations shown, to proper bearing strata. In such cases, the contractor shall overcome the obstruction by pre-boring, or other methods agreeable to Engineer. The Contractor shall have on hand suitable equipment for spudding through buried timbers, cribbing and similar obstruction and shall employ this equipment, when directed, in a manner satisfactory to the Engineer.
- C. Driving Tolerances: Drive Closed-End Steel Pipe Piles within following maximum tolerances:
 1. Location: 3 inches from location indicated for center of gravity of each single Pile.
 2. Plumbness: Maintain 1 inch in 10 feet from vertical, or a maximum of 4 inches, measured when the pile is above ground in leads.

- D. Heaved Closed-End Steel Pipe Piles: Provided recorded instrument observations made during pile driving to determine whether driven pile has lifted from its original seat during driving of adjacent Closed-End Steel Pipe Piles. If uplift occurs, redrive affected Closed-End Steel Pipe Piles to point of elevation at least as deep as original point elevation with a driving resistance at least as great as original driving resistance.
- E. Defective or Damaged Closed-End Steel Pipe Piles: When any pile that has been driven exceeds the tolerance hereinafter specified it may be rejected. When any driven pile has been so injured in driving (due to causes other than obstructions encountered) as to be, in the opinion of the Engineer, unsuitable or otherwise does not conform to the requirements of the contract, such Closed-End Steel Pipe Piles may be rejected. Additional Closed-End Steel Pipe Piles shall be installed in locations designated by the Engineer to replace rejected Closed-End Steel Pipe Piles. If practical the Contractor shall remove the rejected pile. In the event that subsurface obstructions are encountered and methods such as pre-drilling or “spudding” cannot penetrate the obstruction, additional piles should be driven in new locations as specified by the Engineer. The State will pay the “per foot” unit price for piles unable to penetrate waste.
- F. Cutting-Off: Cut-off tops of driven Closed-End Steel Pipe Piles with pile axis and at elevations indicated. Dispose of excess materials off site. Prior to any cut-off, the contractor shall ventilate the Closed-End Steel Pipe Piles to remove any gases that may have accumulated during/after pile driving operations.

2.13.3.3 Corrective Measures

- A. It is intent to secure such conditions that the load on any pile shall not exceed the maximum load allowed by the design, and that any excessive lateral forces at the level of the pile cap due to lean in the pile caps themselves shall be resisted by properly designed concrete members.
- B. No forms for any pile caps shall be placed until the survey affecting the pile cap has been analyzed and approval to proceed with the formwork is given to the contractor.

2.13.3.4 Concrete Fill

Each Closed-End Steel Pipe Pile shall be filled with 4000 psi concrete, after it has been driven to its full length. Closed-End Steel Pipe Piles that have been met refusal and have been abandoned must also be filled with 4000 psi concrete. Concrete shall not be placed until the driven pile has been approved by the Engineer. A temporary pile cap shall be maintained at all times. Place concrete within maximum 24 hours after driving the pile. The maximum allowed size of coarse aggregate in concrete shall be $\frac{3}{4}$ -inch. Provide vibration at least to the top 25 feet of each pile.

2.13.3.5 Pile Load Test

A minimum of one (1) PDA test is required to an ultimate capacity of 60 kips on the first pile. If the PDA test fails to meet the acceptance criteria, the design shall be modified to increase the pile length. Except for the additional payment for increased length at the given unit price, the contractor shall not be entitled for any other payment. At the completion of PDA testing, test results shall be submitted to the Engineer for his review and its acceptability as a production pile.

2.13.3.6 Methods of Measurement

Measurement will be made for quantities, as specified or directed by the Engineer, as follows:

- Each closed-end steel pipe pile that is installed, and accepted.
- Linear foot of piles unable to penetrate waste.
- Each PDA Test (including CAPWAP) conducted
- Additional length including splice welding (per linear foot).

The final pay quantities will be the design quantity increased or decreased by any changes authorized by the Engineer.

The Cost for mobilization and demobilization for the Closed-End Steel Pipe Piles installation shall be incorporated into the Closed-End Steel Pipe Piles Item Bid.

2.13.3.7 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.13.1	Closed-End Steel Pipe Piles	Linear Foot
2.13.2	Closed-End Steel Pipe Pile Testing	Each

The bid price shall be deemed to include the estimated aggregate installed pile length below the cut-off elevations indicated on the Drawings, as specified on the Drawings for Item 2.13.1.

The Contractor will be paid the bid unit price per pile for Bid Item 2.13.2, Closed-End Steel Pipe Pile Testing for all Closed-End Steel Pipe pile testing required, including PDA testing and CAPWAP analysis. No additional payment will be made for the following:

1. Re-driving
2. Delays, including weather, site conditions, equipment breakdown etc.
3. Waste excavated will be paid as per Section 2.5.

END OF SECTION

2.14 Pavement Section at Site Entrance

2.14.1 General Description

During Initial Site Operations, the Contractor shall install a 60' by 30' pavement section, as shown on the Contract Drawings, at the entrance to the Site along the proposed access road during initial site operations. The pavement section shall consist of with 2" of NJDOT Hot Mix Asphalt (HMA) 12.5H76 Surface Course, over 4" HMA 25M64 Base Course, over 18" of NJDOT Dense Graded Aggregate (DGA). The access road shall be placed so as to not cause any damage to the underlying layers. Access Road Pavement shall include purchase, excavation, stockpiling, hauling, placement, and compaction of pre-qualified material from an off-site borrow area.

2.14.2 Material

Access road material shall consist of NJDOT Standard DGA and HMA. Only NJDOT Standard DGA and HMA from a single source and geological classification shall be allowed unless otherwise authorized. Test methods for gradation shall be used according to the appropriate provisions of AASHTO T 11 or T 27, unless otherwise stated. The Contractor shall submit the NJDOT Standard DGA and HMA material sheets to the Engineer for approval as per Section 1.3.

DGA

Use a source of NJDOT Standard DGA that is listed on the NJDOT Qualified Products List (QPL). The Contractor shall sample the NJDOT Standard DGA according to AASHTO T 2. The Contractor shall apply the gradation requirements to the material after it has been placed and is compacted. Virgin DGA can be produced from broken stone conforming to NJDOT 901.03.01, crushed gravel conforming to NJDOT 901.03.02, or blast furnace slag conforming to NJDOT 901.04, except that at least 90 percent of all fragments shall contain at least 1 fractured face. The contractor must ensure that the NJDOT Standard DGA conforms to the following requirements and gradation:

1. Moisture Content

- The moisture content of the DGA immediately before placement is 6% +/- 2% based on dry weight.

2. Plasticity and Gradation

- When tested according to AASHTO T 90 ensure that the portion passing the No. 40 sieve is non-plastic. Ensure that the gradation conforms to the requirements specified in Table 901.10.01-1 provided below.

Table 901.10.01-1 NJDOT DGA Gradation Requirements	
Sieve Size	Percent Passing Square Mesh Sieves
1-1/2"	100 %
3/4"	55-90 %
#4	25-50 %
#50	5-20 %
#200	3-10 %

Hot Mix Asphalt

Ensure that NJDOT Standard HMA soil aggregate is free from elements of chemicals which, in the presence of water, would produce detrimental effects to pavements, structures, or utility lines, and is free of organic matter, garbage, metal, debris, lumps of clay, or other deleterious matter. HMA shall conform to NJDOT [Section 903](#). Asphalt binder shall conform to NJDOT [Section 904.01](#). An approved HMA conforming to NJDOT [Section 903](#) may be used, provided the material has a nominal maximum size of 3/4 inch or less and remains hot enough to compact. Only soil aggregate that conforms to the gradations specified in NJDOT Table 920-1 for HMA shall be used. These requirements shall apply to the material after it has been placed and compacted. If the source contains oversize material, the Contractor may be required to eliminate this oversize material.

Other materials shall conform to the following Subsections:

Prime Coat:

Cut-back Asphalt, Grade MC-30 or MC-70.....NJDOT Section [904.02](#)

Tack Coat:

Cut-back Asphalt, Grade RC-70 or RC-T..... NJDOT Section [904.02](#)

Emulsified Asphalt, Grade RS-1, SS-1, or SS-1h..... NJDOT Section [904.03](#)

Cationic Emulsified Asphalt, Grade CSS-1 or CSS-1h..... NJDOT Section [904.03](#)

Tack Coat 64-22:

PG 64-22..... NJDOT Section [904.01](#)

Joint Sealer, Hot-Poured..... NJDOT Section [908.02](#)

Backer Rod..... NJDOT Section [908.02](#)

The Contractor shall sample NJDOT Standard HMA according to AASHTO T 2.

NJDOT Table 920-1 Superpave HMA Mixtures

Nominal Maximum Size of Aggregate - Grading Of Total Aggregate

Nominal Maximum Aggregate Size – Control Point (Percent Passing)

Sieve Size	37.5 mm		25 mm		19 mm		12.5 mm		9.5 mm	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
2"	100	--	--	--	--	--	--	--	--	--
1½"	90	100	100	--	--	--	--	--	--	--
1"	--	90	90	100	100	--	--	--	--	--
¾"	--	--	--	90	90	100	100	--	--	--
½"	--	--	--	--	--	90	90	100	100	--
3/8"	--	--	--	--	--	--	--	90	90	100
No. 4	--	--	--	--	--	--	--	--	--	90
No. 8	15	41	19	45	23	49	28	58	32	67
No. 200	0	6	1	7	2	8	2	10	2	10

2.14.3 Submittals

Submittals shall be according to Section 1.3 and shall include the source location, copy of the borrow area permits, and results of analysis indicating material meets the criteria of these Technical Specifications.

2.14.3 Placement and Compaction

Placement and compaction shall be performed in accordance with NJDOT Specification Section 302.03. Any changes in procedure must be approved by the Engineer. A tack coat will be required where new paving abuts the existing Harrison Avenue paving. A prime coat will be required on the DGA before placing HMA Base Course.

2.14.4 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
2.14	Pavement Section at Site Entrance	Lump Sum

The Contractor shall be paid the lump sum bid price for Pay Item 2.14 for the subgrade preparation, purchase, excavation, Proctor and particle size testing, stockpiling, handling, placement, compaction, and compaction testing of the pavement mix consisting of the DGA and HMA asphalt mix.

3.1 Health and Safety Plan

3.1.1 General Description

General: This Section describes the minimum safety, health and emergency response requirements for remedial activities at the MSLA 1-D Landfill Site. Requirements of the Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities, and applicable publications of this Section provide the basic safety program for this project. The responsibility of development, implementation, and enforcement of the Health and Safety Plan (HASP) lies with the Contractor and his health and safety personnel. The HASP developed by the Contractor shall include programs for accident prevention, personnel protection, emergency response/contingency planning, and air monitoring. The Contractor's HASP must include contingency plans for alerting the adjacent occupants of the surrounding buildings and evacuating them if necessary.

Documents to be Supplied by Contractor

- Site-specific Health and Safety Plan. The site-specific HASP shall be furnished as a separate document and shall pertain only to the named site activity. A corporate safety and health manual may be furnished along with the HASP but this shall not satisfy the site-specific HASP requirement. The Contractor shall supply four (4) copies of the Health and Safety Plan to NJDEP for comment and approval and one (1) copy to the Engineer in accordance with Specification Section 1.3.

3.1.2 Applicable Publications

Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities: NIOSH, 85-115.

OSHA Safety and Health Standards: 29 CFR 1910 and 1926.

USEPA Standard Operating Safety Guides: November 1984.

NJDEP: Health and Safety Plan - Minimum Requirements (see Volume 4)

3.1.3 Health and Safety Plan Minimum Requirements

The Contractor will follow the Health and Safety Plan Minimum Requirements provided in Volume 4, Appendices, for preparation of the Health and Safety Plan.

3.1.4 Health and Safety Plan (HASP) Closeout Report

At the completion of the project, the Contractor shall provide the NJDEP and the Engineer with a HASP Closeout Report, as per specification section 1.3. The HASP Closeout report presents the NJDEP and the Engineer with an overall safety summary. In this report, the Contractor shall provide documentation confirming adherence to the HASP requirements set forth in section 3.1.3. At a minimum, the HASP Closeout Report shall include, but not be limited, to the following.

1. Health and Safety Officer's (HSO) Daily Report.
2. During potentially hazardous work, such as hazardous substance container removal and staging, Contractor is to provide health and safety field notes and a write-up summary. This shall include:
 - a) Contaminants encountered, conditions present, and practices applied in the specific operation.
 - b) Confirming proper adherence to HASP and proper protection equipment.
 - c) Affirmation that proper decontamination methods, as required by the HASP, have been met, refer to section 3.1.3. (decontamination certificates if applicable).
 - d) Summary of the necessary engineering and/or work practice controls incorporated to reduce and maintain employee exposures during potentially hazardous tasks.
 - e) The PPE program incorporated by Contractor shall be included.
3. Copies of employee Healthy and Safety training records and safety program certifications shall be included. This also includes respirator fit testing certificates.
4. OSHA Occupational Sampling Results
5. Daily air monitoring report/results.
6. Medical Clearance Forms for each worker involved in on-site operations shall be included.
7. If any incidents, accidents, injuries, or other emergencies occurred on site, OSHA 300 logs (accident and exposure reports), and the implemented emergency response plan are to be included in the HASP closeout report. The implemented emergency response plan in HASP closeout report should be consistent with the approved HASP.

3.1.5 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
3.1.1	Health and Safety Plan	Lump Sum
3.1.2	Implementation of Health and Safety Plan	Month

Payment for the development and final approval of the Health & Safety Plan (HASP) shall be made under Bid Item 3.1.1. Payment for the implementing of the Health & Safety Plan (HASP) shall be made under Bid Item 3.1.2 on a monthly basis for each month or fraction thereof, measured to the nearest week from Notice to Proceed with mobilization until substantial completion. No change in price will be allowed for changes in level of protection required for field personnel during construction. This also includes payment for the collection and analysis of all air quality samples and production of the Health and Safety Closeout Report.

The Contractor will not be paid for Bid Item 3.1.1 until the Health and Safety Plan is complete and approved by the NJDEP. No field work can begin until the HASP is approved.

END OF SECTION

3.2 Construction Plan

The Construction Plan shall address, at a minimum, the following items: site operations plan and schedule, environmental pollution protection, dust and vapor control, spill and discharge control, security, traffic control, stormwater pollution prevention and control, contact water management, and construction quality control.

3.2.1 Site Operations Plan and Schedule

The Contractor shall provide a schedule for the tasks needed to complete the remedial construction. The Construction Schedule shall be submitted in accordance with Article 2 of the Terms and Conditions. Separate payment for this task will not be made.

3.2.1.1 Work Included

This item includes the preparation of the Project Construction Schedule and the Site Operations Plan. The Contractor shall perform all work to complete the job within the approved construction schedule. Also, construction operations shall be sequenced and scheduled to give consideration to site conditions, disposal of contaminated material, seasonal effects and any other factors considered relevant by the Contractor.

3.2.1.2 Site Operations Plan

The Contractor shall develop and submit a Site Operations Plan, describing all major site construction activities and showing the sequence of the activities in accordance with the Project Construction Schedule. This Plan shall describe all major construction activities including preparation and submittals of plans, permit applications, shop drawings, materials testing, product data sheets, and operating and maintenance instructions in accordance with Section 1.3 – Submittals.

The Site Operations Plan shall include provisions for daily pre-work safety/progress meetings with the NJDEP Construction Manager and/or the Engineer and the Project Construction Schedule.

Drawings, diagrams, and sketches should be included in the Site Operations Plan as well as references to the Plans (Health and Safety Plan, etc.) in Section 3 to convey how construction will be coordinated with site operations.

3.2.1.3 Project Construction Schedule

1. The Project Construction Schedule developed as part of this contract shall be included in the Site Operations Plan. The schedule shall be prepared by the Critical Path Method.
2. The Contractor shall provide the Engineer with two copies of the Project Management Software used to develop the Project Construction Schedule.
3. The network shall include, as a minimum, one activity for each discrete component of

each Pay Item scheduled in the Proposal. The Engineer may allow grouping of similar Pay Items: The system shall consist of network diagrams and accompanying mathematical tabulations as described hereinafter.

4. Diagrams shall show the order and interdependence of activities and the sequence and quantities in which the work is to be accomplished. The basic concept of network scheduling shall be followed to show how the start of an activity is dependent on the completion of preceding activities and how its completion may affect the start of following activities. No activity duration shall be longer than 20 working days without prior approval. The critical path shall be distinguished from other paths on the network.
5. In addition to construction activities, network activities shall include the submittal and approval of samples of materials and drawings. It shall include all documents and proofs of compliance required by the Plans or Specifications needed for completion.
6. The mathematical tabulation of the network diagram shall include a tabulation of each activity shown on the detailed network diagram. The following information shall be furnished as a minimum for each activity on this tabulation.
 - a. event nodes numbered
 - b. activity description
 - c. estimated duration
 - d. earliest start date (calendar date)
 - e. earliest finish date (calendar date)
 - f. latest start date (calendar date)
 - g. latest finish date (calendar date)
 - h. percentages of activity completed
 - i. critical path activities
7. This mathematical tabulation can be either a computer printout or one manually prepared with a column for each of the above requirements. The Contractor shall update the mathematical tabulation on a monthly basis and shall provide the Engineer with updated copies along with any revisions to the network diagrams on the day the monthly Engineer's Estimate is prepared. The updated tabulations shall reflect the current status of activities as outlined on the network diagram. If any delays have occurred, these shall be noted for time consideration. The updated tabulation sheet shall reflect all changes in dates, durations and float times.

Conditions may develop which require network logic revisions to the original diagram. If during the process of the work, major changes develop which necessitate changes in the original plan, the Contractor shall make such changes so as to depict the current mode of operation and shall provide the Engineer with a revised network diagram.

The Project Construction Schedule shall be reviewed monthly and updated as needed. Updates (hardcopy and electronic versions) shall be included in the Monthly Invoice.

8. The Project Construction Schedule shall take into consideration the effect of any

physical constraints or time constraints posed by the Contract Documents or regulatory permits including, but not limited to, the requirements of Temporary Erosion and Sediment Control Plan; Construction Water Management Plan.

3.2.1.4 Major Construction Activities

The Contractor shall describe all major construction activities. Sequencing, crews, size and type of major equipment, and special considerations or conditions shall be described.

3.2.1.5 Permits

The Contractor shall show a schedule for obtaining all necessary permits including those to be obtained by others, in accordance with Section 1.2.23 and Section 3. This schedule shall be reflected in the Project Construction Schedule.

3.2.2 Environmental Pollution Control

The Contractor shall prepare an Environmental Pollution Control Plan and comply with its provisions. The Contractor shall prepare an Environmental Pollution Control Plan describing how environmental pollution from the construction activities will be prevented. The Contractor shall perform all work in such manner as to minimize the pollution of air, water, soil, or land, and shall, control noise, the disposal of trash and debris, as well as other pollutants. The Contractor shall comply with all applicable federal, state, and local laws, rules, and regulations pertaining to environmental pollution control.

Prior to commencement of the work at the site, the Contractor shall submit in writing a detailed plan in accordance with Section 1.3 for implementing the requirements for environmental pollution control specified herein, and meet with representatives of the Engineer to review and alter the proposal as needed for compliance with the environmental pollution control requirements.

3.2.2.1 Implementation

Prior to the start of any on-site construction activity, the Contractor and the Engineer shall make a joint condition survey after which the Contractor shall prepare a section of his Work Plan indicating on a layout plan the arrangement he proposes in using areas immediately adjacent to the site of the work and adjacent to the designated storage area and access route(s), as applicable.

The land areas outside the limits of clearing under this Contract shall be preserved to allow restoration to their present condition. The Contractor shall confine construction activities to areas defined for work on the Drawings or specifically assigned for his use. Where, in the opinion of the Engineer, trees and/or shrubs may possibly be defaced, bruised, injured, or otherwise damaged by the Contractor's equipment or by his other operations, the Engineer may direct the Contractor to provide temporary protection of such trees/shrubs by placing orange snow fence or silt fence.

The Contractor shall assure the proper disposal of fuels, oils, bitumens, calcium chlorides, acids, alkalis, or other potentially harmful construction-related materials, both on and off the site premises at no additional cost to the State. Special measures shall be taken to prevent such materials from

entering public waters.

As part of the Environmental Pollution Control Plan and prior to on-site construction, the Contractor shall submit a description of his scheme for controlling and disposing of trash and debris generated as a result of the work under this Contract. The Contractor is responsible for disposal of garbage generated by the State and the Engineer. Provision of a dumpster, if needed, shall be addressed in the Plan.

The Contractor shall maintain all excavations, backfill areas, stockpiles, and all other work areas free from excess dust as in accordance with the Dust and Vapor Migration Control Plan. Approved temporary methods consisting of sprinkling, approved dust palliatives, or similar methods will be permitted to control dust. Dust control shall be performed as the work proceeds and whenever a dust nuisance or hazard is imminent in accordance with the Dust Control Plan.

The Contractor shall, upon receipt of notice in writing of any non-compliance with the foregoing provisions, take immediate corrective action. If the Contractor fails or refuses to comply promptly, the NJDEP may issue an order stopping all or part of the work until satisfactory corrective action has been taken. No part of the time lost due to any such stop order shall be claimed as damages by the Contractor unless it was later determined that the Contractor was in compliance.

3.2.3 Dust and Vapor Migration Control Plan

The Contractor shall conduct all site operations in such a way to minimize dust and vapor generation. The Contractor's attention is directed to the fact that the site contains contaminated soils, explosive and malodorous gases, and possibly asbestos.

The Contractor shall prepare and submit for approval by the Engineer a Dust and Vapor Migration Control Plan in accordance with Section 1.3 which will present the Contractor's procedures for control of dust and vapor generation and measures to prevent off-site dispersion.

3.2.3.1 Implementation

The Contractor shall conduct his operations to minimize the generation of dust or vapors. In general, action is required to control dust whenever the three (3) hour average concentration in air exceeds 5 mg/m³, as measured at the property boundary. At a minimum the Contractor shall also conduct dust suppression actions at least twice a day during excavation and regrading activities. Additional actions may be needed if dust reduces site visibility or if directed, by the Engineer.

During excavation and regrading operations, the Contractor shall sample the air as specified in the H&S plan to determine the dust and explosive vapors concentration. Monitoring for asbestos fibers will be conducted when work in Construction and Demolition waste is conducted. When the dust or vapor concentration exceeds the action level identified in the HASP, the Contractor shall reduce the concentration by changing his operations to control or minimize the production of dust and vapors. The dust may be controlled by water or non-toxic chemical spray, or similar means. The Contractor shall cease operations if he is unable to control the dust or explosive or malodorous content of the site air.

After the site excavation has commenced, and the site soils or waste is exposed, dust may be lifted and carried by the wind. The Contractor shall develop a plan to reduce such wind entrainment, by covering the exposed soils or waste, or coating them to reduce the hazard.

The Contractor shall maintain the vehicles and equipment necessary for control of dust at or near the site of the work, so that minimum delay occurs when dust control operations become necessary.

The Contractor shall also observe the dust, explosive gases, and malodorous gases concentrations at the perimeter of the site, to avoid creating hazards on neighboring properties. The Contractor shall report the results of the Air Sampling data to the Engineer within 24 hours of obtaining results. Any action level results shall be reported verbally immediately.

3.2.4 Spill and Discharge Control Plan

Spill and Discharge Control Plan shall include the preparation and implementation of a Spill and Discharge Control Plan and compliance with its provisions. The Contractor shall develop a Spill and Discharge Control Plan prior to the start of any site activities. The Plan shall include contingency measures for potential spills of construction-related materials such as diesel fuel and discharges from dewatering of contaminated surface water pits or ponds on or surrounding the site.

3.2.4.1 Implementation

The Contractor shall implement, maintain, supervise, and be responsible for the Spill and Discharge Control Plan. The Contractor shall provide methods, means, and facilities required to prevent contamination of soil, water, atmosphere, equipment, or material by the discharge of materials from spills due to Contractor's operations.

The Contractor shall provide equipment and personnel to perform emergency measures required to contain any spillage and to remove spilled materials and soils or liquids that become contaminated due to spillage. This collected spill material shall be disposed properly at the Contractor's expense.

The Contractor shall provide equipment and personnel to perform decontamination measures that may be required to remove spillage from previously uncontaminated structures, equipment, or material. Decontamination residues shall be disposed properly at the Contractor's expense.

The Contractor shall submit a Spill and Discharge Control Plan in accordance with Section 1.3, containing the following:

1. Procedures for Containing Dry and Liquid Spills.
2. Listing of Absorbent Material available on-site.
3. Procedures for Storage of Spilled Materials.
4. Decontamination Procedures. Decontamination procedures may be required after cleanup to eliminate traces of the substance spilled or reduce it to an acceptable level. Acceptable level shall be determined by the Engineer. Complete cleanup may require

removal of contaminated soils. Personnel decontamination shall include showers and cleansing or disposing of clothing and equipment. All contaminated materials such as soil and wood that cannot be decontaminated or disposed on top of the wastefill must be containerized properly, labeled, and disposed properly as soon as possible, at no additional cost to the State.

5. Spill Incident Report. A written report detailing the spill or discharge shall include, at a minimum, the cause and resolution of the incident, outside agencies involved, and date the incident occurred. The report shall be submitted to the Engineer within 48 hours of the incident. The Contractor shall document the location of all spills on the Site Drawings and submit the Drawings to NJDEP at project completion.
6. Notification. The State shall be notified immediately of a spill or discharge that impacts the environment by contacting the NJDEP 24-hour Hotline (1-877-WARNDEP). The US Environmental Protection Agency, Region II shall be notified if the spill exceeds the designated reportable quantity.

3.2.5 Security Plan

Security Plan shall consist of preparation and implementation of a plan for site security during the construction. The Contractor shall prepare a Security Plan that describes the security measures to be employed during the construction to prevent site entry by unauthorized persons. The Security Plan shall include at least the following items and be submitted in accordance with Section 1.3:

1. Identification. Procedures for identifying those persons authorized to enter the site.
2. Personnel List. A list, kept current throughout the project that identifies personnel authorized to enter the site.
3. Entrance Procedure. Proper procedures for granting access to the site and providing for proper training if required.
4. Vehicles. A plan for maintaining a list of vehicles entering and leaving the site.
5. Visitors. Identify procedures to be followed in maintaining a visitor log, escorting visitors to the site, and providing for prior approval by the Engineer.
6. Liability Releases. Explain procedures for obtaining signed liability releases from visitors to the site.
7. Access Control. Outline the procedures to be implemented to ensure that all site access is through the main gate, unless authorized otherwise by the Engineer.
8. Non-Working Hours Security. Provide explanation of non-working hours security measures.

The Contractor shall be responsible for maintaining security. The Contractor shall provide sufficient

security personnel to accomplish the work outlined in the Security Plan. The Engineer or NJDEP shall have the right to approve or reject security personnel assigned to the project site at any time during Contractor activities. Designated security personnel must have access to a telephone 24 hours a day. The State's review and approval with regard to the security plan will be limited to public safety and control of waste.

The Contractor shall ensure that all security personnel entering exclusion/ contamination or contamination/ reduction zone, as defined by the Health and Safety Plan, have received the OSHA 40 hour health and safety training for hazardous site operations.

The Contractor shall furnish and install the security fence, including gates, at mobilization for the project in accordance with the appropriate sections of these specifications and the drawings.

3.2.6 Traffic Control Plan

This work shall consist of the planning for and the carrying out of maintenance and protection of vehicular or pedestrian traffic and to provide for the safe and convenient passage of such traffic, within the scope of the Project. Maintenance and protection of traffic includes furnishing, assembling, placing, and relocating traffic control devices, including pavement markers, and removing them when they are no longer required. The Contractor shall prepare and implement a Traffic Control Plan.

Traffic control devices need not be new but must be in good condition as approved. Traffic control devices, other than those shown on the Plans, or as directed by the Engineer, shall conform to the Manual on Uniform Traffic Control Devices. The traffic control devices will be placed as per the approved Traffic Control Plan.

An allowance has been provided in Bid Item 1.4.1 for Town of Kearny Police to assist with traffic control. With the consent of the Engineer and NJDEP, the Contractor may request assistance from the police with traffic control. This in no way is meant to relieve the Contractor from the responsibility for traffic control.

The number and location of traffic signage shall conform to the "Manual for Uniform Traffic Control Devices." When construction signs conflict with existing signs, the existing signs shall be covered. When construction signs are no longer required, they shall be removed. If they are temporarily not required, such as overnight, they shall be either temporarily removed or covered. Signs covered from view of the traveling public shall be completely covered with opaque material securely fastened so that it does not blow in the wind. Burlap shall not be used.

Prior to beginning construction, traffic control devices shall be placed where shown on the Plans or directed by the Engineer. Traffic control devices shall be kept clean and maintained in good condition until no longer required for the Project, at which time they shall be disposed of.

Traffic control devices shall also be placed as directed to provide traffic control for personnel doing inspections, sampling, testing, or taking measurements required for the Project.

When the construction involves improvement of an existing roadway, the roadway shall be kept

open to traffic unless otherwise approved or shown on the Plans. The portion of the Project which is opened to traffic shall be kept in such condition that traffic is adequately accommodated. Temporary approaches or crossings and intersections, and access to trails, roadways, businesses, and parking lots shall be provided and maintained in a safe condition. The owners of adjoining properties shall be given a written notice at least three days prior to the beginning of any Work which interferes with the owners' normal passage.

Equipment or machinery having crawler tracks or other treads that may mar or damage pavements shall not move over or operate from newly constructed or existing pavements unless precautions are taken to prevent such damage.

Any damage to newly constructed or existing pavements within the limits of the Project or adjacent thereto, which in the opinion of the Engineer was caused by the Contractor's operations, shall be repaired as directed, at the Contractor's expense, or the repairs will be made by the Department and the cost of such repairs will be deducted from any monies due or that may become due the Contractor.

Any restrictions of required traffic lane widths or diversion of traffic at any time are subject to approval. Except as necessary during actual working hours, and then only with approval, equipment, materials, personnel, or employee vehicles shall not occupy any traveled way, shoulder, median, or sidewalk area within or adjacent to the Project that is open to traffic.

The Engineer shall be notified one month in advance of a tentative date for establishing new traffic patterns. This date shall be finalized ten working days prior to the establishment of the new traffic patterns resulting from stage construction, and 15 working days prior to the establishment of a detour for the closing of any roadways.

Removable pavement marking tape shall be applied at designated locations. The tape shall be white or yellow and shall be applied in single or double lines, as designated.

The Contractor shall remove, immediately prior to striping or marking the pavement surface, all dirt, oil, grease, existing types of traffic stripes or traffic markings, and other foreign material, including curing compound on new portland cement concrete, from the surface areas on which the various traffic stripes or traffic markings are to be placed. The pavement shall be cleaned one inch beyond the perimeter of where the stripe or marking is to be placed.

The Contractor shall apply a primer-sealer conforming to NJDEP volatile organic content (VOC) requirements to the areas of bituminous concrete surfaces, when recommended by the manufacturer, and to the areas of portland cement concrete surfaces where long-life thermoplastic traffic markings are to be placed.

Marking tape shall be applied on dry surfaces, when the surface temperature is between 10 and 66°C and when the ambient temperature is 10°C and rising, and when the weather is otherwise favorable as determined by the Engineer. The tape shall not be overlapped, and only butt splices shall be used.

To ensure maximum adhesion, the tape shall be tamped and a truck shall be driven slowly over

the tape several times. The tape shall be removed when no longer required for traffic control.

Tape that has become damaged and is no longer serviceable shall be replaced. Tape that is damaged by construction operations shall be replaced without additional compensation.

Work which closes or alters the use of existing roadways shall not be undertaken until adequate temporary or permanent provisions for traffic have been approved.

Where it is necessary for pedestrians to cross or walk within the limits of the Project, temporary sidewalks shall be provided, maintained, and removed as directed.

Construction above vehicular or pedestrian traffic shall not be performed unless there is explicit provision made in the Special Provisions or specific written permission given. Subject to such provision or permission, necessary devices and means to protect such traffic from falling construction materials or other objects, and from painting operations shall be provided at no cost to the State during the time that construction is performed above traffic. The precautions to be taken for the protection of traffic are subject to approval.

The traffic control plan provides for the treatment of conditions caused by or encountered during the Work on the Project. The Work shall be performed in accordance with the traffic control plan.

The Contractor shall provide Jersey Barriers as indicated on the plans as a part of the Contractor's Traffic Control Plan. The cost for this item shall be included under Pay Item 2.7.2.

3.2.6.1 Traffic Control Coordinator

Prior to the start of construction operations, the Contractor shall assign a supervisory-level employee to be the traffic control coordinator. The Engineer shall be notified as to the name and method of contacting the traffic control coordinator on a 24-hour basis.

The duties of the traffic control coordinator shall include, but shall not be limited to, the responsibility for ensuring the following:

1. Set-up and removal of all traffic control devices in accordance with the Contract Documents.
2. Correction of deficiencies of traffic control devices within two hours of discovery or notification by the Engineer.
3. Repositioning traffic control devices displaced by traffic or construction equipment.
4. Covering or uncovering signs as appropriate.
5. Repairing or replacing damaged traffic control devices.
6. Replacing batteries, light bulbs, control panels, and other electrical components.
7. Keeping all traffic control devices clean.
8. Adding fuel and oil to power units for traffic control devices.
9. That all Contractor equipment and vehicles are properly stored and packed so as not to create a traffic hazard.
10. Properly storing traffic control devices when not in use.

Trained flaggers shall be in good physical condition, including sight and hearing, mentally alert, and shall have a courteous but firm manner, neat appearance, and a sense of responsibility for the safety of the public. Trained flaggers shall wear an orange or fluorescent orange garment such as a shirt, jacket, or vest. This garment shall be reflectorized for nighttime operations with reflective material that shall be orange in color. When controlling traffic, trained flaggers shall be equipped with **STOP/SLOW** paddles, and shall follow the procedures stipulated for flaggers in the Manual on Uniform Traffic Control Devices. The Traffic Control Plan will also include traffic control personnel and devices, as needed.

3.2.7 Construction Water Management Plan

The Contractor shall manage and dispose of water generated during construction. The Erosion and Sediment Control Plan requires prevention of run off from the site, and prevention of run on from areas adjacent to the site. The Contractor shall continue to maintain that separation of the site from adjacent areas under storm conditions. Contaminated water and non-contaminated water shall be managed separately.

Construction water generated during activities at the MSLA 1-D Landfill shall consist of:

Contact Water - Stormwater runoff that has been in contact with solid waste materials. Leachate is included in this category.

Decontamination Water - Water from personal and equipment decontamination activities.

Non-contaminated Water - Water not in contact with contaminated material, or may be run-on from clean areas adjacent to the site or run-off from non-contaminated areas.

Measures shall be taken to minimize generation of contact water. Contact water shall be re-routed to the top of the waste mound which is encircled by the perimeter access road.

1. Contact Water - Contact water generation shall be limited to prevent contamination of "clean areas" from run-off and to reduce the quantity of contact water for disposal. Measures to limit, control, and manage contact water include, but are not limited to the following:
 - a. All surfaces with exposed waste shall be covered with six (6) inches of imported soil when excavation operations are halted for periods in excess of eight (8) hours. An intermediate cover of up to twelve (12) inches of cover material shall be applied when work is halted for one month or more.
 - b. Non-contaminated surface water shall be prevented from entering areas of exposed refuse or other known areas of contaminated material for all flows up to peak discharges from at least a 25-year, 24-hour storm.
 - c. For areas of exposed refuse or MSLA 1-D-type waste, the contact water management system shall be designed to collect and control the water volume resulting from a 25-year, 24-hour storm. Contact water shall be collected prior to leaving the contaminated area.

- d. Contact water collected from a contaminated area shall be discharged back onto the landfill. Contact water shall not be allowed to enter gas collection manifold piping.
 - e. In the event, surface run-off is the cause of existing clean areas or subsequently clean areas becoming contaminated above cleanup standards, the affected areas shall be cleaned. Unless the Contractor can demonstrate that the applicable design storm was exceeded, the cost of cleanup will be at the Contractor's expense.
2. Disposal - Contact water shall be disposed within the waste mound encompassed by the perimeter access road. No separate payment will be made for on-site disposal of the contact water since this disposal cost is incidental to the work and its cost should be included in the price of work associated with the generation of contact water.
 3. Non-contaminated water shall be prevented from entering areas of open excavation or suspected contaminated materials.

Prior to mobilization to the site, a Construction Water Management Plan shall be submitted to the NJDEP for approval in accordance with Section 1.3 showing complete details of systems to be implemented pursuant to the requirements of this section. No work will be permitted until this Plan has been approved. Modifications to the Plan which may become necessary as a result of the Contractor's method of work or which may be required by other agencies shall be submitted to the NJDEP for approval.

The Construction Water Management Plan shall include a plan of the site showing sub areas and the sequences of construction activities. Based on these sequences, the Plan shall indicate construction water routes, collection and diversion features, and disposal or discharge locations for each phase of construction. The Construction Water Management Plan submittal shall be in accordance with Section 1.3.

The Plan shall show or describe measures to control decontamination water, control the origin of construction water and to maintain separation of contact (potentially contaminated) water from uncontaminated water during each phase of construction.

3.2.8 Construction Quality Control Plan

The Contractor shall prepare a Construction Quality Control Plan that will include the following:

- Identify the project organization
- Responsibilities
- Construction Quality Assurance (CQA) officer
- CQA Support personnel
- Personnel qualifications
- Project meetings
- Inspections
- Testing
- Daily Record keeping

- Inspection documentation
- Final Documentation
- Storage of records

The Contractor shall ensure that Construction Quality Plan conforms with the requirements of the plans and specification.

3.2.9 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
3.2.1	Construction Plan	Lump Sum
3.2.2	Adherence to Construction Plan	Month (or fraction of, to the nearest week)

The Contractor will not be paid until the Construction Plans are complete and accepted by the NJDEP and no payments for any line item work will be processed until these plans are completed and the Notice to Proceed has been issued. Project Management Software (2 copies), to be provided to the Engineer, shall be included in the price for Pay Item 3.2.1.

Payment for Implementation of all water management plans, as discussed in Section 3.2.7, shall be paid under Bid Item 3.2.2. The Contractor shall be paid on a monthly basis as per Bid Item 3.2.2 for each month, or fraction thereof, measured to the nearest week, from notice to proceed with mobilization until substantial completion. The Contractor will not be paid for any month or fraction thereof that liquidated damages are assessed.

END OF SECTION

3.3 Hazardous Substance Container Removal & Staging

3.3.1 Description

Hazardous Substance Container Removal & Staging shall consist of excavation, removing, staging and transporting containers discovered during site excavation operations. These actions shall occur at the direction of the Construction Manager/Engineer after the Contractor has notified the Construction Manager/Engineer that a hazardous substance container may have been encountered. A hazardous substance container shall be defined as drums, cans, cylinders, and lab packs suspected to contain hazardous substances, hereafter referred to as containers. This also includes backfilling and compaction after removing the container. Empty drums or carcasses are not included in this line item. Any empty drums or carcasses encountered will be replaced in the landfill as part of the work for which it was encountered.

Drum disposal is not included within this Contract, and this task will be handled as a change order.

3.3.2 Excavation of Hazardous Substance Containers

Containers encountered during fill/refuse relocation and other construction operations shall be removed if directed by the Construction Manager/Engineer. The container shall be classified a hazardous substance container for the purpose of this contract. If directed to remove the container(s), the Contractor shall take all steps necessary to remove the container(s) intact to preserve any evidence of ownership. Only containers identified for removal by the Construction Manager/Engineer will be paid under this item.

Following inspection and testing of contents, the containers shall be overpacked, if necessary, and staged at suitable locations on site. Subsequent to removal of containers from the area of excavation, the Contractor shall backfill the excavation to grade.

A. Hazardous Substance Container Handling, Removal, and Opening

Manual handling of hazardous substance containers shall be minimized. Handling shall be by suitable mechanical equipment such as a grapples-equipped backhoe or front end loader. Manual handling of hazardous substance containers in locations other than designated storage areas will not be permitted.

Prior to handling, the condition of each container shall be determined by the Drum Inspector (designated by the Contractor) and categorized as either open, leaking, bulging, empty, a combination, or intact. Containers shall not be moved or opened unless an external/gross gamma scan is negative. The containers shall be removed to the designated lined drum staging area as shown on the Contract Initial Site Operations Plan. See Section 3.4 for hazardous substance container staging area requirements description.

Hazardous substance containers which the Drum Inspector determines cannot be moved to the initial staging area or opened without risk of explosion, fire or spilling of contents shall be designated as unsound containers. Unsound non-bulging containers shall either be

overpacked or the contents shall be transferred to a DOT approved container using hand-operated non-sparking drum pumps. Containers which are bulging or appear to be under pressure shall be remotely sampled in place. Openings shall be plugged and bung holes shall be fitted with pressure venting caps set at 5 psi release. After overpacking or relieving pressure via sampling, the containers may be moved to the initial staging area.

Hazardous substance containers which are not the subject of special handling and removal procedures shall be exposed fully by carefully removing surrounding material and placed in the initial staging area. Hazardous substance containers which the Drum Inspector determines can be opened safely manually shall be placed upright in the initial staging area and the top opened using non-sparking tools.

B. Hazardous Substance Container Inventory

As subsurface containers are exposed, each container shall be subject to the following inventory procedures:

- The location of each container shall be temporarily staked and permanently located by GPS and plotted accurately on a reproducible copy of a topographic plan of the site.
- An information sheet shall be developed upon which the Contractor shall record information such as container size, condition, type of materials, and any identifying characteristics of the container.
- Each inventoried item will be indelibly marked on top and two opposite sides with a numeric code corresponding to the information sheet prepared for that item.
- Copies of the information sheets and location plan shall be provided to the Engineer.

3.3.3 Hazardous Substance Container Staging

The containers may be staged temporarily on-site in the drum staging area until the State completes additional analyses and arranges for off-site disposal. The cost of additional analyses and disposal is not a part of this contract and shall be handled under a change order.

3.3.4 Measurement and Payment

Payment shall be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
3.3	Hazardous Substance Container Removal and Staging	Each

The Contractor shall be paid the bid unit price for Hazardous Substance Container Removal for each hazardous substance container removed, overpacked (if needed), and staged in the designated area. Bid Item 3.3 allows for handling of fifty hazardous substance containers. For purposes of the work, hazardous substance container is defined as a container with a volume capacity greater than 35 gallons including drums, cans, cylinders, and lab packs.

END OF SECTION

3.4 Hazardous Substance Container Staging Area

3.4.1 Description

Hazardous Substance Container Staging Area shall include the preparation and maintenance of a hazardous substance container staging area.

The Contractor shall construct a 10' x 50' hazardous substance container staging area upon mobilization. This staging area shall consist of common fill (Reference Section 2.10) over Geotextile Type B (Reference Section 2.9) and 40 mil geomembrane. It shall be located at least 100' from any active working areas or underground utilities and protected with at least a 2.5' high earthen berm to help contain any leakage and the blast from a potential explosion.

3.4.2 Measurement & Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Unit</u>
3.4	Hazardous Substance Staging Area	Lump Sum

The Contractor shall be paid the bid under the unit price Bid for each preparation and maintenance of the Hazardous Substance Container Staging Area that would be constructed under Bid item 3.4.

END OF SECTION

3.5 Hazardous Substance Container Sampling and Analysis

3.5.1 Description

Hazardous Substance Container Sampling and Analysis shall consist of sampling and analysis of containers discovered during site excavation operations. These actions shall be completed by the Engineer after the Contractor has notified the Construction Manager/Engineer that a hazardous substance container may have been encountered. These tasks will be completed in accordance with the Engineer's pre-approved Quality Assurance Plan. A hazardous substance container shall be defined as drums, cans, and lab packs suspected to contain hazardous substances, hereafter referred to as containers. This also includes backfilling and compaction after removing the container. Sampling and analysis of cylinders will be handled through a Change Order.

3.5.2 Hazardous Substance Container Sampling and Analysis

Manual handling of hazardous substance containers shall be minimized. Handling shall be by suitable mechanical equipment such as a grappler-equipped backhoe or front end loader. Manual handling of hazardous substance containers in locations other than designated storage areas will not be permitted.

One sample will be collected by the Engineer for each container and analyzed for TCL/TAL Metals, TCLP on a 4 week turnaround, and RCRA Disposal Parameters (ignitability, corrosivity, sulfides, and cyanide reactivity) by a New Jersey Certified Laboratory.

Temporary storage of the containers on site in the drum staging area until the State completes any additional analyses and arranges for off-site disposal. The cost of additional analyses and disposal is not a part of this contract and shall be handled under a change order.

3.5.3 Measurement and Payment

Separate payment will not be made for Sampling and Analysis. The Contractor shall accommodate the Engineer who will conduct the Sampling and Analysis.

END OF SECTION

4.0 Operational

4.1 Operations and Maintenance

Operations and maintenance of the MSLA Landfill Site Improvements project shall be performed by the Contractor for a period of one year following Substantial Completion, with an optional additional year (on a month by month basis). O&M under this contract includes operations, maintenance, mowing, weed whacking, snowplowing, monitoring, inspecting, and reporting services associated with erosion and sediment control and stormwater management structures, fencing, bollards, signs, erosion on regraded areas, concrete pads and all roads and parking areas. Contractor can perform additional O&M work if needed.

- A. The Contractor shall maintain all erosion and sediment control and stormwater management structures, including but not limited to removing blockages due to ice, snow, sediment, and straw. Excavated material will be graded into the site adjacent to the areas it is removed from.
- B. The Contractor shall maintain fences, gates and locks in good condition so that the site is secure from trespassing.
- C. Materials shall meet the quality requirements of its applicable specification section. Submittals shall be in accordance with Section 1.3.
- D. Operations and Maintenance shall begin upon written notice of substantial completion of the construction phase from NJDEP.

The Contractor is required to provide all labor and overhead, materials, equipment, transportation, etc. necessary in performing the tasks listed in this section. The Contractor will be responsible for all costs for the first year. The NJDEP may elect to use the Contractor on a monthly basis for a second year of O&M services.

4.1.1 General

Occupying Private Land

The Contractor shall not (except after written consent from the NJDEP) enter or occupy with personnel, tools, materials, or equipment, any land outside of the landfill properties.

Catastrophe or Vandalism Repairs

Repairs of damage caused by catastrophe or vandalism shall be accomplished by the Contractor either:

- At Contractor's expense if covered under his warranty, or caused by his negligence, or

- The Contractor will prepare Change Order request documents for major repairs which shall be paid for by the State.

Documentation

The Contractor shall be responsible for documenting all operation and maintenance activities performed during the course of the work. Documentation shall include the following:

- Maintain an operation and maintenance log book, recording all data generated at the facility (i.e., meteorological readings, names and hours for all personnel used in operation and maintenance efforts and tasks performed, security problems, and communications with agencies and/or personnel).
- The Contractor will be required to submit a completed daily inspection/ maintenance log after each site visit. Site inspections shall occur on a weekly basis. All inspection efforts are to be documented in detail in the daily log. The daily log (reports) shall break out what was inspected that day. The daily log shall list potential future problems with the system. The daily log is to be filled out after every site inspection and is to be submitted and received by the NJDEP either via mail or telefacsimile no later than two (2) working days after a site inspection. Delays in meeting this submittal schedule shall be the basis for a Contractor Complaint, filed by NJDEP with the Department of Treasury.
- Prepare and submit to the State, semiannually, a report consolidating data into charts and graphs providing an overview of all aspects of the operation and maintenance effort. A written report summary shall also be included in this report.
- Prepare report of the annual cost of operation and maintenance of the MSLA landfill facility, upon completion of the 12-month operation period. The annual cost report should be summarized by month to show seasonal differences.
- Provide a record of all personnel utilized in the annual operation and maintenance of the site. Include baseline and annual medical records for each person working on the site.
- The Contractor shall be responsible to perform all the monitoring and/or reporting required for the following permits and/or plans:
 - NJDEP Landfill Disruption Permit
 - Hudson/Essex County Soil Conservation District Erosion and Sedimentation Control Plan Approval
 - NJDEP Tidelands License
 - NJDEP Coastal General Permit Number 24
 - USACE Jurisdictional Determination and Nationwide General Permit No. 38

- NJDEP Freshwater Wetlands Permit / Water Quality Certificate

NOTE: It is the Contractor's obligation to contact the Regulatory Enforcement Officer to determine the procedures required in maintaining/processing logs/reports.

Materials shall meet the quality requirements of its applicable specification section. Submittals shall be in accordance with Section 1.3.

4.1.1.1 Management and Administration

The Contractor shall be responsible for management and administration of the operation services and activities specified to be conducted at the MSLA Landfill. The Contractor shall provide supervisory and management staff to direct the daily activities of its work force and establish and update work schedule and assignments. The Contractor shall provide all site communications to the appropriate NJDEP staff and other entities as directed by the NJDEP. NJDEP shall have full access to all records of the Contractor pertaining to operation and maintenance.

4.1.1.2 Staffing

- A. The Contractor shall provide management, operations, and maintenance personnel required to operate, maintain, and administer all necessary facilities and programs. The Project shall be staffed as necessary to ensure continuous compliance with all specified permits, rules, and regulations in addition to the performance of all necessary related tasks (maintenance, repair, process monitoring, etc.) to effect the proper operation of the project.

4.1.1.3 Materials and Supplies

Acceptance of Specified Materials

Only new materials and equipment shall be incorporated in the work (as specified in the appropriate technical specification sections of the Contract relating to construction). All materials and equipment furnished by the Contractor to be incorporated in the work shall be subject to the inspection of the NJDEP. No material shall be processed or fabricated for the work or delivered to the work site without prior acceptance by the NJDEP.

Prior to the commencement of the work, the Contractor shall submit samples of materials necessary to demonstrate that they conform to the Specifications. Such samples shall be furnished, taken, stored, packed, and shipped by the Contractor.

The Contractor shall submit samples sufficiently early to permit inspection before the materials and equipment are needed for incorporation in the work. The consequences of his failure to do so shall be the Contractor's sole responsibility.

Storage of Materials and Equipment

All material and equipment to be incorporated in the work shall be placed so as not to damage any part of the work or existing facilities and so that free access can be had at all times to all parts of the site and to all public utility installations in the vicinity of the site. Materials and equipment shall be kept neatly piled and compactly stored in such locations as will cause a minimum of inconvenience to public travel and adjoining owners, tenants, and occupants, and as approved by NJDEP.

Any and all Contractor owned materials and/or equipment stored on the site is stored at the Contractor's risk. The State is not liable for any damage to or theft of the Contractor's equipment, material, etc.

Material shall meet the quality requirements of its applicable specification section. Submittals shall be in accordance with Section 1.3.

4.1.1.4 Operation and Maintenance Tasks

This section summarizes the tasks to be performed under the O&M portion of this Contract. In general, the tasks are organized as general tasks to be performed for the entire site.

Task 1 - Project Plans

Several plans are required to be prepared for the O&M portion of this Contract. They include a Work Plan specific to O&M tasks, a HASP for post-construction O&M, and 6-Month Reports. Costs for this work shall be included in the 1st Year lump sum O&M bid item and/or the 2nd Year monthly O&M fee as identified below.

Work Plan (1st Year)

The Contractor shall submit a detailed Work Plan for the completion of all the O&M elements which shall consist of a schedule for the implementation of the O&M program. Included in the work plan shall be an estimate of manpower and equipment which may be necessary to complete each task. Any other considerations necessary to ensure the completion of each element shall also be included in the work plan. The work plan shall describe in detail how work tasks will be completed.

In addition, the schedule within the work plan must be evaluated and updated every 6 months and be included in the 6 month report (described below).

Health and Safety Plan (1st Year)

The Contractor shall submit a detailed Health and Safety Plan for Post-Construction O&M that assures compliance with all applicable OSHA standards under 29 CFR parts 1910 and 1926 and the NJDEP minimum requirements for Health and Safety Plans and Section 3.1 of these specifications. The HASP shall include a listing of all Contractor or subcontractor personnel scheduled to work on

the project for Post-Construction O&M. The Contractor or subcontractor shall also provide proof that appropriate employee training and medical surveillance physical examinations are current for employees assigned to the project prior to their initiating any work under the Contract.

O&M Manual (1st Year, 2nd Year - Update)

The Contractor shall prepare an O&M Manual for this construction project. Thereafter, the Contractor shall provide updates and revisions to the O&M Manual every year based on field changes, future needs and recommendations.

The O&M Manual shall include at a minimum: recommended maintenance procedures and manufacturer spare parts list. The parts list shall also include the name, address, and phone number of local suppliers, from which the original equipment/material was purchased. Materials can be designated by construction specifications or by a substitute approved by NJDEP.

The activities report (described below under “6 Month Report”) shall be incorporated into a separate section of the O&M Manual, in order to maintain a historical account of the entire project and in order to keep the revision of the original O&M Manual to minimal level of work for the Contractor.

6 Month Report (1st and 2nd Years)

A 6 month report shall be submitted to the NJDEP no later than 15 days after each 6 month period, which commences with the Construction Final Acceptance Conference. This report will include an updated Work Plan schedule, an activity report, and photographs of the current site conditions.

The activity report shall consist of documentation all site activities during a 6 month period. The documentation of the activity report shall include at a minimum: routine O&M activities, any emergency response activities, equipment replacement, changes or upgrades made during the reporting period, and a narrative describing the effectiveness of the systems. In addition, the activity report shall evaluate the O&M program and recommend modifications as needed. Also, the activity report shall include information regarding how permit requirements were met, include copies of any reports the Contractor was required to file per permit requirements, all sampling data, etc.

Photographs of the current site conditions shall be taken at locations and frequencies sufficient to document the entire site. Photographs shall document material or system failures, equipment changes, or other important events.

Any recommendations that will result in an increase of effectiveness or represents a saving to the State shall also be included in this report.

Deliverables

1. The draft O&M Work Plan and HASP shall be prepared and submitted before the first year of O&M, at least 15 days prior to obtaining a Certificate of Substantial Completion. Three (3) copies of each of these documents shall be submitted for the

Draft and Final Copy. NJDEP shall have ten (10) working days to review and make comments on the Work Plan and HASP. The Contractor shall have five (5) working days to submit a Final Copy of the above documents which will incorporate NJDEP's comments. These documents must be completed, and approved by the NJDEP, prior to issuance of the Certificate of Substantial Completion. The payment for these items will be made on a lump sum basis, upon NJDEP approval of the deliverables.

2. The Contractor shall submit a draft revised/updated O&M Manual at the Construction Final Acceptance Conference. Three (3) copies are to be submitted for both draft and final copies. Revisions of the draft by NJDEP will be incorporated into the final copy. The final copy of the revised O&M Manual is to be delivered to NJDEP within 30 days of the date that the Contractor received draft comments.

Task 2 - Repair of Roadways (1st and 2nd Years)

The Contractor is required to maintain all roadways to allow access to the site for operations and maintenance. The NJDEP expects that these roadways will incur damage as a result of use and/or erosion.

Work under this task will be done on an as needed basis, as determined by NJDEP.

If road repairs are required, as determined by NJDEP, the Contractor shall supply and install the same type aggregate gravel material (Recycled Aggregate Type B, Dense Graded Aggregate Base Course, and Hot Mix Asphalt) which will be installed for the access road surface under the site improvements construction, and Type B Geotextile if needed.

Delivered material will be installed at agreed upon areas. Any repairs containing an area to be filled which is greater than either 3' wide or greater than 1,000 square feet shall be compacted to meet the specifications in this RFB for that particular material using a small drum roller. Any other repair for areas smaller than those outlined above may be performed using a non-vibratory plate compactor.

The material will not be placed until the area has been shaped and dressed and approved by the NJDEP Construction Manager. Shaping and dressing shall include grading to the required lines and elevations, and the removal of all debris or unsuitable material. Debris will be spread on the landfill in an area designated by NJDEP.

Task 3 - Erosion Control (1st and 2nd Years)

The Contractor shall inspect erosion control structures monthly. The Contractor shall provide aggregate or topsoil, as necessary, to stabilize the slopes and fill in eroded areas, in those sections of the landfill that were disturbed and/or created during this Site Improvements Contract. The access road aggregate used shall be as specified in Section 2.3 of the construction specifications and designated by the NJDEP.

Topsoil shall be in accordance with Construction Specification Sections 2.8. Areas not covered

with Recycled Aggregate shall be revegetated as specified in O&M Task 9. Wetlands areas are not to be cleaned of sediment or disrupted.

Costs for this work shall be included in the 1st Year lump sum O&M bid item and in the 2nd Year monthly O&M bid item.

Task 4 - Sediment Excavation (1st and 2nd Years)

The Contractor shall inspect the run-on, run-off control channels, the culverts, the inlets, pond, and the access road monthly for accumulation of sediments/foreign materials. Accumulated sediment shall be excavated to restore the required erosion and sediment control and stormwater management capacities. The excavated sediment shall be dewatered to increase the solids content to at least 20% solids by weight and placed in low spots or on high spots on top of the wastefill or as directed by NJDEP.

Costs for sediment excavation shall be included in the 1st Year lump sum O&M bid item and in the 2nd Year monthly O&M bid item.

Task 5 - Snow Plowing (1st and 2nd Years)

To ensure access for site operations, the Contractor may be required to plow the site access roads. The Contractor may also plow roads for his convenience. However, the Contractor must plow the roads when sample collection is scheduled or an emergency condition exists.

The Contractor shall include the costs for this task in the 1st Year lump sum bid item for O&M and in the 2nd Year monthly O&M bid item. NJDEP anticipates that the Contractor will have to plow the roads a maximum of four (4) times/year.

NOTE: Plowed snow shall not be deposited on/across any private property or emergency or regular exit/entrance.

Task 6 - Security Fence (1st and 2nd Years)

A well maintained security fence is integral in assuring that the site is not vandalized or used for illegal dumping. The fence, gates, bollards, and signs shall be inspected weekly. Damage shall be repaired within 24 hours of discovery. Repair materials shall be in accordance with specification Section 2.4 and 2.7.

Costs for this shall be included in the 1st year lump sump bid item for O&M and in the 2nd Year monthly O&M bid item.

Task 7 - Vegetative Control (1st and 2nd Years)

To ensure clear access to the work areas, the Contractor will be required to perform cutting around structures using a weed-whacker (including the use of handsaws, gas powered chainsaws or pruning

shears) and pruning of trees and shrubs around roadways and access points. This shall include cutting and pruning the areas listed below:

1. Clear a 4' swatch around all fencing and gates.
2. Maintain existing road width.
3. Clear any other areas where access to mowing is limited.
4. Maintain the access road from the landfill gas plant to the top of the landfill.

Mowing will also be performed, as needed, along the perimeter access road and access road from the gas plant to the top of the landfill to maintain it weed free.

General

The Contractor, as part of his operations, shall not be responsible for picking up and removing the cut vegetation except along the entrance gate area. Vegetation removed from the entrance gate area will be deposited on site. The NJDEP anticipates that the above areas will require mowing/pruning a maximum of six (6) times/growing season.

The Contractor shall include all costs for this work in the 1st Year monthly O&M bid price and 2nd Year monthly O&M bid price, as appropriate.

Task 8 - Erosion Repair and Regrading (1st And 2nd Years)

The Contractor shall inspect the access road and landfill areas disturbed by waste relocation monthly for erosion rills and gullies, ponded water, and other damage.

Various types of material are required to perform the necessary erosion repairs including: top soil as specified in Construction Specification Section 2.8, off-site fill as specified in Section 2.10, and Type B geotextile as specified in Section 2.9. The soil shall be prepared as in Section 2.8 prior to placing repair materials. Soil shall be placed in 6 inch lifts and shall be compacted between layers. Compaction with a non-vibratory plate compactor shall be adequate. The area shall be revegetated as specified in O&M Task 9.

Costs for this work shall be included in the 1st Year lump sum O&M bid item and in the 2nd Year monthly O&M bid item, as appropriate.

Task 9 - Revegetation (1st and 2nd Years)

Revegetation is necessary in order to maintain the vegetative cover which protects the cap system from erosion. It shall be accomplished by putting down lime, fertilizer, seed, and mulch twice a year in areas which are bare or damaged.

Soil shall be shaped and prepared as described in Section 2.8 of these specifications. Fertilizing, seeding and mulching shall be performed in accordance with Section 2.8.

The finished seeded area shall be smooth and shall conform to the prescribed lines and elevations. Seeded areas shall be protected and maintained until final acceptance of the work. Any damage to the seeded area caused by the Contractor shall be repaired at no additional cost.

All costs for this work shall be included in the 1st Year lump sum O&M bid item and in the 2nd Year O&M monthly bid item.

Task 10 - Final Lockout Inspection (2nd Year)

Thirty (30) days before contract expiration, the Contractor and NJDEP shall have a joint inspection of the site to prepare a punch list of items that shall be completed prior to the Contractor's departure. In general, the Contractor shall, unless otherwise directed or permitted in writing, tear down and remove all temporary buildings and structures built by him; shall remove all temporary work, tools, and machinery or other equipment furnished by him; shall remove all rubbish from any grounds which he has occupied; and shall leave the roads and all parts of the premises and adjacent property affected by his operations in a neat and satisfactory condition.

The Contractor shall thoroughly clean all materials installed by him and his subcontractors, and on completion of the contract shall deliver it undamaged and in fresh and new-appearing condition.

The Contractor shall restore or replace, when and as directed, any public or private property damaged by his work, equipment, or employees, to a condition at least equal to that existing immediately prior to the beginning of operations. To this end the Contractor shall do as required all necessary highway or driveway, walk, and landscaping work. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of existing property or structures shall be done as promptly as practicable prior to contract expiration.

4.1.2 Measurement and Payment

Payment will be made under:

<u>Pay Item No.</u>	<u>Pay Item</u>	<u>Pay Unit</u>
4.1.1	Operations and Maintenance, (Year 1)	Lump Sum
4.1.2	Operations and Maintenance, (Year 2)	Month

For Operations and Maintenance, 1st Year payment shall be a lump sum bid price paid out in 12 monthly payments. For Operations and Maintenance, 2nd Year, payment shall be on a per month basis.

Thirty (30) days prior to contract expiration, NJDEP will perform an inspection of the site and adjacent property. Based on the inspection, the Contractor will be informed of any deficiencies. The deficiencies must be corrected prior to issuance of final payment.

END OF SECTION

NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES

REPORT OF PHONE CALL OR VISIT

Bureau or Office Metro

30-0588

In Out _____

File Kearny

Date 5/17/88 Time _____

Routing 0138

Person Contacted Internal/Helen Phone No. _____

Affiliation _____ ~~REARIV. 120 216 515~~

Subject of Call Landfill Leachate

Summary of Call Landfill on south side of 280

heading east - almost to Newark
turnpike (ask Helen for exact directions)
- has a smelly black run-off. After
running down the hill of the landfill
the leachate collects in a ditch below.

BAG000035

Action Recommended _____

(Helen took pictures)

R. Harris

Signature

Handwritten scribble



5/16/88 LANDFILL
KEARNY ID. LF
NR 00 51837

COMPLAINT 30 0588

Let's protect our earth



State of New Jersey

DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
METRO BUREAU OF REGIONAL ENFORCEMENT
2 BABCOCK PLACE
WEST ORANGE, NEW JERSEY 07052

GEORGE G. McCANN, P.E.
DIRECTOR

DIRK C. HOFMAN, P.E.
DEPUTY DIRECTOR

February 10, 1989

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mayor and Council
Town of Kearny
402 Kearny Avenue
Kearny, NJ 07032

Re: Compliance Evaluation Inspection
Kearny 1-D Sanitary Landfill
NJPDES No. NJ 0051837
Kearny/Hudson County

Gentlemen:

A Compliance Evaluation Inspection of your facility was conducted by a representative of this Division on January 18, 1989. A copy of the completed inspection report form is enclosed for your information.

Your facility received a rating of "UNACCEPTABLE" due to the following deficiencies:

1. The permittee is not sampling the six (6) ground water monitoring wells and submitting Monitoring Report Forms as required by Part I, Page 7, Condition g(1) of the site's NJPDES permit.
2. The permittee has not submitted a plot plan of the site including the location of all ground water monitoring wells and methane gas vents as required by Part II, Page 1, Conditions 3(a) of the site's NJPDES permit.
3. Ground Water Monitoring Well Certification Forms A and B for each existing ground water monitoring well have not been

BAA000068

submitted as required by part II, Page 2, Condition 3(c) of the sites NJPDES permit.

4. The permittee is not conducting weekly inspections of the monitoring wells or maintaining an inspection record as required by Part II, Page 3, Condition 9 of the site's NJPDES permit.

5. The permittee has not delineated all leachate discharges to the surface waters of the State as required by Part II, Page 4, Condition 18 of the site's NJPDES permit.

6. The seven (7) wells located during the inspection did not have well permit numbers attached to the casing. The five (5) wells believed to be Monitoring Wells 1 through 5 did not have well permit numbers attached to the casing as required by Part II, Page 3, Condition 8 of the NJPDES site's permit.

7. The permittee failed to report the damage to Monitoring Wells 1, 2 and 6 as required by Part II-F, Page 2 Condition 10 of the site's NJPDES permit. Monitoring Wells 1 and 2 have bent casings that may cause sampling difficulties, Monitoring Well 6 could not be located during the inspection and may have been demolished by the construction crew installing the methane recovery system.

8. Contaminated run-off and leachate from the landfill collects in several locations around the base of the landfill and discharges to the surface waters of the State. This discharge is a unpermitted discharge to the surface waters of the State, the Town of Kearny must cease this discharge.

Deficiencies 1 through 6 were noted in the directive letter to the Town of Kearny dated February 10, 1988. The Town of Kearny has failed to correct these deficiencies as stated in Mr. Norman Doyle's letter to the Department dated May 13, 1988.

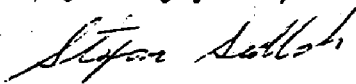
The deficiencies noted above are significant violations of the terms and conditions of your NJPDES permit and/or the Water Pollution Control Act Regulations (N.J.A.C. 7:14A-1 et seq.). You are therefore DIRECTED to institute corrective measures. A written report concerning specific details of remedial measures to be instituted, as well as an implementation timetable, must be submitted to this Department and USEPA, Permits Administration Branch within thirty (30) calendar days of the date of this correspondence.

You are advised that the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) provides for substantial monetary and criminal penalties in cases of permit violations.

Please direct all correspondence and inquiries to Deborah R. Ford, the Environmental Specialist responsible for this case, who can be reached at (201) 669-3900, or by letter through this Division.

Failure to fully comply with the above will result in the initiation of enforcement action by this Department. This shall in no way be construed, however, to indicate any exemption on your part from possible penalties for violations indicated by the Compliance Evaluation Inspection, as stated above.

Very truly yours,



Stefan D. Sedlak
Section Chief
Metro Bureau of
Regional Enforcement

E14:G25

c: Dr. Richard A. Baker, USEPA
Mr. Paul Molinari, USEPA
Health Official
Mr. Scott Tyrell, BAP

Enclosure

bc: Zaheer Hussain, Enforcement
Criminal Justice
Central File ✓



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN 029, Trenton, N.J. 08625



DISCHARGE SURVEILLANCE REPORT

PERMIT # NJ0051837 NO. OF DISCHARGES 6 MW's CLASS MA/IND

DISCHARGER Kearny ID Landfill

OWNER Town of Kearny

MUNICIPALITY Kearny COUNTY Hudson WATERSHED CODE GW

LOCATION Intersection of NJ Turnpike and Newark turnpike

RECEIVING WATERS Groundwater STREAM CLASS NA

LICENSED OPERATOR & PLANT CLASS _____

TRAINEE/ASSISTANT _____ OTHER INFO. (201) 939-5805
(Neqlia)

DEFICIENCIES OR COMMENTS - see letter -

OVERALL RATING Acceptable Conditionally Acceptable Unacceptable

EVALUATOR Deborah R. Ford TITLE Environmental Specialist

INFORMATION FURNISHED BY (Name) Mr. Barry Sutherland, P.E.

(Title) Director of Engineering (Organization) Neqlia Engineering Associates

DATE OF INSPECTION January 18, 1989

Permit # N0051837

Date 1/18/89

DISCHARGE SURVEILLANCE REPORT

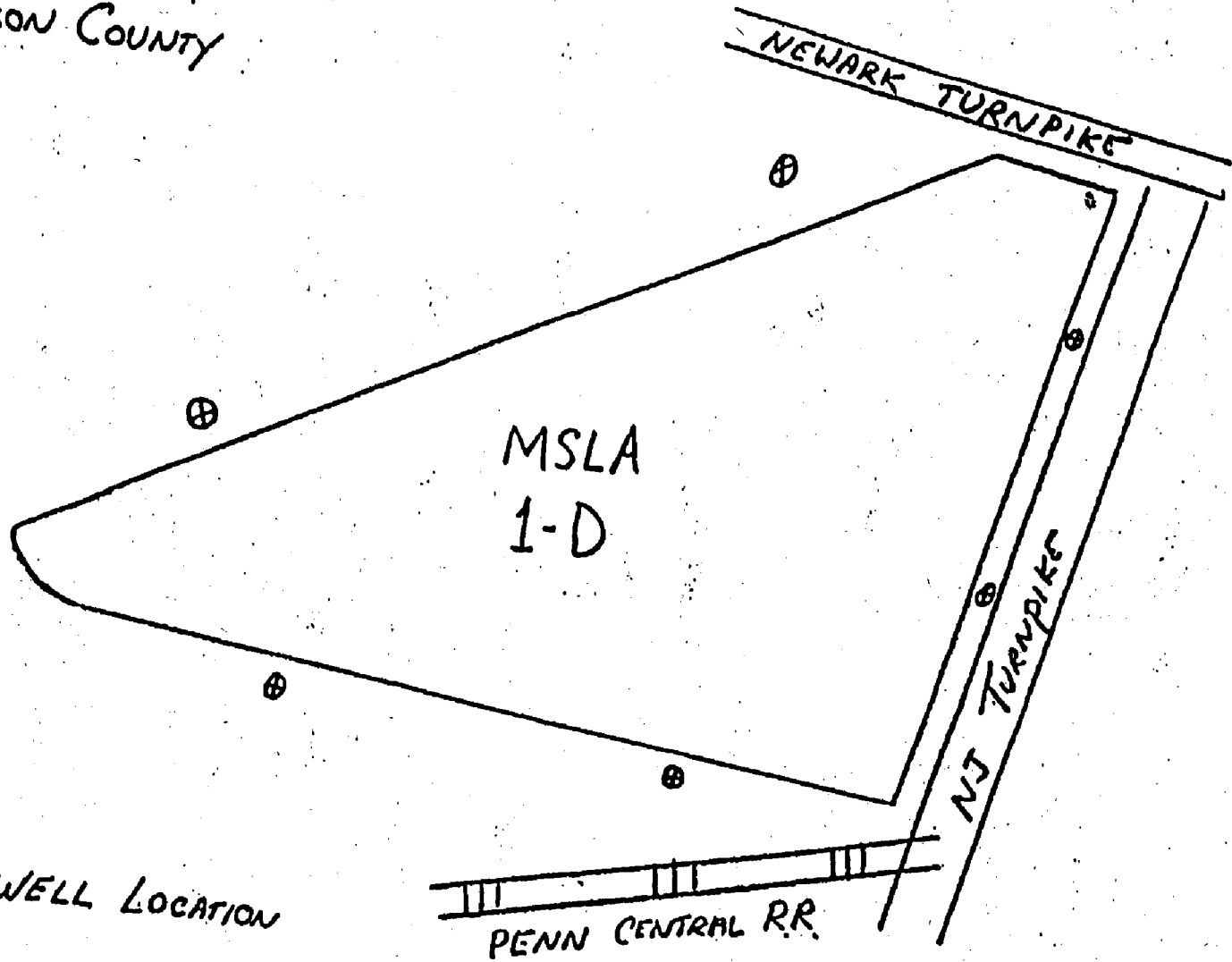
Yearny ID

GROUND WATER DISCHARGE EVALUATION

RATING CODES: S = Satisfactory M = Marginal U = Unsatisfactory NA = Not Applicable NI = not inspected

	RATING	COMMENTS
GENERAL	TYPE DGW	- Landfill
	RCRA FACILITY	NA
	DISCHARGE NUMBER	NA
	WASTEWATER SOURCE/FREQ.	Leachate
	PUMPS AND PIPING	NA
	ALTERNATE POWER/ALARM	NA
	BYPASS	NA
MONITORING SYSTEM	WATER SUPPLY/MONITORING	NI
	AQUIFERS MONITORED	- Organic Mat + Clay of the Hackensack Meadows
	UPGRADIENT WELLS	U wells are not numbered
	DOWNGRADIENT WELLS	U
	SAMPLING PLAN	U none
	SAMPLING PROCEDURES	U samples are not being collected
	LAB CERTIFICATION	-
	RECORDS	U No sample results
	REPORTING	U No sample data submitted
Inspection Log	U weekly inspections are not being conducted	
LYSIMETER/ MONITORED WELLS	DRILLING PERMIT NUMBERS	- see below
	WELLS NUMBERED/IDENTIFIED	U the seven (7) wells located were not numbered
	LOCKS/INTEGRITY	M the 7 wells were locked - No keys available
	ABANDONMENT PLAN	NI
	ELEVATION INFORMATION	↓
	WATER LEVEL MEASUREMENT	↓
	TURBIDITY FREE	↓
SUFFICIENT YIELD	↓	
UIC	CLASSIFICATION	↑ monitoring wells
	PERC/LEACHING PROBLEMS	↓
	SOLVENTS/REPAIRS MADE	NA
	MAX. PRESSURE & VOLUME	↓
	CLOSEST USDW/SUPPLY WELLS	↓
IMPOUNDMENT	MOUND INTEGRITY/COVER	↓
	LINING INTEGRITY	↑ * mw-6 26-05005-7
	EMBANKMENT INTEGRITY	↑
	LEACHATE COLLECTION SYS.	NA * the well believed to be mw-6 could not be found - recently demolished by construction crew installing the methane Recovery system
	SOLIDS BUILDUP/REMOVAL	↓
	HEIGHT TO FREEBOARD	↓
LAND APPLICATION/ SPRAY SYSTEM	APPEARANCE	↓
	EVEN DISTRIBUTION	↑
	PONDING/RUNOFF/EROSION	↑
	SPRAY HEADS	↑
	DISCING	↑
	COVER CROP	NA
	APPEARANCE	↓
BUFFER ZONE	↓	
SLUDGE STOCKPILED	↓	
OTHER	SEEPAGE/LEACHING	NA
	ODOR/AEROSOLS	U Methane venting up through cover - Recovery system is being installed
	FLOW MONITORING/RECORDING	NA

MENT I
MSLA 1-D - KEARNY
HUDSON COUNTY



⊕ MONITOR WELL LOCATION
NOT TO SCALE

Let's protect our earth



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
METRO BUREAU OF REGIONAL ENFORCEMENT
2 BARCOCK PLACE
WEST ORANGE, NEW JERSEY 07052

(201) 669-3900

February 28, 1990

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mayor and Council
Town of Kearny
402 Kearny Avenue
Kearny, NJ 07032

Re: Compliance Evaluation Inspection
MSLA 1-D Kearny Landfill
NJPDES No. NJ0051837
Kearny/Hudson County

Gentlemen:

A Compliance Evaluation Inspection of your facility was conducted by a representative of this Division on January 10, 1990. A copy of the completed inspection report form is enclosed for your information.

Your facility received a rating of "UNACCEPTABLE" due to the following deficiencies:

1. The permittee is not sampling the six (6) ground water monitoring wells and submitting Monitoring Report Forms as required by Part 1, Page 7, condition g(1) of the site's NJPDES permit.
2. The permittee has not submitted a plot plan of the site including the location of all ground water monitoring wells and methane gas vents as required by Part II, Page 1, conditions 3(a) of the site's NJPDES permit.
3. The permittee is not conducting weekly inspections of the monitoring wells or maintaining an inspection record as required by Part II, Page 3, condition 9 of the site's NJPDES permit.

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BAG000010

4. The permittee has not delineated all leachate discharges to the surface waters of the state as required by Part II, Page 4, condition 18 of the site's NJPDES permit.
5. The four (4) wells located during the inspection did not have well permit numbers attached to the casing as required by Part I, Section 10 and Part II-F, section 8 of the site's NJPDES permit.
6. The permittee failed to report the damage to Monitoring Wells 1,2,5 and 6 as required by Part II-F, Page 2, condition 10 of the site's NJPDES permit. Monitoring wells 1 and 2 have bent casing that may cause sampling difficulties, Monitoring Wells 5 and 6 could not be located during the inspection and are believed to have been accidentally demolished.
7. Contaminated run off and leachate from the landfill collects in several locations around the base of the landfill and discharges to the land and surface waters of the State. This discharge is a unpermitted discharge to the land and surface waters of the State. The Town of Kearny must cease this discharge.
8. The permittee has failed to repair or replace the damaged wells as required by Part I, section 10 and Part II-F, section 10.c of the site's NJPDES permit. Unusable wells must be sealed as required by Part I, section 10 of the permit.
9. The permittee failed to submit a completed permit renewal to the Department 180 days prior to the expiration date of the permit as required by Part I, section 2.A.

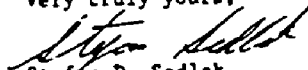
Deficiencies 1 through 5 were noted in the directive letters to the Town of Kearny dated February 10, 1988 and February 10, 1989. The Town of Kearny has failed to correct these deficiencies as stated in Mr. Norman Doyle's letter dated March 20, 1989. Deficiencies 6 and 7 were noted in the directive letter to the Town of Kearny dated February 10, 1989. The Town of Kearny has failed to correct these deficiencies as stated in Mr. Joseph E. Neglia's letter to the Department dated March 20, 1989.

The deficiencies noted above have placed your facility in significant violation of the terms and conditions of your NJPDES permit and/or the Water Pollution Control Act Regulations (N.J.A.C. 7:14A-1 et seq.). You are therefore directed to institute corrective measures. A written report concerning specific details of remedial measures to be instituted, as well as an implementation timetable, must be submitted to this Department and USEPA, Permits Administration Branch, within thirty (30) calendar days of the date of this correspondence.

You are advised that the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) provides for substantial monetary and criminal penalties in cases of permit violations.

Please direct all correspondence and inquiries to Deborah R. Ford, the Environmental Specialist responsible for this case, who can be reached at (201) 669-3900, or by letter through this Bureau.

Very truly yours,



Stefan D. Sedlak
Section Chief
Landfill/UST's Enforcement Section
Metro Bureau of
Regional Enforcement

E14:G26

c: Chief, Permits Administrative Branch, USEPA
Mr. Patrick M. Durack, USEPA
Mr. Edward Grosvenor, H.O.
Mr. Barry Sutherland, P.E. Neglia Engineering Asso.

BC: ZAHEER HUSSAIN
JAMES LYKO
✓CENTRAL FILE



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
CN 029, Trenton, N.J. 08625



DISCHARGE SURVEILLANCE REPORT

PERMIT # NJ0251837 NO. OF DISCHARGES 6 MW CLASS _____

DISCHARGER MSLA ID Kearny Landfill

OWNER Town of Kearny

MUNICIPALITY Kearny COUNTY Hudson WATERSHED CODE _____

LOCATION Newark-Jersey City Turnpike (Between #250 + NW Turnpike)

RECEIVING WATERS Groundwater STREAM CLASS _____

LICENSED OPERATOR & PLANT CLASS _____

TRAINEE/ASSISTANT _____ OTHER INFO. (201) 939-8805
(Neglia)

DEFICIENCIES OR COMMENTS ① Major wells are not being sampled and
Monitoring Report Forms are not being submitted. ② weekly
well inspections are not conducted and inspection record maintained
③ Damage to wells 1, 2, 5 and 6 not reported. ④ Damaged
wells have not been replaced. ⑤ wells' ^{well} numbers
⑥ Plot plan has not been submitted ⑦ Leachate discharges
have not been delineated. ⑧ Permit renewal has not been
submitted. ⑨ Unpermitted discharge of leachate to the land
and surface waters of the State.

OVERALL RATING Acceptable Conditionally Acceptable Unacceptable

EVALUATOR Deborah R. Ford TITLE Environmental Specialist

INFORMATION FURNISHED BY (Name) Barry Sutherland P.E.

(Title) Director of Engineering (Organization) Neglia Engineering Assn.

DATE OF INSPECTION January 10, 1990

DISCHARGE SURVEILLANCE REPORT

GROUND WATER DISCHARGE EVALUATION			
RATING CODES: S = Satisfactory M = Marginal U = Unsatisfactory NA = Not Applicable			
		RATING	COMMENTS
GENERAL	TYPE DGW	-	Landfill leachate
	RCRA FACILITY	NA	
	DISCHARGE NUMBER	NA	
	WASTEWATER SOURCE/FREQ.	-	Leachate
	PUMPS AND PIPING	NA	
	ALTERNATE POWER/ALARM	NA	
	BYPASS	NA	
MONITORING SYSTEM	WATER SUPPLY/MONITORING	NA	
	AQUIFERS MONITORED	-	Organic Mat. Clays of the Hackensack aquifer
	UPGRADIENT WELLS	U	Wells are not numbered and have no data - cur.
	DOWNGRADIENT WELLS	U	2 of 4 wells located cannot be
	SAMPLING PLAN	U	NO Sampling is being conducted
	SAMPLING PROCEDURES	U	"
	LAB CERTIFICATION	-	
	RECORDS	U	No Monitor Reports or Inspection Log
	REPORTING	U	Monitor Reports are not being submitted
Inspection Log	U	Weekly inspections are not being conducted	
LYSIMETER/ MONITORED WELLS	DRILLING PERMIT NUMBERS	-	See Below
	WELLS NUMBERED/IDENTIFIED	U	Wells Not Numbered
	LOCKS/INTEGRITY	-	All four wells watered out for sample by EPA
	ABANDONMENT PLAN	NI	
	ELEVATION INFORMATION	↓	Monitor wells mw1 26-09003-6
	WATER LEVEL MEASUREMENT	↓	mw2 26-09001-4
	TURBIDITY FREE	↓	mw3 26-09005-2
SUFFICIENT YIELD	↓	mw4 26-09006-1	
UIC	CLASSIFICATION	NA	mw5 26-09007-9
	PERC/LEACHING PROBLEMS	↓	mw6 26-09008-7
	SOLVENTS/REPAIRS MADE	↓	Quality could not be located (may have been damaged)
	MAX. PRESSURE & VOLUME	↓	2 wells are damaged and cannot be sampled
	CLOSEST USDW/SUPPLY WELLS	↓	
	MOUND INTEGRITY/COVER	↓	
IMPOUNDMENT	LINING INTEGRITY	NA	
	EMBANKMENT INTEGRITY	↓	
	LEACHATE COLLECTION SYS.	↓	
	SOLIDS BUILDUP/REMOVAL	↓	
	HEIGHT TO FREEBOARD	↓	
	APPEARANCE	↓	
LAND APPLICATION/ SPRAY SYSTEM	EVEN DISTRIBUTION	NA	
	PONDING/RUNOFF/EROSION	↓	
	SPRAY HEADS	↓	
	DISCING	↓	
	COVER CROP	↓	
	APPEARANCE	↓	
	BUFFER ZONE	↓	
	SLUDGE STOCKPILED	↓	
OTHER	SEEPAGE/LEACHING	U	Leachate discharges to surface water.
	ODOR/AEROSOLS	U	Methane and Chemical odors strong on NE side of
	FLOW MONITORING/RECORDING	NA	landfill



DISCHARGE SURVEILLANCE REPORT

Permit # 251837
Date 1/10/90

PLANT DIAGRAM AND FLOW SEQUENCE:

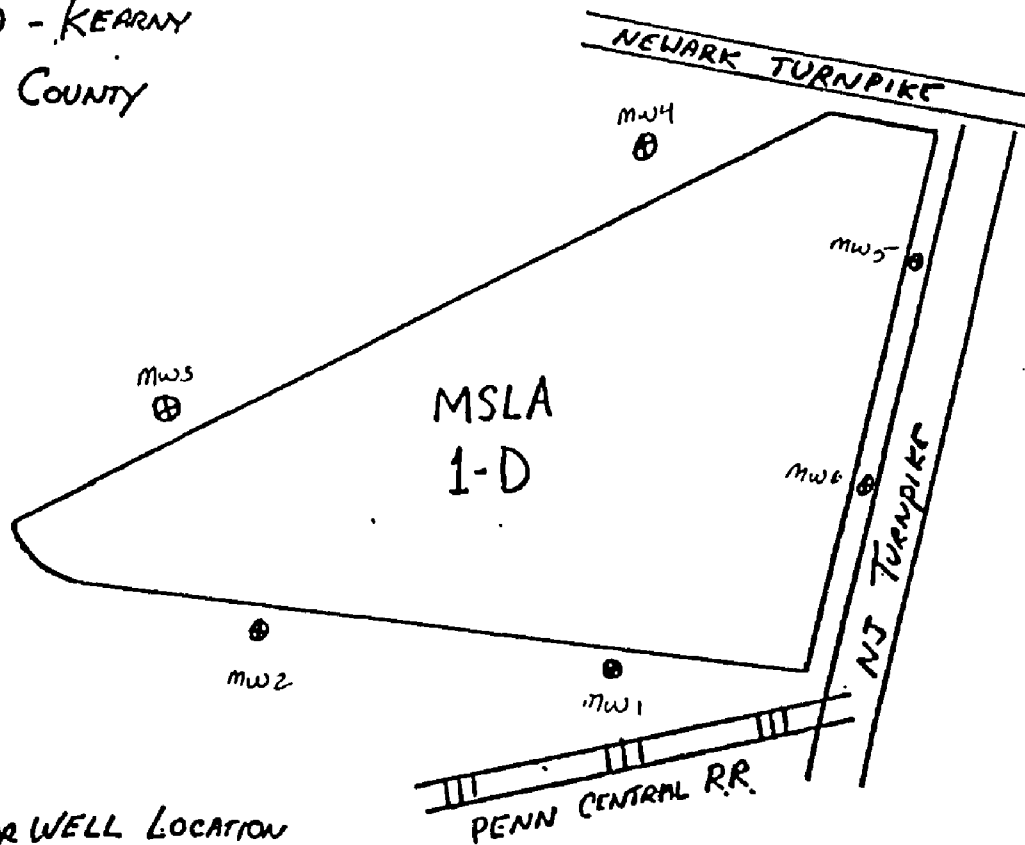
See Attached Diagram

DISCHARGE DATA
SOURCE: 1/10/90 Sampled by E.P.A. Results not available at this time
PERIOD: _____

DIS	PARA	SAMPLE TYPE	PERMIT LIMITS	DATA	DIS	PARA	SAMPLE TYPE	PERMIT LIMITS	DATA

MONITORING DEFICIENCIES: _____

MSLA 1-D - KEARNY
HUDSON COUNTY



⊕ MONITOR WELL LOCATION
NOT TO SCALE

OVER PLUMB

MSLA 1-D
1/10/99
L. E. & S. O'CONNOR



State of New Jersey
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DIVISION OF WATER RESOURCES
METRO BUREAU OF REGIONAL ENFORCEMENT
2 BABCOCK PLACE
WEST ORANGE, NEW JERSEY 07052

(201) 669-3900

March 8, 1991

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Mayor and Council
Town of Kearny
402 Kearny Avenue
Kearny, NJ 07032

Re: Compliance Evaluation Inspection
MSLA 1-D Kearny Landfill
NJPDES No. NJ 0051837
Kearny/Hudson County

Gentlemen:

A Compliance Evaluation Inspection of your facility was conducted by a representative of this Division on February 15, 1991. A copy of the completed inspection report form is enclosed for your information.

Your facility received a rating of "UNACCEPTABLE" due to the following deficiencies:

1. The permittee is not sampling the six (6) ground water Monitoring Wells and submitting Monitoring Report Forms as required by Part I, Page 7, Condition g(1) of the site's NJPDES permit.
2. The permittee is not conducting weekly inspections of the Monitoring Wells or maintaining an inspection record as required by Part II, Page 3, Condition 9 of the site's NJPDES permit.
3. The permittee has not delineated all leachate discharges to the surface waters of the State as required by Part II, Page 4, Condition 18 of the site's NJPDES permit.

BAA000C71

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4. The two (2) wells located during the inspection did not have well permit numbers attached to the casing as required by Part II-F, Section 8 of the site's NJPDES permit.

5. The permittee failed to report the damage to Monitoring Wells 1, 2, 5 and 6 as required by Part II-F, Page 2, Condition 10 of the site's NJPDES permit. Monitoring Well 1 has a bent casing that may cause sampling difficulties, Monitoring Wells 2, 3, 5 and 6 could not be located during the inspection and are believed to have been accidentally demolished.

6. Contaminated runoff and leachate from the landfill collects in several locations around the base of the landfill and discharges to the surface waters of the State. This discharge is a unpermitted discharge to the surface waters of the State. The Town of Kearny must cease this discharge.

7. The permittee has failed to repair or replace the damaged wells as required by Part I Section 10 and Part II-F, Section 10.c of the site's NJPDES permit. Unusable wells must be sealed as required by Part I, Section 10 of the permit.

8. The permittee failed to submit a completed permit renewal to the Department 180 days prior to the expiration date of the permit as required by Part I, Section 2.A.

9. The two (2) wells located during the inspection were not locked and did not have water tight inner caps as required by Part II-F, Section 5 and the Departments monitor well specifications.

Deficiencies 1 through 8 were noted in the directive letters to the Town of Kearny dated February 10, 1988, February 10, 1989 and February 28, 1990. As of this date the Town of Kearny has failed to correct these deficiencies.

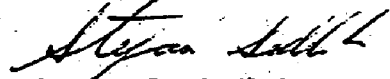
The deficiencies noted above have placed your facility in significant violation of the terms and conditions of your NJPDES permit and/or the Water Pollution Control Act Regulations (N.J.A.C. 7:14A-1 et seq.). You are therefore DIRECTED to institute corrective measures. A written report concerning specific details of remedial measures to be instituted, as well as an implementation timetable, must be submitted to this Department and USEPA, Permits Administration Branch within thirty (30) calendar days of the date of this correspondence.

You are advised that the New Jersey Water Pollution Control Act (N.J.S.A. 58:10A-1 et seq.) provides for substantial monetary and criminal penalties in cases of permit violations.

Please direct all correspondence and inquiries to Deborah R. Cowell, the Senior Environmental Specialist responsible for this case, who can be reached at (201) 669-3900 or by letter through this Bureau.

Failure to fully comply with the above will result in the initiation of enforcement action by this Department. This shall in no way be construed, however, to indicate any exemption on your part from possible penalties for violations indicated by the Compliance Evaluation Inspection as stated above.

Very truly yours,



Stefan D. Sedlak
Section Chief
Landfill and Underground
Storage Tank Enforcement
Metro Bureau of
Regional Enforcement

E14:G25

c: Chief - Permits Administration Branch, USEPA
Mr. Patrick M. Durack, USEPA
Mr. Edward Grosvenor, Health Official
Mr. Barry Sutherland, Neglia Engineering Associates
Mr. Scott Tyrell, BAP

Enclosure

bc: Zaheer M. Hussain, Enforcement
James Lyko, Criminal Justice
Central File



NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION
 DIVISION OF WATER RESOURCES
 CN 029, Trenton, N.J. 08625



DISCHARGE SURVEILLANCE REPORT

PERMIT # NJ0051837 NO. OF DISCHARGES 6 MW CLASS —

DISCHARGER MSLA ID Kearny Landfill

OWNER Town of Kearny

MUNICIPALITY Kearny COUNTY Hudson WATERSHED CODE —

LOCATION Newark - Jersey City Turnpike (Between 280 and NJ Turnpike)

RECEIVING WATERS Groundwater STREAM CLASS —

LICENSED OPERATOR & PLANT CLASS —

TRAINEE/ASSISTANT — OTHER INFO. (201) 939-8805 (Weglia)

DEFICIENCIES OR COMMENTS 1) Monitor Wells are not being sampled and Monitoring Report Forms have not been submitted, 2) weekly well inspections have not been conducted and inspection Records have not been maintained. 3) Damage to Monitor wells 1, 2, 5 and 6 was not reported. 4) Damage wells have not been replaced. 5) wells are not numbered or locked, ^{and do not have inner caps} 6) Leachate discharges have not been delineated 7) Permit renewal has not been submitted. 8) Unpermitted discharge of leachate to the land and surface waters of the state.

OVERALL RATING Acceptable Conditionally Acceptable Unacceptable

EVALUATOR Deborah R. Cowell TITLE Sr. Environmental Specialist

INFORMATION FURNISHED BY (Name) Barry Sutherland P.E.

(Title) Director of Engineering (Organization) Neglia Engineering Assoc.

DATE OF INSPECTION February 15, 1991

Permit # W0051837

Date 2/15/91

DISCHARGE SURVEILLANCE REPORT

1-D

GROUND WATER DISCHARGE EVALUATION

RATING CODES: S = Satisfactory M = Marginal U = Unsatisfactory NA = Not Applicable

	RATING	COMMENTS
GENERAL	TYPE DGW	Landfill leachate
	RCRA FACILITY	
	DISCHARGE NUMBER	
	WASTEWATER SOURCE/FREQ.	Leachate
	PUMPS AND PIPING	NA
	ALTERNATE POWER/ALARM BYPASS	
MONITORING SYSTEM	WATER SUPPLY/MONITORING	NA
	AQUIFERS MONITORED	Organic Mat + Clays of the Hackensack Meadow
	UPGRADIENT WELLS	2 old wells were located - 1 had a bent casing
	DOWNGRADIENT WELLS	Both were not numbered and don't have inner caps
	SAMPLING PLAN	No sampling is being conducted
	SAMPLING PROCEDURES	"
	LAB CERTIFICATION	
	RECORDS	No Mon. Log Reports or Inspection Record
	REPORTING	Monitor Report Series one not being submitted
Inspection Record	Wells are not inspected weekly	
LIFE LINE MONITORED WELLS	DRILLING PERMIT NUMBERS	See below
	WELLS NUMBERED/IDENTIFIED	Wells are not numbered
	LOCKS/INTEGRITY	Wells are not locked
	ABANDONMENT PLAN	NE
	ELEVATION INFORMATION	monitor wells MW1 26-08003-6
	WATER LEVEL MEASUREMENT	MW2 26-08004-4
	TURBIDITY FREE	MW3 26-08005-2
UIC	SUFFICIENT YIELD	MW4 26-08006-1
	CLASSIFICATION	NA
	PERC./LEACHING PROBLEMS	
	SOLVENTS/REPAIRS MADE	
	MAX. PRESSURE & VOLUME	
	CLOSEST USDW/SUPPLY WELLS	
IMPONDMENT	MOUND INTEGRITY/COVER	
	LINING INTEGRITY	NA
	EMBANKMENT INTEGRITY	
	LEACHATE COLLECTION SYS.	
	SOLIDS BUILDUP/REMOVAL	
LAND APPLICATION/SPRAY SYSTEM	HEIGHT TO FREEBOARD	
	APPEARANCE	
	EVEN DISTRIBUTION	NA
	PONDING/RUNOFF/EROSION	
	SPRAY HEADS	
	DISCING	
	COVER CROP	
	APPEARANCE	
BUFFER ZONE		
OTHER	SLUDGE STOCKPILED	
	SEEPAGE/LEACHING	U Leachate discharges to surface water
	ODOR/AEROSOLS	U Methane and chemical odors from cracks in the landfill
FLOW MONITORING/RECORDING	NA	straws on top



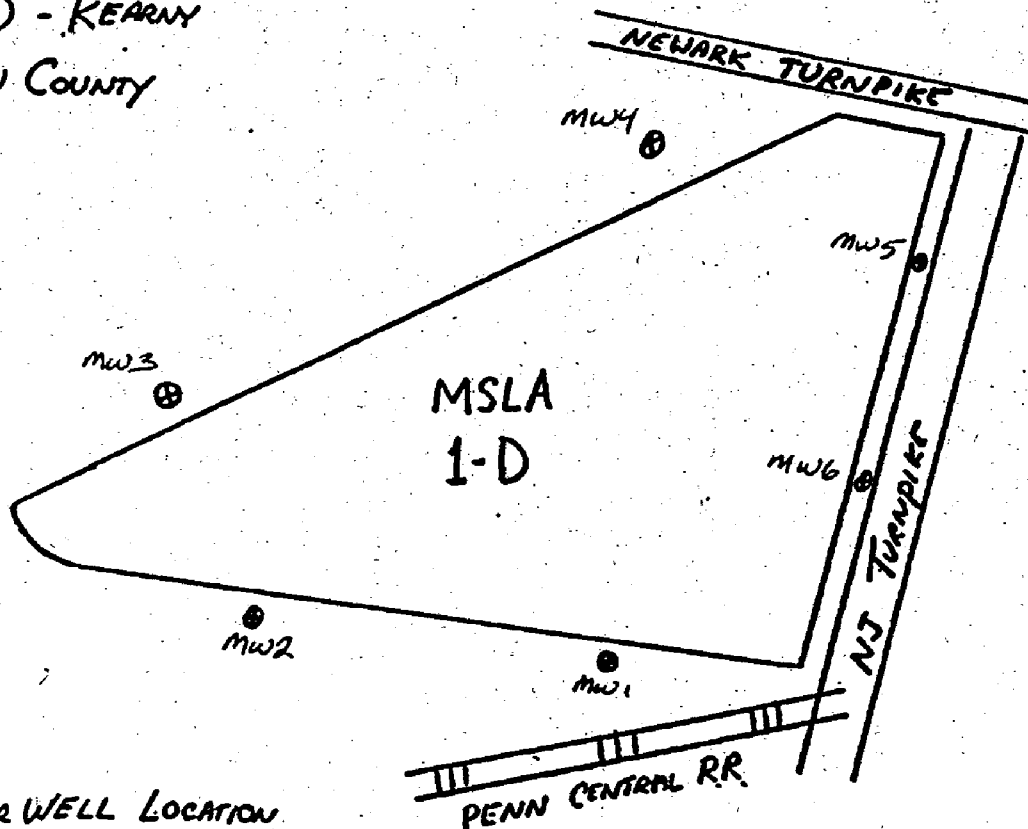
DISCHARGE SURVEILLANCE REPORT

Permit # NJ0051837
Date 2/15/91

1-D

DIAGRAM AND FLOW SEQUENCE:

MSLA 1-D - KEARNY
HUDSON COUNTY



⊕ Monitor Well Location

NOT TO SCALE

25 SAMPLES TAKEN

DISCHARGE DATA

E: _____ PERIOD: _____

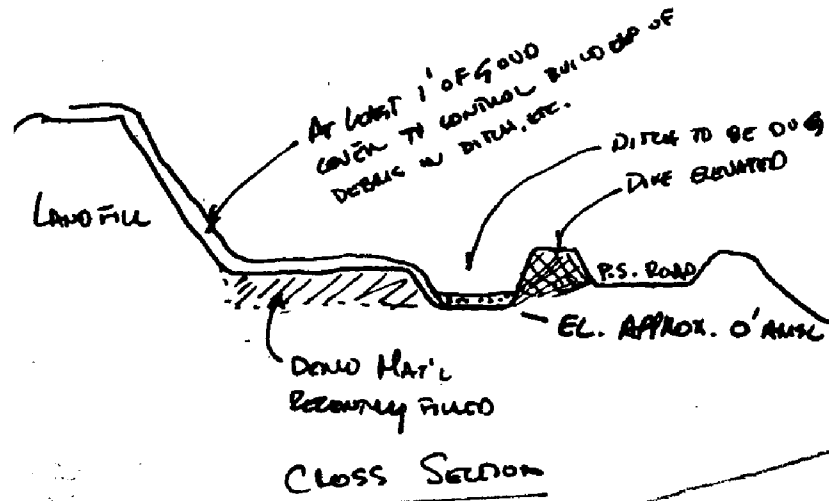
ARA	SAMPLE TYPE	PERMIT LIMITS	DATA	DIS	PARA	SAMPLE TYPE	PERMIT LIMITS	DATA

WORKING DEFICIENCIES: _____

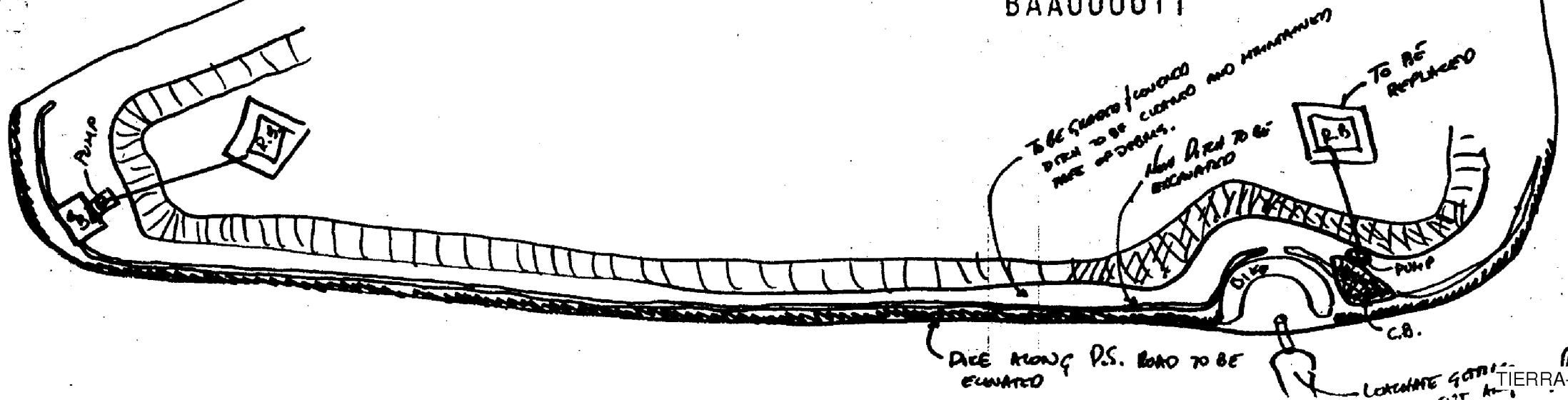
SYSTEM IS BEING INSTALLED DURING INSPECTION OF 5/14/76

ALTHOUGH THE IDEA SEEMS MECHANICALLY GOOD, THE FOLLOWING MUST BE ADDED TO TO MAKE IT ACCEPTABLE:

1. DIKE ALONG P.S. ROAD ELEVATED FROM GOOD GRADE... NOT PLACED ON GARAGE AS WAS EVIDENT DURING INSPECTION.
2. THAT DIKE BE BOUNDARY WAST AND NOT SUFFICIENTLY TO CONTAIN ALL LIQUIDS ON SITE.
3. THAT THE DEMO MTL MAINTENANCE DIKE BE PROPERLY COVERED.
4. THAT THE NECESSARY PRECAUTIONS BE TAKEN TO MAINTAIN THE DITCH TRENCH AND CAREFUL OF DUBS.



CROSS SECTION



BAA000011

DIKE ALONG P.S. ROAD TO BE ELEVATED

BAA000011



Hackensack Meadowlands Development Commission

1099 WALL STREET WEST • LYNDHURST, NEW JERSEY 07071 • (201) 935-3250

PATRICIA Q. SHEEHAN
Chairman

WILLIAM D. McDOWELL
Executive Director

June 18, 1976

Mr. Roger Generazzo
Municipal Sanitary Landfill Authority
1500 Harrison Avenue
Kearny, New Jersey

RE: MSLA, FILE 71-175

Dear Mr. Generazzo:

On June 17, 1976, this Office conducted inspections of the MSLA Sites I-A, I-C and I-D, in Kearny. Based on the above, this Office found the following disturbing conditions:

(1) All work has ceased on the drainage and leachate control system along the southerly property line of Site I-D. Specifically, since our last joint inspection, no further covering of the slopes or drainage area has been completed. In addition, the new drainage ditch has been only partially dug and abandoned. Further, the clean fill piled up just south of the new ditch is ineffective as diking, since it is dumped directly over the demo fill. As a result, leachate continues to escape the site through the demo material, and by way of ditches that have been dug to the property south of the PSE&G right-of-way.

We anticipate that work will immediately resume in order that this problem may be corrected as soon as possible.

(2) Active filling on Site I-C has progressed to the easterly slope of the site, along the PSE&G powerline right-of-way. However, the required 50' plateau is not being maintained along that slope and the stakes marking the setback

BAA000015

June 18, 1976

have been removed. Therefore, you are hereby ordered to cease all dumping in the vicinity of the east slope, to immediately stake out a 50' wide plateau from the top of the existing slope and to adhere to the required setbacks during all future filling.

Further, enclosed is a copy of the approved compliance schedule which has been marked to indicate those additional items with which this Office has found deficiencies. We anticipate that you will give all these items your prompt attention in order that they may be resolved as soon as possible.

If there are any questions, please do not hesitate to contact this Office.

Sincerely,

OFFICE OF THE CHIEF ENGINEER


GEORGE D. CASCINO, P.E., P.P.
CHIEF ENGINEER

MA/jo

cc: Dennis Backus, P.E.
Kenneth D. McPherson, Esq.
Mark L. First, Esq., DAG

THOSE DEADLINES UNDERLINED HAVE NOT BEEN MET

MUNICIPAL SANITARY LANDFILL AUTHORITY COMPLAINT SCHEDULE

<u>START</u>	<u>DEADLINE</u> <u>COMPLETE</u>	<u>SITE I-A</u>
	4/1/76	Bimonthly to 1/1/79 - Water Sampling (bi-monthly)
<u>2/1/76</u>	7/1/76	Complete final cover (2') entire site should be completing.
<u>2/1/76</u>	7/1/76	Construct and/or recondition swales for drainage should be completing.
	8/1/76	Seed entire site
	1/1/77	Install methane vents - should be starting.
	1/1/77	Submittal of diking plan, if necessary.
		<u>SITE I-D</u>
<u>IMMEDIATE</u>	<u>IMMEDIATE</u>	Water and methane sampling (monthly)
2/1/76	<u>3/1/76</u>	Re-install leachate pumps 1 and 2 pump on southwest corner removed.
2/1/76	<u>3/1/76</u>	Construct collection and recharge basins - must be reconditioned.
2/1/76	7/1/76	Construct barrier berms.
	7/1/76	Site shall become <u>Inactive</u> .
<u>2/1/76</u>	7/1/76	Final covering shall be complete (2') - not started.
<u>2/1/76</u>	7/1/76	Construct new south swale and ditch - has been abandoned
<u>2/1/76</u>	8/1/76	Install methane vents - not started
7/1/76	9/1/76	Seed entire site.
	<u>DEADLINE</u>	<u>SITE I-C</u>
<u>IMMEDIATE</u>	<u>IMMEDIATE</u>	No filling within 200' of P.S.E. & G Company right-of-way (50' plateau) or within limits of HMDC Sawmill Park Landfill Extension. (both limits should be staked immediately) Has been violated ... shall be re-staked and maintained.
<u>2/1/76</u>	<u>3/1/76</u>	Clean drainage ditch along Belleville Turnpike side of site - only started recently.
	<u>4/1/76</u>	Water sampling (monthly)
<u>2/1/76</u>	<u>4/1/76</u>	Block all drainage pipes under P.S.E. & G. towers

MUNICIPAL SANITARY LANDFILL AUTHORITY COMPLIANCE SCHEDULE CONTINUED

<u>START</u>	<u>COMPLETE</u>	<u>SITE I-C</u>
<u>3/1/76</u>	<u>4/1/76</u>	Install leachate pumps (along P.S.E. & G side) construct collection and recharge basins.
<u>3/1/76</u>	<u>4/1/76</u>	Construct dikes 3 & 5 (P.S. side-south and north of site).
<u>4/1/76</u>	<u>6/1/76</u>	Construct flood gates 1,2,3,&4 (southeast corner under P.S. line for Belleville Ditch)
<u>2/1/76</u>	<u>7/1/76</u>	Construct swales P.S. side (clean ditch?)
	<u>7/1/76</u>	Construct new bridge from Belleville Pike.
<u>6/1/76</u>	<u>7/1/76</u>	Install leachate pumps #3 & #4 (Dike #6 at north tip should be complete - no deadline established).
	<u>9/1/76</u>	Methane samples - monthly
	<u>1/1/77</u>	Revised topos due.
<u>2/1/76</u>	<u>1/1/77</u>	Install methane vents
<u>4/1/76</u>	<u>4/1/77</u>	Elevate dike #4 (or construct new dike on property)
<u>4/1/76</u>	<u>4/1/77</u>	Construct Dikes 1 & 2
<u>9/1/76</u>	<u>5/1/79</u>	Construct barrier berm (Belleville Side)
	<u>5/1/79</u>	Construct barrier berm (P.S.E.&G Side)

THE DEADLINES UNDERLINED HAVE NOT BEEN MET!

COMPLIANCE SCHEDULE (MSLA)

Deadline

SITE I-A

<u>START</u>	<u>COMPLETE</u>	
	<u>4/1/76</u>	Bimonthly to 1/1/79 - Water Sampling (Bi-Monthly)
<u>2/1/76</u>	7/1/76	Complete Final Cover (2') Entire Site SHOULD BE COMPLETING
<u>2/1/76</u>	7/1/76	Construct and/or Recondition Swales for Drainage SHOULD BE COMPLETING
	9/1/76	Seed Entire Site
	1/1/77	Install Methane Vents SHOULD BE STARTING
	1/1/77	Submittal of Diking Plan, if necessary.

SITE I-D

<u>IMMEDIATE</u>	<u>Immediate</u>	- Water and Methane Sampling (Monthly)
<u>2/1/76</u>	<u>3/1/76</u>	Re-install leachate pumps 1 and 2 PUMP ON SOUTH-WEST CORNER REMOVED
<u>2/1/76</u>	<u>3/1/76</u>	Construct Collection and Recharge Basins MUST BE RECONDITIONED
<u>2/1/76</u>	7/1/76	Construct Barrier Berms
	7/1/76	Site shall become <u>Inactive</u>
<u>2/1/76</u>	7/1/76	Final covering shall be complete (2') NOT STARTED

ADDITIONAL

DECLARATION STATEMENT

REMEDIAL ACTION PLAN

MSLA 1D LANDFILL SITE

SITE NAME AND LOCATION

MSLA 1D Landfill Site located in the Town of Kearny, Hudson County, New Jersey

STATEMENT OF BASIS AND PURPOSE

This Remedial Action Plan presents the selected on-site remedial action for the MSLA 1D Landfill Site located in the Town of Kearny, Hudson County. The investigations which led to this Remedial Action Plan were developed pursuant to the Spill Compensation and Control Act, N.J.S.A. 58:10-23.11a et. seq. (Spill Act). This Remedial Action Plan explains the factual and legal basis for selecting the remedy for this site.

The information supporting this remedial action decision is contained in information repositories which have been established for this site. This Remedial Action Plan contains a Declaration Statement and Decision Summary.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the response action selected in this Remedial Action Plan, present an unacceptable risk to public health, welfare, and the environment.

DESCRIPTION OF THE SELECTED REMEDY

The remedial actions described in this document for on-site contamination are divided into two operable units. The first will address landfill leachate. Contaminated leachate has been identified as posing the greatest threats to the human health and the environment. In order to stop the uncontrolled flow of leachate from the landfill into the ground water and adjacent wetlands, a subsurface barrier wall with a leachate collection system will be constructed. The barrier wall will contain the leachate within the footprint of the landfill and a collection system will convey it to the sewage treatment plant for disposal.

This second operable unit will involve capping of the landfill in order to minimize leachate production, manage landfill gases, and to encapsulate contaminated materials on the landfill. The cap will include a methane gas collection system and storm water management controls.

The major components of the proposed remedial actions include the following:

- Construction of a subsurface barrier wall around the landfill to contain leachate.

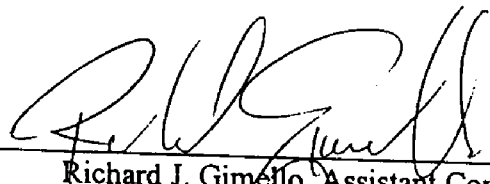
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- Construction of a leachate collection trench on the inboard side of the barrier wall to convey leachate to pump stations and the sewerage treatment plant.
- Regrading of the landfill to promote stormwater runoff.
- Covering the waste materials with an impermeable, solid waste type cap.
- Implementation of storm water management and soil erosion controls.
- Collection of landfill gas under the cap for processing or flaring.
- Fencing and posting of the site.
- Long-term performance monitoring and maintenance of the remedy to insure its effectiveness.

DECLARATION OF STATUTORY DETERMINATIONS

The selected remedy is protective of human health and the environment and complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action. The remedy will employ technologies that are routinely used at landfills in the area, and throughout New Jersey. Once implemented, the goals of the remedy will be achieved immediately. The most cost-effective methods and materials that meet design criteria will be utilized. Construction controls will also be put into practice that to minimize impacts to the surrounding community and the environment.



Richard J. Gimello, Assistant Commissioner
Site Remediation Program
New Jersey Department of Environmental Protection

11/10/99

Date

DECISION SUMMARY

MSLA 1D LANDFILL SITE

1. INTRODUCTION

This Remedial Action Plan presents the selected remedy for onsite contamination at the MSLA 1D Landfill Site located in the Town of Kearny, Hudson County. This document is issued by the New Jersey Department of Environmental Protection (NJDEP) and presents the factual and legal basis for the actions proposed herein to address contamination at the site.

This Remedial Action Plan is being issued under the authority of: N.J.S.A. 58:10-23.11a et. seq., entitled the Spill Compensation and Control Act; N.J.S.A. 58:10B-1 et. seq. concerning the remediation of contaminated properties; and N.J.S.A. 58:10A-1 et. seq., entitled the Water Pollution Control Act. The remedy presented in this Plan was developed pursuant to N.J.S.A. 13:1E-1 et. seq., entitled the Solid Waste Management Act, and in accordance with: N.J.A.C. 7:26-2A et. seq. which governs the closure and post-closure care of sanitary landfills, and N.J.A.C. 7:26E, entitled Technical Requirements for Site Remediation, which governs the selection of remedial actions. The remedy selected in this Plan is, to the extent possible, in accordance with the Federal National Oil and Hazardous Substances Contingency Plan (NCP), 40 C.F.R., Part 300

The information supporting this remedial action decision is contained in the record repositories for this site. This Remedial Action Plan contains a Decision Declaration and a Decision Summary.

2. SITE DESCRIPTION

The MSLA 1D Landfill is located near Exit 15 W of the NJ Turnpike, at 1500 Harrison Avenue, in the Town of Kearny, Hudson County (Figure 1). It is situated primarily on a 93.8 acre tract of land designated as Block 285, Lot 2, which is owned by the Town of Kearny (Figure 2).

The MSLA 1D Landfill lies within an area classified as the Hackensack Meadowlands District. Within the District are over 400 acres of wetlands that provide valuable habitat for a wide variety of fish and wildlife species. They also provide for flood control, filtering of pollution, recreation, and educational opportunities. Development within the District is governed by the Hackensack Meadowlands Reclamation and Development Act. The Hackensack Meadowlands Development Commission (HMDC) has planning and zoning authority within the District to the end of promoting a balance between economic growth and the environment. The landfill property is currently zoned SU-3, Special Use. SU zoning is designed to accommodate special uses of regional importance.

The landfill property is triangular in shape. It is vacant except for a landfill gas recovery and processing facility operated by GSF Energy, Inc, a Division of the EcoGas Corporation. The landfill is boarded on the east by wetlands, a TRANSCO gas pipeline easement, and the NJ

Turnpike Passaic River Viaduct. To the south are PSE&G and TRANSCO gas pipelines and a wetland that is connected to the Passaic River by culverts under NJ Transit Rail Lines. Wetlands and a NJ Department of Transportation right-of way bound the northwest side of the triangular lot. On the west side, the adjacent property is being used for storage of heavy and construction equipment.

Dark-colored, odorous leachate can be observed flowing from seeps in the landfill into adjacent wetlands on the south and east sides. On the north side, leachate seeps discharge along the curblin of Harrison Avenue. The flow of leachate out of the landfill is estimated to be several hundred thousand gallons per day. Leachate contaminated water in the wetlands is free to flow through a culvert on the south side of the site into the Passaic River which flows into the Newark Bay. The distance from the Passaic River to the site is less than 1000 feet.

GSF Energy, Inc. operates a number of gas extraction wells on top of the landfill. Gas is piped from the wells to their plant at the toe of the landfill, processed, mixed with gas extracted from other nearby landfills, and then conveyed along the eastern side of the landfill to a connection with a Public Service Gas and Electric Company Pipeline.

Subsurface conditions at the site can be described in terms of six strata. The refuse fill material rises some 110 feet above the surrounding land. Under the refuse is a thin stratum of organic peat which is considered to represent the original wetland soils. Based on soil boring information, the organic peat is underlain by a gray sand stratum which is 20 to 30 feet thick. Below this is a stratum of finely-layered (varved) sand and silt, approximately 25 feet thick, which is underlain by a stratum of clayey silt, sand and gravel, approximately 20 feet thick. Underlying the overburden soils is red brown shale bedrock (e.g. the Brunswick Formation).

Presently, ground water usage in the area is limited to industrial purposes. All municipalities within 3 miles of the site draw their drinking water from the Wanaque Reservoir, located in northern Passaic County, or from other reservoirs. There are nine industrial wells within 3 miles of the site, the nearest being approximately 0.8 mile southwest. This later well withdraws water from the stratum overlying the bedrock. Seven other wells within a 3-mile radius of the site draw water from the Brunswick Formation. Reported yields of these wells are as much as 600 gallons per minute (gpm), and the median yield is reported to be 100 gpm.

3. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A 1955 topographic map and aerial photographs from 1961-1962 of the area around the site show it to be primarily wetlands. A 1971 aerial photograph shows landfilling of construction and demolition debris in the southwestern portion and sanitary waste in the northeastern portion of the site. Portions of the site have been filled to accommodate connections between Route I-280 and Harrison Avenue. In the 1970s, the landfill property was leased by the Town of Kearny, who owned the land, to the Municipal Sanitary Landfill Authority (MSLA). In 1977, the MSLA obtained Certificate of Registration No. 0907C from the NJDEP allowing the site to be used for landfilling. By 1978, aerial photographs show that the majority of wetlands had been filled. It is

documented that more than 4 million tons of solid waste were disposed at the landfill between 1977 and 1979, at which time it was closed. A significant volume of waste oil, estimated at approximately 1.5 million gallons, was also disposed of in the landfill. In addition, a variety of industrial-type wastes were reportedly disposed of and are listed as follows:

Sludge Waste (unknown content)	Wet Gas Scrubber Sludge	Dredge Material
Pharmaceuticals	Filter Cake (lime-based)	Insecticides
Plastic Resins (solid)	Asphaltic Bottoms	Deodorants
Activated Charcoal Sludge	Filter Cake (sewer sludge)	Wax (solid)
Construction Debris	Fuel Oil	

The landfill was reopened again between 1981 and 1982, but was never properly closed. The final cover was insufficient and the leachate collection and monitoring systems were not operating. Throughout its operation of the landfill, the MSLA was cited with various violations. Under administrative order from the NJDEP the landfill ceased operations in 1982 due in part to the fact that it had reached its maximum allowable height and that the MSLA had failed to maintain the leachate collection system.

Since the end of the 1980s up to the present, GSF Energy, Inc has operated a landfill gas extraction and processing facility at the site. In addition to processing gas from the 1D Landfill, gas is extracted and piped to the facility from two other MSLA Landfills nearby. Once processed, the gas is piped along the eastern side of the landfill and into a PSE&G pipeline line in the southeastern corner of the site.

There have been a number of problems at the landfill since it ceased operations 1982. In 1987, a NJDEP site inspection observed large, open cracks in the top of the landfill. There was immediate concern that a possible slope failure was underway. Monitoring and slope stability analyses by the State, PSE&G and the New Jersey Turnpike Authority lead all to conclude that the landfill was stable and surface cracks were due to internal settlement. Later, in 1995, a fire developed at the site covering a 10 to 20 acre area. The Town of Kearny estimated their cost to extinguish the fires at up to \$500,000 and requested State aid from the Governor. Vegetation at the site is not mowed or maintained and the potential for fires is always present.

In 1986, the USEPA's contractor, Malcolm Pirnie, Inc, performed a Preliminary Assessment of the site. The Report recommended a site inspection to assess the quality of the leachate. In 1990 the USEPA's contractor, NUS Corporation, performed sampling and investigations and issued a Site Investigation Report. The findings of this Report are summarized in Section 5 of this Remedial Action Plan.

Berms are present along the toe of the landfill on all sides. Apparently, these were constructed by MSLA to contain leachate seepage out of the landfill. Leachate would pond behind the berms and then be pumped up onto the landfill or discharged into wetlands flowing into the Passaic River. Since the MSLA ceased operations at the landfill, the leachate overflows the berms into the adjacent wetlands.

Due to lack of a viable party at this time to undertake the proper closure measures, the NJDEP is proceeding to perform the work described in this Remedial Action Plan using public funds.

4. PUBLIC NOTICE

The NJDEP has provided public notice in the Jersey Journal newspaper of its intent to remediate the site. A toll-free telephone number and mailing address is provided for questions and further information.

The selection of the remedy in this Plan is based on three key documents: (1) "Potential Hazardous Waste Site Preliminary Assessment", dated May 22, 1986, by Malcolm Pirnie, Inc; (2) "Final Draft Site Inspection Report", dated June 29, 1990, by the NUS Corporation, which provides background information and the results of sampling at the site; and (3) "Background Investigation and Design Recommendation Report", dated July 1999, by Louis Berger and Associates, Inc, which also provides background information and describes the remedial measures to be implemented. These documents, and other site-related information, can be found at the following location:

New Jersey Department of Environmental Protection
P.O. Box 413,
401 East State Street
Trenton, New Jersey 08625-0413
Contact: Ms. Mindy Mumford, Community Relations Coordinator
Bureau of Community Relations
Phone: 1-800-253-5647

The NJDEP has also established information repositories that contain the most important site-related documents at the following locations:

Kearny Public Library
318 Kearny Avenue
Kearny, NJ
Contact Nancy Smith, Reference Librarian
201-998-2666

Hackensack Meadowlands Development Commission
One DeKorte Park Plaza
Lyndhurst, NJ
Contact Mr. Thomas R. Martarano, Director of Solid Waste and Engineering
201-460-1700

The NJDEP encourages the public to review these documents in order to gain a more comprehensive understanding of the site, the activities that have been conducted, and the basis for the remedy selected herein.

5. SITE CONTAMINATION

Information about the nature and extent of contamination at the site can be found in the "Final Draft Site Inspection Report", dated June 29, 1990, by the NUS Corporation (NUS). NUS personnel collected ground water, surface soil, surface water, sediment, and leachate samples for the US Environmental Protection Agency. Samples were analyzed for priority pollutant organic chemicals and metals.

The Sample Location Map is included as Figure 3. Sampling results from the NUS Report are presented in Tables 1 through 5 and are compared to NJDEP standards.

5.1 GROUND WATER

The aquifers underlying the site are classified as Class II-A in the New Jersey Ground Water Quality Standards (GWQS), N.J.A.C. 7:9-6. Class II-A ground water aquifers are designated as suitable for potable water supply. Hazardous organic and inorganic compounds were detected in the ground water at the site at concentrations above Class II-A GWQS as shown in Table 1.

One ground water sample was obtained from an existing well (Well No. MW-3 in the NUS Report) installed in the shallow, overburden aquifer on the west side of the site. Two volatile organic compounds were detected above GWQS as follows: chlorobenzene at 58 parts per billion (ppb) and total xylenes at 1,100 ppb. Inorganic analyses also detected aluminum, barium, chromium, iron, lead, manganese, nickel, and sodium at levels exceeding GWQS.

The depth to ground water at the site is relatively shallow. Water levels in on-site monitoring wells installed along the base of the landfill ranged from 2.5 to 9 feet below ground surface during the NUS sampling events. This shallow, unconsolidated aquifer is composed of recent organic sediments at the top and glacially deposited material with depth. The shale bedrock aquifer begins approximately 70 feet beneath the ground surface. Although the primary permeability of the shale is low, appreciable amounts of water are found in joints and fractures. The shallow ground water flow direction at the site is radially outward due to the large mound of leachate in the landfill. Shallow ground water discharges locally into adjacent wetlands and surface water bodies. There is no evidence that the landfill was constructed with a bottom liner, therefore, leachate is free to drain out of the waste materials and directly into ground water.

5.2 LANDFILL LEACHATE

Five samples were taken from leachate ponds or seeps along the toe of the landfill. Sample analytical results are presented in Table 2 and compared to New Jersey Surface Water Quality Criteria (SWQC), N.J.A.C. 7:9-4 et seq for Saline Estuary, SE-type waters. Levels of polynuclear aromatic hydrocarbons (ie. pyrene, flouranthene, benzo(a)anthracene, chrysene, benzo(b)flouranthene, benzo(a)pyrene, and indeno(1,2,3-cd)pyrene) were detected at levels above SWQC which are protective of human health. The pesticides beta-BHC, 4-4'-DDD, 4-4'-

DDE, and 4,4'-DDT were all detected in leachate at levels above SWQC which are protective of human health. Analyses for inorganic compounds also detected metals at levels exceeding SWQC for protection of human health or aquatic life including: arsenic at 7.3 ppb, lead at 1250 ppb to 1,250 ppb, zinc at 2360 ppb, chromium at 262 ppb, copper at 490 ppb, and mercury at 2.6 ppb (concentrations are qualified as estimated).

5.3 SURFACE WATERS AND SEDIMENTS

The Passaic River in the vicinity of the site is classified as Saline Estuary (SE) in the New Jersey Surface Water Quality Standards (SWQS), N.J.A.C. 7:9-4 et seq. SE-type waters are designated for the maintenance and migration of fish populations, the migration of diadromous fish, secondary contact recreation, the maintenance of wildlife, and any other reasonable uses.

Only one surface water sample was taken from the wetland on the northeast side of the landfill. Sample analytical results are presented in Table 3. Benzene and chlorobenzene were the only organic contaminants detected, both at concentrations of 3 ppb. Inorganic contaminants were also detected. Arsenic and mercury were detected at levels exceeding saltwater SWQS for the protection of human health. The following metals were also detected at concentrations exceeding saltwater SWQC for the protection of aquatic life: copper at an estimated 1,500 ppb; lead at 1,050 ppb; mercury at an estimated 2.0 ppb; nickel at an estimated 222 ppb; and zinc at an estimated 1,070 ppb.

Sediment samples were taken from two locations as shown in Figure 3. Sample analytical results are presented in Table 4. No promulgated standards exist for sediment quality. Sediment results were compared to published criteria in the "Guidance For Sediment Quality Evaluations", NJDEP, dated November 1998. A sediment sample taken in the wetland northeast of the landfill detected the following semi-volatile organic compounds at levels above "Low Effects Range" screening level where adverse benthic impacts have been observed in 10% of the studies: fluoranthene at 1,700 ppb; pyrene at an estimated 2,400 ppb; benzo(a)anthracene at 1,600 ppb; chrysene at 2,000 ppb; benzo(a)pyrene at 2,200 ppb; indeno(1,2,3-cd)pyrene at 1,800 ppb; and benzo(g,h,i)perylene at 1,600 ppb. Also detected above the sediment screening criteria was the following pesticide 4,4'-DDT at an estimated 67 ppb. Inorganic analyses also detected arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc above NJDEP sediment screening criteria.

5.4 SOILS

Analytical results are available in the NUS Corporation's Site Inspection Report for five surface soil samples taken around the perimeter of the landfill. Table 5 lists the compounds detected and compares them to NJDEP Soil Cleanup Criteria (SCC). The SCC are guidelines used by the NJDEP to determine if remediation is necessary. The non-residential SSC and the SSC for protection of ground water are applicable to the site at the present time. The non-residential criteria were developed to be protective of human health based on an ingestion pathway. The ground water SSC were developed to protect the potability of the underlying aquifer from

contaminants that might leach out of the soils.

Three volatile organic compounds were detected in the soils: chlorobenzene, ethylbenzene, and xylenes. Polyaromatic hydrocarbons (PAHs) were also detected, including benzo(a)pyrene at 750 ppb, which exceeds the SSC for non-residential direct contact. Pesticides were detected including: beta-BHC; 4,4'-DDT, methoxychlor, and 4,4'-DDE. Metals were detected in soil samples including: arsenic, cadmium, chromium, copper, lead, mercury, nickel, and zinc.

In addition to chemical compounds detected in the soils, previous site investigations have observed wastes on the surface of the site. These include medical wastes, chemical drums, and large tanks.

5.5 Air

Gaseous emissions from the landfill are controlled to some degree by the gas extraction system in operation on top of the landfill. During site visits by NJDEP personnel in 1999, foul odors were noted in areas where leachate is seeping from the side of the landfill or where it is ponded.

6. SUMMARY OF SITE RISKS

The remedy selection rationale in this Remedial Action Plan follows the Presumptive Remedy approach presented in the USEPA Directive No. 9355.0-49FS, entitled "Presumptive Remedy for CERCLA Municipal Landfill Sites." This streamlined approach, as used herein for municipal landfills, consists of identifying chemicals present in ground water, sediments, and surface water, and comparing them to standards for those media which may be applicable or relevant and appropriate requirements (ARARs). Those chemicals that exceeded ARARs for a given pathway are considered to require remedial action. A detailed calculation of risk factors to human health or the environment was not performed. Under the Presumptive Remedy approach, any contaminant exceeding a chemical-specific ARAR is assumed to result in a site risk.

Tables 1-5 compare the levels of contaminants detected in ground water, leachate, surface water, sediments, and soils with State ARARs. As shown, the ground water quality at the site is contaminated above levels determined to be protective of human health based on potable use. Surface water and sediments in the wetlands are also degraded by landfill leachate above standards established for the protection of human health and/or aquatic life. Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Remedial Action Plan, may present an imminent and substantial endangerment to public health, welfare, or the environment.

7. REMEDIAL ACTION SELECTION

This Remedial Action Plan was developed with the goal of attaining the following objectives for on-site contamination:

- Prevent leachate contamination of the ground water above New Jersey Ground Water Quality Standards for Class II-A aquifers.
- Prevent leachate contamination of adjacent wetlands and surface water bodies.
- Control landfill gas emissions
- Prevent human or animal direct contact with contaminated materials

The rationale for this remedy selection follows the USEPA Presumptive Remedy approach for municipal landfills. Title 40 C.F.R. Section 300.430(a)(iii)(B) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) contains the expectation that engineering controls, such as containment, will be used where treatment is impracticable. The preamble to the NCP identifies municipal landfills as a type of site where treatment of the waste may be impracticable because of the size and heterogeneity of the contents (55 Federal Register 8704, 1990). Because treatment is usually impracticable for a landfill, containment is considered to be the appropriate response action, or the "Presumptive Remedy." The presumptive remedy for municipal landfill sites consists primarily of the containment of the landfill mass, collection and/or treatment of landfill gas, and measures to control leachate. Use of the presumptive remedy also eliminates the need for an initial identification and screening of remedial alternatives.

Landfill capping upon closure is standard engineering practice in New Jersey. The construction of a subsurface barrier wall in combination with a leachate collection system is a proven method of leachate control at other landfills in the area, such as the MSLA 1A Landfill and the MSLA 1E Landfill. These measures have been constructed by the HMDC and have been operating successfully for several years. The successful implementation and performance of these barrier wall projects in nearby areas of similar geology, with comparable landfills, is a factor in the NJDEP's selection of this remedy.

8. SCOPE AND ROLE OF REMEDIAL ACTIONS

As with many hazardous waste site cleanups, the problems are complex. As a result, the NJDEP has organized the work into two separate actions or operable units.

- Operable Unit 1: Leachate control to mitigate contamination of surface water and ground water.
- Operable Unit 2: Landfill capping to control gas emissions, prevent direct contact with contaminated materials, and reduce leachate generation.

Before landfill capping, leachate control measures will be implemented. The landfill is daily discharging thousands of gallons of contaminated leachate into the ground water and the surrounding wetlands. This represents the most visible and direct threat to human health and the environment. Leachate control measures are considered to be a first priority. Also, historically, there has been concern about the stability of the MSLA 1D Landfill. The initial installation of a leachate collection system will allow the landfill to dewater to some degree and increase in stability prior to adding the additional weight of a cap. Excavations for the barrier wall will generate considerable volumes of soil which will be disposed of on top of the landfill and will

require proper grading and capping which will follow under Operable Unit 2 - Capping.

The second operable unit will consist of a low permeability cap over the landfill, including a landfill gas collection system. A cap will control stormwater infiltration into the landfill which results in leachate production. Additional benefits include the control of gas emissions and prevention of direct contact of humans and animals with exposed, contaminated materials. Design of a landfill cap can begin once the leachate control measures are under construction.

Once these measures are implemented, on-site contamination will be contained from impacting off-site areas. Remediation of off-site contamination is not considered in this Remedial Action Plan and will be studied and handled separately, if necessary.

9. REMEDIAL ACTION DESCRIPTION

The two operable units which are proposed for on-site remediation are described in detail in this section.

9.1 LEACHATE CONTROL

A subsurface barrier wall is proposed to enclose the waste material. The wall will be keyed into the varved sand, silt, and clay formation at depths of approximately 50 feet. On the landfill side of the wall, a leachate collection trench will be installed at a level below the off-site ground water table elevation. It will convey leachate contained within the wall to a pump station to be built onsite. From there the leachate will be piped to a pump station at the MSLA 1A Landfill which is owned by the Kearny Municipal Utilities Authority (KMUA). There it will be combined with leachate from the MSLA 1A and MSLA 1E Landfills and disposed of into the sewer system for conveyance to the Passaic Valley Sewerage Commission's (PVSC) treatment plant. These actions will contain, collect, and dispose of the landfill leachate to prevent its migration into off-site ground water and its discharge into surface waters and wetlands.

Construction and quality control requirements for subsurface barrier walls and leachate collection systems are provided in New Jersey Division of Solid and Hazardous Waste Regulations, N.J.A.C 7:26-2A.7. The wall will be keyed into the underlying low-permeability formation to a depth of at least three feet. Based on available geological information, this formation, in combination with the barrier wall, will effectively cut off any lateral or downward leachate migration.

To facilitate construction of the subsurface wall and leachate collection system, clearing and grading of portions of the site will be required. A stable, level, working platform for the equipment used to install the subsurface wall will be constructed around the base of the entire landfill. Upon completion of the wall, this platform will be converted into an access road to allow for operations and maintenance. In addition, a construction laydown area will be established for the processing and storage of barrier wall materials. Excess waste and soils from wall construction and other work will be taken to the top of the landfill, graded out, and covered in accordance with Division of Solid and Hazardous Waste Regulations. This material will be capped when construction of the second

operable unit occurs.

During construction, some wetlands around the site may require filling to allow access for equipment. A wetlands mitigation plan will be developed to address wetlands impacted by the remedial measures.

To further protect human health from contact with contaminated materials on site, the property will be fenced and posted. This will also safeguard the remedial measures from vandalism.

All necessary permits and approvals will be obtained for construction including, but not limited to, those from: HMDC, Hudson-Essex-Passaic Counties Soil Conservation District, State of New Jersey, Kearny Municipal Utilities Authority, Passaic Valley Sewerage Commission, and the Town of Kearny. NJDEP permits include those for wetlands disruption, sewer connection, well drilling, treatment works approval, and landfill disruption.

Post-closure care is required for a minimum of 30 years. Maintenance work would be scheduled at regular, periodic intervals. At a minimum, fencing, monitoring wells, and the leachate collection, pumping and conveyance systems would require periodic inspection. To insure that the barrier wall and leachate collection system, once constructed, continue to function properly over time, a network of monitor wells will be installed on either side of wall. Water levels in wells on either side of the wall will be monitored to insure that an inward hydraulic gradient is developing (after initial installation of the wall) or is maintained (during long-term monitoring). Under these conditions, any leakage through the wall will consist of clean ground water from outside the wall.

Locations, parameters, and frequencies for monitoring will be developed in detail during the design of the remedy.

The construction, operation and maintenance, and total present worth (over a 30 year period, using a 5% discount rate) costs for the subsurface barrier wall and leachate collection system were estimated as follows, assuming that the cutoff wall can be constructed of soil mixed with bentonite clay:

Capital Cost	\$ 12,000,000
Annual O&M Costs	\$ 550,000
Total Present Worth Costs	\$ 20,500,000

If, during design, it is determined that physical constraints, such as limited workspace, or the incompatibility of the leachate with the soil/bentonite mixture require the use of more expensive techniques, such as a watertight sheet piling wall or a geomembrane panel wall, the costs are estimated as follows:

Capital Cost	\$ 17,000,000
Annual O&M Costs	\$ 550,000
Total Present Worth Costs	\$ 25,500,000

The construction materials and methods to be used for the subsurface wall will be determined during the design phase. The most cost-effective solutions that meet design criteria will be selected.

9.2 LANDFILL CAPPING

The proposed landfill cap will be a solid waste type cover with a low permeability liner. The existing landfill cap is inadequate as evidenced voluminous amounts of leachate that flow out of the landfill. The New Jersey Division of Solid and Hazardous Waste Regulations, N.J.A.C 7:26-2A.7, require that the final cover system be designed and constructed to minimize long-term infiltration and percolation of liquid into the landfill throughout the closure and post-closure periods, which is not the case at this site. Also, N.J.A.C. 7:26-2A.7 and Federal RCRA Subtitle D Regulations require that the permeability of the cap be less than or equal to that of the bottom liner system or natural subsoils. Once a subsurface barrier wall is installed under the first operable unit, the wall, and the low permeability soils it will key into, will form a bottom liner system with a permeability expected to be no more than 1×10^{-7} cm/sec. This will require construction of a landfill cap having a similar or lower permeability.

The extent of the cap will be determined during the engineering design phase based on slope stability considerations and cost. Cap construction will be in accordance with the New Jersey Division of Solid and Hazardous Waste Regulations, N.J.A.C 7:26-2A.7 for solid waste type landfills.

There are several components to the landfill cap. Initially the site will be graded to minimize soil erosion and maximize storm water runoff. The construction of the cap will begin with the installation of a gas collection system and a cushioning layer for the overlying liner. A liner, such as a 40-mil synthetic plastic membrane or two feet of clayey soil, will be placed above the gas collection layer to prevent the infiltration of stormwater into the underlying waste. The liner will be chemically compatible with materials it may come in contact with and be able to accommodate stresses caused by settling. Over the liner will be a drainage layer to allow stormwater to drain off of the top of the liner. The uppermost layer of the cap will consist of topsoil capable of supporting vegetative growth. The thickness of the cap above the liner will be sufficient to prevent frost, animal, and root damage to the liner.

In order to manage gases generated by the decay of material in the landfill, the existing gas collection system will be evaluated for compliance with State and Federal requirements. If necessary, further gas extraction wells or other modifications will be made to the system during capping. It is anticipated that the collected gas would be piped to the existing processing plant operated by GSF Energy. Otherwise, a flaring station would be constructed to burn the gas.

To facilitate construction of the landfill cap, clearing and grubbing of the site would be required. Access road improvements may be needed to accommodate the construction equipment that would be traveling to the site. Dust control measures (e.g., the use of water trucks) would be taken to minimize the off-site migration of dust. To prevent soil erosion and reduce off-site sediment

transport, a soil erosion and sediment control plan would be prepared. These plans will identify the measures to prevent soil loss and off-site damages, measures to establish proper vegetation, and post-closure maintenance procedures. Stormwater management controls may also be required.

All necessary permits and approvals will be obtained for construction including, but not limited to, those from: HMDC, Hudson-Essex-Passaic Counties Soil Conservation District, State of New Jersey, and the Town of Kearny. NJDEP permits include those for wetlands disruption, well drilling, air permitting, and landfill disruption.

Post-closure care is required for a minimum of 30 years. Maintenance needs would be determined by periodic site inspections. At a minimum, the vegetated cover, side slopes, fencing, gas collection system, and storm water management systems would require periodic inspection and maintenance.

The construction, operation and maintenance, and total present worth (over a 30 year period, using a 5% discount rate) costs for landfill capping were estimated as follows, assuming that the cap will cover the entire wastefill (approximately 94 acres):

Capital Cost	\$ 13,000,000
Annual O&M Costs	\$ 430,000
Total Present Worth Costs	\$ 19,600,000

If, during design, it is determined that the stability of the landfill will be compromised by capping the entire landfill, or that the benefits realized in terms of reduced leachate production are not equal to the additional costs of capping the entire landfill, a partial cap on the top of the wastefill (approximately 20 acres) will be constructed. The construction, operation and maintenance, and total present worth (over a 30 year period, using a 5% discount rate) costs for partial capping were estimated as follows:

Capital Cost	\$ 3,000,000
Annual O&M Costs	\$ 90,000
Total Present Worth Costs	\$ 4,400,000

10. REMEDIAL ACTION PERFORMANCE

This section evaluates the performance of the remedial action presented in Section 9 in terms of regulatory criteria for selecting remedial alternatives. These include requirements for protection of human health and the environment, implementability, time for remediation, and cost (ref. N.J.S.A. 58:10B-12). The New Jersey Spill Compensation and Control Act (N.J.S.A. 58:10-23.11 *et. seq.*) states that any cleanup shall be, to the maximum extent possible, in accordance with the Federal National Oil and Hazardous Substances Contingency Plan (NCP). The NJDEP Technical Requirements for Site Remediation (N.J.A.C. 7:26E-5) contain four criteria for the initial evaluation of remedial alternatives that are in accordance with the NCP and are presented below. Any remedy should meet these criteria in order to be considered for the site.

CRITERIA 1 considers protection of human health and the environment. N.J.S.A. 58:10B-12 requires that remediation standards be protective of human health to the level of one additional lifetime cancer risk per million people for carcinogens and to a Hazard Index Level of less than one for noncarcinogens. The remedy selected in this Plan provides protection of human health and the environment by means isolating the landfill contaminants within a subsurface cutoff wall and under a landfill cap. The barrier wall will prevent contaminated leachate from coming into contact with ground or surface waters. Leachate collected from the landfill will be pumped off-site to a permitted disposal facility. The cap will serve to reduce the infiltration of stormwater through the wastefill that causes the generation of leachate. Direct-contact risks associated with contaminated materials and soils will be reduced through the placement of the cap, and implementation of soil erosion and sediment controls. Exposure to gaseous emissions from the landfill will be prevented by the gas collection system.

The remedial action will comply with all applicable federal, state and local laws, and regulations. During the construction of the subsurface barrier wall and cap, some short-term impacts on the environment are anticipated. Some disruption of the surrounding wetlands may occur to allow space for construction equipment and/or the barrier wall or cap. A wetlands mitigation plan will be developed to address these areas. Soil erosion and sediment control measures will be implemented to minimize any impacts from construction on the surrounding environment. Odors from the excavations for the subsurface wall are also anticipated. All work will be performed according to an approved Health and Safety Plan. The air will be monitored for hazardous chemicals and odors.

CRITERIA 2 is implementability, which is the technical feasibility of a remedy including the availability of materials and services needed to implement the chosen solution. Solid waste type caps and gas collection systems are routinely constructed for closure of landfills. Many firms are familiar with the equipment, specialists, and materials required to construct these cap systems.

Subsurface barrier walls to control ground water flow have been used successfully since the 1940s on civil works projects. Since CERCLA legislation in the 1980s, subsurface barrier walls have been used more frequently to control contaminated ground water. Considerable information now exists on the design, testing, construction, and monitoring of subsurface barrier walls of various types, for these purposes. The HMDC has constructed subsurface barrier walls in combination with leachate collection systems at the MSLA 1A Landfill and the MSLA 1E Landfill, which are both nearby. Based on discussions with the HMDC, these remedies have been operating successfully for several years.

The construction of this remedy will require temporary and permanent easements from a number of property owners. Based on past experience, access agreements and easements have been obtained in the past by the NJDEP for environmental cleanup work and should be negotiable for this project.

CRITERIA 3 is timeliness or how quickly an alternative will achieve remediation standards. N.J.S.A. 58:10B-12 and the Federal NCP requires the consideration of whether a remedial alternative can be implemented within a reasonable time frame without endangering human health

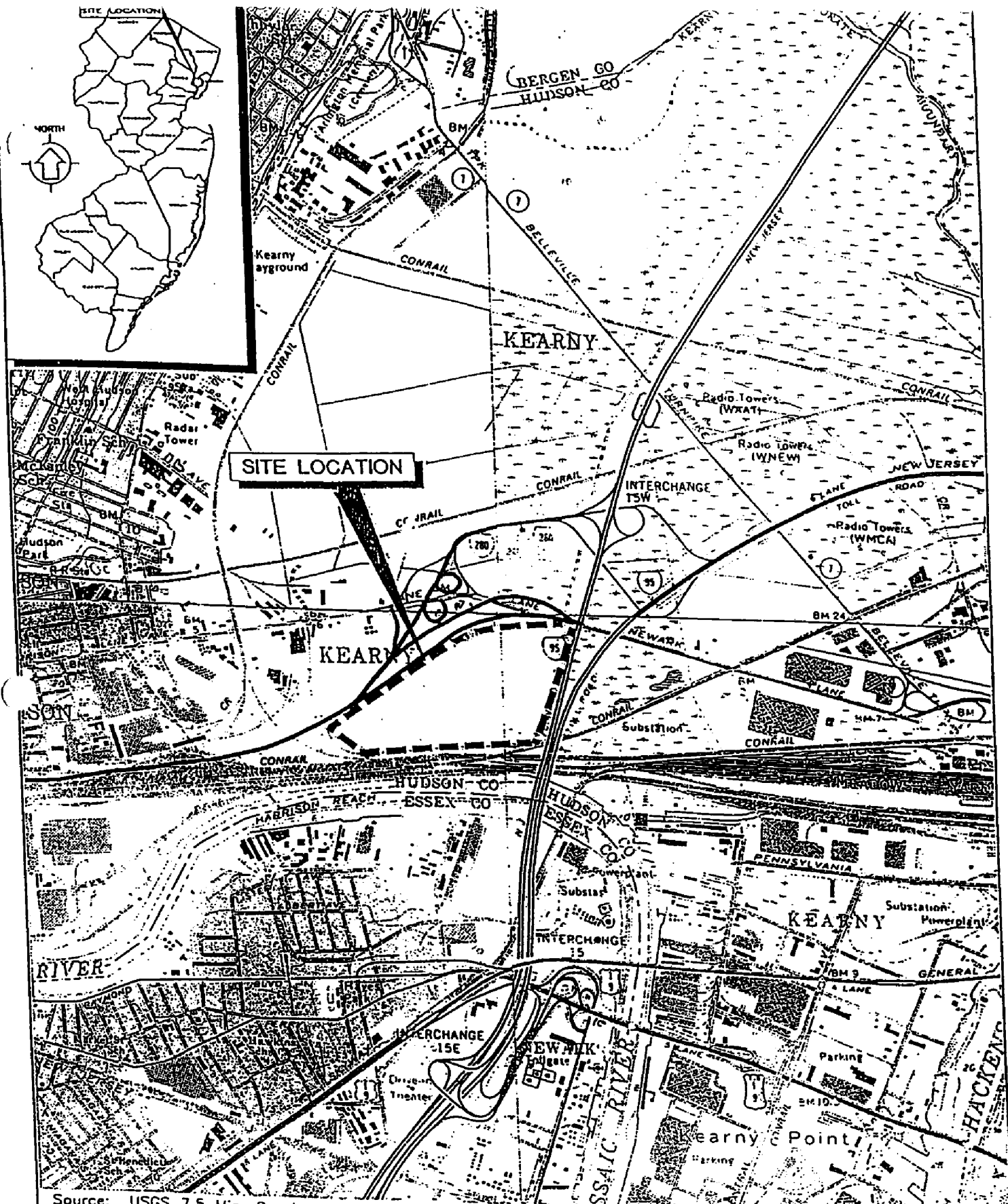
or the environment.

Operable Units 1 and 2 are each expected to take two years to construct after completion of their designs. The beneficial effects of preventing leachate migration into the ground water and surface waters, the control of landfill gas, and prevention of direct contact of humans and animals with waste materials, will begin upon completion of construction.

CRITERIA 4 is cost. The cost of a remedial alternative, excluding "No Action", should not be grossly excessive compared to the other alternatives evaluated. The Background Investigation and Design Recommendations Report evaluated three subsurface wall alternatives, and partial and full capping. The type of barrier wall to be deployed at the site will be determined by design studies of the compatibility of the leachate with the wall material, by the physical constraints of the site (utilities, topography, wetlands, etc), and by health and safety issues. Similarly, the extent of capping will be determined based on engineering and cost/benefit studies. The most cost effective construction methods and materials that meet design criteria will be selected.

The remedy selected in this Plan addresses all of the four criteria of concern discussed above. It provides for protection of human health and the environment, is technologically feasible, provides for immediate relief from continued pollution of ground and surface waters. Every attempt to minimize short-term impacts to the surrounding community from construction of the remedy will be made.

ATTACHMENT I – FIGURES



Source: USGS 7.5 Min. Quadrangle, Orange, N.J.

Scale: 1" = 2000'

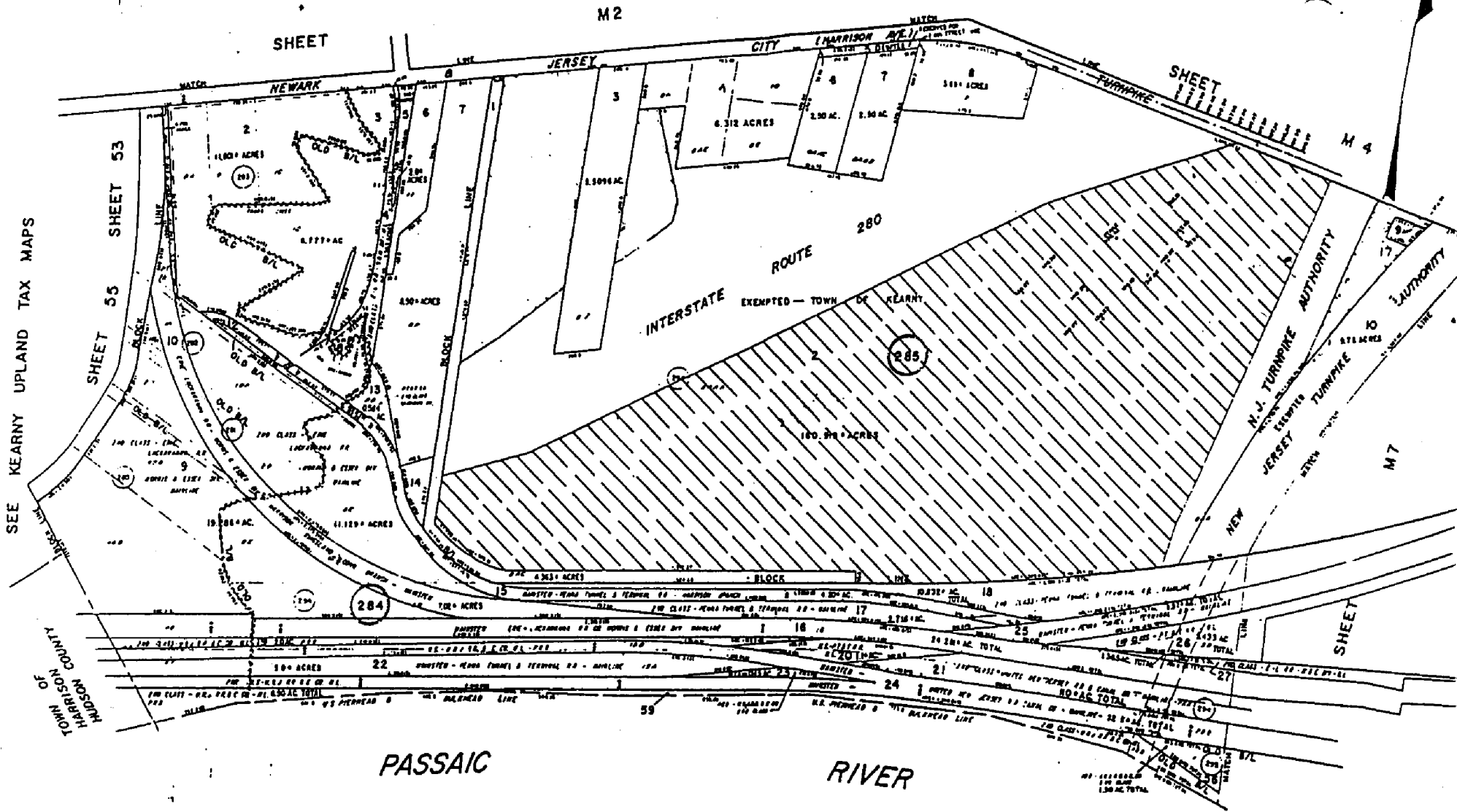


N.J. Department of Environmental Protection

MSLA-10 LANDFILL, KEARNY, NEW JERSEY
SITE LOCATION MAP
 NJDEP CONTRACT No. A-85149

Louis Berger & Assoc.
 30 Vreeland Road
 Florham Park, NJ

FIGURE 1



PASSAIC RIVER

CITY OF NEWARK
ESSEX COUNTY

DATUM - U.S. COAST & GEODETIC PLUS
100.00 FEET

NEGlia ENGINEERING ASSOCIATES
JOSEPH E. NEGlia - TOWN ENGINEER
AUGUST 1970

 MSLA ID LANDFILL

FIGURE 2

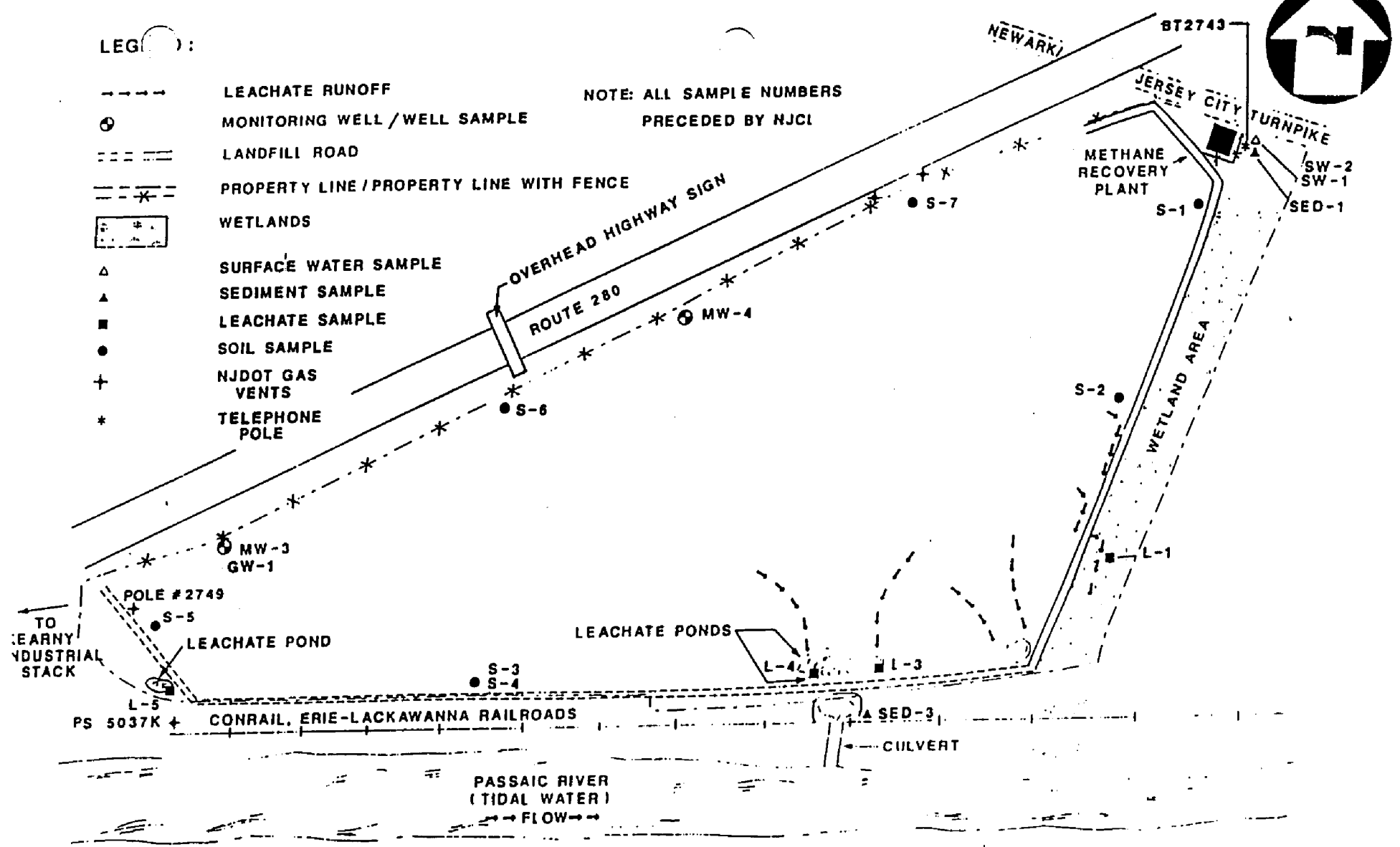
BY JOHN BRIDGEMAN OF THE PASSAIC
PROVIDING FOR THE TOWN OF KEARNY
PUBLIC UTILITY "D" DISTRICT
CONFORMS TO A TOWN ENGINEER'S
PROVISIONS OF CHAPTER 176, PART 10 OF THE
NEW JERSEY STATUTES AS AMENDED
DATE OF PREPARATION OF THIS MAP
JUL 14 1970

TAX MAP
TOWN OF KEARNY
HUDSON COUNTY, NEW JERSEY
SCALE: 1"=200' NOVEMBER 1, 1964
BERNARD A. JOA - TOWN ENGINEER
577 KEARNY AVE., KEARNY, NEW JERSEY
REVISED _____

LEGEND:

- LEACHATE RUNOFF
- ⊕ MONITORING WELL / WELL SAMPLE
- === LANDFILL ROAD
- - - * - - - PROPERTY LINE / PROPERTY LINE WITH FENCE
- [] WETLANDS
- Δ SURFACE WATER SAMPLE
- ▲ SEDIMENT SAMPLE
- LEACHATE SAMPLE
- SOIL SAMPLE
- ⊕ NJDOT GAS VENTS
- * TELEPHONE POLE

NOTE: ALL SAMPLE NUMBERS PRECEDED BY NJCI



TO INDUSTRIAL STACK SOUTH OF PASSAIC RIVER

SAMPLE LOCATION MAP
MSLA, 1-D LF, KEARNY, N.J.

(SCALE UNKNOWN)

FIGURE 3



ATTACHMENT II - TABLES

TABLE 1
MSLA 1-D LANDFILL
SITE INSPECTION SAMPLING RESULTS-GROUND WATER *

QUANTIFIED COMPOUNDS (ug/L)	SAMPLE IDENTIFICATION	NJDEP CLASS IIA GWQS (ug/L)**
	NJCL-GW1	
VOLATILE ORGANIC COMPOUNDS		
Chlorobenzene	1720 E	4
Ethylbenzene	50	700
Toluene	24J	1000
Xylenes (Total)	1100 E	40
SEMI-VOLATILE ORGANIC COMPOUNDS		
	ND	
PESTICIDES/PCBS		
	ND	
METALS		
Aluminum	1720 E	200
Arsenic	6.9J	8
Barium	3310 E	2000
Calcium	61,000 E	NP
Chromium	101 E	100
Cobalt	3.4J	NP
Copper	61.1 E	1000
Iron	92,000 E	300
Lead	317 E	10
Magnesium	92,000 E	NP
Manganese	221 E	50
Nickel	133 E	100
Potassium	505,000 E	NP
Sodium	244,000 E	50,000
Vanadium	20.6J	NP
Zinc	331 E	5000

NOTES:
 * Sampling performed by NUS Corporation and analyses performed by Keystone Environmental, 1/90.
 ** GWQS Ground Water Quality Standards (N.J.A.C. 7:9-6)

ug/L - micrograms per liter
 J - Estimated value for compound present below CRDL but above IDL
 E - Estimated value
 NP - Not published for this constituent

TABLE 2
MSLA 1-D LANDFILL
SITE INSPECTION SAMPLING RESULTS - LEACHATE*

QUANTIFIED COMPOUNDS (ug/L)	SAMPLE IDENTIFICATION				SWQC HUMAN HEALTH (ug/L)**	SWQC AQUATIC LIFE (ug/L)***
	NJCL-L1	NJCL-L3	NJCL-L4	NJCL-L5		
VOLATILE ORGANIC COMPOUNDS						
2-Hexanone	25E	ND	ND	ND	NP	NP
SEMIVOLATILE ORGANIC COMPOUNDS						
Phenanthrene	540J	250J	300J	780J	NP	NP
Fluoranthene	860	380J	440J	820J	370	NP
Pyrene	1,100E	1,100E	760E	800J	8,970	NP
Benzo(a)anthracene	480J	370J	350J	330J	0.031	NP
Chrysene	550J	450J	420J	420J	0.031	NP
Benzo(b)fluoranthene	1100	660J	730J	1570J	0.031	NP
Benzo(a)pyrene	550J	240J	410J	ND	0.031	NP
Indeno(1,2,3-cd)pyrene	410J	310J	280J	ND	0.031	NP
Benzo(g,h,i)perylene	430J	420J	330J	ND	NP	NP
PESTICIDES/PCBS						
beta-BHC	300	ND	ND	ND	0.460	NP
4,4'-DDD	240	ND	35J	74J	0.000837	NP
4,4'-DDE	ND	ND	240	27J	0.000590	NP
4,4'-DDT	74J	ND	39J	11J	0.000590	NP
Methoxychlor	ND	ND	470	ND	NP	0.03
METALS						
Aluminum	12,200 E	9,310 E	6,430 E	9,880 E	NP	NP
Antimony	ND	8,20J	6,40J	14.5	4,300	NP
Arsenic	415	ND	82J	73	0.136	36
Barium	559 E	280 E	330 E	215 E	NP	NP
Beryllium	0.47J	0.71J	0.25J	2	NP	NP
Cadmium	0.76J	2.1	0.98J	3.9	NP	9.3
Calcium	24,100 E	13,800 E	12,600 E	10,600 E	NP	NP
Chromium	20 E	103E	262E	68.1 E	3,230	50 a
Cobalt	6.20J	8.30J	21.5	6.70J	NP	NP
Copper	374E	918E	113E	490 E	NP	5.8 b
Iron	17,500 E	27,500 E	29,500 E	16,500 E	NP	NP
Lead	304E	603E	248E	1250E	NP	8.1
Magnesium	6,010 E	3,290 E	4,100 E	3,690 E	NP	NP
Mercury	0.43E	0.09E	0.15E	2.6 E	0.148	0.025 b
Nickel	258	175	427	751	3,900	8.2
Potassium	1,530	720J	573J	1,450	NP	NP
Vanadium	34.9	30.7	33.5	26.5	NP	NP
Zinc	384E	450E	223E	2,360E	NP	81

NOTES:
 * Sampling performed by NUS Corporation and analyses performed by Keystone Environmental, January 1990.
 ** SWQC Surface Water Quality Criteria - Saltwater, Human health criteria, total recoverable NJAC 7:9B-1.14
 *** SWQC Surface Water Quality Criteria - Saltwater, Chronic effects aquatic life criteria, dissolved
 a - Chronic effects for Cr⁶⁺
 b - Total recoverable

ug/L - micrograms per liter
 J - Estimated value for compound present below CRDL but above IDL
 E - Estimated value
 ND - Not Detected

**TABLE 3
MSLA 1-D LANDFILL
SITE INSPECTION SAMPLING RESULTS - SURFACE WATER ***

QUANTIFIED COMPOUNDS (ug/L)	SAMPLE IDENTIFICATION	NJDEP HUMAN HEALTH SWQC (ug/L)**	NJDEP AQUATIC SWQC (ug/L)***
	NJCL-SW2		
VOLATILE ORGANIC COMPOUNDS			
Benzene	3J	71	NP
Chlorobenzene	3J	21,000	NP
SEMI-VOLATILE ORGANIC COMPOUNDS			
	ND		
PESTICIDES/PCBS			
	ND		
METALS			
Aluminum	25,100E	NP	NP
Arsenic	22.9E	0.136	36
Barium	1240	NP	NP
Cadmium	6.9	NP	9.3
Calcium	233,000E	NP	NP
Chromium	292E	3,230	50 a
Cobalt	30.4J	NP	NP
Copper	1,550E	NP	5.6 b
Iron	60,800E	NP	NP
Lead	1,050E	NP	8.1
Magnesium	108,000E	NP	NP
Manganese	1,710E	100	NP
Mercury	2.0E	0.146	0.025 b
Nickel	222E	3,900	8.2
Potassium	159,000	NP	NP
Sodium	631,000	NP	NP
Vanadium	100E	NP	NP
Zinc	1070E	NP	81

NOTES:
* Sampling performed by NUS Corporation and analyses performed by Keystone Environmental, 1/90.
** SWQC Surface Water Quality Criteria - Saltwater, Human health criteria, total recoverable NJAC 7:9B-1.14
*** SWQC Surface Water Quality Criteria - Saltwater, Chronic effects aquatic life criteria, dissolved
a - Chronic effects for Cr⁶⁺
b - Total recoverable

ug/L - micrograms per liter
J - Estimated value for compound present below CRDL but above IDL
E - Estimated value
NP - Not published for this constituent
ND - Not Detected

**TABLE 4
MSLA 1-D LANDFILL
SITE INSPECTION SAMPLING RESULTS-SEDIMENTS***

QUANTIFIED COMPOUNDS (mg/kg)	SAMPLE IDENTIFICATION		MARINE/ESTUARINE SEDIMENT CRITERIA**	
	NJCL-SED1	NJCL-SED3	Low Effects Level (mg/kg)	Medium Effects Level (mg/kg)
VOLATILE ORGANIC COMPOUNDS				
2-Butanone	0.053	0.095	NP	NP
2-Hexanone	0.014J	ND	NP	NP
SEMI-VOLATILE ORGANIC COMPOUNDS				
Phenanthrene	0.670J	ND	0.240	1.50
Flouranthene	1.70J	0.84J	0.600	5.10
Pyrene	2.40J	0.81J	0.665	2.60
Benzo(a)anthracene	1.60J	0.88J	0.261	1.80
Chrysene	2.00J	0.93J	0.384	2.80
Benzo(b)Fluoranthene	4.50	1.40J	NP	NP
Benzo(a)pyrene	2.20J	0.82J	0.430	1.60
Indeno(1,2,3-cd)pyrene	1.80J	0.78J	0.200	320.00
Benzo(g,h,i)perylene	1.60J	0.75J	0.17	320.00
Total Polynuclear Aromatic Hydrocarbons	18.47J	8.81J	4.0	45.0
PESTICIDES/PCBS				
beta-BHC	0.022J	21	0.005	21
4,4'-DDD	0.015J	0.180 E	NP	NP
4,4'-DDE	0.035J	ND	0.0022	0.027
4,4'-DDT	ND	0.067J	0.0016	0.0460
METALS				
Aluminum	10,600 E	12,000 E	NP	NP
Arsenic	115	5.32	8.2	70.0
Barium	180 E	228 E	NP	NP
Cadmium	37	ND	1.2	9.6
Calcium	5,020 E	13,000 E	NP	NP
Chromium	181E	50.1 E	81.0	370.0
Copper	947E	659E	34.0	270.0
Iron	19,300 E	16,500 E	NP	NP
Lead	353E	238E	47.0	218.0
Magnesium	2,980 E	3,270 E	NP	NP
Mercury	202E	0.92E	0.15	0.71
Nickel	88	21	21.0	52.0
Sodium	1310J	1,660	NP	NP
Vanadium	34	33.7	NP	NP
Zinc	360E	299E	150.0	410.0

NOTES:

- * Sampling performed by NUS Corporation and analyses performed by Keystone Environmental, January 1990.
- ** NJDEP Guidance For Sediment Quality Evaluations, November 1998.

mg/kg - milligrams per kilogram

J - Estimated value for compound present below CRDL but above IDL

E - Estimated value

NP - Not published for this constituent

ND - Not Detected

**TABLE 5
MSLA 1-D LANDFILL
SITE INSPECTION SAMPLING RESULTS-SOIL***

QUANTIFIED COMPOUNDS (mg/kg)	SAMPLE IDENTIFICATION				NJDEP NRDCSCC** (mg/kg)	NJDEP RDCSCC*** (mg/kg)	NJDEP IGWSCC**** (mg/kg)
	NJCL-S1	NJCL-S3	NJCL-S6	NJCL-S7			
VOLATILE ORGANIC COMPOUNDS							
Chlorobenzene	ND	ND	ND	0.150	680	37	1
Ethylbenzene	ND	ND	ND	0.081	1,000	1,000	100
Xylenes (Total)	ND	ND	ND	0.069	1,000	410	67
SEMI-VOLATILES ORGANIC COMPOUNDS							
Phenanthrene	ND	ND	ND	1.20	NP	NP	NP
Fluoranthene	0.150J	ND	ND	1.90	10,000	2,300	100
Pyrene	0.170J	0.93	ND	2.20	10,000	1,700	100
Benzo(b)fluoranthene	0.170J	ND	ND	1.40	4	0.9	50
Benzo(a)pyrene	ND	ND	ND	0.75E	0.66	0.66	100
Benzo(a)anthracene	ND	ND	ND	0.91J	4	0.9	500
Indeno(1,2,3-cd)pyrene	ND	ND	ND	0.39E	4	0.9	500
PESTICIDES/PCBS							
Beta-BHC	0.015	ND	0.078E	0.100	NP	NP	NP
4,4'-DDT	0.0027J	0.100	ND	ND	9	2	500
Methoxychlor	0.040J	0.030J	0.200J	ND	5,200	280	50
4,4-DDE	ND	0.051J	ND	ND	9	2	50
METALS							
Aluminum	5,680 E	7,840E	8,240 E	13,000 E	NP	NP	NP
Arsenic	2	4.1	6.1	6.7	20	20	(Site Specific)
Barium	26.4J	157 E	78.9 E	193	47,000	700	(Site Specific)
Cadmium	0.74J	1.1	1.6	1.0J	100	39	(Site Specific)
Chromium	11.4	60.8	85.2 E	34 E	(Site Specific)*	120,000*	NP
Copper	37.3 E	56.9 E	59.1 E	137 E	600	600	(Site Specific)
Lead	40.8	216 E	71.4 E	200 E	600	400	(Site Specific)
Mercury	ND	0.38 E	1 E	0.82 E	270	14	(Site Specific)
Nickel	ND	120	17.7	16.8	2,400	250	(Site Specific)
Vanadium	12.2	27.5	22.8	16.7	7,100	370	(Site Specific)
Zinc	26.3 E	208 E	132 E	211 E	1,500	1,500	(Site Specific)

NOTES:

- * Sampling performed by NUS Corporation and analyses performed by Keystone Environmental, January 1990.
- ** NRDCSCC Non-Residential Direct Contact Soil Cleanup Criteria (Last Revised-5/3/99)
- *** RDCSCC Residential Direct Contact Soil Cleanup Criteria (Last Revised-5/3/99)
- **** IGWSCC Impact to Ground Water Soil Cleanup Criteria (Last Revised-5/3/99)
- * Trivalent Chromium

mg/kg - milligrams per kilogram

J - Estimated value for compound present below CRDL but above IDL

NP - Not published for this constituent

ND - Not Detected

E - Estimated value

ENVIRONMENTAL HEALTH COMMISSION

AVE. HARRISON, NEW JERSEY 07029 PAGE 1 of 1

AIR PRODUCTS

INVESTIGATION

H-R-H.C. CASE# _____

ARRIVED 2:00 DEPARTURE 3:00 MANHOURS _____

LOCATION: Air Products + Chemical, Inc. RP: _____

ADDRESS: 1501 Harrison Avenue _____

Keary, N.J.

LOCATION PHONE# 997-6527 OTHER: _____

NOTIFICATION REC'D FROM: self _____

DATE: 4/21/93 TIME: 2:00 P.M. _____

NATURE OF INCIDENT: unknown liquid percolating out of ground

OTHER RESPONDING AGENCIES: _____

VIOLATIONS ISSUED: _____

FINDINGS: Site inspection conducted as a result of liquid observed percolating out of ground in front of plant. Liquid had a slight discoloration and was foaming as it flowed along curb into nearby marsh.

According to Mr. Cecil Bonnellip, Plant Manager, source of discharge was investigated and found not to be from their process. Liquid suspected of being from a leak in a water main which runs along Harrison Avenue or landfill leachate due to recent high precipitation.

He indicated Water Department was aware of situation and had scheduled work crew to begin excavating on Friday. John Sarvas, BOH, had also visited site.

Findings reported to Gary Sartore, H-R-H.C. Program Coordinator. No cause for further action at this time.

BAE000004

SUPERVISOR SIGNATURE

INVESTIGATOR SIGNATURE

FILE: SITE LOG _____

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HUDSON REGIONAL HEALTH COMMISSION

215 HARRISON AVE. HARRISON, NEW JERSEY 07029 PAGE _____ of _____

INVESTIGATION

DEPE

INVESTIGATION DATE: 2/4/94 H.R.H.C. CASE# 94-2-4-1129-03

INVESTIGATOR DB TIME ARRIVED 10:30 DEPARTURE 12:00 MANHOURS _____

LOCATION: Air Products RP: _____

ADDRESS: 1501 Harrison Ave _____

Kearny _____

LOCATION PHONE# 99 7-6527 OTHER: _____

NOTIFICATION REC'D FROM: HC Engineering - Demetrio Arenable 915-1360

DATE: 2/4/94 TIME: 10:15

NATURE OF INCIDENT: reports of yellow discharge along Harrison Ave near Rt 280 intersection

OTHER RESPONDING AGENCIES: _____

VIOLATIONS ISSUED: _____

FINDINGS: Found a yellowish-brown "discharge" frozen in front of Air Products. I spoke to Cecil Bonnell, plant manager, he said this discharge is leachate from landfill I.D and is not a leak of the effluent used in the gas generation at this plant.

This is not the first discharge from the landfill, last March Cecil said the same thing occurred. An area was excavated to determine if a pipe broke, lines were tested, and it was determined no leak from the facility had caused this, but the leachate just found an area of low resistance and flowed out.

Landfill I.D has not been "Capped" nor does it have a leachate collection system.

Air Products offered to sample the discharge and analyze it to verify that it is leachate and not this effluent, and will follow this with a letter to Kearny (according to their Civil Engineer) requesting information re: the leachate.

I spoke to Gary Constantino to update and Demetrio to update, Demetrio requested a copy of field report.

SUPERVISOR SIGNATURE

INVESTIGATOR SIGNATURE

FILE: SITE 1 LOG _____

HUDSON REGIONAL HEALTH COMMISSION

215 HARRISON AVE. HARRISON, NEW JERSEY 07029

TEL. 201-485-7001 FAX 201-485-1251

REPORT OF PHONE CALL OR VISIT

Bureau or Office _____

In _____ Out _____

Date _____ Time _____

File AIR PRODUCTS/GSF

Routing 1501 HARRISON AVE
HARRISON N.J. 07029

Person Contacted MIKE SOYEREC / CECILLE BONELLI Phone No. 997-6527 / 215 481-4317

Affiliation GSF AIR PRODUCTS

Subject of Call Visit LEACHATE COMING THROUGH PROPERTY FROM ID LANDFILL

Summary of Call Visit Don Beard (y) HRHC investigated above - see FR
UIS called re: analyzing product to demonstrate
it was not their effluent. I told them HRHC would not
require analysis at this time. UIS stated it was voluntary,
attempted to contact DEP - DSW & DWR for
suggestions re: above - no one available - faxed
copy of technical reg. 7:26E - dealing with
unknowns to Mr Bonelli. Also restated HRHC was not
requesting the analysis at this time.

Ed Grossman + Mike Beard - HRH - referred status

Pat Ferraro DEP - DSW

Steve Sedlak " " "

Action Recommended Periodic follow up at site to determine
if discharge is ongoing, and approximate quantity

G. Yante
Signature

HUDSON REGIONAL HEALTH COMMISSION
MEADOWVIEW CAMPUS
595 COUNTY AVENUE, BUILDING 1, SECAUCUS, NEW JERSEY 07094

PAGE 1 of 1

INVESTIGATION

INVESTIGATION DATE: 3/11/99 ARRIVED 10³⁰ DEPART 11⁴⁰ HOURS
REC'D FROM: KFD DATE: 3/11/99 TIME: 1000am
LOCATION: D-1 Landfill RP:
ADDRESS: 1501 HARRISON Ave H.M.D.C., KANNY TOWN,
KANNY, NJ. GSE/ECOGAS.
LOCATION PHONE: 201-997-6527
NATURE OF INCIDENT: oily, seepage, spill?

OTHER AGENCIES: KPD KHD VIOLATIONS:
FINDINGS:

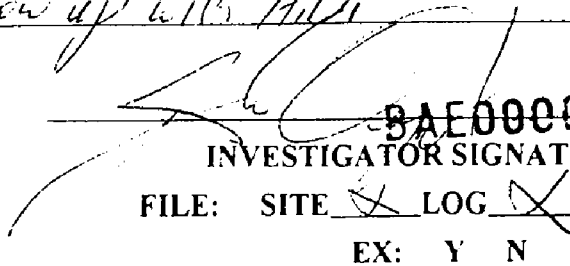
Observed liquid issuing to the ground surface within 1 foot of the curb area in front of GSE/ECOGAS / HMDC Landfill. Said liquid was flowing along the curb to a surface water discharge point just east of the facility. An oily sheen had accumulated. I met with Capt. Paul KFD and M. BEAN KHD. Suggested that DEP be notified. (CASE # 99-03-11-117 GSD)

Mr. Joe Sziveli, Plant Mgr of ECOGAS said the line is leachate from the landfill that use to run to the surface waters directly until the NJDOT change the road. He volunteered to put down oil absorbent "pillows" and the line along sanded & marked off the area to traffic.

H.M.D.C., N.J. DEP (Chris Doin), & ECOGAS are having a meeting tomorrow about how to resolve this issue.

NFA will follow up with HMDC

SUPERVISOR SIGNATURE


INVESTIGATOR SIGNATURE
FILE: SITE LOG
EX: Y N U

BAE000011

105

ACTIVE:
REFERRED: X
NOV ISSUED:
CLOSED:
ASST. REQUEST:

COMPLIANCE ASSISTANCE REPORT
COMPLAINT NOTIFICATION REPORT

NORTH: X
CENTRAL:
SOUTH:
MGT. REF:

REFERRAL#: DATE REC'D: DATE DUE:
CASE NO.: 1999-03-11 # 1404
Yr. Mo. Day
DATE: 1999-03-11 REC'D BY: COMM.CTR. TIME: 11:17

INCIDENT REPORT BY

Last Name: OPERATOR 3 First Name: Phone: (201)991-1400
Street: City: KEARNY County: HUDSON State: NJ Zip:

Affiliation/Title: KEARNY FIRE DEPT.

INCIDENT LOCATION Transportation: Facility: x Other:

Site Name: D LANDFILL Phone:
Street: HARRISON/280 RAMP
City: KEARNY County: HUDSON State: NJ Zip:
Date of Incident: 1999-03-11 Time: 10:01

RESPONSIBLE PARTY Suspected: x Unknown: Phone:
Company Name: D LANDFILL Title:
Contact: Street: HARRISON AVE
City: KEARNY County: HUDSON State: NJ Zip:

OFFICIALS NOTIFIED (Name/Title)
NJSP: Phone: Date: Time:
COUNTY HEALTH: HUDSON CO CEHA Phone: (201)223-1133 Date: Time:
LOCAL HEALTH : KEARNY H.D. Phone: Date: Time:
USEPA: Phone: Date: Time:
OTHER: NO.HAZ.WST. Phone: Date: Time:

Assigned to: Date Assigned: Date Closed:

Violations cited NJAC:
COMMENTS: LEACHATE FROM LANDFILL RUNNING OFF SITE ONTO ROADWAY, LOCAL
HEALTH DEPT ON SCENE.

COMMENTS CONT'D:

New Jersey Department of Environmental Protection
COMMUNICATIONS CENTER NOTIFICATION REPORT

Received **03/11/1999**

TC Log# **39936**

Operator **JIMH**

Reviewed By

Case # **99-03-11-1117-15**

AD

Notification Type **Municipality**

Reported By **OPER 3** Affiliation **KEARNY FD** Phone **201-991-1400**

Street Address Municipality State

Incident Location: **Other**

Site: **AREA OF** Phone

Street Address **HARRISON/280 RAMP** Municipality **KEARNY TOWN** County **HUDSON** State **NJ**

Location Type **Commercial** Incident Date **03/11/1999** Time **1011**

Substance Released **LEACHATE**

Amount Released (): **UNKNOWN**

ID **Known** State **Liquid** CAS# Release Is **Continuous**

Additional Substances

Substance Contained? **No** Hazardous Material? **C** TCPA? **N** A310 Letter? **N**

COMU Code **0907** Referral Code **101** Is Hazardous Waste Involved? **No**

Incident Description **Spill**

Injuries? **No** Public Evac? **No** Facility Evac? **No** Police On Scene? **Yes** Firemer On Scene? **Yes** DEP Requested? **No** Road Closure? **No**

Wind Speed/Direction Contamination Of **Land** Receiving Water

Status at Scene

LEAK FROM LANDFILL TO ROADWAY. LOCAL HEALTH DEPARTMENT ALSO ON SCENE

Responsible Party **Known**

Party **D LANDFILL** Phone

Contact Title

Street Address **HARRISON AVE** Municipality **KEARNY TOWN** County **HUDSON** State **NJ**

OFFICIALS NOTIFIED

	Name	Affiliation	Phone	Date	Time
NJSP	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
MUNIC	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
OTHER	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>

	Name	Affiliation	Method	Date	Time
1	<input type="text"/>	BFO-CAS DRPSR	Faxed, Mailed	03/11/1999	<input type="text"/>
2	<input type="text"/>	Northern HAZ-WST	Faxed	03/11/1999	<input type="text"/>
3	<input type="text"/>	HQ DSWM	Faxed	03/11/1999	<input type="text"/>

COMMENTS

MAR 11 '99 11:31

HUDSON REGIONAL HEALTH COMMISSION
MEADOWVIEW CAMPUS
595 COUNTY AVENUE, BUILDING 1, SECAUCUS, NEW JERSEY 07094

FOLLOW UP/CONTINUATION

DATE: 3/12/99

HOURS: 1

CASE NAME:

ADDRESS:

D/ Landfill

1501 Harrison Ave. Newark, N.J.

Contacted Chris Deir of HMDR (201-460-1700) who explained that the property is owned by the town of Newark. He is aware of the runoff problem and says it resulted from the county obliterating a french drain when the road was improved.

CSF had installed the drain specifically to direct the leachate to storm drainage next door to the landfill.

He has had meetings with FCOGAS and DEP to address the leachate from the entire site, but not meet this particular discharge.

Mike Berlingame (609-292-1424) is a contact from Bureau of Site Management.

Mr. Deir said Commissioner Shin considers the landfill a top priority, but he doesn't foresee a quick remediation.

I will refer the matter to the property owner Newark, NJ.

- Scheduled a meeting with Mike Berlingame on 3-23-99 to review site problems.

INVESTIGATOR SIGNATURE

FILE: SITE LOG



State of New Jersey

Bruce L. Whitman
Governor

Department of Environmental Protection

Robert C. Shaw, Jr.
Commissioner

PLEASE FAX THIS INCIDENT FOLLOW-UP SHEET TO (609)588-2444
WITHIN TEN (10) WORKING DAYS OF RECEIPT.

FROM: Hudson Co. CEHA J. Demjanick HEALTH DEPT.
CASE #: 99-03-11-1404 DATE RETURNED TO DEP: 3-17-99
INCIDENT LOCATION: D-1 Landfill
Harrison Ave. + 280 ext. ramp
Hamm
MUNICIPALITY: Hamm town
VIOLATION (S) ISSUED: _____ YES _____ NO

RESULTS OF INVESTIGATION

DATE OF COMPLETION: 3/11/99

(If still ongoing, please explain why with an anticipated date of completion)

also, reported as case # 99-03-11-1117-15
by the Hamm fire dept.
Material is white. issuing from grounds
of Landfill + running onto roadway continuously.
The material is a full melting aqueduct
liquid with an oily sheen. It
could not be collected through the Ground Site Management
(Mike Buckland, 609-292-3142)

New Jersey is an Equal Opportunity Employer
Recycled Paper

9AM Hudson Co. Court
Administration Bldg.

meeting.
Dispatch
3-14-73
**Air Pollution
Order Faces
Landfill Unit**

Hudson Superior Court Judge Theodore I. Botter signed an order yesterday directing Municipal Sanitary Landfill Authority, Harrison av., Kearny, to show cause on Sept. 14 why it should not be penalized for air pollution.

Deputy Atty. Gen. Michael J. Gross obtained the order. According to the complaint filed, the defendant was ordered on July 17, 1969, to cease polluting the air. Subsequently the defendant paid a \$200 penalty for open air burning of refuse on Apr. 19, 1972. Now, the N. J. Department of Environmental Protection alleges the defendant committed another offense, Apr. 11 of this year, burning refuse in the open. The state seeks a \$2,500 penalty this time.

CAAG00001

Essex chooses Kearny dump sites

Interim landfill will be used for 5 years as recycling is developed

By JAMES WENSON

Essex County officials last week chose two sites in the Hackensack Meadowslands in Kearny to dump county solid wastes over the next five years until a recycling facility is available.

The county's selection of the sites by Friday was required under a timetable in its solid waste management plan which was approved by the state Department of Environmental Protection (DEP).

County officials met with DEP and Hackensack Meadowslands Development Commission (HMDC) officials Friday in East Rutherford and presented their landfill choices, two sites totaling 87 acres off Harrison Avenue near the New Jersey Turnpike in Kearny.

The HMDC, which supervises garbage dumping in the Meadowslands, is opposed to the Kearny sites in accordance with its policy of avoiding opening new dumps.

The HMDC wants Essex County to open a dump within its own borders and has suggested numerous locations, but county officials have rejected all of them for various reasons, including environmental concerns, and continue to insist that the two Meadowslands sites are best suited for Essex garbage.

The DEP will have to approve or reject the county's site selections in the near future. The HMDC, in correspondence with the DEP, has found, however, that the county's choices do have "some potential" as dump sites.

Every Essex County municipality except Essex Fells, which uses a site in Mt. Olive, dumps its garbage either at a site known as MSLA 1-D in the Kearny meadowslands adjacent to the county's two choices for future disposal, or at a bathing facility in the meadowslands.

• • •

MSLA 1-D is scheduled to close at the end of this year, but several extensions of the use of MSLA 1-D and other dumps in the meadowslands have been granted by the state.

Essex officials believe MSLA 1-D could be used well into next year if permitted by the state.

David Hull, deputy director of the Essex County Department of Planning and Economic Development, said county and municipal officials have opposed opening any potential dump site within county borders for zoning, environmental, political or other reasons. Hull said the county might fight the state in court if ordered to open an Essex site.

The largest of the county's two dump site choices is

55 acres and is known as MSLA 1-A. It was an active landfill site but was closed five years ago. Hull said it has the capacity to handle much of the county's garbage over the next five years.

The second site chosen is a triangle of land 33 acres in area bounded by the PATH rail elevated right-of-way, the Turnpike and Harrison Avenue.

MSLA 1-D is immediately opposite the Turnpike to the west of the site.

HMDC found the site had "limited development potential" but that it "should not be substantially impacted by the existing use characteristics." The site was once partly filled illegally by a landfill operator but, on HMDC orders, the illegal waste was removed.

As an alternative to the first two choices, the county has chosen an area of the Kearny meadowslands known as the Keegan site, which is south of Route 7.

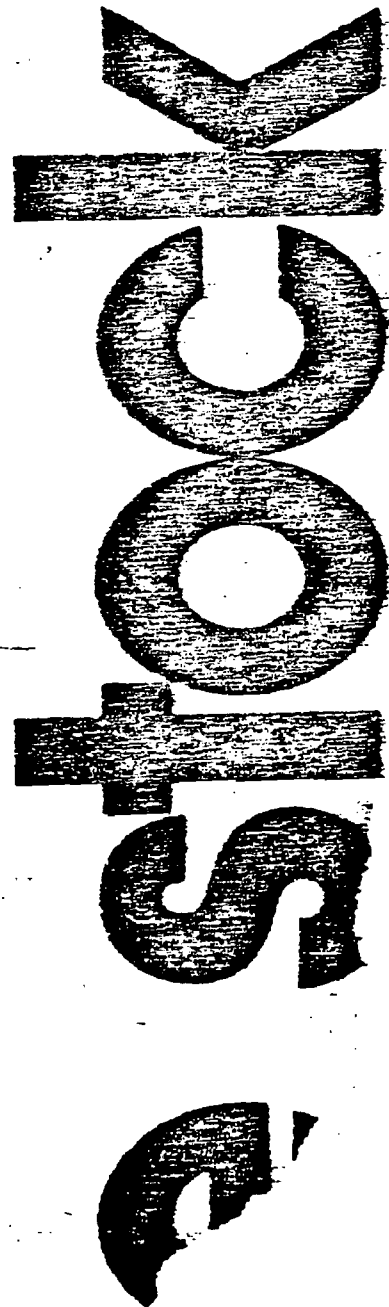
Seating sought on PVSC board

Newark Councilwoman Marie L. Villant has called on the city's legislative delegation in Trenton to sponsor a bill mandating that the city be guaranteed representation on the board of the Passaic Valley Sewerage Commission (PVSC).

Although Newark owns almost 40 per cent of the PVSC stock, not one city resident sits on the board of the seven-member commission, the at-large councilwoman said.

"The multi-million dollar PVSC plant occupies 174 acres of prime industrial land in the Meadowslands," according to Villant, who noted the city expects to pay the PVSC \$77 million for fiscal 1980 services, while the increased tax payments from the agency amount to \$393,000 annually.

"Not only does Newark fail to receive its fair share of taxes from the land occupied by the PVSC, but we must live with the environmental effects of having the agency located within our borders," she added.



CAA00004

AMERICAN OF MARTINSVILLE HOOKER MANOR HOUSE PREW

HUDSON REGIONAL HEALTH COMMISSION

313 Harrison Avenue
Harrison, New Jersey 07029

REPORT OF FIELD INVESTIGATION

DATE 9-25-80 TIME 10:30 a.m FILE# _____
REFERENCE TO CHAPTER 5.1

FULL BUSINESS NAME Municipal Sanitary Landfill

Location Harrison Ave., Kearny, N.J
No Street Municipality

Mailing Address as above
No Street Post Office Zip Code

Person(s) Interviewed _____
Title

Title

Comments _____

Report Requested by Ed. Grosvenor Kearny Department of Health

Purpose of Investigation To determine if dumping of drums or chemicals prevalent

Observations Complaint received that possibly Carbone Trucming Co, Passaic
, N.J. may be dropping off 55 gallon drums possibly filled with toxic
chemicals or waste.

Continued surveillance of above location for any trucks entering landfill
that may be of a suspicious nature and carrying drums

Conclusions No trucks at time of inspection entering landfill

Recommendations Continue periodic inspection and surveillance of general area.

CAA000005

Investigated by Chet Potoczny

and being
grd. Each
as.
rain, the
driver or
upon and
The state
es for the

abled can
privilege
hours of
w transit
ts.

red-fare
Transit

Kearny, DEP confer on dump controversy

By DONNA LEUSNER

Kearny officials, opposing a state order to open another landfill in the garbage-choked meadowlands, pleaded their case before state authorities yesterday in Trenton.

Although the 20 officials who gathered for a roundtable discussion with members of the state Department of Environmental Protection (DEP) got no concrete answers, Kearny representatives called the information exchange "productive."

Kearny is seeking to have rescinded a Jan. 19 order from the state to open temporary landfills in Newark and Kearny by July 1 to handle a combined total of 3,500 tons daily of Essex County garbage.

DEP Commissioner Jerry English directed the Hackensack Meadowlands Development Commission (HMDC) and Essex County to find a site to accommodate the garbage until Essex County opens a recycling plant in 1985.

The town, arguing that another landfill will discourage proposed industrial development in the region and create a health hazard, has vowed to fight the order in court.

Kearny Mayor Henry Hill said the region slated for a third landfill is the "gateway to a revitalized economy for

Kearny, generating industrial development worth millions of dollars and creating thousands of jobs."

E. Robert Hakim, chairman of the Kearny Industrial Commission, urged English to rescind the dumping order, claiming Kearny has made its contribution to the state over the past 60 years by taking garbage.

"I can't imagine creating thousands of jobs and industrial development amid a sea of garbage," said Hakim. "If they (the state) rescind the directive, Kearny will be happy."

Margaret Hallaway, who has been fighting open dumping in Kearny for 12 years, also called the meeting profitable because "now the state knows how drastic the situation is and how hard we must work to keep the garbage out of Kearny."

Sen. Frank E. Rodgers (D-Hudson) demanded an answer from English after the hourlong meeting on whether the state would seek other sites outside of Hudson and Essex counties to place the garbage.

DEP assistant commissioner George Tyler also called the meeting productive.

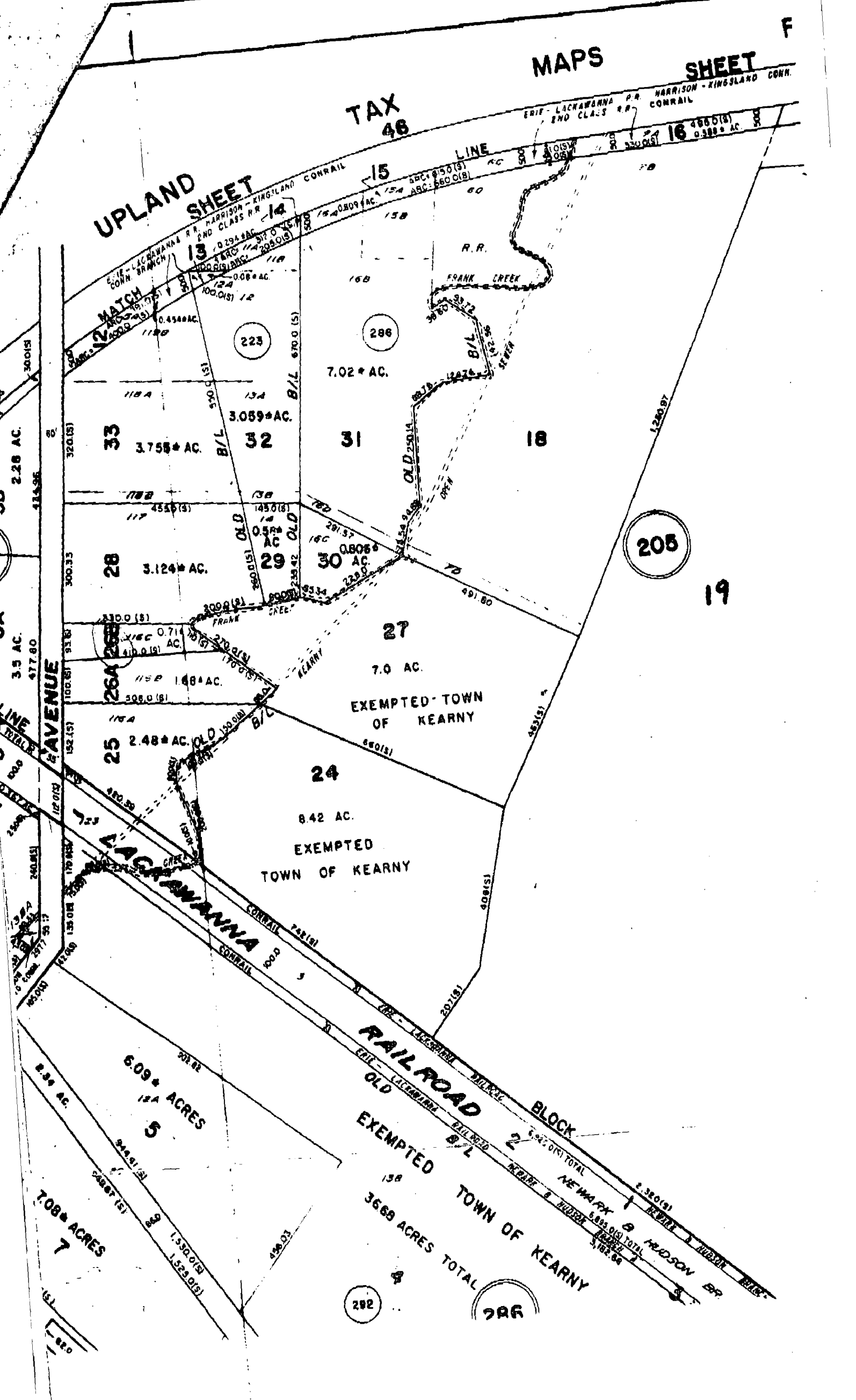
"We heard the legitimate concerns expressed by the people of Kearny and will take these into consideration, as we have since the public has been offering them to us."

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TAX 46

UPLAND SHEET



26

HUDSON REGIONAL HEALTH COMMISSION

215 HARRISON AVE., HARRISON, NEW JERSEY 07029
TEL. 201-485-7001 FAX 201-485-1251

Richard Censullo, President

Robert Ferraiuolo, Director

MEMO

TO: Edward Grosvenor, Health Officer
FROM: Robert Ferraiuolo, Director
DATE: September 18, 1995
RE: Keegan Landfill
Landfill ID (Southeast of Drew Chemical)

Over the past several days we have been monitoring conditions at both sites referred to above. Although the Fire Department and Cali Contracting have done an excellent job in extinguishing and/or controlling the fires, I am concerned about potential long term consequences of not properly closing both sites.

We are aware that a number of historical, legal and political factors have served to severely complicate long term remediation scenarios. We are further aware that proper closure could potentially cost tens of millions of dollars for the ID site alone, thus beyond the financial capability of the Town of Kearny.

We made inquiry into possible sources of funding assistance for which the Town might be eligible. The results were not encouraging.

We contacted Pat Ferrara of the DEP as well as other knowledgeable parties and were advised that there were generally no such funds available for such assistance, most particularly where there was a responsible party. There is a Bill (#1111), presently pending, which would provide assistance for the closure of municipal landfills where such landfills were not operated for a profit. From what I understand about the operation of the ID site under the terms of a lease with the Town, this legislation, if adopted, would probably not apply. To the best of our knowledge, neither the 'Keegan' nor 'ID' sites were ever on the 'Superfund List'. Neither are on the most current listing of known contaminated sites maintained by the NJDEP.

CAA000028

RECOMMENDATIONS

It would seem of enormous economic benefit to the Town to have the HMDC assume responsibility for closure of both sites. While it is not within my purview to influence the outcome of negotiations and litigation which have arisen from their proposal, the HMDC might be on top of a short list of entities capable of and willing to take on the substantial burden of closure.

Another option might be to seek assistance from our legislative representatives.

We will continue to monitor conditions at both sites and hope that the Fire Department and contractors engaged by the Town can have continued success in controlling outbreaks. However, even these actions can be quite costly and might ultimately prove futile.

In my opinion, the landfills are an unfortunate legacy of shortsighted environmental management. Only through proper closure will their potential consequences be obviated.

For your further information, I have enclosed a copy of a study of the 'Keegan Site' done by the NUS Corporation in September of 1989.

If I can be of further assistance, please advise.

HEARING OFFICER'S REPORT

1.0 EXECUTIVE SUMMARY

The HMDC, through its enabling legislation, has been involved with regional disposal of solid waste since our inception. We recognize at this time, that there are certain regulatory processes in the making, that will in all likelihood have a serious impact on the State's ability to send solid waste out-of-state. Proposed federal legislation will make out-of-state disposal for New Jersey either prohibitively expensive or legally impossible. Individual states have imposed restrictions over the past several years that have added to the cost of solid waste transfer operations. More importantly, the reliance on out-of-state disposal as a solution to the State's solid waste crisis will keep solid waste costs on their upward spiral, while increasing truck traffic and air pollution.

In 1988, officials from the HMDC, Hudson County, Bergen County, Essex County, New Jersey Department of Environmental Protection, and the State Board of Public Utilities met to discuss several regional solid waste disposal initiatives.

Over a period of a year, data was gathered and several regional options were explored. The most cost effective option pointed towards establishing a regional non-processable landfill in the Meadowlands. Computer modelling indicated that there would be a savings on the order of \$500 Million to the region over a twenty year planning period. Proportionate savings would occur with the proposed Keegan site with its minimum ten year estimated life.

One of the assumptions included in the regional study, was that the non-processable landfill had to be approximately 100 acres in size and have a capacity of at least ten years. A review of the other potential "orphan" landfills (inactive but not closed sites in the District), indicated that the Keegan site was the only site large enough to satisfy the criteria. Other sites under consideration were the Malanka Landfill in Secaucus, the MSLA 1-D Landfill in Kearny, the Erie Landfill in North Arlington, the Avon/Viola Landfill in Lyndhurst, and the old Rutherford Landfill in Rutherford.

The Keegan site also has excellent regional access to service the targeted solid waste districts not found with the other sites. Finally, the remediation of this site will stop the environmental degradation of the adjacent Fresh Water marsh. It should be noted that this is the largest fresh water marsh in the District, and that it was formally protected by the Commission in 1985.

After discussions and site visits with representatives of the New Jersey Department of Environmental Protection and Energy, the HMDC decided to proceed with the first step towards formally proposing the Keegan site as a regional materials handling complex that would include the non-processable landfill as well as a construction/demolition recycling facility. This action was also prompted by the recommendations included in the Governor's Task Force report on solid waste, particularly concerning regionalization and construction & demolition waste recycling.

The first of two public hearings was held on January 7, 1992 at the offices of the Commission. A second public hearing was held on February 19, 1992 in the Kearny High School.

1.1 WRITTEN COMMENTS

Prior to the public hearings, written comments were received that requested that the record be held open, another hearing be held, and that the HMDC should consider alternative development for the site. Additional written comments were received from the Bergen County Utilities Authority (BCUA), the Hudson County Improvement Authority (HCIA), and the Town of Kearny. Responses to these comments are addressed at length in the full Report.

The HCIA commented that the HMDC must include any proposed solid waste facility in the Hudson County Solid Waste Management Plan. The HMDC believes that the Solid Waste Management Act is clear and that as a Solid Waste Management District, facilities in the HMDC do not have to be entered into the Hudson County Plan, nor are Interdistrict Agreements required as they had described.

The BCUA comments related to financial impact, waste flow orders, and facility capacity. Responses are addressed herein.

The Town of Kearny passed a resolution on March 11, 1992 "... that the Mayor and Council of the Town of Kearny do formally, and unequivocally, oppose any further landfill operations within the Town of Kearny including specifically the proposed regional solid waste materials handling complex which has been the subject of the proposed amendment to the HMDC solid waste management plan..."

The alternative development proposal by Hudson Meadows Urban Development Corporation included an office complex, shopping mall, hotel, etc. The developer owns approximately 34 acres, and has a developmental lease for another 384 acres with the Town of Kearny. A portion of the proposed development would occur on top of the landfilled portions of the Keegan property, roughly the same area designated by the HMDC for the non-processable landfill. It should be noted that Hudson Meadows has had this property under lease for more than 13 years. No response to a nine-page preliminary findings letter from the HMDC dated May 15, 1987 was ever received.

To date, no action has been taken to develop or remediate this site. The financial implications of remediating, financing, and developing an old landfill site of this size are obvious and help explain why no development has occurred. The HMDC could simply wait no longer to stop the degradation of the surrounding area.

Hudson Meadows had extensive questions, and provided lengthy testimony as to why their proposal should go forward. This included that the public notice process was defective for several reasons. The HMDC has in fact complied with the public hearing process as specified in the Solid Waste Management Act.

In addition, it was stated that the HMDC failed to consider alternative sites for the proposed facility along with an impact assessment. The HMDC response is that after evaluating the existing "orphan" landfills in the District, the Keegan site offers the most capacity of any of these "orphan" landfills. This is based on staff knowledge of the District. Further, access to the site is ideal since the Keegan Site is located adjacent to two major State highways, with the proposed access along a major Hudson County route.

The HMDC has designated 421 acres for the proposed facility. However, the bulk of the property is the Kearny Freshwater Marsh which cannot be disturbed. Landfilling would only occur on top of the existing landfilled portions of the site, or about 110 acres.

The landfill would accept bulky wastes (Type 13), and non-hazardous industrial wastes (Type 27) which includes asbestos. The majority of the waste flow is anticipated to be the non-processable wastes that are redirected from resource recovery facilities, transfer stations, and recycling operations. No incinerator ash will be accepted at this facility, which by design will not be able to accept ash. Waste will only be accepted from New Jersey sources.

A March 3, 1992 letter from Hudson Meadows Urban Development Corporation attached additional comments that were supposed to be submitted in evidence at the February 19, 1992 public hearing. Many of these issues were repeated from earlier correspondences and/or testimony. One question, was whether reopening the landfill was the only means to achieve the HMDC's environmental objective. Clearly, our proposal is the only means to close both the Keegan and MSLA 1-D landfills and maintain them for a minimum 30 year post closure period.

An interesting comment, was that "...if a commercial development were constructed, the Kearny "closure" would not likely require an income stream greater than \$1.5-2.5 million/year over a ten year period. This revenue stream could easily be generated from local taxes on the commercial development that could be dedicated to closure costs." Obviously, this would reduce the potential ratables by 50 percent from what has been promoted by Hudson

Meadows.

Another comment was that development of other areas of the Meadowlands has been at the expense of Kearny. The Kearny portion of the Meadowlands is somewhat unique in that a large percentage of the area is wetlands. The next largest area, unfortunately, has been landfills that predated the existence of the HMDC. Because of the disparities for Kearny as well as areas that have received the bulk of the development over the years, the HMDC set up an inter-municipal tax sharing formula. In 1992, Kearny will receive \$2,568,471 from the tax sharing fund, and to date has received \$21,215,252. Host community benefits from the landfill operations have totalled \$1,512,741 since the host community benefits began to be collected.

While Hudson Meadows stated that we have no basis to conclude that significant adverse environmental impacts are occurring, one only has to walk the site to see that there is leachate flowing from the site, that the color of the water in Frank's Creek gets progressively greener as it flows through the site, and that numerous underground fires over the years have scarred site vegetation. Further evidence of site contamination was found by the USEPA in their investigation of the site.

1.2 PUBLIC COMMENTS

Traffic that would be generated by this proposal was one of the most frequently voiced concerns. Kearny residents believe that their roads are already at capacity, and that there is too much truck traffic. The HMDC has estimated that site operations would generate 200 trucks per day, the majority of which occurs at off-peak hours. The HMDC prepared a traffic modelling report that enables us to predict the impact from a proposed development. Use of this model indicated that the proposed facility would not change the Level of Service of the feeder routes (Harrison Avenue or Belleville Turnpike). In addition, the site is located about one-half mile west of the intersection of Route 280 and the New Jersey Turnpike at the 15W Interchange. It is anticipated that trucks will utilize the major arteries, ie. Harrison Avenue and Belleville Turnpike to access the site. The estimated 200 trucks per day are in stark contrast to the development proposal which would have in excess of 7,000 vehicles per day. It should be noted that the only current access to the site is via a dirt road.

Many residents asked why the site use could not simply be a park instead of either a landfill or another development. The HMDC responded that based on the history of underground fires at the site, leachate emanating from the site, etc. there would have to be a substantial cleanup of the site before any park development, with no viable funding source available.

A September 29, 1989 report commissioned by the USEPA Superfund Division recommended the site for Medium Priority for further action. Further, that a fence should be installed around the site to limit access, and that additional sampling was needed to assess the full extent of pollutants from the site.

Cleanup could not be effected by simply covering the site with several feet of dirt. A perimeter cutoff wall and leachate collection system, as proposed by the HMDC, would be required along with adequate capping of the site before any recreational uses could be contemplated. Obviously, these improvements would require a substantial investment that neither the Town nor the HMDC could make.

The financial impacts of the proposed project were also questioned by several people at the hearings. The HMDC has projected that the landfill will accept 1500 tons per day, 300 days per year, with a tipping fee of approximately \$75 per ton. Using the current State taxes of \$24.35 per ton, taxes would account for 33 percent of the tipping fee. Assuming that the operations at the proposed facility cost the same as the present Baler contract, 28 percent of the funds collected would go towards operations. Closure and post-closure costs for the Keegan and the MSLA 1-D site would account for an additional 36 percent. This would leave 3 percent for contingencies and administration.

Property values were of great concern to the residents of the Town, and especially nearby residents. The HMDC has seen a number of large and small scale developments near landfills in the District and elsewhere. Hudson Meadows pointed out at the public hearing that the Loew's Glenpointe development in Bergen County was built adjacent to an old landfill. The Bellemead Development Corp. has built a number of office buildings in the Meadowlands near old landfills. Housing continues to be built near landfills, most recently in North Arlington within several thousand feet of the Bergen County Landfill.

In addition to the above, and the fact that the area surrounding the Keegan site is largely heavy industrial in nature, the HMDC does not believe that the proposed landfill will negatively impact Kearny properties.

Asbestos will be disposed at the non-processable landfill much the same as it is today at the HMDC Baler. To date, there have not been any incidents of asbestos spills from solid waste vehicles. Asbestos is one of the most highly regulated industries and solid waste streams in the country.

Prior to any asbestos being removed from a demolition project, the licensed asbestos removal company must certify that all asbestos has been removed from the building. At that point, the removed asbestos is wet down and packaged in two 6 mil plastic bags

prior to disposal. At the Baler, the asbestos hauler must make specific arrangements for the time and place of disposal. The same procedure would be followed at this facility. Providing a reasonably priced in-state method of disposing of asbestos is critical to the safe timely removal of this material from our environment.

1.3 RECOMMENDATION

The EMDC staff recommendation, based on our review of the available information, the submitted documentation and public testimony, is that the proposed use of the site as a materials handling complex is the best use of the site.

2.0 FINDINGS

The HMDC is proposing to establish a regional materials handling complex in Kearny with access from Harrison Avenue through Bergen Avenue, to be located on Block 205, Lots 18, 19, 24, 27, 28, 29, 30, 31, 32, and 33. This facility would include a non-processable landfill and construction/demolition recycling operation which would accommodate wastes that have traditionally been landfilled, and which have more recently been transferred out-of-state. These wastes either cannot be recycled or cannot be processed in a resource recovery facility.

The HMDC has discussed the feasibility of establishing such a facility over the last several years with the NJDEPE, Bergen, Hudson and Essex Counties. A Tri-County initiative study conducted in 1988, indicated that if such a facility were established, that the region would stand to save an estimated \$500 Million over a twenty year period.

The proposed non-processable landfill would be located on top of the existing landfilled portions of the lots noted herein. This site is generally referred to as the old Keegan Landfill, or the MSLA 1-B Landfill. The goal of the HMDC is to remediate the old landfill thereby containing and controlling the existing pollutants from the site, while siting a much needed non-processable landfill for the region. Only New Jersey waste would be accepted at this facility.

Tipping (disposal) fees would pay for site remediation and landfill design, construction, operation, closure, post-closure and end-use plans. Additionally, the Hackensack Meadowlands Development Commission intends to collect funds for closure and post-closure for the MSLA 1-D landfill in Kearny.

The proposed construction and demolition recycling facility would accept concrete, wood, brick, etc. from construction and demolition sites. This facility would also serve as a consolidation center for this material. Concrete and brick would be processed into gravel for road base, admixtures, fill, etc. pursuant to State specifications. Wood would be processed, shipped to a secondary processor, or landfilled if it is non-processable (such as pressure treated or creosoted wood). Metal would be magnetically removed and brought to a scrap metal processor. Residual soils would be used as landfill cover whenever possible. Accessory uses may also include a tire shredding/chipping operation.

The old Keegan landfill is approximately 110 acres and this defines the lateral site limits. However, the ultimate capacity of the facility will be determined by extensive geotechnical investigations, wetlands delineation, and design constraints. If certified by the NJDEPE, this amendment to the HMDC Plan would

permit the HMDC to pursue the required engineering and environmental studies necessary to develop the site, to remediate the site, and to develop the new landfill on top of the site.

On January 7, 1992, the HMDC held the first of two public hearings. Public notices were placed in the Bergen Record and the Jersey Journal pursuant to the Solid Waste Management Act.

This document will address the two public hearings, written comments etc. separately. It should be noted that Classic Sanitation/Industrial Haulage removed their application for an amendment to the Plan shortly before the public hearing due to site plan problems.

2.1 JANUARY 7, 1992 HEARING

Written comments were received from: Gary Bennett, attorney for the Town of Kearny requesting that the public hearing be adjourned or that the record be left open and the public hearing be continued at a later date due to a conflict with a Town council meeting; Hudson Meadows Urban Development Corporation submitted a preliminary soils report prepared for Hudson Meadows by Melick-Tully and Associates dated March 30, 1987; a January 2, 1992 letter from Hudson Meadows to Mayor Kenneth Lindenfelser objecting to the proposed facility; a January 6, 1992 letter from Melick-Tully and Associates to Hudson Meadows; and a letter from Thomas Stukane of DeCotiis and Pinto, attorneys for Hudson County Improvement Authority requesting that the public comment period be held open until January 20, 1992.

Hudson Meadows Urban Development Corporation

Hudson Meadows submitted written comments on January 7, 1992 along with several attachments. Among these attachments was a January 6, 1992 letter from Melick-Tully & Associates that highlighted their March 30, 1987 soils report. Their study "...revealed that the majority of ...(the site)... had been previously filled with trash containing wood, grass, newspapers, rags, organic materials and other refuse. The fill had been placed directly over the original surficial organic marsh deposits. The total thickness of the fill and organic deposits varied from approximately 8 to 23 feet. Medium dense to dense sandy silt and sandy silt were encountered beneath the organic deposits and ranged from approximately 28 to 36 feet in thickness. The silt/sandy soils were underlain by soft to very stiff varved silt and clay which extended to depths ranging from approximately 75 to 150 feet beneath the ground surface. Dense competent glacial till and/or shale bedrock was encountered beneath the varved silt and clay.

The development of the site as proposed by Hudson Meadows includes an office complex, shopping mall, hotel and other related

and support structures. This report recommends a variety of necessary improvements for construction. This includes the following:

- 1) All high-rise structures must be supported on piles. Piles would have to be driven to depths ranging from 90 to 150 feet below the existing ground surface. Low to mid-rise structures could be supported by either a controlled fill alternative, or low to moderate capacity piles.
- 2) Excavation and disposal of unsuitable materials from within areas to be developed, controlled fill installation within building areas, the importation of general fill to raise grades within building areas if piles are utilized.
- 3) Design techniques that include ramps to enter structures; exaggeration of surface slopes to develop surface sheet drainage and minimize construction of drainage piping; the use of flexible connections for all utilities.
- 4) The construction of either a passive or active methane venting system for all structures depending on the concentrations of methane found in the fill materials.

Hudson Meadows also submitted the following major written objections to the proposed amendment:

- 1) The site designation by the HMDC constitutes a taking.
- 2) The site designation denies Hudson Meadows due process.
- 3) The public notice is defective because it fails to tell the public about the Hudson Meadows proposal.
- 4) The public notice is defective due to the HMDC reversing its historical opposition to regional facilities and a shift in waste flows.
- 5) There is no substantial evidence.
- 6) The HMDC fails to consider alternative sites in the District, and elsewhere in the county and state.
- 7) The HMDC failed to assess impacts to wetlands, surface water, groundwater, and ambient air quality.
- 8) The site designation is premature because the HMDC cannot obtain a Clean Water 404 permit, nor comply with state wetlands and buffer zone requirements.

RESPONSE

The HMDC provided adequate public notice in two daily newspapers in the region and in the format and timing pursuant to the State Solid Waste Management Act. There are no provisions that require the HMDC to list other potential developments on the effected properties.

As this site is a former landfill operation, there are certain known environmental and engineering liabilities. The HMDC is proposing to absorb all these liabilities through collection of closure and post-closure funds with the tipping fees. In addition, the HMDC will also absorb all liabilities for the MSLA 1-D landfill.

For the HMDC to undertake detailed engineering or environmental studies at this time, would be inappropriate. Sufficient background data exists to support the planning process as conducted to date. This work is proposed to be performed after the NJDEPE certifies this HMDC Amendment. Preliminary discussions with the Army Corps of Engineers indicate a willingness to cooperate with the HMDC in order to eliminate the degradation of the Kearny Freshwater marsh by the leachate from the Keegan Landfill.

For the reasons noted above as well as the other environmental concerns with this site, the HMDC has proposed what we believe to be the only alternative for site development. The development of this site as a landfill will remediate the site, while providing the region the much needed landfill capacity for non-processable solid waste. Additionally, the HMDC proposal addresses the closure of the 1-D landfill as well.

Hudson Meadows has not demonstrated, either in written or oral presentations that they intend to remediate the site to the level that the HMDC is proposing and which we believe will contain the pollutants leaching into the adjacent Kearny freshwater marsh.

The January 2, 1992 letter to Mayor Lindenfelser of Kearny dealt solely on the benefits of the proposed Hudson Meadows development and does not require a response in this document.

PUBLIC COMMENT

The responses to the major questions raised at the public hearing are as follows:

Traffic and Access

There were several questions and concerns raised about traffic and access to the site. The residents wanted to avoid

compounds in various sediment samples. Several inorganic compounds, including mercury, lead, and chromium were detected in surface water samples collected in Frank's Creek.

It was also noted that a member of the Kearny Police Department had worked as a truck driver for DuPont Chemical in Newark in the 1960's. He reported that every morning a least one truck with approximately forty 30-gallon drums went to the Keegan tract. These wastes included chromate and bichromate slurry, pigment wastes, and organic wastes. However during site investigations by the NUS Corporation, no drums were found.

The summary report concluded that the site poses a potential threat of contamination to surface waters. Downstream water samples indicated concentrations of chromium significantly greater than upstream samples. The same could be said for the sediment samples. It was also indicated that there was a potential for direct contact with hazardous substances present on site. In fact during recent inspections with the NJDEPE on the site, there were always people fishing or hunting on the site. Further, there is significant evidence of routine dumping throughout the site.

The report went on to say that "...based on recreational targets from the Hackensack River and the potential for direct contact, the site is recommended for a MEDIUM PRIORITY for further action. A fence should be installed around the site to limit access to the landfill. Note that this report is on file with the NJDEPE Hazardous Waste Division.

A July 2, 1987 letter from Edward Londres, Assistant Director of Enforcement for the NJDEP required that as an immediate, short term remedial measure, be prepared to mitigate the constant fires at the site. Next, a closure plan for the site was to be submitted, to preclude similar events from occurring in the future. It was further recommended that fire access roads be constructed to facilitate fire vehicle entry. Finally, it was recommended that measures to prevent public access to the site, such as fences and/or periodic patrols be put in place. To date, none of the improvements recommended by either the NUS Corporation or the NJDEP were implemented, including submittal of either the conceptual proposal or closure plan.

Ownership

The majority of the site is owned by the Town of Kearny (384 acres), with the remainder of the site in private ownership. Hudson Meadows Urban Development Corporation also has a leasehold interest in all of the Kearny owned land, as well as having direct ownership of about 34 acres. The total area that the HMDC has designated for this facility is 421 acres. Of that amount, only 110 acres are proposed for landfilling. The remaining acreage is the fresh water marsh which will ultimately be incorporated into the reuse of the

additional traffic on local roads which they feel are already congested. The HMDC has proposed that the access to the site be limited to a feeder road on the south of the site, ie. from Harrison Avenue, a major County road that links Harrison to Jersey City and where Route 280 and the New Jersey Turnpike meet at Interchange 15W. This intersection is approximately one-half mile east of the proposed site entrance. We have estimated that about 200 trucks per day will use this facility.

Another question raised related to the proposed extension of Route 17 south from Lyndhurst to the 15W interchange and/or Route 280. This proposal has been talked about for the last 20 years. The final alignments proposed by the NJDOT would not interfere with our proposed facility. In addition, we understand that the NJDOT has abandoned this project due to environmental concerns.

Present Site Conditions

It is believed that landfill operations began on the site in the 1940's or earlier. Operations continued until 1972 at which time disposal was concentrated onto a number of other larger sites. The site was operated by Municipal Sanitary Landfill Authority (a private company) as the MSLA 1-B Landfill under a lease arrangement with the Town of Kearny.

Since the landfill was closed prior to the Solid Waste Management Act, there are no environmental improvements at the site. The HMDC has estimated that there are approximately 65 million gallons of leachate being produced on-site each year. This leachate enters either the Kearny Freshwater Marsh, or Frank's Creek which bisects the site and flows south to Newark Bay. Frank's Creek has often been described as an open sewer, that usually has a green color. Leachate seeps are evident along the banks of the creek and the perimeter of the site.

The site has had a series of underground fires over the years that have caused air pollution problems for local residents. This has forced the town to hire outside contractors to put out the fires at a cost of about \$40,000 per year. The method of putting out the fire is fairly standard. A bulldozer or other heavy equipment are brought in to dig up the fire. Then large quantities of water are pumped onto the exposed area until the fire is out. The last fire in November, 1991 required an area the size of a football field to be disturbed, with water being pumped onto the site for over a week. Obviously, where there are underground fires there is methane, and there are no controls to prevent lateral migration of methane into adjacent structures.

A September 29, 1989 report prepared by the NUS Corporation/Superfund Division for the United States Environmental Protection Agency indicated the presence of mercury, lead, chromium, polychlorinated biphenols (PCBs) and several semivolatile

site as a passive wildlife refuge.

Waste Flow Components

The HMDC is proposing to accept bulky wastes (ID 13), and non-hazardous industrial wastes including asbestos (ID 27). In addition any non-processable wastes directed from either resource recovery facilities, transfer stations, materials recovery facilities, etc. will also be accepted (these are assumed to fall into an ID 13 or 27 category). It is anticipated that much of the cover material that will be used on the landfill will be soil generated from an on-site demolition recycling operation, or from similar sources from the State sponsored Soil Reuse Program.

Waste will be accepted only from New Jersey sources. It is anticipated that the four or five northeastern counties that historically dumped in the Meadowlands will send their non-processables to this facility. No incinerator ash will be accepted at this facility. In fact, by State regulation, a landfill must be specifically designed and operated to accept incinerator ash. The proposed non-processable landfill will not be able to meet those requirements which include dual synthetic liners, double leachate collection systems, etc.

Operations

The HMDC is proposing to operate this facility Monday through Saturday, from 6:00 AM to 4:30 PM. The landfill operations will be conducted in accordance with standard industry practice. Asbestos operations will be conducted separately from other landfill operations, but asbestos waste will only be accepted between the hours of 7:30 AM to 1:30, Monday through Friday.

The site life is estimated to be a minimum of 10 years to an elevation of about 100 feet.

Utilities

There are currently no sewers in this area of Kearny. The HMDC has, however, built a leachate force main from the 1-E landfill on the north of the Keegan site, to the 1-A landfill on the east. This force main will eventually be hooked up to the Kearny south pumping station that will feed directly into the Passaic Valley Sewage Commission facility in Newark, New Jersey. The HMDC is proposing to construct a force main from the Keegan site that would also service the adjacent industrial buildings in Kearny that are now on septic or holding tanks.

Closure Costs

The closure costs for the Keegan site are estimated to be \$30 million, with the post-closure costs estimated to be an equal amount. The HMDC has also proposed to collect enough funds through the tipping fees to provide for the equally costly closure and post-closure of the former MSLA 1-D landfill, owned by the Town of Kearny, and located about one-mile east of the Keegan site. If this proposal is approved by the NJDEPE, the HMDC would absorb all liability from the Town of Kearny for these two sites.

Wetlands

The HMDC proposal includes the Kearny Freshwater Marsh because it is within Block 205, Lot 19. However, the HMDC does not have plans to fill in any portion of the marsh. In fact, in 1985 the Commission passed a resolution forever protecting the marsh from development.

This proposal by the HMDC will have a positive impact on the marsh because it will stop leachate from entering the marsh, as well as the upland pollutants that enter via Frank's Creek. This Creek will be rerouted around the landfill to its present terminus.

Hearing Process

There were several references made that the public hearing process did "...not meet the minimum standard for the process as envisioned by the Solid Waste Management Act and the implementing regulations." This included not having an available record for the public to review.

Pursuant to the Solid Waste Management Act, the HMDC did in fact provide all required notices in two papers in general circulation in the area, specifically the Jersey Journal and the Bergen Record. Notices were placed in these papers once a week for two weeks, with the second notice at least ten days prior to the date of the hearing as prescribed by law.

The record at the time of the public hearing, included site aerial and topographic maps, listing of effected property owners, basic site information, and substantial quantities of background documents. This information included several borings and test pits on the site. Traffic data was also available from a proposed development on Harrison Avenue about one-half mile east of the proposed access road to the Keegan site. Additionally, the HMDC has a traffic model of the entire District which was used to evaluate potential impacts.

The HMDC has maintained that to conduct extensive engineering and environmental studies prior to the initial public hearings and prior to any NJDEPE approvals would be inappropriate. Non site-specific data from other landfills in the District provides adequate baseline data for the Commission to render a decision as to the preliminary acceptability of this site, costs involved with closure and post-closure, traffic and other impacts. The HMDC will proceed with the extensive geotechnical, environmental and other related engineering studies only after the NJDEPE has certified this site for the uses as described in our proposed amendment.

2.2 FEBRUARY 19, 1992 PUBLIC HEARING

A second public hearing was held at the Kearny High School auditorium on February 19, 1992. Public notices were placed in the Jersey Journal, Bergen Record and the Kearny Observer.

Many of the speakers and the questions raised were covered in the original public hearing and were already addressed in this report or Findings. The following topics then relate specifically to the second public hearing. Written comments will be addressed first:

Town of Kearny

The Mayor and Council of Kearny passed a resolution on March 11, 1992, "...that the Mayor and Council of the Town of Kearny do hereby formally, and unequivocally, oppose any further landfill operations within the Town of Kearny including specifically the proposed regional solid waste materials handling complex which has been the subject of the proposed amendment to the HMDC solid waste management plan..."

The resolution also stated that "...the Town has conducted an independent evaluation of the subject site disclosing that it is possible to develop this property using current construction practices; however, this would involve substantial closure costs...". In addition, that "... the Town of kearny would prefer commercial development as opposed to the continued obliteration, devastation and ruination of the Kearny Meadowlands area..."

Hudson Meadows Urban Development Corporation

A January 10, 1992 letter from Hudson Meadows requested information relative to the proposed amendment under the New Jersey Right to Know Law. This information included: environmental impacts of past landfill operations; site remediation costs; site remediation alternatives; economic benefits analysis; feasible commercial development alternatives; traffic impacts; Town of Kearny liability; and wetlands impacts.

In addition, there were eight specific items that were mentioned in the January 10, 1992 letter which the HMDC responded to in a February 5, 1992 letter. They are addressed separately as follows:

1) **Wetlands Contamination** - The HMDC estimates that approximately sixty-five (65) million gallons of leachate per year are contaminating the groundwater and surrounding wetlands on the Keegan site. This figure is based on a depth of twenty to thirty feet of putrescible and industrial waste on site, 40 inches of

precipitation per year, the fact that there are no environmental controls on site and relatively gentle topography.

The quantity of leachate has a particularly detrimental effect on the adjacent fresh water marsh because it is not tidal and does not exchange large volumes of water twice a day. These contaminants tend to stay in the system. Evidence of site contamination can be seen by the results and recommendations in the USEPA report.

2) **Site Remediation Costs** - The HMDC has estimated site remediation costs on the order of \$31 million, not including any post-closure costs. These conflicted with the estimates of Hudson Meadows engineers who stated that costs were more on the order of \$4-5 million. A copy of all correspondences are attached to the HEARING OFFICER'S REPORT including a detailed breakdown of estimated costs. (It should be noted at this point, that these same engineers stated at the second public hearing that the HMDC closure costs were accurate).

3) **Revenues to Kearny** - Hudson Meadows stated that the development that they proposed for the site would generate about \$5 million per year in revenues to the Town. The HMDC stated that the proposed Materials Handling Complex and landfill would generate about \$2 million per year. This is based on the landfill operating 300 days per year accepting 1500 tons of non-processable waste per day, and with a host community benefit of \$4.50 per ton. It should also be restated that the HMDC will absorb all closure and post-closure liability for this site and the MSLA 1-D landfill, a number that is not figured into the revenues to the Town.

A final letter received on March 3, 1992 also stated that the tax revenues to the Town of Kearny would in fact be \$1.5-2.5 million less per year to cover site remediation costs.

4) **Commercial Site Development** - This comment was directed to the HMDC Engineering Division which oversees development in the District. Hudson Meadows has never submitted the required environmental, engineering, traffic, and financial data to support their development. No response to our nine page preliminary findings letter dated May 15, 1987 was ever received. This letter requested information which would be necessary to proceed with the first phase of our zoning application process.

5) **Traffic** - A December, 1990 traffic modelling report prepared for the Commission enables us to predict the traffic impact from a proposed development onto existing roadways. The result of the analysis indicated that there would be no impact on the roadway from truck traffic.

6) **Town of Kearny Liability** - The HMDC stated that as the property owner of the majority of the Keegan site, the Town would be jointly and severally liable for the closure and post-closure

costs. This is consistent with the position taken by the State on other landfills.

7) **Slurry Wall Remediation** - The engineering consultant for Hudson Meadows questioned whether the slurry wall containment as proposed by the HMDC is the only viable remediation control for the Keegan site. While there may be other technologies that have been used elsewhere, the HMDC believes that slurry wall technology coupled with a perimeter leachate collection system, is the most cost effective remediation control available. This system as employed at other similar sites with great success, and creates an inflow condition that precludes the outward flow of leachate. Geotechnical data from several landfills within the District, indicate that a naturally occurring clay layer extends beneath these landfills to bedrock. This clay, up to 300 feet thick in some places, has a very low permeability on the order of 1×10^{-8} cm/sec. This permeability is less than that generally recommended in standard engineering practice. With the "keying in" of the slurry wall to the underlying clay layer, you essentially create a bathtub to collect leachate.

8) **Wetlands** - Hudson Meadows questioned the designation of an area that included the Kearny Freshwater Marsh within the Lots designated for the facility. As noted earlier, the Marsh is part of Block 205, Lot 19 which includes a portion of the Keegan Landfill. The HMDC has absolutely no intention to fill in any portion of the Marsh. In fact one of the goals of the reopening of the Keegan site is to stop the uncontrolled release of contaminants from the site.

Since the Keegan site ceased operations before the Solid Waste Management Act, there are no monies available for closure and post-closure. The HMDC is proposing to collect this money through tipping fees at the site. Additional money will also be collected for the nearby MSLA 1-D Landfill that is owned by the Town of Kearny, and was leased out to MSLA for landfill operations.

Bergen County Utilities Authority

A February 19, 1992 letter from Larry J. McClure, Executive Director of the BCUA had the following questions with respect to the project:

1) **Financial** - Requested information on projected tipping fees and closure and post-closure costs. Tipping fees are projected to be in the \$75-\$80 per ton range. Closure costs are estimated to run about \$30 Million, with post-closure costs expected to run about the same. Estimates for the cost at the MSLA 1-D landfill are about the same, or a total of \$60 Million.

2) **Waste Flow** - Questioned whether or not a generic waste flow order to the facility would be prepared. At this time, the HMDC is not proposing any waste flow orders to this facility. It may be

necessary, however, that controls such as waste flow orders be implemented so that the counties can track non-processable waste flow through their designated disposal facilities.

Additionally, the origin of the waste was questioned. The facility will be only available for waste generated from within the State. It is anticipated that the Northeast counties will be the primary users of this facility.

3) **Financing** - The HMDC will float environmental improvement bonds in order to remediate the site before accepting any waste. Should waste flows fall below the quantity needed to provide adequate closure and post-closure funds for the site, the HMDC will seek waste flow designations to the site.

4) **Residual Soils** - The HMDC will accept residual soils under the State Soils Reuse Program for landfill cover in addition to the soil generated from the proposed construction/demolition waste recycling operations. Soil reuse quantities have been as high as 85,000 cubic yards per year.

5) **Order of Magnitude Study** - Has a study of this nature been prepared to address the capacity of the facility taking into account geotechnical, wetlands, and design constraints? The HMDC has not done the full scale investigations that would be required by the NJDEPE. However, using available data for this site and other District landfill sites, the HMDC has projected that the main portion of the landfill could reach a height of 100 feet. This should provide a site life of at least ten years.

Hudson County Improvement Authority

A February 11, 1992 letter was received from Thomas J. Stukane of DeCotiis & Pinto, attorneys for the Hudson County Improvement Authority with the following comments:

1) Prior to obtaining a permit, the proposed facility must be included in the Hudson County Solid Waste Management Plan.

The HMDC disagrees with this statement insofar as the HMDC is a Solid Waste Management District pursuant to the Solid Waste Management Act and the facility would be within the District. This is why Hudson County was not required to enter into an Interdistrict Agreement with Bergen County to utilize the HMDC baler and balefill.

2) No waste may be accepted at the proposed facility from other counties without obtaining an Interdistrict Agreement with Hudson County.

For the same reasons noted above, the HMDC disagrees with this statement.

PUBLIC COMMENTS

Mayor Lindenfelser of the Town of Kearny stated that the Town has "...had enough dumped in Kearny, regardless of the financial impact and the financial consequences."

Councilwoman Magenheimer questioned how the proposed facility would fit in with plans proposed by the Hudson County Improvement Authority for regional construction and demolition recycling facilities. The HMDC response is that it would complement the facilities proposed by the County because these facilities need a place to take their residuals. Also questioned was the traffic flow to this facility and the impact on Kearny streets. The HMDC response is that there will be no change in the level of service on streets leading to this facility. If necessary, the HMDC will designate specific truck routes, much the same way they are designated for a resource recovery facility.

Asbestos

There were several questions raised about asbestos coming into the proposed facility and whether or not it is mixed in with the demolition material. Also, how releases of asbestos would be controlled from incoming vehicles, what would happen if there was an accident involving a vehicle carrying asbestos, the carcinogenicity of asbestos, etc.

As noted at the public hearing, asbestos removal is one of the most highly regulated operations in the country. No demolition can take place until all asbestos is removed from a building. The asbestos is then wet down and packaged in double bags as required by the Federal Government prior to it being shipped to the disposal facility. In fact, recent Federal legislation requires that the licensed asbestos removal company put the full address of the origin of the asbestos on the bags.

All asbestos removal companies must be licensed by the State, and are required to complete courses in asbestos removal and control. The air is monitored after an asbestos removal project and sampling performed to be certain that there are no residual asbestos fibers in the building. Then and only then can the demolition of a building commence. To date, there have never been any episodes where vehicles containing asbestos waste overturned and/or presented a threat to the health and safety of residents near a landfill. The HMDC has been registered to accept asbestos waste since we began operating the Baler 1980.

A somewhat related issue was the control of lead paint residues on wood. The concern about lead paint entering a landfill on demolition wood has not been addressed by the NJDEPE to our knowledge. However, any wood entering the recycling facility would be suspect, and may be diverted to the landfill. No creosoted or pressure treated wood would be accepted at the recycling facility, and would be diverted to the landfill instead.

Fires

Another concern at the hearing was the possibility of a fire at the proposed facility and how it would be fought. This concern was obviously due to the long history of fires at the Keegan site, and the desire to control these fires once and for all. In fact, there have been seven major fires at the site in the last eight years.

The proposed facility would be operated as a state-of-the-art landfill, and as such would receive at least six inches of daily cover. In the event of a fire, the operator would be required to dig up the effected area and extinguish the fire. Substantial cover would then be placed on top of the effected area to prevent air from entering.

The asbestos disposal area, as required by State regulations would be separate from the main operating area, and would receive a minimum of three feet of cover.

Siting

There was a comment about the siting of the proposed facility, and why not elsewhere in the District.

The HMDC believes this is the best site for a regional non-processable landfill and recycling operation for a number of reasons. First, the site is ideally located to major highways including the New Jersey Turnpike, Interstate Route 280 and a major County road, Harrison Avenue. Second, the site is a former landfill that presents a serious environmental concern to the area. Without the proposed landfill, the full clean-up as proposed by the HMDC will never be realized. Third, the HMDC is proposing to absorb all closure and post-closure liabilities from the Town for the Keegan site and the MSLA 1-D Landfill. Lastly, in order to recoup adequate closure and post-closure money for these sites, a site had to be at least 100 acres. This would provide an estimated 10 year site life at 1500 tons per day.

Regardless of the testimony presented by Hudson Meadows, they have provided no information that indicates an understanding or ability to cleanup the site. References were made to the

construction of high rise structures on the site supported by piles, and the ability of macadam parking lots as a capping method, and the fact that the NJDEPE is comfortable with construction, excavation etc. on landfills.

Any investigations on a landfill, even for borings and testing requires a landfill disruption permit from the NJDEPE. Any project that would be proposed on top of a landfill receives intense scrutiny by the NJDEPE's landfill engineering group.

No testimony was presented that reflected a willingness on the part of Hudson Meadows to prevent the lateral migration of contaminants from the site. These contaminants are entering the adjacent wetlands as evidenced by the USEPA Study. The HMDC has proposed a perimeter slurry trench cut-off wall and leachate collection system that would effectively isolate the landfill from the adjacent Marsh.

We should also note that at the second public hearing the consultants for Hudson Meadows agreed with the closure costs for the landfill; they estimate closure to be "...in the range of 23 to 33 million dollars."

Sanitary Sewers

There were several questions about the leachate from the site and the use of Kearny sewers for leachate.

The HMDC presently trucks leachate from the 1-A Landfill into a manhole near the Keegan site. The HMDC has entered into negotiations with the Kearny Municipal Utilities Authority to accept leachate from our landfill sites into the Kearny South pumping station, and from there into the Passaic Valley Sewage Commission facility in Newark. The draft agreement would require that the HMDC pay for the entire cost of construction of the sewer lines for the Meadowlands area of Kearny to the pumping station. Currently, there are a number of industrial facilities that are on septic or holding tanks in this area including a major regional post-office facility. The HMDC is proposing that all these buildings be hooked up to the sanitary sewer.

Liability

In addition to the information from the first public hearing, liability issues were raised at the second public hearing. This included comments that the State of New Jersey should pay to close the dumps.

The HMDC as a State agency is proposing to effectively close and maintain both the Keegan site and the nearby MSLA 1-D landfill.

There are no other relative funding mechanisms available to close these sites. Both sites ceased operations prior the Solid Waste Management Act. Therefore, no money was put in escrow for this purpose. Further, monies collected for closure and post-closure at the other District landfills has been budgeted and is needed at those sites. As an option, we assume that the Town of Kearny as the landowner could apply for either Spill Fund money and/or Closure Tax money for these sites.

Financial

Several people questioned the amount of money that would be collected through the tipping fees at this facility. Since the HMDC is proposing a facility that would accept 1500 tons per day, 300 days per year, and at a cost of \$75 per ton, the HMDC would collect approximately \$337,500,000 over a ten year lifetime. Where does this money go?

The HMDC responded that a large portion of the tipping fee goes to taxes. Currently, \$24.35 per ton in taxes are collected for Type 10 (Municipal) waste. Assuming no increases in the taxes before the facility begins operations, this translates to 33 percent of the total tipping fee. Included in this amount is a \$4.50 per ton host-community benefit.

Additionally, there will be the operational contract for the landfill. The present contract with GROWS/Waste Management costs about \$775,000 per month or \$9,300,000 per year. Assuming that the contract amount for operations at the Keegan site was the same, this would translate to 28 percent of the total money collected. Closure and post-closure for the Keegan and MSLA 1-D sites accounts for an estimated \$120 Million or about 36 percent of the total money collected. So far, this adds up to 97 percent, or about \$1.0 Million per year remaining. Some of this amount would include the cost for the operations of the Construction & Demolition recycling operations, site access improvements, permitting, contingencies and administration.

As noted at the public hearing, the HMDC is a utility, and must file and justify all base rates and increases with the State. Further, all expenditures are subject to State review and approval.

End Use

The HMDC is proposing that once the facility is at capacity, the site would be capped and become part of a passive open space recreational area in conjunction with the Kearny Freshwater Marsh. Perimeter site improvements will have been completed prior to site operation. Therefore, the environmental quality of the adjacent area will be substantially improved before park conversion.

Property Values

For the residents that live near the proposed site, there was a concern about property values once the landfill is opened.

The HMDC believes that there will be no negative effect on property values in the area for a number of reasons. First, the Keegan site is already a landfill, however it has no environmental controls. There are numerous underground fires annually that require heavy equipment, and there are no security controls. The uses surrounding the Keegan site are primarily heavy industrial, including Port-O-San (a portable toilet storage and repair facility), a construction/demolition recycling operation, solid waste haulers storage yard, junkyards, Town DPW yard, and a number of warehouses.

The HMDC is proposing to remediate the Keegan site, control the underground fires, control the leachate and prevent the unauthorized entry onto the site. The one disadvantage to our proposed vertical expansion of the Keegan site, is the visual impact that a 100 foot landfill would have on the area. This is something that the HMDC cannot control. However, a thousand feet of industrial buildings and an existing railroad embankment that is 20 feet high will provide limited visual screening of the landfill.

We should note that adjacent to the Bergen County landfill and the BCUA Transfer Station, a developer is building 15 two family homes. Obviously, a developer would not build new homes if no one were willing to live there.

The HMDC maintains, however, that the proposed park end use with all the other environmental improvements, will in fact add considerably to a site that the USEPA has designated as Medium Priority for cleanup.

SOLID WASTE ADVISORY COMMITTEE

The Hackensack Meadowlands Municipal Committee is the designated solid waste advisory committee for the HMDC. The Municipal Committee is made up of the mayors of the fourteen towns which form the Meadowlands District.

On February 3, 1992, the HMDC discussed the proposal of the regional materials handling complex with the mayors. Mayor Lindenfelser of the Town of Kearny took exception to Kearny's responsibility in re-opening the landfill, and stated that the municipality objected to the proposal. He also commended the HMDC staff on the manner in which they had presented their position to the citizens of Kearny. P.J. McIntyre of the Town of Kearny objected to the proposed height of the landfill and the traffic that it would generate. The advisory committee took no formal position on this plan amendment.

Additional Written Comments

Written comments were received following the second public hearing from Hudson Meadows Urban Development Corporation. The Comments largely reflected comments received earlier, and testimony made at the two hearings. However, they will be addressed as follows:

1) **Closure costs** were proposed to be recouped by the developer from tax revenues at a rate of \$1.5-2.5 Million per year over a ten year period. Aside from the fact that this conflicts with previous statements for Hudson Meadows regarding tax income to the Town of Kearny, these revenues will fall far short of the estimates made by the HMDC and Hudson Meadows' own consultant for the proper closure and post-closure of the Keegan site.

2) **Impacts** from the proposed materials handling complex have been addressed elsewhere in this report in a preliminary nature as required by the planning process. Once certified, the HMDC will undertake all necessary investigations.

3) The **scope** of the project is very clear as to the wastes that the HMDC will allow into the facility. No hazardous wastes will be permitted to enter the site. Although not necessarily hazardous, incinerator ash will not be allowed at this facility, and in fact the landfill will not be designed for ash.

4) The **income** to be generated for this facility will be sufficient to cover all costs associated with the two sites. Estimates provided so far will be fine tuned only after full environmental and engineering studies are conducted. No excess money will be collected and the HMDC will substantiate all costs to the NJDEPE before the rate is set.

Dumping, Drug Center Stir Ruckus in Kearny

By ROBERT NESOFF
Evening News Staff Writer

The Kearny council caucus last night heard complaints about dumping near residential areas and placement of a drug treatment program in town.

Mrs. Margaret Hallaway, ejected by State Police from Gov. Cahill's office in Trenton Monday, was ordered out of the council session for continued disruptions of the proceedings.

She was ordered out by Mayor Anthony J. Cavalier, who had issued her at least a dozen warnings to be quiet, after she stood and accused the council of seeking graft from the local dump operators.

As several policemen approached to escort her out, pandemonium broke loose in the crowd of about 300. She screamed at the policemen to take their hands off her. Cavalier recessed the meeting and

the councilme took temporary refuge in a back room of the Lincoln School, where the meeting had been moved because of the overflow crowd.

Deputy Police Chief Joseph V. Bellini approached the woman as a peacemaker and won a promise that she she would remain silent. Cavalier relented and she made no more noise.

Residents presented the council with a 2,000 signature petition demanding the closing of the Keegan Dumps off Harrison Turnpike. Their prime complaint is that it presents a health menace because of its proximity to homes.

A newly formed group called Citizens Against Pollution brought in an attorney, George Minish of Nutley, to speak for them. Minish won a promise from the council to seek new methods of closing the Keegan

tract, such as by forcing the Hackensack Meadowlands Development Commission to take action.

Mrs. Marie Matus complained that she was manhandled by police while she was picketing Saturday at the dump. A police report said she was pulled from the path of an oncoming truck. Mrs. Matus termed this a falsification.

Joseph Camino complained that a methadone maintenance program recently instituted in town would draw addicts to Kearny. He said he would not be opposed to such a center for treatment of Kearny addicts only.

Daniel Alfieri, program director, told Camino that other programs in other areas are treating Kearny addicts and that the local problem, although not limited to Kearny, would treat mainly town addicts.

The Evening News

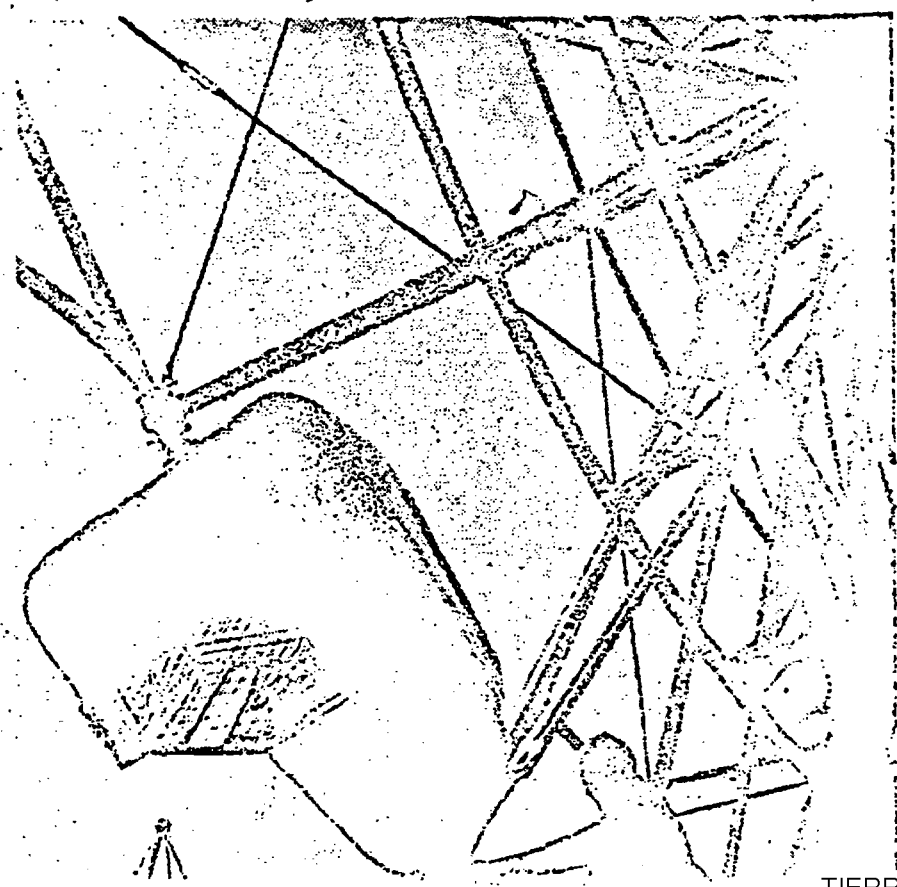
- COMMUNITY NEWS
- EDITORIALS
- COMMENT

Wednesday,
March 21, 1971
Newark, N.J. 21

School Budget Pared

Evening News Staff Writer

WOODBRIIDGE—The Board of Education's budget for 1971-72 has been trimmed almost \$2 million by the Township Council.



HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

1

OK.
Good

TELEPHONE CONVERSATION REPORT

Date: 8/24/72 Time: _____ By: MIKE

Name: _____

Organization: _____

Phone Number: _____

Subject: Ms LA GENERAL

Random dumping on Lot 11
has been cleaned up, access off
road has been blocked off

CAA000038

TELEPHONE CONVERSATION REPORT

Date: 1/11/72 Time: _____ By: MIKE

Name: _____

Organization: _____

Phone Number: _____

Subject: New dump Block 284 Lot 31

New dumping of garbage started on Thomson Ave. Just to past office, on west side

17.66 acres

owner

Town of Kearny
402 Kearny Ave
Kearny, N.J.

(R) 1/12

I-B
↓
GENERAL

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

TELEPHONE CONVERSATION REPORT

Date: 3/9/72 Time: _____ By: MIKE GENERAL
 Name: _____
 Organization: SITE I-B
 Phone Number: MSLA-71-175?
 Subject: Dump, Harrison Ave, Next to Post Office

Dumping of garbage now going on. One truck, Raselle, no 154 dumping on site. 1 dog on site. No cover material on site. Time 11:40 A.M. I think constant cover should be applied other wise the post office will be covered with papers blowing around.

4:00 spoke to Tony - will set up cover paper next garbage for a few days as road bed.

(N) 3/14

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

TELEPHONE CONVERSATION REPORT

Date: 3/14/72 Time: _____ By: Mike

Name: _____

Organization: _____

Phone Number: _____

Subject: MSLA # I-B → GENERAL

Site at Post Office

Garbage being dumped at this site, no cover no cover material on site, a drag line on site mucking out on westerly side placing material on westerly side of dumping area, probably going to be used for cover.

JH
3/14

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

FILED

TELEPHONE CONVERSATION REPORT

Date: 4/25/72 Time: _____ By: M. Ke

Name: _____

Organization: _____

Phone Number: _____

Subject: MSLA site 1-B Post Office GENERAL

*dumping on south west side
dump pretty well covered. cover
material is of meadow matt obtained
with drag line muckery out ahead
of dumping.*

76

HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

FILE

TELEPHONE CONVERSATION REPORT

Date: 6/15/72 Time: _____ By: M. Ke.

Name: _____

Organization: _____

Phone Number: _____

Subject: MSLA SITE 1-B GENERAL Post Office

there is 2 trailers blocking entrance to site off Hornsain Ave. 2 signs posted, U.S. Property No trespassing. Site closed, no one on site.

SANITARY LANDFILL INSPECTION REPORT

INSPECTOR: Mike Kondratik

DATE: 5/9/72

- B.C. 71-156 MALENKA 71-157 MSLA (I-D) 71-175
 VIOLA 71-160 MSLA (I-A) 71-175
 EGAN 71-159 MSLA (I-B) 71-175
 P & M 71-176 MSLA (I-C) 71-175

CHARACTERISTICS

	GOOD	RATING		POOR
		ADEQUATE	FAIR	
ACCESS ROAD		✓		
DIKE CONSTRUCTION				✓
LEACHATE CONTROL				✓
METHANE CONTROL				✓
FIRE FIGHTING EQUIPMENT				✓
CONTROL OF BLOWING LITTER				✓
DUST CONTROL				✓
RODENT CONTROL				✓
BULKY WASTE DISPOSAL				✓
COVER MATERIAL (AMOUNT)			✓	
COVER MATERIAL (QUALITY)				✓

SIDE SLOPES 30 %
 CELL DEPTH 6 FEET

LIQUID WASTE

YES

NOX

(over)

Mucking out ahead of dumping site using muck

As covered material. In sufficient daily cover,

Mud & debris on Harrison Avenue. ~~subject daily~~

~~maintain~~. Daily cleaning at Entrance to site on

ROAD. BE MAINTAINED.

MAY 25, 1949

all members present voting "aye" on roll call:

WHEREAS, the Town of Kearny is the owner of certain meadow lands situate in the Town of Kearny, Hudson County, New Jersey; and

WHEREAS, it is the opinion of this Council that said lands can be reclaimed and their value greatly enhanced by depositing thereon a fill composed of garbage and other refuse, properly maintained and supervised;

NOW THEREFORE, BE IT RESOLVED by the Council of the Town of Kearny, in the County of Hudson, that:

1. The Town of Kearny enter into an Agreement with William A. Keegan to provide for the filling of said meadow lands situated North of Bergen Avenue, and South of Belleville Turnpike and East of the Delaware, Lackawanna and Western Railroad, and being more particularly described as Lot 4A in Block 291 on the Tax Maps of the Town of Kearny, New Jersey, comprising 396 acres, more or less.
2. The manner in which the filling of said lands is conducted shall be in accordance with the terms and provisions of the said Agreement to be entered into, as aforesaid.
3. The Mayor and Town Clerk are hereby authorized to execute said Agreement on behalf of the Town of Kearny.
4. This Resolution shall take effect immediately.

At this point, Town Attorney Koch reported that the foregoing resolution pertained to the same type of dumping agreement as others recently made for the same purpose except that there will be no replacement clause due to the fact that there is no further land available.

Mayor Gilzean presented the following resolution which was adopted, all members present voting "aye" on roll call:

WHEREAS the Hudson County Board of Freeholders recently approved high salaried appointments to county positions and proposes, within the near future, to grant blanket salary increases to a majority of the 2800 Hudson County employees, which action will increase the Hudson County tax budget by the sum of approximately \$1,400,000.00; and

WHEREAS such actions by the Hudson County Board of Freeholders are unwarranted and have been made without regard to the taxpayers of the Town of Kearny; and

WHEREAS such actions are contrary to the current economic trend, inasmuch as many of the citizens of the Town of Kearny have been separated from their employment; and if the policy of such unreasonable increases in an already over-taxed county was pursued, it might not only bankrupt the County of Hudson but each municipality therein, as well;

THEREFORE, BE IT RESOLVED by the Council of the Town of Kearny in the County of Hudson that this Council, on behalf of the citizens of the Town of Kearny, in an effort to protect the citizens of the Town of Kearny from such unwarranted and unreasonable tax increases in an already highly inflated county tax burden, does hereby vigorously denounce the recent action of the Hudson County Board of Freeholders, as aforesaid, and further protests against such unwarranted increases in the share of the county tax burden borne by the Town of Kearny;

AND BE IT FURTHER RESOLVED that Calvin S. Koch, Town Attorney of the Town of Kearny, and William A. Sternkopf, Auditor of the Town of Kearny, are hereby authorized to represent the Town of Kearny in registering its protest to the Hudson County Board of Freeholders, and said Town Attorney and Town Auditor are further authorized to take whatever appropriate action may be necessary to protect the interest of the Town of Kearny in this matter, either before the Hudson County Board of Freeholders or any other agency;

JUNE 8, 1949

ceived, read, ordered noted and referred to the Mayor and Council as a Committee of the Whole.

Health Officer Amos Field, Jr., submitting a report and recommendations in regards to the matter of refuse being dumped on River Road between Bergen Avenue and Afton Street, was received, ordered noted and referred to the Mayor and Council as a Committee of the Whole.

Kearny Council for Youth recommending that action be taken on the licensing of juke boxes and action be taken on outdoor fire-places and camping facilities on the 'Old Soldiers Home' property, was received, read, ordered noted and referred to the Mayor and Council as a Committee of the Whole.

Department of Public Utilities advising that a hearing will be held on the application of the Harford Bus Co. Inc., et al for municipal consents to extend their South Hudson County Boulevard Bus Route from Jersey City to the Federal Shipbuilding & Drydock Co., was received, read, ordered noted and referred to the Transportation Committee.

Department of Public Utilities advising that a hearing will be held on the application of the Marion Bus Transportation Co. Inc., for municipal consents to extend their Jersey City Bus Route to the Federal Shipbuilding and Drydock Co., was received, read, ordered noted and referred to the Transportation Committee.

Milton L. Feuer, D.D.S., requesting that five shade trees be removed from the front of his property located at 839 Kearny Avenue, was received, read, ordered noted and referred to the Shade Tree Commission.

The Town Clerk reported having received the following applications for licenses, all of which were received, read, ordered noted and referred to the License Committee:

Box Lunch	Pasquale Vitale	250 Boyd Ave. J.C.
" "	Preferred Box Lunch	503 Lyons Ave. Irvington
" " (2)	Brody's Box Lunch Inc.	482 So. 12th St. Newark
Milk (4)	Alderney Dairy	26 Bridge St., Newark
Pack Peddler	William D. Ball	76 Green St., Newark
" "	Sam Miller	418 Belmont Ave. Newark
Dumping	Harmon Color Works	1106 Harrison Ave. Ke.
" "	L & R Corporation	577 Elm Street, Ke.
" "	James Hawkins	326 Highland Ave. Ke.
" "	Brixite Manuf. Co.	Jacobus Ave. Kearny
" "	Kut-Kleen Lawn Mower Co.	479 Schuyler Ave. Ke.
" "	Daniel De Block	209 Devon St. Ke.
" "	Frys Roofing Co.	Tidewater Term. Jacobus Ave

JUNE 8, 1949

Dumping Newark Plaster Co. Jacobus Ave. So. Ke.
Fruit & Vegetable Carmelo Danzi 671 Chestnut St. Ke.
" Harry Pappas 569 Hickory St. Ke.
Taxi Cab Business (3) David Carlson 526 Elm St. Ke.
Ice Cream H. Perrine & H. Warmenhoven 408 Kearny Ave. Ke.
Dumping (2) United Cork Co. Ft. of Central Ave. Ke.
Open Air Parking Moe Cross 946 Passaic Ave. Ke.
Station

The following reports of Town Officers were then read and action taken on same as hereafter set forth:

Chief Engineer Wandras, Police Chief Hemsley, Welfare Director Brierley, submitting their monthly reports for May 1949, all of which were received, read, ordered noted and filed.

The Ordinance Committee by Councilman Cassin, Chairman, moved that the two following ordinances be passed on first reading, ordered published for hearing, and to lie over to the next regular meeting for second reading and final passage, and on roll call all members present voting "aye", the two following ordinances were duly declared passed on first reading and ordered published for hearing:

Ordinance appropriating \$70,000 for various school purposes and authorizing the issuance of school bonds of the Town of Kearny, in the County of Hudson, New Jersey, to meet said appropriation.

Recital

Pursuant to due action of the Board of Education of the Town of Kearny, in the County of Hudson, New Jersey, and the Board of School Estimate of said Town, taken at and pursuant to meetings of said Boards heretofore duly held, various sums, aggregating \$70,000, have been estimated, fixed and determined as the amounts necessary for various school purposes and improvements in the Town, all as more fully appears by the certificates heretofore made by said Board of School Estimate and delivered to this Town Council under dates respectively of June 30, 1948 and May 31, 1949. Said \$70,000 amount has not been appropriated by this Town Council and no part of said amount has been raised and paid to the Custodian of School Moneys.

An Ordinance amending Sections 1, 3 and 4 (c) of an Ordinance entitled, "An ordinance for the grading and construction of chain link fence in the playground situated in the south side of Tappan Street, West of Davis Avenue in the Town of Kearny, County of Hudson, to appropriate funds therefor and to provide financing thereof", adopted April 13th 1949.

The Finance Committee by Councilman Ross, Chairman, moved that the minutes of regular meeting held May 25, 1949 be approved as type-written, and on roll call all members present voting "aye" it was so ordered.

Councilman Ross further moved that the bills and payrolls be not read and on roll call all members present voting "aye", it was so ordered.

Councilman Ross further reported having examined the following

JUNE 22, 1949

required by law owing to the fact that members of the Council are members of this Post.

The Town Clerk further reported having received the following applications for licenses all of which were received, read, ordered noted and referred to the License Committee:

Dumping	Kearny Scrap Metal	17 Stover Avenue, Ke.
"	Gold Star Market	611 Elm Street, Ke.
"	Hyprod Service, Inc.	600 Forest Street, Ke.
"	Gorman's Catering Service	616 Elm Street, Ke.
Paek Peddler	West Hudson Landscape Gardeners	27 Grand Place, Ke.
Junk	James Graham.	244 Highland Ave. Ke.
"	Ike Law	113 Goodwin Ave., Nwk
"	Louis Fattorusso	96 Malvin Street, Nwk
Fruit & Vegetable	Joe Borruto	26 Cuozzo Street, Belle.
Box Lunch	William Strickland	292 Morris Ave., Newark
Gasoline	Klein Bros. Steel Corp.	936 Harrison Ave. Ke.
Restaurant	John Batts	460 Elm Street, Ke.
"	Louis J. Carbone	1 Kearny Ave., Ke.

The following report of Town Officers was then read and action taken on same as hereafter set forth:

Building Inspector Warren submitting his monthly report for May 1949, was received, read, ordered noted and filed.

The Ordinance Committee by Councilman Cassin, Chairman, moved that the two following ordinances be passed on second reading and final passage, ordered engrossed in the Ordinance Book, signed by the Mayor, attested by the Clerk, and published according to law, and on roll call, all members present voting "aye", the two following ordinances were duly declared passed on second reading and final passage and so ordered:

Ordinance appropriating \$70,000 for various school purposes and authorizing the issuance of School Bonds of the Town of Kearny, in the County of Hudson, New Jersey, to meet said appropriation.

An ordinance amending Sections 1, 3 and 4 (c) of an ordinance entitled, "An ordinance for the grading and construction of chain link fence in the playground situated in the South Side of Tappan Street, West of Davis Avenue in the Town of Kearny, County of Hudson, to appropriate funds therefor and to provide financing thereof", adopted April 13th, 1949.

Councilman Cassin further moved that the three following ordinances be passed on first reading, ordered published for hearing and to lie over to the next regular meeting for second reading and final passage, and on roll call all members present voting "aye", the three following ordinances were duly declared passed on first reading and ordered published for hearing:

An ordinance to regulate the growth of brush, hedges and other plant life growing within 10 feet of any roadway and within 25 feet of the intersection of two roadways in the Town of Kearny, Hudson County, New Jersey, and providing penalties for violation thereof.

JULY 13, 1949

Peter King, holder of Meat Peddler's License for the Town of Kearny, advising that unlicensed vendors are operating in the Town of Kearny and requesting that Police Department check on same, was received, read, ordered noted, and referred to the License and Police Committees.

D. & M. Contracting Company advising that they requested the United Cork Company to eliminate the dumping of cork and that fires caused by said dumping have been extinguished, was received, read, ordered noted and referred to the License Committee.

D. & M. Contracting Company advising that all fires on the dumping grounds have been eliminated and further requesting that they be notified before permits are given to industrial concerns to dump in order that a program might be worked out with the owners for dumping, was received, read, ordered noted and referred to the License Committee.

United Cork Companies advising that they will cooperate with custodian at dumping grounds as to dumping of cork, and therefore requesting their 1949 Dumping Permit be issued, was received, read, ordered noted, and referred to the License Committee.

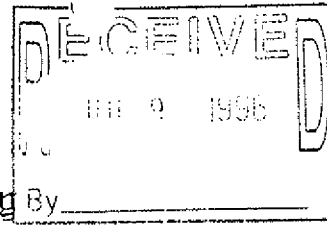
Max and Norman Root making application for transfer of Plenary Retail Distribution License D-17 now owned by Leonard and Sheridan Gersten, at the same licensed premises, 545 Kearny Avenue, was received, read, ordered noted and referred to the License Committee.

The Town Clerk reported having received the following applications for licenses, all of which were received, read, ordered noted and referred to the License Committee:

Used Car Lot	River Road Service Co.	9 Passaic Avenue
Restaurant	Regent Theatre	413 Kearny Avenue
Restaurant	Carmela Duca	414 Kearny Avenue
Dumping	Clear Air Furnace Co.	68 Stewart Avenue
"	Anthony Catena	242 Highland Avenue
"	Antonio Dutillio	281 Bergen Avenue
"	Michael Miller	28 Arlington Avenue
"	Patrick Choffo	17 Archibald Terrace
"	Gaffney Products	407 Schuyler Avenue
Meat Peddler	Peter Knizickwich(King)	253 Hoyt Street

The following reports of Town Officers were then read and action taken on same as hereafter set forth:

Building Inspector Warren, Chief Engineer Wandras, Police Chief Hemsley and Welfare Director Brierley submitting their monthly re-



State of New Jersey By _____

Christine Todd Whitman
Governor

Department of Environmental Protection
401 East State Street, 3rd Floor
Trenton, New Jersey 08625-0423
Voice: 609-292-0112
Fax: 609-777-1330
E-mail: pnutkowi@dep.state.nj.us

Robert C. Shinn, Jr.
Commissioner

July 5, 1996

Thomas R. Marturano, P.E.
Director of Solid Waste/Engineering Operations
Hackensack Meadowlands Development Commission
One DeKorte Park Plaza
Lyndhurst, New Jersey 07071-3799

**Re: former Keegan Landfill
HMDC, Kearny, Hudson County
Pre-Application Meeting**

Dear Mr. Marturano:

This is a summary of the issues discussed at the pre-application meeting which was held at the Department of Environmental Protection on Thursday, June 27, 1996 at 2:00 p.m.

You began by introducing the project. The Hackensack Meadowlands Development Commission (HMDC) proposes to construct and operate a Materials Handling Complex in Kearny, Hudson County, New Jersey. This facility will consist of a non-processible materials landfill and a construction/demolition recycling facility on the site of the former Keegan Landfill. The former Keegan Landfill is located on land which is primarily owned by the Town of Kearny. The Keegan landfill occupies approximately 110 acres. The landfill currently has twenty to twenty five feet of garbage in it. Next to the landfill is the Kearny Freshwater Marsh, which occupies an area of 300 acres. It is the largest freshwater marsh in the HMDC district. The former Keegan landfill will be a regional facility. The revenues generated from tipping fees will be used to close the 1D landfill and the Keegan landfill. The 1D landfill occupies 100 acres adjacent to the New Jersey Turnpike. There are no environmental improvements to the 1D landfill. There is a 250,000 gallon oil leak in the middle of the landfill. Every year 60 to 70 million gallons of untreated leachate runs off into the Passaic River. A new force main will be built to convey leachate from the facility to the 1-A Landfill east of the site. Another new force main from the 1-A Landfill to the Kearny South Pump Station will permit the leachate to be sent to the Passaic Valley Sewerage Commissioners (PVSC) facility for treatment through the Kearny Municipal Utility Authority (KMUA) sewerage system.

Nelson Hausman, of the Bureau of Landfill, Compost & Recycling Management, commented that we think the landfill should be a Class II landfill. We will send you a letter discussing this issue. You are required to do a Final Environmental and Health Impact Statement (E.H.I.S.). We require a closure and post-closure plan as part of the application. We will act as the permit

application review project manager.

Sue Lawson, of the Bureau of Inland Regulation, commented that you will need a Stream Encroachment Permit (S.E.P.) because of filling in the wetlands. Greater than one quarter acre of wetland fill in the HMDC triggers the S.E.P. When you design the relocation of the stream which will go outside of the cut-off wall, please contact Rick Reilly or Nabil Andrews, LURP, Engineering Support (Stream Encroachment), at 609-984-0194, to discuss permitting/engineering issues related to the top of the hill. You will need a Water Quality Certificate and the USACOE will require it. We have no Freshwater Wetlands Jurisdiction. This is our jurisdiction for activities within the district. But if there are any activities outside of the district, then there may be different requirements.

Nick Horiates, of the Bureau of Construction and Connection Permits, commented that the Department is investigating the relevance of grant conditions pertaining to the KMUA Kearny Point Pump Station in relation to your project. Please contact Mr. Horiates directly if you have any questions.

Eleanor Krukowski, of the Bureau of Operational Ground Water Permits, commented that you know what you are required to do in terms of ground water monitoring. She suggested a more qualitative, descriptive approach to complying with the ground water quality modeling requirements.

Bob Colon, of the Bureau of Stormwater Permitting, commented that you would apply for an Individual Permit (I.P.) for storm water which would cover the construction phase and the operational phase until full closure. At that time we would revoke your I.P., provided that you can meet the terms and conditions of a General Permit. We would then issue a General Permit.

Helen Kushner will be replacing me as the single point of contact for this project within the Permit Coordination and Pollution Prevention Element.

If you have any questions, please do not hesitate to contact me.

Sincerely,



Paul Nutkowitz, Ph.D.
Research Scientist
Permit Coordination and Pollution Prevention Element

copy:

Christopher L. Dour, P.E., HMDC
Henry W. Germann, P.E., P.P., HMDC
Paul Bove, HMDC
Nelson Hausman, DSHW, Bureau of Landfill, Compost & Recycling Management
John Edwards, DSHW, Bureau of Landfill, Compost & Recycling Management
Sue Lawson, LURP, Bureau of Inland Regulation
Nabil Andrews, LURP, Engineering Support (Stream Encroachment)
Nick Horiates, Bureau of Construction & Connection Permits
Eleanor Krukowski, Bureau of Operational Ground Water Permits

Bob Colon, Bureau of Stormwater Permitting
Larry Schmidt, Office of Program Coordination
Helen Kushner, Permit Coordination and Pollution Prevention Element
Jeanne Mroczko, *Administrator*, Permit Coordination and Pollution Prevention Element

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HACKENSACK MEADOWLANDS DEVELOPMENT COMMISSION

One DeKorte Park Plaza • Lyndhurst, New Jersey 07071-3799
Administrative Offices: (201) 460-1700 Environment Center: (201) 460-8303
Fax: (201) 460-1722



JANE KENNY
Chairman

ALAN J. STEINBERG, ESQ.
Executive Director

March 10, 2000

Mr. Walter M. Smith, Jr.
Hartz Mountain Industries, Inc.
400 Plaza Drive
Secaucus, New Jersey 07094

RE: Kearny/Hartz Mountain Site Improvement
File #00-042

Dear Mr. Smith:

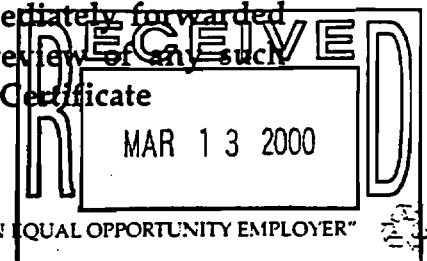
This Office has recently completed its review of your zoning certificate application and related plans for the proposed remediation of the premises identified as Block 286, Lot 4, on Bergen Avenue in the Town of Kearny.

Based on our review, we have determined that the proposed Remedial Action Work Plan (RAWP), as approved by the NJDEP, conditionally complies with the Commission's Highway Commercial Zoning Regulations, and we are therefore approving your Zoning Certificate with conditions.

The approval is subject to the following conditions:

1. This approval is limited to the proposed actions described in the RAWP, entitled "Remedial Action Workplan, Harrison Avenue Landfill, Lot 4 Block 286, Kearny, N.J.", prepared by Envirotech Consultants, Inc., dated May, 1999, and approved by the NJDEP on October 4, 1999. The tasks permitted by this approval include, but are not limited to, the following: the excavation and off-site disposal of contaminated soils, the placement of a surface cap, the collection of leachate and the preparation of institutional controls (deed restrictions).

2. Any document report, plan, study, test result or the like prepared by or for the applicant or others in connection with the work which may have a bearing on this Zoning Certificate approval shall be immediately forwarded by the applicant to this Office for review. Should the review of any such document submitted indicate to this Office that the Zoning Certificate



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Handwritten:
AJF.
C17 w/plas

Mr. Smith
Page 2
March 10, 2000

approval issued herein is or may be materially affected, further clarification may be sought by this Office, and additional or modified approvals may be required.

3. Proposed office use is for illustration purposes to satisfy N.J.A.C. 19:4-6.18(o)1ii. No site development can occur without first obtaining a Zoning Certificate from this Office.

This letter shall serve as your Conditional Zoning Certificate, designated CZC-00-042, and shall be valid for a period of one year. This is not an approval to start construction. Application must be made to the Town of Kearny for a building permit. Enclosed please find a copy of the approved site plans by Macdel Engineering, Sheets C-1, C-3, C-4, C-5, C-8, C-9 and C-10, dated 1/11/00 and sheet C-2 last rev. 1/6/00.

The applicant is hereby advised of their responsibility to investigate and obtain all federal, state, and local permits which may pertain to their proposal or project. The Hackensack Meadowlands Development Commission will not be held liable for any damage which may result from the applicant's failure to obtain the necessary approvals from all respective agencies having jurisdiction. This Office must receive copies of all federal, state, and local permits which may pertain to the proposal, and "as -built" plans, before it will issue a Certificate of Completion.


This letter is an agency determination, decision, and administrative order. Pursuant to N.J.A.C. 19:4-6.25(b), if you wish to appeal this decision, a written notice of appeal must be filed, by certified mail, with the Office of the Chief Engineer within fifteen (15) days of the date of this decision. The notice of appeal shall specify the grounds for such appeal. Upon receipt of the notice of appeal, the Executive Director or his designee shall transmit to the Office of Administrative Law all papers as required by the Office of Administrative Law pursuant to N.J.A.C. 1:1-8.2.

Mr. Smith
March 10, 2000
Page 3

If you should have any questions, please contact Mark W. Skerbetz of this Office.

Sincerely,

OFFICE OF THE CHIEF ENGINEER



RECOMMENDED BY:

Mark W. Skerbetz, P.P. AICP
Staff Planner

APPROVED BY:



John Martinez, P.E., P.P.
Acting Chief Engineer

Enclosure

cc: Robert Armstrong, Kearny Construction Official
Debbie Dakin, HMDC
Bruno Rondi, HMDC
HMMC



6038357

State of New Jersey

Christine Todd Whitman
Governor

Department of Environmental Protection
Division of Solid and Hazardous Waste
CN 414
Trenton, NJ 08625-0414
Tel. #609-984-6664
Fax. #609-777-0769

Robert C. Shinn, Jr.
Commissioner

OCT 11 1996

Mr Jack Pettigrew
185 Devon Street
Kearny, New Jersey 07032

Dear Mr. Pettigrew:

Governor Christine Todd Whitman has asked me to respond to your letter to the editor of September 12, 1996 regarding the reopening of the Keegan Landfill in the Town of Kearny. On behalf of Governor Whitman, I am pleased to respond to your concerns.

The Solid Waste Management Act places the responsibility for closure and long term care of landfills on the property owner. The Town of Kearny, as the primary property owner of the Keegan Landfill, has the responsibility for the proper closure of this site. The improper closure of the Keegan Landfill poses a threat to the Kearny Freshwater Marsh as well as creating other problems, such as the fires that have occurred at the landfill. The nearby 1-D Landfill, which is also owned by Kearny, is also in need of proper closure. The closure cost for the Keegan Landfill alone has been estimated at \$30 million, with the post closure care cost estimated at an additional \$30 million. The closure of both of these landfills would place an enormous economic burden on the residents of the Town of Kearny.

The planned reopening of the Keegan Landfill by the Hackensack Meadowlands Development Commission (HMDC) to provide revenue for closure of that landfill and the 1-D Landfill is an environmentally and fiscally sound proposal. Before the Keegan Landfill reopens, all environmental safeguards required by the Solid Waste Regulations will be in place. Installation of environmental improvements will not be put off until the site is ready for closure. A perimeter cut-off wall and leachate collection system will be installed to protect the adjoining marsh before the site opens. In addition, HMDC will use the revenue generated by the reopened Keegan landfill to fund the environmentally sound closure of the reopened landfill and the 1-D landfill as well as maintenance and environmental monitoring for the 30 year post closure period at both sites.

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The Keegan Landfill is NOT an EPA classified high priority Superfund hazardous waste site as erroneously stated in your letter. The National Priority List (NPL), also known as the Superfund List, contains the country's most hazardous waste sites. In 1989, a study of the landfill was conducted for the EPA by the NUS Corporation. At that time, it was classified as medium priority on the EPA'S CERCLIS List. This list is a comprehensive record of all known contaminated/hazardous sites, including all potential and actual Superfund sites. The NUS study recommended that the Keegan site be fenced and that two feet of clean soil be placed over the landfill. These recommendations were never implemented. The EPA recently eliminated the "medium" priority category; hence, the Keegan landfill was reclassified as a "higher" priority site on the CERCLIS list. The EPA is continuing its evaluation of the Keegan landfill at this time in order to determine its potential eligibility for the NPL.

I hope this answers your questions. If you have any additional questions or comments, please contact me at (609) 984-5950.

Sincerely,



Robert C. Ciolek
Assistant Director
Office of Permitting
and Technical Assistance

file:g238357

00000000



Hackensack Meadowlands Development Commission

Memorandum

TO HMDC COMMISSIONERS AND ANTHONY SCARDINO, JR., EXECUTIVE DIRECTOR
THOMAS R. MARTURANO, DIRECTOR OF SOLID WASTE
FROM GEORGE COHEN, D.A.G. Date MAY 23, 1996
Subject KEEGAN LANDFILL SITE


In an effort to clean up and properly close an old, environmentally harmful landfill, the HMDC proposed a Solid Waste Management Plan (SWMP) amendment for the reopening of the old Keegan landfill in Kearny. The reopening of the landfill meets two basic State policies: 1) the funding and proper closure and post-closure of "orphan" landfills that are polluting the State of New Jersey on a daily basis; and 2) providing in-state regional landfill capacity for non-recyclable solid waste. In addition to the proper closure of the Keegan landfill, the HMDC plan hopes to generate sufficient funds to close the 1-D landfill, another old orphan landfill in Kearny that was never properly closed.

A. Statutory and Regulatory Background

In 1969, the HMDC was created as a regional governmental body to oversee the development of 21,000 acres of marshland located in 14 municipalities in order that this resource would not be lost to the State through unplanned reclamation and development. N.J.S.A. 13:17-1 et seq. Only scattered development had occurred in the District as of 1969. One of the principal reasons that this potential for development had never been realized was that the municipalities in the region had attempted to implement their separate development plans without concern for the coordination of these plans. Thus, the legislation emphasized the urgent need in this area of the State for the HMDC to coordinate the orderly and comprehensive development of land for industrial, commercial, residential, public recreation and other uses. N.J.S.A. 13:17-1. Additionally, the HMDC was authorized to acquire property, acquire or construct solid waste facilities and operate these facilities or contract with persons capable of operating disposal facilities N.J.S.A. 13:17-10.

The Legislature again recognized the HMDC's solid waste management role when it designated the HMDC along with the twenty-one counties of the State as solid waste planning districts that must prepare and implement a ten year strategy for solid waste disposal within their respective jurisdictions. By law, each district's SWMP must be approved by the Commissioner of DEP. N.J.S.A. 13:1E-24. Once a district proposes a SWMP amendment, it shall hold a hearing for the purpose of soliciting public comment, N.J.S.A. 13:1E-23. After obtaining public comment, a district may adopt, modify or reject its proposed amendment. If adopted, the plan is sent to the DEP Commissioner who has 150 days to certify

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Call 
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his acceptance, modification or rejection of the adopted plan.
N.J.S.A. 13:1E-24.

B. The Plan Amendment Process

In or about the fall of 1988, the HMDC, the DEP, Board of Public Utilities (BPU) and the counties of Bergen, Essex and Hudson undertook a cooperative study to explore the possibilities of a regional solid waste facility in the Meadowlands District. This study resulted in the conclusion that such a regional facility would save the region approximately \$500 million dollars over a twenty-year period. This study also concluded that this facility would be a landfill that could take any solid waste that was not sent to a resource recovery facility (burned), recycled or composted. Such wastes are known as non-processible solid waste.

In the fall of 1991, the HMDC held separate meetings with the principals of Hudson Meadows and the Mayor and officials of the Town of Kearny to inform them of the HMDC's intention to introduce a SWMP amendment for a 10-20 year regional non-processible landfill in Kearny on the abandoned Keegan landfill. In the preceding years, Hudson Meadows had submitted incomplete partial proposals for development of the property. On December 6, 1991, the HMDC provided public notice and advertisement of the proposed SWMP amendment which invited public comment. Prior to the public hearings, written comments were received that requested that the record be held open, that another hearing be held, and that the HMDC consider alternative development for the site. Additional written comments were received from the Bergen County Utilities Authority (BCUA), Hudson County Improvement Authority (HCIA), and Town of Kearny.

The first public hearing was held on January 7, 1992 at the HMDC building. The hearing began with opening statements from the Executive Director of the HMDC, Anthony Scardino, Jr. and a detailed overview of the proposed non-processible landfill by Thomas Marturano. My statement included a description of the site of the proposed landfill by block and lot number and also described the site as the old Keegan landfill in Kearny. In addition, my presentation noted that the landfill would be a non-processible landfill which would not take any items that could be either burned, recycled or composted. I also stated that the Keegan landfill had ceased operations in 1972 before many DEP regulations that currently exist came into effect. Finally, I noted that the existing Keegan landfill is producing significant quantities of leachate and methane gas; and that as an uncontained site, the landfill created serious environmental problems.

The HMDC plan was described as a continuation of the HMDC program where old abandoned "orphan" landfills were taken over, reopened for the purpose of placing solid waste on top of them and then dedicating the "tipping fees" or cost to dump at the landfills

for funding the closure of the landfills. The proposal includes, in addition to the environmental closure of the Keegan landfill, the intention to generate enough funds at the Keegan site to close the 1-D landfill along Harrison Turnpike in Kearny. This landfill is approximately 100 acres and 150 feet high; moreover, there are insufficient closure or post-closure monies available for this site, which is causing serious environmental problems that are degrading the environment of Kearny everyday. Kearny is financially responsible for the closure and post-closure of the Keegan and 1-D landfills.

The Keegan site was chosen because it is an old landfill which needs remediation and it contains the largest available volume in the Meadowlands District. The site was chosen because it would provide the most capacity for non-processible waste, thus generating the most funds for the closure of both the Keegan and the 1-D landfills. The proposed actions of the HMDC for preparing the Keegan site for closure include the construction of a cut-off wall around the entire perimeter of the site and the placement of a leachate collection system on the inside of that wall so that the leachate which is generated from within the site could not flow into the adjacent environmentally sensitive marsh. Leachate is the liquid produced from rain passing through the landfill.

Access to the site is planned to come off of Harrison Turnpike. No access to the site would come off Schuyler Avenue from the residential areas. In summation, the HMDC plan amendment was described as an effort to clean up orphan landfills, to stop leachate from flowing into the wetlands, to control the methane gas from the landfills and to protect a marsh that is a vital environmental area which is being degraded everyday. Finally, the cost of the environmental cleanup of the Keegan landfill was presented. It was estimated that the cost would be measured in tens of millions of dollars for closure. The closure and post-closure of landfills currently under HMDC authority have closure improvements estimated at 300 million dollars and that the ratios of those numbers were similar to what was expected at the Keegan site.

At the public hearing held on January 7, 1992, the HMDC SWMP amendment was available to all who attended. In addition, mounted copies of an aerial photograph of the site as well as still photographs from ground level were presented at the front of the hearing room. Members of the public presented comment at the hearing, including Kearny Town Council members as well as representatives of Hudson Meadows. After the hearing adjourned the record was held open and a second public hearing was held on February 19, 1992. At the March 25, 1992 HMDC meeting, further public comment was taken and the Commission tabled a vote on the plan amendment subject to a visit to the site by then Chairman Melvin R. Primas. The record was closed after the March 25, 1992 hearing.

From the time of the first public notice on December 6, 1991 until a vote by the full Commission on May 27, 1992 approving the HMDC adopted plan amendment, all public comment submitted was accepted as part of the record. Hudson Meadows submitted written and oral comments, as well as consultants' reports at every opportunity. The HMDC adopted the proposed SWMP amendment for the proposed regional non-processible landfill at the Keegan site. The plan amendment was forwarded to the DEP for review by the Commissioner of DEP and his eventual approval, rejection or modification pursuant to N.J.S.A. 13:1E-24.

C. In Lieu of Prerogative Writ Action

On June 26, 1992, while review of the HMDC amendment was underway at the DEP, Hudson Meadows and Kearny filed a complaint in lieu of prerogative writ challenging the adoption of the SWMP amendment by the HMDC and moved to take depositions. The in lieu action claimed that the HMDC plan lacked support, failed to provide a sufficient public comment period, included unnecessary property, did not comply with local zoning, and did not receive sufficient votes from the full HMDC. The HMDC opposed this motion and cross-moved to transfer the matter to the Appellate Division as an appeal of a final administrative action. On August 7, 1992, Judge Seymour Margulies, J.S.C., denied the HMDC's motion to transfer and granted the motion of Hudson Meadows to take depositions. On November 23 and 24, 1993, Hudson Meadows deposed Executive Director Anthony Scardino and Director of Solid Waste Thomas Marturano.

D. DEP Certification of the Plan Amendment

On December 2, 1992, the DEP Commissioner certified the amendment designating the Keegan site for a residual non-processible landfill. The Commissioner found that the HMDC plan to reopen the Keegan site to "remediate existing pollution problems" and develop a modern disposal facility "represents significant positive benefits" locally and to the State. The Commissioner stated that the plan "will improve, not lessen the environmental condition of the site....This facility can be a cornerstone to solving the State's deficiencies in disposal capacity thereby greatly reducing our dependence on out-of-state lands."

Pursuant to N.J.S.A. 13:1E-24, the Commissioner submitted the plan amendment for review and recommendations to the advisory council on solid waste management in the Department and to the agencies, bureaus, and divisions within the Department concerned with, or responsible for, environmental quality. The record reviewed by the DEP during the certification process contained, among other things, the transcripts of the January 7, February 19, and March 25, 1992 public hearings as well as the transcripts from the April 22 and May 27, 1992 HMDC Commission meetings; copies of all comments received by the HMDC from December 6, 1991 until HMDC's resolution adopting the plan amendment on May 27, 1992; the

reports and comments of consultants on behalf of Hudson Meadows and the Town of Kearny and internal Department comments and comments from the USEPA.

E. Appeals

On January 15, 1993, Hudson Meadows and Kearny appealed the Commissioner's December 2, 1993 certification of the May 27, 1992 plan amendment to the Appellate Division. On February 11, 1993, the Honorable George P. Moser, Jr., J.S.C., granted the motion of the HMDC to transfer the Law Division matter to the Appellate Division. The two appeals and the transferred matter were consolidated by Judge Seidman by formal notice dated June 29, 1993. On June 7, 1994, oral argument was held in the Appellate Division.

On July 18, 1994, the Appellate Division affirmed the decision of the DEP Commissioner certifying the HMDC's SWMP amendment. Writing for the Court, Judge Skillman found that: 1) the HMDC properly adopted its SWMP amendment and did not need a "super majority" vote simply because its Solid Waste Advisory Council (SWAC) disapproved the proposal; 2) the DEP Commissioner is required to approve, modify or reject a plan within 150 days and an in lieu of prerogative writ action in no way stays the Commissioner's action; 3) the in lieu action was properly transferred to the Appellate Division; 4) the HMDC provided adequate information to appellants and the public regarding the plan; and 5) the DEP Commissioner properly measured and approved the HMDC's plan amendment against the goals of the Statewide Solid Waste Management Plan. The Court rejected all of appellant's objections to the HMDC adoption and DEP certification of the SWMP amendment. On December 9, 1994, the New Jersey Supreme Court denied Hudson Meadow's petition for certification. The Town of Kearny did not join in the petition.

Subsequent to the Appellate Division decision, the Commission applied to the NJDEP for approval of a Preliminary Environmental and Health Impact Statement. This is required prior to the acquisition of land for a solid waste facility. It was approved on December 28, 1995.

F. Conclusion

Therefore, it is the recommendation of the staff that this resolution authorizing the Executive Director to acquire the properties consistent with the Solid Waste Plan Amendment, either through negotiation or condemnation, be approved.

NEWS

ARMY CORPS HEARS PLEA TO SPARE WETLANDS LANDFILL OPERATOR VS. CARLSTADT MALL

By TINA TRASTER and LISA GOODNIGHT, Staff Writers

05/13/1997

The Record, Northern New Jersey

4 Star

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(Copyright 1997)

CLARIFICATION: An article Tuesday indicated that an exit from the New Jersey Turnpike for a mall proposed by the Mills Corp. for the Meadowlands would be built with public funds. Mills, of Arlington, Va., has said it would pay for a ramp from the turnpike to Route 120A; a planned realignment of that highway _ which would provide access to the Mills site but is not necessarily dependent upon that development _ would be publicly funded. (PUBLISHED, WEDNESDAY, MAY 14, 1997, PAGE a02.)

Why fill wetlands and use public funds to build an exit off the New Jersey Turnpike for a shopping and entertainment complex in the Meadowlands when there is a site in Kearny that offers highway access and enough land to build a 2.1-million-square-foot mall?

That question was put to the Army Corps of Engineers during a public meeting last week by a landfill operator who wants Mills Corp. of Arlington, Va., to shift its proposed mall site from a wetlands tract in Carlstadt to **Keegan landfill** in Kearny.

"We are telling the corps that there is an . . . alternative" that doesn't sacrifice wetlands, said Jeryl Maglio, a principal with Hudson Meadows Urban Renewal Development Corp., which has development rights to **Keegan landfill**.

Because Mills wants to build in wetlands protected under the federal Clean Water Act, the developer must prove that it has sought _ and ruled out _ alternative sites for its project, which include retail, warehouses, hotel space, and a mass transit center.

Maglio told corps officials that developers from Western Corp., as the Mills company was formerly known, considered building on the landfill in 1986. But negotiations fell apart and the developers shifted their plans to the Carlstadt tract, owned by Empire Ltd. of Wood-Ridge.

Edward B. Vinson, Mills' vice president, said the company has no plans to build on **Keegan landfill**, or on any landfill. Vinson acknowledged that "there were some conversations in 1986," but said the company was run by a different group "with a different focus."

Mills says it eliminated 50 sites in North Jersey, mostly due to environmental challenges.

Maglio suggested the landfill site during a public "scoping" meeting. At that meeting, input was sought on the Mills proposal while the developer was preparing an environmental impact statement.

Last month, officials from the U.S. Fish and Wildlife Service sent letters to the corps saying Mills should consider other sites in the New York metropolitan region. Environmentalists say Mills should put its mall in a city such as Newark, Elizabeth, or Paterson.

Maglio says Mills should follow the lead of other developers who are building on landfills, such as mall developers in Elizabeth and Nyack, New York.

"Under the Clean Water Act, Mills has to demonstrate that there is not an alternative site," said corps spokesman Andrew Miller. "Mills will have to take {the **Keegan landfill**} into account when they write their alternatives analysis."

CCB000003

Both sites are within the boundaries of the Hackensack Meadowlands Development Commission, which oversees zoning for a 32-square-mile district that encompasses portions of 14 towns in Bergen and Hudson counties.

HMDC officials have said the best way to finance "mitigation" or restoration of reed-choked wetlands is by development. Mills, for example, wants to fill 206 acres of wetlands in the Meadowlands, and in exchange, refurbish an adjoining 380 acres.

But Maglia said the landfill site offers development dollars within the district, but does not sacrifice wetlands.

The **Keegan landfill** closed in 1971. Eight years later, Hudson Meadows, a private health-care and real estate company, bought 34 acres of the landfill and leased development rights from Kearny for an additional 384 acres that constitute the landfill and surrounding freshwater marsh.

Hudson Meadows wants to build on the landfill but plans to preserve the wetlands.

The company clashed with the HMDC in 1991, after the agency, which has zoning jurisdiction over the site, proposed reopening the landfill as a dump site for non-organic matter.

HMDC officials argued that reopening **Keegan landfill** was the only way the agency could generate the \$100 million it would take to stop the flow of gases and toxic liquids from the dump. Under the proposal to reopen Keegan, the commission said it could raise enough additional funds in tipping fees to seal and cap another landfill, known as 1-D.

Hudson Meadows and Kearny lost their legal battle to stop the the HMDC from reopening the landfill.

Plans have not proceeded. Rather, the HMDC recently commissioned a study to examine whether the site should be zoned for open space, dumping, or development.

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Hackensack Meadowlands Development Commission

Lauch 5
Shygar

1099 WALL STREET WEST • LYNDHURST, NEW JERSEY 07071 • (201) 935-3250

PATRICIA Q. SHEEHAN
Chairman

WILLIAM D. McDOWELL
Executive Director

January 30, 1975

Mr. Dennis Backus
c/o Municipal Sanitary Landfill Authority
1500 Harrison Avenue
Kearny, New Jersey 07032

RE: MSLA, FILE 71-175

Dear Mr. Backus:

On December 31, 1974, this Office sent a letter to you which required specific information to be submitted no later than January 20, 1975, in order to complete the review of MSLA Landfill operations on Sites I-A and I-D, and complete the close down of Site I-A, in Kearny.

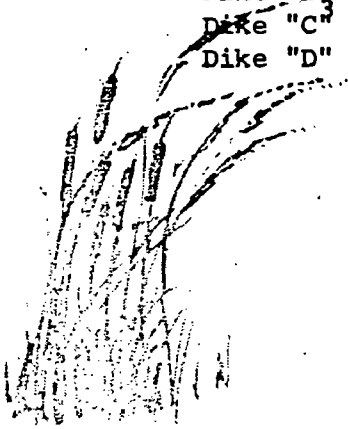
To date, that information has not been forthcoming.

Please be advised that this delay will not alter the scheduling for completion of required improvements as shown on the marked up plans sent to you by this Office on December 31, 1974.

Further, the following is an up-to-date status of your compliance with the revised scheduling as shown on those plans:

1. Site I-A

<u>SECTION</u>	<u>TO BE COVERED BY</u>	<u>% COMPLETED</u>
Dike "A"	October 1, 1974	100
Dike "B ₁ "	January 1, 1975	50
Dike "B ₂ "	January 1, 1975	85
Dike "B ₃ "	January 1, 1975	70
Dike "C ₃ "	April 1, 1975	
Dike "D"	July 1, 1975	



BAA000005

RECEIVED
1975 FEB 23 AM 10:37
NEWARK OFFICE

RECEIVED
1975 FEB 23 AM 10:37
NEWARK OFFICE

2. Site I-C

<u>JOB</u>	<u>START</u>	<u>FINISH</u>	<u>% COMPLETE</u>
A. Construct Dike #4	Jan. 1, 1975	July 1, 1975	0
B. Install Leachate Pumps 1 and 2	Jan. 1, 1975	July 1, 1975	0
C. Construct Dikes 3, 5 and 6	Jan. 1, 1975	July 1, 1975	0
D. Construct Tide Gates 1, 2, 3 and 4	Jan. 1, 1975	July 1, 1975	0
E. Construct Dikes 1 and 2	Jan. 1, 1975	July 1, 1975	25


3. Site I-D

<u>JOB</u>	<u>START</u>	<u>FINISH</u>	<u>% COMPLETE</u>
A. Dike #1	Immediately	Immediately	0
B. Leachate Pumps 1 and 2	Immediately	Immediately	0
C. Construct Collect/ Recharge Basins 1 and 2	Immediately	July 1, 1975	0
D. North Swale	Immediately	July 1, 1975	--

Therefore, as you are now aware, it will be in your best interest to submit the required information immediately.

We await your prompt response.

Sincerely,
OFFICE OF THE CHIEF ENGINEER


GEORGE D. CASCINO, P.E., P.P.
CHIEF ENGINEER

Mr. Dennis Backus

Page 2

January 30, 1975

MA/jc

cc: John McNeil, Esquire

Roger Generazzo

William Hui

Mark First, Esquire, D.A.G.

Mr. A. Lawrik

Maryland Casualty Company

Certified Mail #293734

RECEIVED
NEWARK OFFICE

1975 FEB 3 11:10:37

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Hackensack Meadowlands Development Commission

1099 WALL STREET WEST • LYNDHURST, NEW JERSEY 07071 • (201) 935-3250

PATRICIA Q. SHEEHAN
Chairman

WILLIAM D. McDOWELL
Executive Director

RECEIVED
1975 MAR 11 AM 10:17
TELETYPE UNIT
NEWARK OFFICE

March 7, 1975

Dennis Backus, P.E.
Municipal Sanitary Landfill Authority
1500 Harrison Avenue
Kearny, New Jersey 07032

RE: M.S.L.A., FILE 71-175

Dear Mr. Backus:

We reviewed your letters dated February 15, 1975, and February 19, 1975, both received February 24, 1975, in reference to previous correspondence concerning the several MSLA sites.

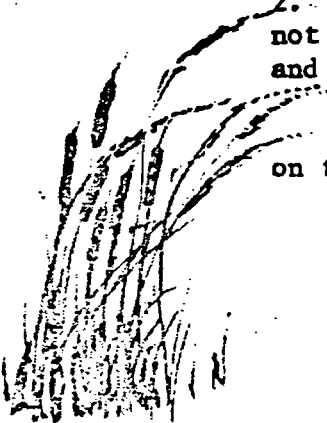
I. In response to your letter of February 15, 1975, please be advised of the following:

1. The total perimeter of all MSLA sites is approximately 36,000 feet, of which at least 9,200 feet and as much as 15,000 feet requires diking.

Although 2,200 feet of diking may have been constructed by MSLA, only about 1,100 feet, on Site I-C, is incorporated in the required diking scheme. Therefore, at best, only 12% of the required diking is complete.

2. The Hackensack Meadowlands Development Commission will not verify that MSLA has, at any site, consistently collected and pumped leachate to top-of-landfill recharge basins.

This Office had seen the placement of a pump and hose on the south side of Site I-D, which no longer exists.



BAA000006

Dennis Backus, P.E.
M.S.L.A.
March 7, 1975
Page 2

3. The Commission does take issue to the use of a composite material consisting of organic material as required cover. As stated in our February 3, 1975 letter, its use must be discontinued immediately!

We will, however, entertain an engineer's report, based on detailed analysis of the composite, to determine its acceptability as cover material.

4. HMDC inspections reveal that covering of Site I-A, has been proceeding satisfactorily. However, please be advised that HMDC inspections of this site in the future will also include a determination of the depth of final cover, to insure that 2' has been applied. Prior to giving final approval of the covering, this Office must be able to verify that 2' of cover has been applied throughout the site.

Further, covering of active landfill sites continues to be inadequate, and as stated above, the use of a "compost" as cover must be discontinued immediately. You can be sure the Commission will closely monitor the sites and will continue to strictly enforce Regulations concerning cover.

5. To date, this Office has not received the revised plans, applications, or any other required information necessary for final review and approval of the landfill sites. Please be advised that MSLA will be required to meet all schedules and deadlines as specified on the marked-up set of plans sent to you on December 31, 1974. In addition, if the required information is not forthcoming, in the next few days, this Office will compute and bill you for the required application fees, and will notify you of an estimated dollar amount for the performance bond that must be submitted to insure completion of all required improvements.

Dennis Backus, P.E.
M.S.L.A.
March 7, 1975
Page 3

6. You state that MSLA is a "responsible, experienced leader in solid waste management." Therefore, you should have no problems conducting covering operations at any time of the year, with very little lag time due to poor weather conditions.

In addition, a good display of "responsibility and leadership" by MSLA could be best shown by giving total cooperation to meeting HMDC Landfill Regulations.

II. In response to your letter of February 19, 1975, in reference to the compliance schedules for the several sites, established by HMDC, please be advised of the following:

1. Site I-A: HMDC accepts the revised schedule, with those additional requirements, as shown on the plans as follows:

	<u>JOB</u>	<u>START</u>	<u>FINISH</u>
A.	Cover B ₁	----	March 15, 1975
B.	Cover B ₂	----	March 15, 1975
C.	Cover B ₃	----	March 15, 1975
D.	Cover C	----	April 1, 1975
E.	Cover D	----	July 1, 1975
F.	Take Water Samples	November, 1974	Monthly
G.	Install Methane Vents on Sections B ₁ , B ₂ , B ₃ , C	April 1, 1975	May 1, 1975
H.	Install Methane Vents on Section D	July 1, 1975	August 1, 1975
I.	Take Methane Samples	August 1, 1975	Bi-monthly

* To date, this Office has not received the results of water sampling at the site. This information must be forthcoming immediately.

Dennis Backus, P.E.
M.S.L.A.
March 7, 1975
Page 4

2. Site I-D: HMDC cannot accept the MSLA schedule for this site. We restate the HMDC required schedule, with additional requirements as shown on the plans, for the site, as follows:

<u>JOB</u>	<u>START</u>	<u>FINISH</u>
A. Dike #1	Immediately	Immediately
B. Install leachate pumps 1 and 2	Immediately	Immediately
C. Construct Collect/ Recharge Basins 1 and 2	Immediately	July 1, 1975
D. North Swale	Immediately	July 1, 1975
E. Install Methane Vents	(as each section reaches final elevation)	

3. Site I-C: HMDC cannot accept the MSLA schedule, at it is totally unacceptable. What your schedule does, is procrastinate the placement of required improvements for another two (2) years. (Will MSLA stop dumping on this site until the required improvements can be completed?)

HMDC will not entertain a revision of the schedule, as set. Following is the HMDC Schedule with other required deadlines as shown on the plans for the site:

<u>JOB</u>	<u>START</u>	<u>FINISH</u>
A. Construct Dike #4	January 1, 1975	July 1, 1975
B. Install Leachate Pumps 1 and 2	January 1, 1975	July 1, 1975

Dennis Backus, P.E.
M.S.L.A.
March 7, 1975
Page 5

#3 Site I-C continued:

<u>JOB</u>	<u>START</u>	<u>FINISH</u>
C. Construct Dikes 3 and 4	January 1, 1975	July 1, 1975
D. Construct Tide Gates 1, 2, 3 and 4	January 1, 1975	July 1, 1975
E. Construct Dikes 1 and 2	January 1, 1975	July 1, 1975
F. Install Leachate Pumps 3 and 4	April 1, 1975	July 1, 1975
G. Construct Dike #6	April 1, 1975	July 1, 1975
H. Clean Drainage Ditch	April 1, 1975	May 1, 1975
I. Take Water Samples at Pumps 1, 2 and 3	July 1, 1975	Monthly
J. Install Methane Vents	(Immediately upon completion of each section)	
K. Sample Methane	(Bi-monthly, immediately upon completion of each section)	

Further as shown on the marked-up plans, sent to you on December 31, 1974, Dike #4 must be completed by July 1, 1975, to the west of the Public Service Electric and Gas Company transmission lines, and on MSLA property, if Dike #4 cannot or will not be constructed utilizing the Public Service Electric and Gas Company's access road.

Dennis Backus, P.E.
M.S.L.A.
March 7, 1975
Page 6

Finally, as can be seen from the above schedules, many items should have already been initiated, and some completed. As stated in previous correspondence, it should now be clear that it will be in your best interest to submit all required information immediately. If required implementation schedules are not followed, this Office will have no recourse but to take further action.

We await your prompt response.

Sincerely,

OFFICE OF THE CHIEF ENGINEER



GEORGE D. CASCINO, P.E., P.P.
CHIEF ENGINEER

MA/jc

cc: John McNeil, Esquire
Roger Generazzo, M.S.L.A.
Mark L. First, Esquire, D.A.G.
Mr. William Hui, N.J.D.E.P.
Mr. A. Lawrik, P.U.C.
Maryland Casulty Company

Certified Mail #293586

NEW JERSEY STATE DEPARTMENT OF ENVIRONMENT. PROTECTION
INSPECTION OF SOLID WASTE DISPOSAL AREA

TO MARK
K

GENERAL INFORMATION

1. Date of Inspection JUNE 16, 1975. Time _____
2. Name of Solid Waste Disposal Facility MSLA. 1-D
3. Street Location HARRISON AVE
4. Lot and Block No. _____
5. Municipality KEARNEX County HUDSON
6. Name of Owner MSLA.
7. Address of Owner _____
8. Name of Operator MSLA.
9. Address of Operator _____
10. Full Name of Inspector J. BRIAN MCNALLY
(Please Print)

The deficiencies marked "X" below were noted at the subject solid waste disposal area, as related to N.J.A.C. 7:26-1 et seq.

- () Sanitary Landfill Operational Requirements (General)
N.J.A.C. 7:26-2.5. () .1 () .2 () .3 () .4 () .5 () .6 () .7 () .8 () .9 () .10
() .11 () .12 ~~X~~ .13 ~~X~~ .14 () .15 () .16 () .17 () .18
() .19 () .20 () .21 () .22 () .23 () .24 () .25 () .26
- () Sanitary Landfill Operational Requirements (Specific)
Sewage Sludge and Other Materials
N.J.A.C. 7:26-2.6.1. () .1 () .2 () .3
- () Bulky Items
N.J.A.C. 7:26-2.6.2. () .1 () .2 () .3
- () Radioactive Materials and Lethal Chemicals
N.J.A.C. 7:26-2.6.3. () .1
- () Hazardous and/or Chemical Wastes and Other Materials
N.J.A.C. 7:26-2.6.4. () .1 () .2 () .3 () .4
- () Disrupted Landfill Requirements
N.J.A.C. 7:26-2.7. () .1 () .2 () .3 () .4 () .5
- () Smoking, Smoldering or Burning
N.J.A.C. 7:26-2.8. () .1 () .2 () .3 () .4 () .5 () .6 () .7
- () Other

BAA000007

J. Brian McNally
Inspector (Signature)

The New Jersey Bureau of Solid Waste Management representative has provided me a copy of this report.

Richard Dill
(Signature) (Date)

The disposal area owner and/or operator may, if he so desires, arrange for a conference with the Bureau of Solid Waste Management to discuss the deficiencies noted.

MEMORANDUM

State of New Jersey
Department of Environmental Protection

TO: FILE

FROM: BRIAN McNALLY

DATE: JUNE 16, 1975

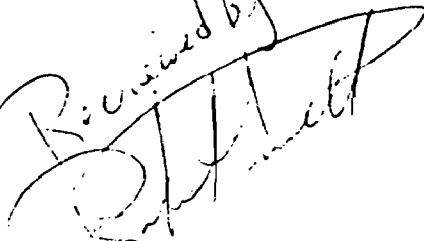
SUBJECT: MSLA - HARRISON AVE

I. THE PURPOSE OF THIS INVESTIGATION IS TO DETERMINE IF M.S.L.A'S HARRISON AVE SITE IS IN COMPLIANCE WITH THE REGULATIONS OF THE BUREAU.

II THE INVESTIGATION REVEALED THE FOLLOWING DEFICIENCIES:

7:26.2.S.13 - THERE ARE TWO STRIPS OF UNCOVERED REFUSE APPROX 10'-15' WIDE

7:26.2.S.1A. - SEVERAL AREAS OCCUR ON THE SURFACE WHERE CONSTRUCTION - DEMOLITION WASTE IS USED AS A COVER MATERIAL, PARTICULARLY ON THE ROADS WHERE IT IS USED AS A BASE.

Reviewed by:


MEMORANDUM

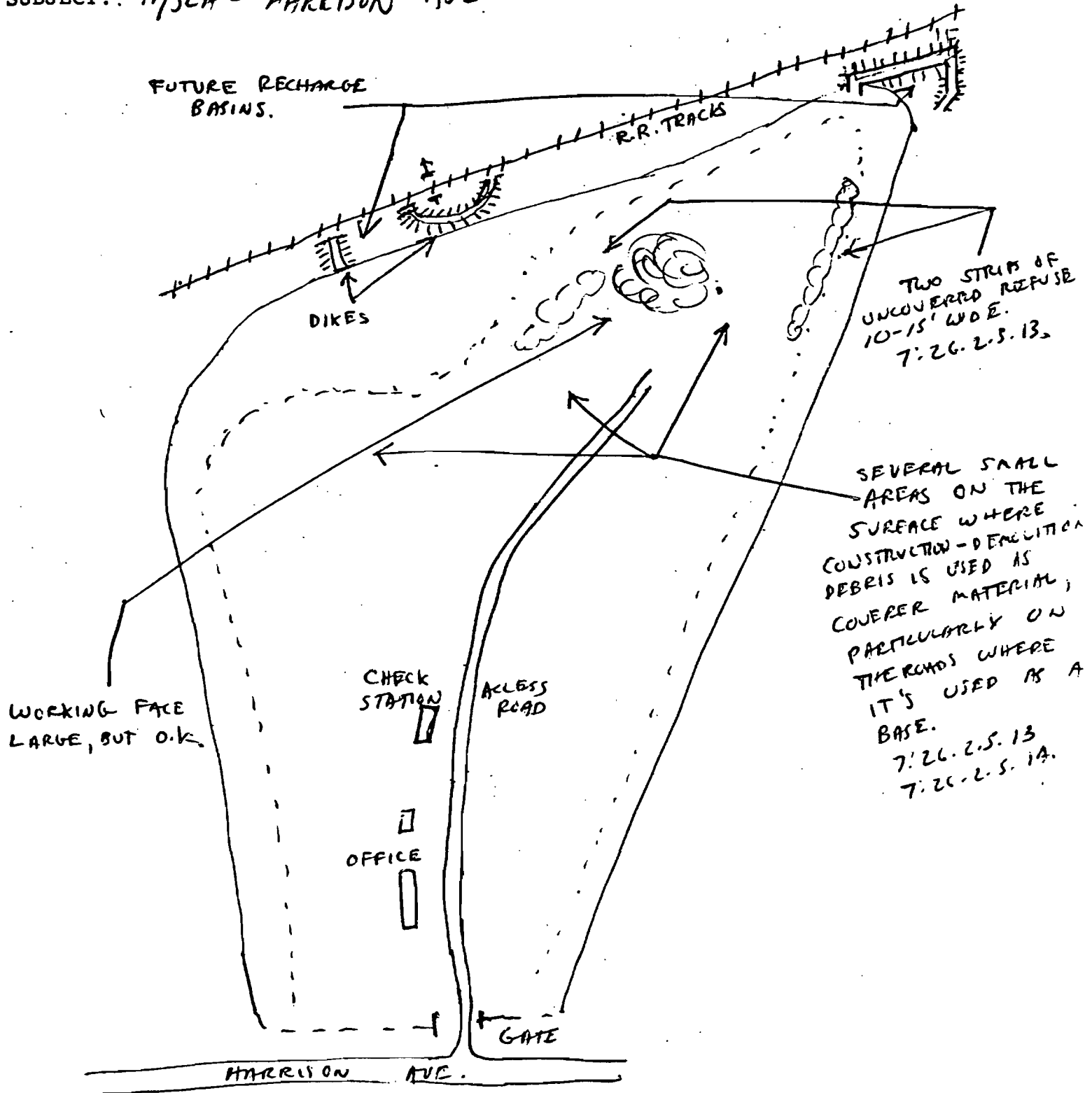
State of New Jersey
Department of Environmental Protection

TO:

FROM:

DATE: JUNE 16, 1975

SUBJECT: MSLA - HARRISON AVE



5/9/76

MTG AT THE MSLA SITE I-D 1:00 PM.

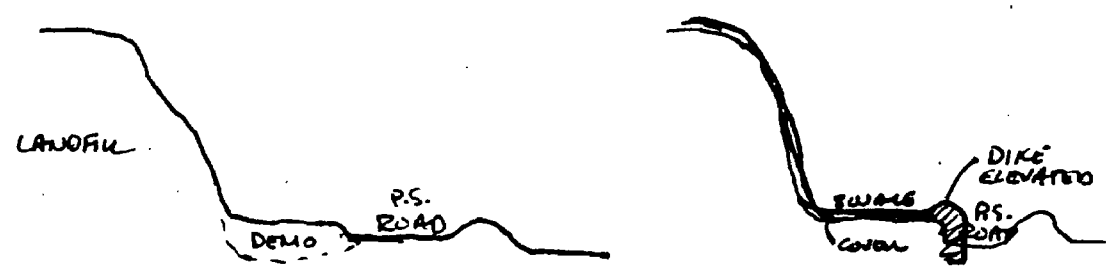
HMOC: MIKE & MARK

MSLA: ROGER BENEZZO, DENNIS BACKUS,
+ 2 FOREMEN

RE: DRAINAGE, DITCHING, PUMPING, LEACHATE CONTROL ON SOUTH SIDE OF SITE. IN ADDITION, GRADING AND COVERING OF SLOPES.

1. GRADING & COVERING OF SLOPES HAS BEGUN...
SAY SHOULD BE COMPLETE WITHIN 3 WEEKS.

2. A ^{NEW SECTION (2 SECTIONS)} ~~SWARE~~ PLAN WILL BE SUBMITTED BY DENNIS BACKUS THAT WILL CONSTRUCT A SWARE OVER RECENT DUMP FILL UP TO NEW DIKE ELEVATION AS FOLLOWS



3. WILL GIVE SPECIAL CONSIDERATION TO PROBLEM OF REMOVING DIKE IN GROUND SOUTH-WEST CORNER INTO COLLECTION BASIN

4. Will submit alternate plan using ditch, etc.

5. Will submit all other necessary info relative to job plus engineering conclusions + description of whole process.

Mark

6. Roger would like a copy every week of the status sent directly to him & take care of. Will do. *Mark*



Hackensack Meadowlands Development Commission

1099 WALL STREET WEST • LYNDHURST, NEW JERSEY 07071 • (201) 935-3250

PATRICIA Q. SHEEHAN
Chairman

WILLIAM D. McDOWELL
Executive Director

June 18, 1976

Mr. Roger Generazzo
Municipal Sanitary Landfill Authority
1500 Harrison Avenue
Kearny, New Jersey

RE: MSLA, FILE 71-175

Dear Mr. Generazzo:

On June 17, 1976, this Office conducted inspections of the MSLA Sites I-A, I-C and I-D, in Kearny. Based on the above, this Office found the following disturbing conditions:

(1) All work has ceased on the drainage and leachate control system along the southerly property line of Site I-D. Specifically, since our last joint inspection, no further covering of the slopes or drainage area has been completed. In addition, the new drainage ditch has been only partially dug and abandoned. Further, the clean fill piled up just south of the new ditch is ineffective as diking, since it is dumped directly over the demo fill. As a result, leachate continues to escape the site through the demo material, and by way of ditches that have been dug to the property south of the PSE&G right-of-way.

We anticipate that work will immediately resume in order that this problem may be corrected as soon as possible.

(2) Active filling on Site I-C has progressed to the easterly slope of the site, along the PSE&G powerline right-of-way. However, the required 50' plateau is not being maintained along that slope and the stakes marking the setback

BAA000015

June 18, 1976

have been removed. Therefore, you are hereby ordered to cease all dumping in the vicinity of the east slope, to immediately stake out a 50' wide plateau from the top of the existing slope and to adhere to the required setbacks during all future filling.

Further, enclosed is a copy of the approved compliance schedule which has been marked to indicate those additional items with which this Office has found deficiencies. We anticipate that you will give all these items your prompt attention in order that they may be resolved as soon as possible.

If there are any questions, please do not hesitate to contact this Office.

Sincerely,

OFFICE OF THE CHIEF ENGINEER



GEORGE D. CASCINO, P.E., P.P.
CHIEF ENGINEER

MA/jo

cc: Dennis Backus, P.E.
Kenneth D. McPherson, Esq.
Mark L. First, Esq., DAG

THOSE DEADLINES UNDERLINED HAVE NOT BEEN MET

MUNICIPAL SANITARY LANDFILL AUTHORITY COMPLAINT SCHEDULE

<u>START</u>	<u>DEADLINE</u> <u>COMPLETE</u>	<u>SITE I-A</u>
	4/1/76	Bimonthly to 1/1/79 - Water Sampling (bi-monthly)
<u>2/1/76</u>	7/1/76	Complete final cover (2') entire site should be completing.
<u>2/1/76</u>	7/1/76	Construct and/or recondition swales for drainage should be completing.
	8/1/76	Seed entire site
	1/1/77	Install methane vents - should be starting.
	1/1/77	Submittal of diking plan, if necessary.
		<u>SITE I-D</u>
<u>IMMEDIATE</u>	<u>IMMEDIATE</u>	Water and methane sampling (monthly)
<u>2/1/76</u>	<u>3/1/76</u>	Re-install leachate pumps 1 and 2 pump on southwest corner removed.
<u>2/1/76</u>	<u>3/1/76</u>	Construct collection and recharge basins - must be reconditioned.
<u>2/1/76</u>	7/1/76	Construct barrier berms.
	7/1/76	Site shall become <u>Inactive</u> .
<u>2/1/76</u>	7/1/76	Final covering shall be complete (2') - not started.
<u>2/1/76</u>	7/1/76	Construct new south swale and ditch - has been abandoned
<u>2/1/76</u>	8/1/76	Install methane vents - not started
<u>7/1/76</u>	9/1/76	Seed entire site.
	<u>DEADLINE</u>	<u>SITE I-C</u>
<u>IMMEDIATE</u>	<u>IMMEDIATE</u>	No filling within 200' of P.S.E. & G Company right-of-way (50' plateau) or within limits of HMDC Sawmill Park Landfill Extension. (both limits should be staked immediately) Has been violated ... shall be re-staked and maintained.
<u>2/1/76</u>	<u>3/1/76</u>	Clean drainage ditch along Belleville Turnpike side of site - only started recently.
	<u>4/1/76</u>	Water sampling (monthly)
<u>2/1/76</u>	<u>4/1/76</u>	Block all drainage pipes under P.S.E. & G. towers

MUNICIPAL SANITARY LANDFILL AUTHORITY COMPLIANCE SCHEDULE CONTINUED

<u>START</u>	<u>COMPLETE</u>	<u>SITE I-C</u>
<u>3/1/76</u>	<u>4/1/76</u>	Install leachate pumps (along P.S.E. & G side) construct collection and recharge basins.
<u>3/1/76</u>	<u>4/1/76</u>	Construct dikes 3 & 5 (P.S. side-south and north of site).
<u>4/1/76</u>	<u>6/1/76</u>	Construct flood gates 1,2,3,&4 (southeast corner under P.S. line for Belleville Ditch)
<u>2/1/76</u>	7/1/76	Construct swales P.S. side (clean ditch?)
	7/1/76	Construct new bridge from Belleville Pike.
<u>6/1/76</u>	7/1/76	Install leachate pumps #3 & #4 (Dike #6 at north tip should be complete - no deadline established).
	9/1/76	Methane samples - monthly
	1/1/77	Revised topos due.
<u>2/1/76</u>	1/1/77	Install methane vents
<u>4/1/76</u>	4/1/77	Elevate dike #4 (or construct new dike on property)
<u>4/1/76</u>	4/1/77	Construct Dikes 1 & 2
9/1/76	5/1/79	Construct barrier berm (Belleville Side)
	5/1/79	Construct barrier berm (P.S.E.&G Side)

THE DEADLINES UNDERLINED HAVE NOT BEEN MET!

COMPLIANCE SCHEDULE (MSLA)

Deadline

SITE I-A

<u>START</u>	<u>COMPLETE</u>	
	<u>4/1/76</u>	Bimonthly to 1/1/79 - Water Sampling (Bi-Monthly)
<u>2/1/76</u>	7/1/76	Complete Final Cover (2') Entire Site <i>SHOULD BE COMPLETING</i>
<u>2/1/76</u>	7/1/76	Construct and/or Recondition Swales for Drainage <i>SHOULD BE COMPLETING</i>
	9/1/76	Seed Entire Site
	1/1/77	Install Methane Vents <i>SHOULD BE STARTING</i>
	1/1/77	Submittal of Diking Plan, if necessary.

SITE I-D

<u>IMMEDIATE</u>	<u>Immediate</u>	<u>- Water and Methane Sampling (Monthly)</u>
<u>2/1/76</u>	<u>3/1/76</u>	Re-install leachate pumps 1 and 2 <i>PUMP ON SOUTH-WEST CORNER REMOVED</i>
<u>2/1/76</u>	<u>3/1/76</u>	Construct Collection and Recharge Basins <i>MUST BE RECONDITIONED</i>
<u>2/1/76</u>	7/1/76	Construct Barrier Berms
	7/1/76	Site shall become <u>Inactive</u>
<u>2/1/76</u>	7/1/76	Final covering shall be complete (2') <i>NOT STARTED</i>
<u>2/1/76</u>	7/1/76	Construct new south swale and ditch. <i>HAS BEEN ABANDONED</i>
<u>2/1/76</u>	8/1/76	Install Methane Vents <i>NOT STARTED</i>
<u>7/1/76</u>	9/1/76	Seed Entire Site

Deadline

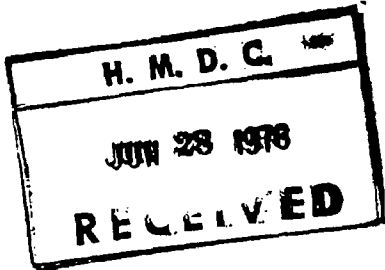
SITE I-C

<u>IMMEDIATE</u>	<u>Immediate</u>	<u>No Filling within 200' of P.S.E.&G. Co. R.O.W. (50' plateau) or within limits of HMDC Sawmill Park Landfill Ext. (Both limits should be staked immediately). <i>HAS BEEN VIOLATED... SHALL BE RE-STAKED AND MAINTAINED</i></u>
<u>2/1/76</u>	<u>3/1/76</u>	Clean Drainage Ditch along Belleville Tpk. side of Site. <i>ONLY STARTED RECENTLY</i>
	<u>4/1/76</u>	Water Sampling (Monthly)
<u>2/1/76</u>	4/1/76	Block all drainage pipes under P.S.E.&G. towers
<u>3/1/76</u>	4/1/76	Install leachate pumps (along P.S.E.&G. side) construct collection and recharge basins.
<u>3/1/76</u>	4/1/76	Construct Dikes 3 and 5 (P.S. side-south and north of site).
<u>4/1/76</u>	6/1/76	Construct flood gates 1, 2, 3, 4 (southeast corner under P.S. line for Belleville Ditch).
<u>2/1/76</u>	7/1/76	Construct swales P.S. side (Clean ditch?)
	7/1/76	Construct new bridge from Belleville Pike.
<u>6/1/76</u>	7/1/76	Install leachate pumps #3 & #4 (Dike #6 at north tip should be complete-no deadline established).
	9/1/76	Methane Samples - Monthly
	1/1/77	Revised topos due
<u>1/1/76</u>	1/1/77	Install methane vents
<u>1/76</u>	4/1/77	Elevate Dike #4 (or construct new dike on property)
	4/1/77	Construct Dikes 1 and 2
	5/1/79	Construct Barrier Berm (Belleville Side)

Municipal Sanitary Landfill Authority

1500 HARRISON AVENUE
KEARNY, NEW JERSEY 07032

PHONE: 991-6814



*TO HARRIS
F.Y.I. FILE
M*

June 23, 1976

Hackensack Meadowlands Development Commission
1099 Wall Street West
Lyndhurst, New Jersey 07071

Att: Mr. George D. Cascino, P.E., P.P.

Re: HMDC Letter dated June 18, 1976;
MSLA Sites I-A, I-C, I-D

Dear Mr. Cascino:

This letter is in response to your recent letter citing the results of an inspection of MSLA Sites I-A, I-C, I-D conducted on June 17, 1976.

Within the past week I have met with you at least three (3) times to discuss plans and progress at the subject landfill sites. In our meeting we talked about the problem of dumping on the easterly slope of site I-C. I told you that I would refer to Dennis Backus, our Engineer and cease operation in the immediate area until clearance is given to proceed.

On June 23, 1976 Mr. Backus informed me of the following:

1. The HMDC roadbed, located to HMDC's plan dimensions 200 ft. off the property line, falls directly in the middle of the existing east slope, not on the top shelf as desired by HMDC.
2. HMDC has not given an elevation for this roadbed as "marked-up" on MSLA plan drawing no. 103-0C

*GIVE THEM ONE!
k*

Without the design elevation for this roadbed and without resolution of the incompatibility of this road location with HMDC's Final Elevation Plan "A Recreation Complex" dated January, 1974, MSLA can not proceed with construction. If MSLA had proceeded with construction to HMDC's 200 ft. location dimension, the whole eastern slope (over 5000 ft.) would have been disturbed. Repeatedly you have requested that this slope not be disturbed because of its view-line from the New Jersey Turnpike.

In the interests of resolving this problem at an early date it is requested that HMDC send a representative to meet at the job site with MSLA and see first hand the magnitude of the problem as indicated by our survey stakes. Subsequently, the road plan can be revised to our mutual satisfaction.

BAA000017

Municipal Sanitary Landfill Authority

1500 HARRISON AVENUE
KEARNY, NEW JERSEY 07032

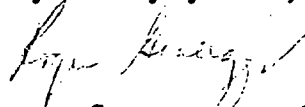
PHONE: 991-6814

In reference to your comments concerning site I-D, in excess of 300 ft. of drainage ditch has been excavated per MSLA's plan. This work was not stopped by MSLA. Construction ceased when the backhoe MSLA specifically purchased for this ditching broke down due to catastrophic failure of the hoe linkage bearing. We have tried unsuccessfully to obtain the necessary parts from two (2) International Dealers and are awaiting a shipment of the necessary parts from the factory. MSLA has not abandoned this construction work at site I-D. As soon as the backhoe is repaired, MSLA will resume work.

Also at site I-D, our engineer informs me that the clean fill you refer to which has been placed there by MSLA to protect the PSEG gas main. The PSEG roadbed serves as a dike and will be effective when the MSLA ditches are drained by the two (2) recirculation pump systems located on the site specifically for this purpose. Any leachate passing through the demolition fill and over the roadbed dikes would have to travel uphill.

In closing, I wish to state that I thought we were working under a plan of cooperation based on our meetings last week. At no time during these meetings did you state that we would receive your referenced letter of complaint. Clearly, your letter was unnecessary and a needless surprise. These items could have been jointly resolved through communication via the telephone.

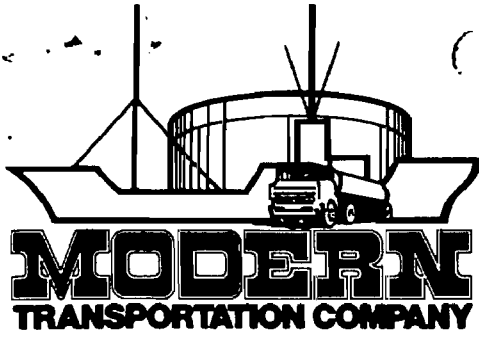
Very truly yours,



Roger Generazzo, Manager
MUNICIPAL SANITARY LANDFILL AUTHORITY

CC D L Backus, Engineer
William McDowell
Waters, McPherson, & Hudzin
Mark First, Deputy Attorney General

RG:nd



75 JACOBUS AVE., S. KEARNY, N. J. 07032 201:589-0277

July 20, 1976

Municipal Sanitary Landfill Authority
1500 Harrison Avenue
Kearny, New Jersey 07032

Attention: Mr. Roger Generazzo
General Manager

RE: Letter Received from Modern Transportation Co.
dated June 14, 1976

Dear Sir:

Pursuant to receiving a copy of a letter that you received from the Hackensack Meadowlands Development Commission dated July 1, 1976, Modern Transportation Co. contracted with United States Testing Company, Inc. to perform the analyses required by Hackensack Meadowlands Development Commission.

Would you be kind enough to once again request permission of the Hackensack Meadowlands Development Commission to dispose of that phase of our lime slurry material not currently being reused or resold for other purposes. Your cooperation in this matter is appreciated.

Very truly yours,

MODERN TRANSPORTATION CO.

John Wengryn, J.
 John Wengryn, J.
 mjd

BAA000022

H. M. D. C.
JUL 23 1976
RECEIVED



UNITED STATES TESTING COMPANY, INC.

REPORT OF WATER AND WASTEWATER ANALYSIS

Page 3 of 3

Client: Modern Transportation Co. Report No.: 86074-282 Date: 7/20/76

Sample No.: 1 Description Powder lime filter material (mg/kg except where noted)

Sample No.: 2 Description Leachate (mg/l of water extract except where noted)

TEST	SAMPLE NO.		TEST	SAMPLE NO.	
	Powder	Leachate*		Powder	Leach.
Acidity (as CaCO ₃)	< 10	< 10	Surfactants		
Alkalinity, Total (as CaCO ₃)			Aluminum		
Alkalinity			Antimony		
Hydroxide %	25.5		Arsenic		
Carbonate %	12.0		Beryllium		
Bicarbonate			Cadmium		
Chlorides			Calcium %	21.2	
Total Organic Carbon			Chromium, Total	< 0.02	< 0.02
Chemical Oxygen Demand (COD)		4	Chromium, Hexavalent		
Fluorides			Cobalt		
Chlorine Residual			Copper	72	3.0
Chlorinated Hydrocarbons			Iron		
Cyanides			Lead	< 0.05	< 0.05
Iodides			Magnesium	6400	210
Hardness, Total			Manganese		
Sulfide			Mercury	< 0.02	< 0.02
Nitrogen			Molybdenum		
Ammonia			Nickel		
Nitrate			Potassium		
Nitrite			Selenium		
Goldahl			Sodium		
Oil/Grease			Tin		
Oil (Units)	12.0**	12.0	Titanium		
Phenols ppb		3	Zinc	7300	150
Phosphate, Total			Immediate Oxygen Demand		
Sulfate, Dissolved			Biochemical Oxygen Demand (5 days)		10
Solids			Biochemical Oxygen Demand (20 days)		
Moisture %	9.45		Coliform, Total (MPN/100 mls.)		
Suspended %		9.00	Coliform, Fecal (MPN/100 mls.)		
Total Dissolved			Fecal Streptococcus (MPN/100 mls.)		
Volatile Suspended			Total Plate Count (per ml.)		
Settleable Solids			Odor (Units)		
Sulfates %	19.3		Color (Units)		5
Sulfides			Specific Conductance (micromhos/cm.)		
Sulfites			Taste (Units)		
Density lbs/ft ³	24.3		Turbidity (J.T.U.)		
ORP vs. Standard Calomel					
Electrode	-60 mv				

REMARKS: * Leachate analysis was performed using 20 gms. of solid & 200 ml of water and conditions per Client's instructions. Leachate concentrations are reported in mg/l of leachate as described. ** 1 powder to 10 distilled water. Note: Powder analyses are reported in mg/kg of dry sample unless otherwise shown.



Hackensack Meadowlands Development Commission

1099 WALL STREET WEST • LYNDHURST, NEW JERSEY 07071 • (201) 935-3250

PATRICIA Q. SHEEHAN
Chairman

WILLIAM D. McDOWELL
Executive Director

July 28, 1976

Mr. Roger Generazzo
Municipal Sanitary Landfill Authority
Belleville Turnpike
Kearny, New Jersey

R: LETTER OF MODERN TRANSPORTATION
DATED JUNE 14, 1976

Dear Mr. Generazzo:

This Office has reviewed the chemical analysis transmitted to this Office by Modern Transportation relative to the disposal of a lime based filter at the MSLA Landfills in Kearny.

Based upon our review, the request of Modern Transportation to dispose of the lime-based filter cake, described in the letter of June 14, 1976, at the MSLA Landfills is hereby approved, subject to the following conditions:

- (1) This approval is valid for a one year period, ending July 27, 1977
- (2) A maximum of 10 twenty yard loads per week is hereby approved. Any increases in the number of loads or cubic yards disposed of at the MSLA Landfills shall be first approved by this Office.
- (3) At least once every six months, the lime-based filter cake (solid) shall be analyzed for the following parameters: Acidity, Hydroxide, Carbonate, pH, % moisture, ORP, Calcium, Copper, Magnesium and Zinc. An analysis report shall be submitted to this Office for review.

BAA000023

July 28, 1976

(4) This approval may be revoked upon two weeks notice
if Modern Transportation violates conditions #1 to #3.

If you have any questions, do not hesitate to contact this Office.

Sincerely,

OFFICE OF THE CHIEF ENGINEER



GEORGE D. CASCINO, P.E., P.P.
CHIEF ENGINEER

JB/jo

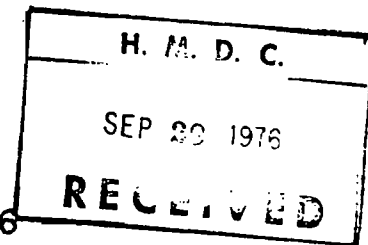
cc: John Wengryn, Modern Transportation

MSLA 24

Municipal Sanitary Landfill Authority

1500 HARRISON AVENUE
KEARNY, NEW JERSEY 07032

PHONE: 991-6814



September 27, 1976

Hackensack Meadowlands Development Commission
1099 Wall Street West
Lyndhurst, New Jersey 07071

Att: Mr. George D. Cascino, P.E., P.P.
Chief Engineer

Re: MSLA Site I-D (1), File 71-175

Dear Mr. Cascino:

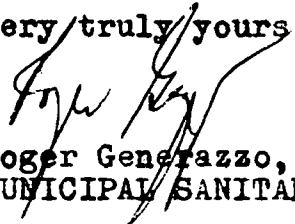
We have obtained the spot elevations requested in your letters of August 23 and September 15, 1976. These are forwarded superposed on a copy of our March 24, 1976 topographical map.

Please note that although as stated in my letter of September 3, "some elevations exceed 50 feet in spots", the majority of the spot elevations do not exceed the maximum approved elevation of 50 feet.

Further, we wish to advise you that we have not finished our work in this area to establish proper drainage. When we have finished spreading, grading and compacting, we expect all of the elevations to fall within the 50 ft. contour.

I expect that these results will meet with your complete satisfaction. If you have any questions, please contact Dennis Backus, of our staff who will be available to discuss this with you.

Very truly yours,


Roger Generazzo, Manager
MUNICIPAL SANITARY LANDFILL AUTHORITY

RG:nd

CC The Joint Venture
Dennis Backus, P.E.

BAAG00024



National Priorities List (NPL)



Contact Us Search: All EPA This Area

You are here: [EPA Home](#) » [Superfund](#) » [Sites](#) » [National Priorities List \(NPL\)](#) » NPL Site Narrative for Diamond Head Oil Refinery Div.

NPL Site Narrative for Diamond Head Oil Refinery Div.

DIAMOND HEAD OIL REFINERY DIV. Kearny, New Jersey

Federal Register Notice: [September 05, 2002 \(PDF\)](#) (9 pp, 193K, [About PDF](#))

Conditions at Proposal (July 27, 2000): The Diamond Head Oil Refinery Div. (Diamond Head) site is located at 1401 Harrison Ave. in Kearny, Hudson County, New Jersey. Currently, the site is inactive and consists of undeveloped land that is bordered by Harrison Avenue to the north, entrance ramp M of Interstate 280 (I-280) to the east, I-280 to the south, and Campbell Distribution Foundry to the west. The site is comprised of wetland areas and drainage ditches, a small wetland/pond, a vegetated landfill area along the western border of the site, and the remnants of the former Diamond Head Oil Refinery on the eastern portion of the site. The abandoned refinery portion of the site contains various construction debris, including foundations of the former on-site building and two former aboveground storage tanks. The refinery is currently owned by the Hudson Meadows Urban Land Development Corporation (HMULDC). A portion of the site is owned by HMULDC.

The Diamond Head Oil Refinery Div. was in operation from February 1, 1946 to early 1979. The facility operated under several company names including PSC Resources, Inc., Ag-Met Oil Service, Inc., and Newtown Refining Corporation. All of these companies were owned by Mr. Robert Mahler. In January 1985, Newtown Refining Corporation sold the property to Mimi Urban Development Corporation, which changed its name to Hudson Meadows Urban Land Development Corporation.

During facility operations, two aboveground storage tanks and possibly underground pits were used to store oily wastes. These wastes were intermittently discharged directly to adjacent properties, including the wetland area to the south of the site, creating an oil lake. The New Jersey Department of Transportation (NJDOT) acquired the property south of the refinery on March 6, 1968. In 1977, NJDOT began construction of I-280 and was reported to have removed 9 million gallons of oil-contaminated water and 200,000 to 250,000 cubic yards of oily sludge from the lake. The material was reportedly transported to Newtown Refining Corporation's facility on Long Island to be recycled; however, there are no reports stating that this recycling process occurred. It is also reported that during the construction of I-280, an underground lake of oil-contaminated ground water was found extending from the eastern limits of the NJDOT right-of-way to Frank's Creek on the west. It is reported that, prior to abandoning the refinery, Diamond Head cleaned out the two aboveground tanks; however, there is no known documentation of this activity. From the close of operations in 1979 until 1982, the abandoned refinery was not completely fenced. During this time, it was reported that dumping of waste oils and other debris took place on site. Refinement International Co. hired Eastern Chemical Co. to clean up the refinery in May 1982. In order to do so, the material in the tanks was analyzed and found to contain polychlorinated biphenyls (PCBs) at a concentration of 206 parts per million (ppm). Subsequent analyses revealed the presence of PCBs at concentrations over 3,100 ppm. Approximately 7,500 gallons of material were pumped out of the tanks and disposed off site by a Resource Conservation and Recovery Act (RCRA) permitted Treatment, Storage, and Disposal Facility (TSDF) by Resource Technology Service. Environmental Transport also removed 27 tons of contaminated soil in May 1982.

Background information indicates that previous investigations have been conducted at the Diamond Head Oil Refinery Div. site. These investigations include a sampling event conducted by the New Jersey Department of Environmental Protection (NJDEP), an Environmental Site Characterization conducted by Killam Associates, and a Site Inspection conducted by the U.S. Environmental Protection Agency (EPA) Region II Field Investigation Team (FIT). During these investigations, ground water, surface water/sediment, surface/subsurface soil, liquid waste and solid waste samples were collected. Analytical results of these samples indicated the presence of volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs), pesticides, PCBs, and metals.

In December 1999 EPA conducted an Expanded Site Inspection (ESI) at the Diamond Head Oil Refinery Div. site. During the ESI, EPA collected surface/subsurface soil and ground water samples from 20 borings advanced throughout the site. EPA also collected sediment samples from the on-site wetland/pond area as well as from the wetland area extending along the southern perimeter of the site. Analytical results indicated the presence of VOCs, SVOCs, pesticides, PCBs, and metals. An observed release to surface water is documented by chemical analyses of sediment samples collected from wetlands along the southern and western boundaries of the site. Level II concentration of lead and zinc are documented to 0.19 mile of wetland frontage located along the southern perimeter of the site.

Status (September 2002): EPA is considering various alternatives for this site.

For more information about the hazardous substances identified in this narrative summary, including general information regarding the effects of exposure to these substances on human health, please see the Agency for Toxic Substances and Disease Registry (ATSDR) ToxFAQs. ATSDR ToxFAQs can be found on the Internet at [ATSDR - ToxFAQs](#) (<http://www.atsdr.cdc.gov/toxfaqs/index.asp>) or by telephone at 1-888-42-ATSDR or 1-888-422-8737.

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Last updated on 11/27/2012

Diamond Alkali Co.

New Jersey

EPA ID#: NJD980528996

EPA REGION 2 Congressional District(s): 08

Essex
Newark

NPL LISTING HISTORY

Proposed Date: 9/8/1983

Final Date: 9/21/1984

Site Description

The Diamond Alkali Superfund Site includes the former pesticides manufacturing plant and surrounding properties at 80 and 120 Lister Avenue in Newark, New Jersey, the Lower Passaic River Study Area, the Newark Bay Study Area and the extent of contamination. The Lower Passaic River Study Area includes the 17-mile tidal stretch of the river from Dundee Dam to Newark Bay, and tributaries. The Newark Bay Study Area includes Newark Bay and portions of the Hackensack River, Arthur Kill and Kill Van Kull. Because the problems posed by the upland part of the site are significantly different from those in the Passaic River and Newark Bay, the site was divided into three operable units: the 80 and 120 Lister Avenue properties, the Lower Passaic River Study Area, and the Newark Bay Study Area. The area is both densely populated and heavily industrialized.

From 1951 to 1969, the Diamond Alkali Company (subsequently known as the Diamond Shamrock Chemicals Company) owned and operated a pesticides manufacturing plant at 80 Lister Avenue in Newark. The property was used for manufacturing by numerous companies for more than 100 years. The mid-1940s marked the beginning of the manufacturing operations related to the current site conditions, including the production of DDT and phenoxy herbicides. Subsequent owners used the property until 1983, when sampling at the site and in the Passaic River revealed high levels of dioxin. Dioxin (also known as 2,3,7,8-tetrachlorodibenzo-p-dioxin or TCDD) is an extremely toxic chemical and an unwanted byproduct of the manufacture of certain chemicals which were produced at the site. Since Occidental Chemical Corporation (OCC) is a successor to the Diamond Shamrock Chemicals Company, OCC is required to perform remedial activities at the 80 and 120 Lister Avenue properties and the Newark Bay Study Area under the Superfund program.

For the Lower Passaic River Study Area, a more innovative approach is being taken. In 2004, EPA formed a partnership with the U.S. Army Corps of Engineers (the Corps), New Jersey Department of Transportation (NJDOT), U.S. Fish and Wildlife Service (USFWS), National Oceanic and Atmospheric Administration (NOAA) and New Jersey Department of Environmental Protection (NJDEP) to conduct a joint study of the Lower Passaic River. The joint study is an integration of a Remedial Investigation/Feasibility Study (RI/FS) under Superfund and a Feasibility Study under the Water Resources Development Act (WRDA). A group of 43 potentially responsible parties (PRPs), including OCC, is required to provide funding for the Superfund portion of the integrated study. In May 2007, a group of 73 PRPs (named the Cooperating Parties Group or CPG), including the above 43, took over the performance of the Superfund portion of the study, under EPA oversight.

Site Responsibility: This site is being addressed through a combination of Federal, State, and potentially responsible party actions.

Threat and Contaminants

Dioxin, pesticides and other hazardous substances were found in the soil at 80 and 120 Lister Avenue. Other properties in the area were also contaminated by dioxin. Dioxin, pesticides, volatile organic compounds (VOCs) and other hazardous substances were found in groundwater at the site. Persons who contacted or ingested the contaminated soil may have been at risk. Although groundwater is not used as a source of drinking water, groundwater migrated toward the Lower Passaic River where it may have added to the contamination of fish and shellfish. However, all of those threats were addressed through immediate and interim remedial actions on the land site. Dioxin, polychlorinated biphenyls (PCBs), mercury, metals and pesticides were also found in sediment samples taken from the Lower Passaic River, Newark Bay and nearby waterways. The Lower Passaic River and Newark Bay are under fish and shellfish consumption advisories, issued by NJDEP based on PCB, dioxin and/or mercury contamination. EPA and NJDEP posted fishing advisory signs within the study area and beyond.

Cleanup Approach

The site is being addressed in several stages: immediate actions and interim remedial actions on the land site, time and non-time critical removals in the Passaic River, a long-term remediation of the 17-miles of the river starting with a focused remediation of the lower eight miles, and a long-term remediation of Newark Bay.

Response Action Status

Immediate Actions: The dioxin discovery led to the 80 Lister Avenue property being secured by a fence and by twenty-four hour security guard service. Exposed soils on the property were covered with geofabric to prevent potential migration of contamination. At other properties, dioxin-contaminated soils and debris were removed by excavation, vacuuming, and other means, and were transferred to 120 Lister Avenue for storage. This work was initiated by the EPA and NJDEP in 1983 and was taken over by the Diamond Shamrock Chemicals Company under State Administrative Consent Orders.

Interim Remedy: In 1987, EPA selected an interim remedy for the 80 and 120 Lister Avenue properties that included (1) construction of a slurry wall and flood wall around the properties, (2) installation of a cap over the properties, and (3) pumping and treating of groundwater to reduce the migration of contaminated groundwater. Under a 1990 Consent Decree with EPA and NJDEP, OCC and Chemical Land Holdings (CLH) submitted design plans to EPA for construction of the interim remedy. Prior to approving the design plans, EPA, at the request of the local community, explored the potential for implementing an alternative to the interim remedy selected in 1987. EPA considered innovative technologies as well as on-site and off-site thermal treatment options, but due to the nature of the material to be remediated, new technologies were deemed inappropriate at that time, and no off-site option was available. One alternative, on-site incineration, was deemed technically feasible, but the local community expressed opposition to on-site incineration in public meetings throughout the summer of 1998. Therefore, EPA approved the design plans for the interim remedy. CLH, now known as Tierra Solutions, Inc. (TSI), selected its construction contractor after approval of the design plans and specifications. Construction began in April 2000 and was completed in December 2001. The construction completion report was approved on July 24, 2006. Under the 1990 Consent Decree, the interim remedy is required to be reevaluated every two years to determine if it remains protective of human health and the environment. Pursuant to the Consent Decree, the first Remedy Evaluation Work Plan was submitted and is undergoing review.

Non-Time Critical Removal: In June 2008, OCC and EPA signed an Administrative Order on Consent (AOC) for a non-time critical removal of approximately 200,000 cubic yards of contaminated sediment from the Passaic River in the vicinity of the former Diamond Alkali plant in Newark NJ, to be done in 2 phases. Phase 1 would include the excavation of 40,000 cubic yards of contaminated sediment which would be shipped off-site for treatment and disposal. Phase 2 would include the excavation of 160,000 cubic yards of contaminated sediment which would be placed in a CDF, anticipated to be sited and constructed in Newark Bay. A public comment period was held from 11/19/08 to 12/19/08 on the Phase 1 Proposed Plan, the Engineering Evaluation/Cost Analysis and draft Community Involvement Plan, and the Action Memorandum was signed 1/9/09. After completion of the design plans, construction began in July 2011. Dredging began in March 2012 and the project was completed in January 2013.

Time-Critical Removal: In June 2012, EPA and the CPG signed an AOC for a time-critical removal action to address the risks posed by elevated concentrations of dioxins and PCBs (and other contaminants) found at the surface of a mudflat on the east bank of the river at River Mile (RM) 10.9 in Lyndhurst, NJ. The action will involve removing the volume of sediment necessary to place an engineered cap over those contaminated sediments, thereby reducing exposure and preventing migration of the contamination to other parts of the river. Design of the action is underway and dredging is expected to begin in summer 2013. This time-critical removal action is not a final remedy: a final decision for RM10.9 will be made by EPA as part of the 17-mile Lower Passaic River Study Area RI/FS Record of Decision.

Lower Passaic River Study Area: Under an AOC executed on April 20, 1994, CLH, on behalf of OCC, started an RI/FS in a six-mile stretch of the Passaic River. The objectives of the study were to determine: (1) the spatial distribution and concentration of dioxins, furans, PCBs, polycyclic aromatic hydrocarbons (PAHs), pesticides and metals, both horizontally and vertically in the Passaic River sediments; (2) the primary human and ecological receptors of contaminated sediments; and (3) the transport of contaminated sediment within the Study Area.

The sampling results from the six-mile stretch investigation and other environmental studies showed that sediments contaminated with hazardous substances, and potential sources of hazardous substances, exist along the entire 17-mile tidal stretch of the Passaic River, from Dundee Dam to Newark Bay. As a result, EPA expanded its investigation to include that 17-mile portion, also known as the Lower Passaic River, and its tributaries. At the same time, the Corps, with NJDOT as local sponsor, was authorized to conduct a study of restoration opportunities along the 17-mile Lower Passaic River. EPA, NJDEP, the Corps, NJDOT, NOAA, and USFWS formed a partnership to conduct a joint Superfund-WRDA study of the Lower Passaic River watershed.

During the course of the 17-mile study, the sediments of the lower eight miles of the river were found to be a major

source of contamination to the rest of the river and Newark Bay. Therefore, a Focused Feasibility Study was developed to evaluate alternatives for an action to control this major source of pollution. A draft of the Focused Feasibility Study was reviewed by a group of stakeholders and their comments are being incorporated. A Proposed Plan is expected to be released for public comment in 2013.

Newark Bay Study Area: In a separate action, EPA also found that hazardous substances are present in Newark Bay. Therefore, on February 13, 2004, EPA and OCC entered into an AOC for TSI to conduct an RI/FS in Newark Bay and its tributaries.

Enforcement Status

In 1984, NJDEP and Diamond Shamrock Chemicals Company entered into two Administrative Consent Orders, the first for the investigations and immediate response work at 80 Lister Avenue and the second for investigations and immediate response actions at other properties including 120 Lister Avenue. A Consent Decree was filed in 1989 among OCC, CLH, the State and EPA requiring OCC and CLH to undertake cleanup activities at the site. The U.S. District Court approved the Consent Decree in November of 1990. This work is being conducted under EPA oversight. In addition, CLH, on behalf of OCC, entered into an AOC on April 20, 1994 with EPA. Under this AOC, CLH conducted extensive sampling in a six-mile stretch of the Passaic River, the results of which have been incorporated into the current 17-mile Lower Passaic River Study.

On February 13, 2004, EPA and OCC signed an AOC for TSI to perform an RI/FS for Newark Bay, including portions of the Hackensack River, Arthur Kill and Kill Van Kull. The AOC allows EPA to maintain oversight of the Newark Bay work and to ensure that it is conducted consistently with the Lower Passaic River study.

Effective June 22, 2004, EPA entered into an AOC with 31 potentially responsible parties (PRPs) to fund the RI/FS portion of the joint Superfund-WRDA study of the Lower Passaic River (i.e., the 17-mile, tidal portion of the river, from Dundee Dam to Newark Bay, and tributaries). The Corps and NJDOT are cost-sharing equally the WRDA portion of the joint study. Effective November 9, 2005, EPA's June 2004 administrative settlement has been amended to include 12 additional companies that will share in the estimated cost of the RI/FS portion of the Lower Passaic River Restoration Project. A key benefit of the amendment is that all of the companies (both the new parties and the earlier settlers) have agreed to pay EPA \$750,000 in additional funding for the RI/FS if such additional funds are needed to complete the study. On May 8, 2007, EPA entered into another AOC with 73 PRPs (including the 43 PRPs who signed the previous AOCs), for them to take over the RI/FS work, with EPA oversight. Coordination of the RI/FS with the WRDA portion of the study will continue through EPA.

On June 23, 2008, EPA and OCC signed an AOC for TSI to perform a non-time critical removal of 200,000 cubic yards of contaminated sediment from the Passaic River in the vicinity of the former Diamond Alkali plant in Newark, NJ, to be done in 2 phases. This work is being conducted under EPA oversight.

In June 2012, EPA and the CPG signed an AOC for a time-critical removal action to address the risks posed by elevated concentrations of dioxins and PCBs (and other contaminants) found at the surface of a mudflat on the east bank of the river at RM10.9 in Lyndhurst, NJ. This work is being conducted under EPA oversight.

Cleanup Progress

The interim remedy has reduced risks associated with the 80 and 120 Lister Avenue properties.

The Phase 1 non-time critical removal action removed the most concentrated inventory of dioxin-contaminated sediments from the Lower Passaic River.

Site Repositories

Newark Public Library, 5 Washington Street, Newark, NJ 07102

U.S. EPA Region 2 Superfund Records Center, 290 Broadway, 18th floor, New York, NY 10007

Diamond Head Oil Refinery Superfund Site Kearny, New Jersey



July 2009

EPA ANNOUNCES PROPOSED PLAN

This Proposed Plan identifies the preferred alternative for an Early Action to address the light nonaqueous phase liquid (LNAPL) source area at the Diamond Head Oil Refinery site, and provides the rationale for that preference. For this action, also referred to as Operable Unit 1 (OU1), EPA is recommending construction of an on-site biocell to facilitate the biodegradation of the LNAPL source area. Not all the wastes are expected to be effectively treated within the biocell, so this Early Action also includes the excavation and off-site disposal of the more highly contaminated material within the LNAPL source area. This action would be taken while remedial investigations to determine the full nature and extent of contamination for the site are completed.

This proposed plan summarizes the data considered in making this early action recommendation. This document is issued by EPA, the lead agency for site activities. EPA, in consultation with the New Jersey Department of Environmental Protection (NJDEP), the support agency for site activities, will select the final OU1 remedy after reviewing and considering all information submitted during a 30-day public comment period. EPA, in consultation with NJDEP, may modify the preferred alternative or select another response action presented in this Proposed Plan based on new information or public comments. Therefore, the public is encouraged to review and comment on all the information presented in this Proposed Plan.

EPA is issuing this Proposed Plan as part of its community relations program under Section

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:

July 14, 2009 - August 12, 2009, U.S. EPA will accept written comments on the Proposed Plan during the public comment period.

PUBLIC MEETING:

July 22, 2009 at 6:00 P.M.

U.S. EPA will hold a public meeting to explain the Proposed Plan and all of the alternatives presented in the Feasibility Study. Oral and written comments will also be accepted at the meeting. The meeting will be held at the main council chambers in Town Hall, 402 Kearny Avenue, Kearny, New Jersey.

For more information, see the Administrative Record at the following locations:

U.S. EPA Records Center, Region II
290 Broadway, 18th Floor
New York, New York 10007-1866
(212-637-4308)
Hours: Monday-Friday – 9 A.M. to 5 P.M.

Kearny Public Library
318 Kearny Avenue
Kearny, New Jersey 07032
(201-998-2666)

117(a) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA, or Superfund), and Sections 300.430 (f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). This Proposed Plan summarizes information that can be found in greater detail in several reports, included in the Administrative Record, in particular, the June 2009 report *Operable Unit 1 Focused Feasibility Study for the LNAPL Source Area* (FFS Report). EPA and NJDEP encourage the public to review these documents to gain a more comprehensive

understanding of the site and Superfund activities that have been conducted there.

SITE DESCRIPTION

The Diamond Head site, listed as 1401 Harrison Avenue, Kearny, New Jersey, is characterized by contamination from a former oil reprocessing facility located near the Hackensack Meadowlands. Figure 1 shows the site location. The site is comprised of a 15-acre unoccupied parcel that includes wetland areas and drainage ditches, a small wetland/pond, a vegetated landfill area along the western border, and the remnants of the former Diamond Head Oil Refinery on the eastern portion of the site. The parcel is bordered by Harrison Avenue (also called the Newark Turnpike) to the north, entrance ramp "M" of Interstate 280 (I-280) to the east, I-280 to the south, and Campbell Distribution Foundry to the west.

The land use surrounding the site is industrial or open space/wetlands; the nearest residential area is a half-mile to the west. To the south, a Municipal Sanitary Landfill Authority (MSLA) landfill, identified as the 1-D Landfill, is situated south of I-280.

The 15-acre parcel is fenced. The prior site operations took place on the eastern half of the parcel; the landfilled area was once an access road to the 1-D Landfill, and a landfill mound remains from those activities that rises 10 to 15 feet above the rest of the site. Surface water drains through a drainage ditch that eventually discharges to Frank's Creek, which in turn discharges to the Passaic River.

SITE HISTORY

The oil reprocessing facility operated under several company names, including PSC Resources, Inc., Ag-Met Oil Service, Inc., and Newtown Refining Corporation, from 1946 to early 1979. All of these companies were owned by Mr. Robert Mahler. During facility operations, multiple

aboveground storage tanks and possibly subsurface pits were used to store oily wastes. These wastes were intermittently discharged directly to adjacent properties to the east and the wetland area on the south side of the site, creating an "Oil Lake."

In 1976, the New Jersey Department of Transportation (NJDOT) purchased several lots from PSC Resources, Inc., as part of its plans for construction of I-280. In 1977, NJDOT removed over 10 million gallons of oil and oil-contaminated liquid and over 230,000 cubic yards of oily sludge from the area of the Oil Lake. The liquid wastes were shipped to waste-oil recycling facilities. The oil-contaminated sludges from the bottom of the Oil Lake were excavated and placed in a series of disposal cells, one atop the MSLA 1-D Landfill, and a series of smaller cells within the right-of-way (ROW) to the highway, next to the then still-operating oil-reprocessing facility. The details of these disposal efforts are not well documented, but a simple liner and a clay-based capping material were to be part of the disposal efforts for the sludges.

While the surficial Oil Lake was removed and filled, the NJDOT also reported finding an "underground lake" of oil-contaminated groundwater extending from the eastern limits of the I-280 right-of-way to Frank's Creek, west of the site.

From the close of operations in 1979 until 1982, the abandoned site was not completely fenced. In 1982, during the dismantling of the oil reprocessing facility, approximately 7,500 gallons of materials were apparently pumped out of the tanks and disposed off site, and 27 tons of contaminated soil were reportedly removed from the site. It was sampling undertaken during this cleanup effort that first identified hazardous substances, including polychlorinated biphenyls (PCBs) in waste material collected from the site. Aerial photographs from 1982 show that the oil reprocessing facility infrastructure had been dismantled. The buildings and facilities associated

with previous site operations were constructed on the eastern half of the site, and some remnant concrete building and tank foundations remain. In 1985, the refinery property was sold to Mimi Urban Development Corporation, which subsequently changed its name to Hudson Meadows Urban Development Corporation.

The property sat idle for a number of years, at least in part because of the alleged contamination. EPA was asked by NJDEP to evaluate the site for inclusion on the National Priorities List (NPL) in 1999. The site was added to the NPL of Superfund sites in September 2002.

In 2002, EPA began a remedial investigation (RI) to determine the nature and extent of the problems posed by the site. In addition to the LNAPL findings discussed below, the RI found soil, groundwater, sediment and surface water contamination attributable to the site. The RI also included a number of test trenches through the landfill portion of the site to assess the nature of the material buried there, and has collected borings along the I-280 ROW berms to confirm the presence of the buried sludges. Site studies are ongoing; for example, new groundwater monitoring wells were installed earlier in 2009 on a number of neighboring properties to fully assess the extent of the groundwater problems posed by the site. Field investigations for the comprehensive remedial investigation of the site are expected to be complete in 2010, at which time EPA can proceed with evaluating remedial alternatives for the entire site.

SITE CHARACTERISTICS

Site Hydrology

The nearest surface water body is Frank's Creek, and as a result of I-280's construction, all drainage on the north side of the highway now travels by a man-made drainage swale, a distance of about 600 feet to the creek, which in turn discharges to the Passaic River. Prior to the 1940s, the area south of Harrison Avenue was wetland. Landfilling

activities that started in the 1940s began to shrink and divide the wetland areas, and the eventual Oil Lake, estimated in 1977 at between six and seven acres, appears to have formed in a remaining lowland area surrounded by properties filled for industrial development and by what would become the MSLA 1-D Landfill. With the construction of I-280, including the placement of the ROW berms, an isolated wetland, frequently ponded, remains just south of the former Diamond Head Oil facility.

Two factors have a significant influence on the water table at the site. The first is the presence of wetlands along the southern site boundary that include areas of surface water, and the second is the presence of an LNAPL plume in the southeast corner of the site in the area of the former lagoon. Although lighter than water, the density of the LNAPL has the effect of depressing the water table and influencing groundwater flow. Excepting these areas, groundwater is first encountered at the site under unconfined conditions at a depth of one to two feet below the ground surface.

Site Hydrogeology

The stratigraphy at the site consists of a relatively uniform vertical sequence of unconsolidated materials as follows, from top to bottom:

- A highly variable (in content and thickness) layer of anthropogenic fill across the site, consisting of typical demolition-type debris, including wood, brick, metal, glass, plastic and concrete mixed in a matrix of poorly sorted fine to coarse sand and gravel or silt, sand, and gravel.
- A sand unit about five feet thick on the western side of the site and pinching out until it is not present on the eastern side of the site.
- A silty clay unit, up to eight feet thick in sections of the site, that appears to be continuous throughout the study area.

- A distinctive peat layer of varying thickness but considered continuous across the site.
- A silt and sand unit approximately 15 to 20 feet thick beneath the peat.
- Laminated silt and clay unit, the full thickness of which was not observed in any of the study borings to date (as deep as 50 feet).
- Bedrock, which also has not been encountered to date.

Shallow groundwater flow direction above the silty clay and peat layers is consistent with surface water flow directions, to the south and west. In the waterbearing unit below the peat, groundwater flows from northeast to southwest, consistent with regional trends in groundwater flow.

The ongoing RI studies will result in a more comprehensive understanding of stratigraphy and groundwater.

Nature and Extent of LNAPL Source Material

The RI studies to date have outlined two areas as potential source areas where LNAPL may be continuing to release contamination to the environment:

- the former oil reprocessing section of the site, once containing two buildings, multiple aboveground storage tanks (ASTs), drum storage areas, and possibly underground pits; and
- remnants of the Oil Lake, estimated in 1977 to cover an area of six to seven acres, located over the southern section of the site and extending outside the site's fenced boundaries to the east and south.

Currently, in the oil processing section of the site, only the foundations of one building and two ASTs are visible. No remnants of the Oil Lake are visible, but historical information shows that the

lagoon occupied the southeastern section of the site and extended eastward. Figure 2 shows the boundary of the Oil Lake compiled from historical aeriels of the site.

There is evidence of oil contamination in nearly every boring installed within the 15-acre fenced property and in many borings to the southeast. Because of this "smear" of oil contamination across the site, the RI studies performed to date have used the following methods to document the nature and extent of the LNAPL, and to identify the more severely contaminated areas of the site:

- A geotechnical measurement tool called laser-induced fluorescence (LIF) allowed for the subsurface mapping of borings that contain LNAPL. LIF can rapidly identify an oil "fingerprint," including both extent and relative concentration.
- Soil borings were collected throughout the site down to the laminated silt and sand unit, as much as 50 feet deep, and the presence of oil staining or separate-phase oil in the soil borings was documented. These results were compared with the LIF sample points to calibrate the LIF data to site-specific conditions.
- A number of monitoring wells, meant to measure groundwater contamination, have thicknesses of floating product in the tops of the wells, with as much as five feet of LNAPL floating in some wells.
- Samples were collected of contaminated soil and oily wastes and sludges and sent for laboratory analysis to identify potential contaminants of concern and to establish an analytical profile of the LNAPL.

Using these methods, several characteristics of the LNAPL were established:

- The LIF study concluded that LNAPL is present in the subsurface throughout most of the investigated area, though the LIF showed wide variations in the intensity of the LNAPL

signal, indicating substantial variation in concentration across the site.

- LNAPL was measured in wells in three areas of the site, one in the former process area, and two within the footprint of the Oil Lake. These areas are identified on Figure 2.
- The vertical occurrence of LNAPL can be further separated into two depth intervals: (1) at the water table (approximately two feet below ground surface), sometimes with an extended smear zone into the saturated fill-containing material and soil to about 10 feet below ground surface; and (2) as a distinct deeper interval at depths of 10 to 16 feet below ground surface within the silty/clayey soil. The bulk of LNAPL-containing soil is located near the water table within the fill layer.
- LNAPL appears to contain more diesel range organics than gasoline range organics. The following compounds or classes of compounds were detected in the LNAPL: benzene, toluene, ethylbenzene, and xylenes, as well as a number of other volatile and semivolatile organic compounds (VOCs and SVOCs) consistent with a petroleum matrix. In addition, two PCBs (Arochlor-1232 and Arochlor-1260) and a variety of metals, including lead and cyanide were also identified in LNAPL-zone samples.
- Despite the large thickness of LNAPL found in some monitoring wells and its relatively high saturation, LNAPL is extremely viscous and is relatively immobile under ambient gradients. This is indicative of a highly weathered LNAPL, where much of the more mobile components of the site releases have degraded or already traveled away from the site, leaving the less mobile fractions.
- Within LNAPL, there are pockets of less weathered LNAPL of high saturation that present a leaching concern to groundwater. These are LNAPL areas that may be

considered to present a risk for leaching contaminants to groundwater.

Principal Threat Evaluation of LNAPL

Based on the LNAPL studies performed to date, portions of the LNAPL are more mobile, are likely to have a higher toxicity, and are at a much greater concentration at the site. These high-level wastes form the "principal threat" posed by the site. Having developed an understanding of the nature and extent of the LNAPL, the RI studies further identified characteristics for the principal threat LNAPL, consistent with EPA guidance.

EPA defines principle threat wastes as "those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur. They include liquids or other highly mobile materials (e.g., solvents) or materials that have high concentrations of toxic compounds." By contrast, low-level threat wastes are defined as "those materials that generally can be reliably contained and that would represent a low risk in the event of a release. They include materials that exhibit low toxicity, low mobility in the environment, or are near health-based levels."

The following lines of evidence based on site-specific data were used to interpret whether the LNAPL source material at the Diamond Head site represents a principal and/or a low level threat:

- Assessment of the presence of LNAPL in the soil column through soil borings and interpretation of LIF results, placing particular emphasis on LNAPL found at or near the ground surface and, therefore, posing a direct-contact threat;
- Comparison of LIF results to areas where LNAPL was visually observed in the pore spaces of soil cores collected from soil borings, and to groundwater data to indicate where the highest mass of wastes were located, and where those high-concentration

wastes were associated with elevated groundwater concentrations; and

- Areas where a measureable thickness of LNAPL was found in monitoring wells and piezometers during RI studies.

Using these lines of evidence, LNAPL detected at the site was separated into areas where LNAPL material is considered to represent a principal threat, and areas where LNAPL can be considered to represent a lower-level threat, and for which appropriate measures will be considered during future feasibility studies. Figure 2 shows the areas identified as a principal threat using these lines of evidence (shaded in orange). The total area is roughly 176,000 square feet. This area includes the two areas of the site where monitoring wells contain measurable thicknesses of LNAPL (shaded in yellow). The thicknesses of the principal threat LNAPL varies. Based on an average depth of seven feet below ground surface, a volume of 45,825 cubic yards, including 2,593 cubic yards where LNAPL floating product is found in wells, constitutes the principal threat LNAPL (outlined in red on Figure 2).

A noncontiguous area within cloverleaf of I-280 (also identified on Figure 2) appears to meet some of the characteristics of a principal threat as described in the FFS, but it is not as near the surface, and groundwater contamination is not as clearly attributable to this area. This area is not included within the definition of a principal threat for this Early Action; further studies of this area will be carried out as part of the site-wide RI.

While further studies of the landfilled area of the site are required, the history of site activities and the test trenches already installed support EPA's conclusion that the landfill is not a source of LNAPL. EPA will further evaluate the landfill as part of a site-wide RI.

SCOPE AND ROLE OF ACTION

In order to remediate Superfund sites, work is often divided into remedial phases, also referred to

as operable units. This first operable unit has been identified as an early action to address the principal threat LNAPL. A second operable unit will address residual soil contamination attributable to the site including lower-level threat LNAPL, the on-site landfilled area, the ROW berms, and groundwater and sediment contamination.

ENFORCEMENT

Diamond Head Oil Refinery, Inc., and its affiliated companies are no longer in business. Hudson Meadows Urban Development Corporation (HMUDC) is the land owner for the former Diamond Head Oil facility, and Kearny Township and NJDOT retain ownership to the remaining land associated with the site. At the start of the RI/FS, EPA concluded that HMUDC was not capable of funding the cost of the necessary studies; the RI/FS has been federally funded.

SUMMARY OF RISKS ATTRIBUTABLE TO LNAPL SOURCE AREAS

The focus of this Early Action is to address light nonaqueous phase liquid (LNAPL) that constitutes a principal threat at the site. The principal threat LNAPL is physically similar to free oil product. Oil products are toxic to ecological receptors and humans through direct contact, incidental ingestion, and inhalation pathways. Potential exposure to ecological receptors and humans from the high-concentration LNAPL that is present at the site could result in adverse health effects. It is, therefore, important that steps be taken to reduce or eliminate the volume of LNAPL present at the site. Reducing or eliminating the LNAPL at the site would reduce potential exposure to free product and is an important early step in managing the site risks; however, it is not expected to eliminate the overall risks and hazards to ecological receptors or humans because of residual contamination that would remain on the site. This residual contamination will be addressed in subsequent

actions and will be accompanied by full ecological and human health risk assessments.

In addition to removing the potential exposure to LNAPL at the site, reducing or eliminating the LNAPL would also limit its potential migration, which would aid in investigating and selecting a remedy for the remainder of the site.

A list of chemicals of potential concern identified to date can be found in Table 1. Further information about the nature and extent of contamination found at the site is included in the Administrative Record.

Based upon the results of the site studies to date, EPA has determined that actual or threatened releases of hazardous substances from the site, if not addressed by the preferred remedy or one of the other active measures considered, may present a current or potential threat to human health and the environment.

REMEDIAL ACTION OBJECTIVES

The following remedial action objectives for the principal threat LNAPL wastes address the human health risks and environmental concerns at the Diamond Head Oil site:

- Remove or treat principal threats, consistent with the NCP, to the extent practicable;
- Prevent current and future migration of LNAPL and associated chemical contaminants to the various media at the site including groundwater and seeps to surface water; and
- Prevent human exposure through direct contact with the principal threat LNAPL.

The first two RAOs are intended to address the principal threat LNAPL and the contamination that may be released from this material. The third RAO is intended to address risks to potential future site workers/users as a result of exposures to this material.

This proposed action would address the principal threat wastes that have been identified to date at the site, thereby addressing the most highly contaminated material that, without early attention, would result in ongoing contamination of currently uncontaminated areas. The RAOs would be achieved by attaining the remediation goals of no measurable thickness of LNAPL in monitoring wells, and no potential for LNAPL-contaminated soil to leach oil and grease to groundwater, as measured by a synthetic precipitate leachate procedure (SPLP) leaching test. Because there are no Federal or State cleanup standards for LNAPL, EPA established these remediation goals based upon the toxicity and mobility and the principal threats to address this continuing source.

SUMMARY OF REMEDIAL ALTERNATIVES

The RAOs identified above are primarily focused on addressing the LNAPL mass and do not specifically address the co-located chemical contamination in soil at the site. Some, though not all of this chemical contamination is associated with LNAPL; therefore, by reducing the mass of LNAPL, the Early Action would also reduce some of the co-located chemical contamination and the unacceptable risks to potential human and ecological receptors associated with both the LNAPL and co-located chemical contamination at the site.

While the effects of the selected technologies on the co-located chemical contamination cannot be quantified at this time, the effectiveness of each alternative is presented in terms of LNAPL source reduction and the technology's potential to reduce concentrations of other chemicals present at the site.

The principal threat LNAPL to be addressed by this proposed action encompasses two areas (outlined in red in Figure 2), and identified in the FFS report as the "remedial target area." The thickness of the principal threat LNAPL varies from between six and 12 feet, and at its deepest,

appears to have penetrated as much as six inches into the silty/clay layer that underlies the site. The total volume of these areas was estimated in the FFS at 45,825 cubic yards.

The RI included several treatability studies of technologies that are commonly used for petroleum-based LNAPL: *in-situ* air sparging and LNAPL pumping. For both technologies, the viscosity of the LNAPL was an impediment to successful performance. Consequently, neither of these technologies was carried forward in the FFS, although the biodegradation treatment process at work in air sparging is present in Alternative 2.

Detailed descriptions of the remedial alternatives can be found in the FFS report. The alternatives are:

Alternative 1: No Action

Capital Cost:	\$0
Annual O&M Cost:	\$0
Present-Worth Cost:	\$0
Construction Time:	NA

The Superfund program requires that the "no-action" alternative be considered as a baseline for comparison with the other alternatives. The no further action alternative does not include any physical remedial measures (beyond those response actions already completed) that address the LNAPL contamination at the site.

Because this alternative would result in contaminants remaining on site above health-based levels, CERCLA requires that the site be reviewed every five years. If justified by the review, remedial actions may be implemented to remove or treat the wastes.

Alternative 2: On-Site Biocell

Capital Cost:	\$16,080,000
Annual Biocell Operations Cost:	\$207,000
Annual operation and maintenance (O&M) Costs:	\$0
Present-Worth Cost:	\$17,340,000
Construction Time:	1 year
Remediation Time:	5 years

Under this alternative, the remedial target areas would be isolated with a sheet pile wall, and the principal threat LNAPL areas excavated. Some of this material, as discussed more fully below, would be removed for off-site disposal. The remaining excavated material would be augmented with nutrients and bulking agents to enhance permeability and the conditions for biological activity. The area within the sheet pile walls would be converted into a biocell by installing piping to supply air and distribute nutrient additives, along with a collection system for air and water that may accumulate in the biocell. The augmented LNAPL material would then be placed in the biocell for treatment, and capped.

The biocell would require continued operation of the aeration, nutrient distribution, and water collection systems, including collecting and treating water accumulated in the biocell, and maintenance of the cover, until the remediation goals are achieved. The FFS describes performance sampling and final confirmation sampling that would be required to demonstrate that the LNAPL wastes have been destroyed through biological degradation, at which time, the biocell components would be dismantled. The FFS estimates that the biocell would require five years to achieve the remediation goals.

Areas where a measureable layer of floating LNAPL product is found in monitoring wells may not be amenable to effect treatment in the biocell, or may extend the time frame required for

treatment beyond the projected five-year time period. Under this alternative, these areas would be excavated and transported for off-site disposal. These highly contaminated soils and sludges may need treatment via stabilization to allow for transportation. The quantity of material that would not be suitable for the biocell cannot be determined until remedial design; for cost-estimating purposes, the FFS assumed, at minimum, that the floating product area, approximately 2,600 cubic yards of the 45,825 cubic yards within the remedial target areas, would be disposed of in this fashion. Although additional treatability work during remedial design will refine the amount of material to be shipped off site for disposal, the volume could be much larger than 2,600 cubic yards; the effectiveness of the process in achieving cleanup goals within given time periods will be a major factor in this determination. For example, removing a larger volume of material for off-site disposal may reduce the time to meet cleanup goals and enable more rapid reuse of the site.

While this alternative would result in contaminants remaining within the remedial target areas above health-based levels, the action is expected to address the principal threat LNAPL as a final action. A subsequent Record of Decision will be required to make a final determination about the underlying constituents that would remain within the treated soil; therefore, the need for a review of the site every five years, as required by CERCLA if contaminants remain above health-based levels, would be made at that time. If justified by the RI/FS, remedial actions may be implemented to remove or treat such wastes.

Alternative 3: On-Site Soil Washing

Capital Cost:	\$18,560,000
Annual O&M Costs:	\$0
Present-Worth Cost:	\$18,560,000
Construction Time:	1 year

Under this alternative, the remedial target areas would be isolated with a sheet pile wall, and the principal threat LNAPL areas excavated. The excavated material would then be treated on site using soil washing. The excavated soils and LNAPL wastes would be placed in a slurry reactor vessel and combined with a washing fluid, a combination of water, surfactants and co-solvents that would "wash" (desorb or dissolve) the LNAPL from the soil particles. This technology requires a water treatment facility to treat the LNAPL and contaminants of concern in the washing fluid so it can be reused. The separated wastes from soil washing would be taken off site for further treatment and disposal. The treated soil material would be tested for compliance with the cleanup goals, and returned to the excavated areas.

The FFS describes confirmation sampling required to demonstrate that the LNAPL wastes have been removed from the treated soils prior to returning the material to the excavation. The FFS estimates that soil washing could be implemented in approximately one year.

As with Alternative 2, areas where a measureable layer of floating LNAPL product is found in monitoring wells may not be amenable to soil washing, and this alternative assumes that these areas would be excavated, treated as necessary, and transported for off-site disposal. For cost-estimating purposes, the FFS assumed that, at minimum, the floating product area would be addressed in this fashion.

While this alternative would result in contaminants remaining within the remedial target areas above health-based levels, the action is expected to

address the principal threat LNAPL as a final action. A subsequent Record of Decision will be required to make a final determination about the underlying constituents that would remain within the treated soil; therefore, the need for a review of the site every five years, as required by CERCLA if contaminants remain above health-based levels, would be made at that time. If justified by the RI/FS, additional remedial actions may be implemented to remove or treat such wastes.

Alternative 4: Excavation and Off-Site Treatment/Disposal

Capital Cost:	\$19,450,000
Annual O&M Costs:	\$0
Present-Worth Cost:	\$19,450,000
Construction Time:	1 year

Under this alternative, the remedial target areas would be isolated with a sheet pile wall, and the principal threat LNAPL areas excavated. As with Alternatives 2 and 3, dewatering would be required prior to excavation, and the removed water would need to be treated prior to discharge. The excavated material would then be stabilized on site to allow for transportation for off-site disposal. The excavated areas would be backfilled with clean fill.

Sampling would be performed during remedial design to delineate the extent of the remedial target areas, but no performance monitoring would be required. The FFS estimates that this alternative could be implemented in approximately one year.

Because this alternative would create a "clean island" in the center of the site, the sheet pile wall would be left in place at the end of the action. The excavated area would be graded to create a recharge area that would maintain a positive gradient from within the sheet piled areas to the outside to prevent recontamination of the area by other contaminants of concern.

This alternative would not result in contaminants

remaining within the remedial target areas above health-based levels, as any underlying constituents within the excavated area would also be removed. A subsequent Record of Decision will still be required to make a final determination about the need for five-year reviews for other areas of the site.

EVALUATION OF ALTERNATIVES

Nine criteria are used to evaluate the different remediation alternatives individually and against each other in order to select a remedy, (see Table above, "Evaluation Criteria for Superfund Remedial Alternatives"). This section of the Proposed Plan profiles the relative performance of each alternative against the nine criteria, noting how it compares to the other options under consideration. The nine evaluation criteria are discussed above. The "Detailed Analysis of Alternatives" can be found in the FFS.

1. Overall Protection of Human Health and the Environment

Given the limited scope of this early action, the remedial action objectives only consider protectiveness of actions to address the principal threat LNAPL. Site-wide protectiveness will be considered in a subsequent decision document. The no action alternative is not considered protective because it does nothing to mitigate the LNAPL as a continuing source of contamination or as a direct contact threat.

Alternative 1, the "No Action" alternative, is not protective of human health and the environment. The remaining alternatives are considered protective, because they remove the LNAPL through treatment or off-site disposal.

2. Compliance with ARARs

Alternatives 2, 3 and 4 are expected to satisfy applicable or relevant and appropriate requirements (ARARs) that pertain to the

EVALUATION CRITERIA FOR SUPERFUND REMEDIAL ALTERNATIVES
Overall Protectiveness of Human Health and the Environment evaluates whether and how an alternative eliminates, reduces, or controls threats to public health and the environment through institutional controls, engineering controls, or treatment.
Compliance with ARARs evaluates whether the alternative meets federal and state environmental statutes, regulations, and other requirements that are legally applicable, or relevant and appropriate to the site, or whether a waiver is justified.
Long-term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, the community, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing the alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual operations and maintenance costs, as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State/Support Agency Acceptance considers whether the State agrees with the EPA's analyses and recommendations, as described in the RI/FS and Proposed Plan.
Community Acceptance considers whether the local community agrees with EPA's analyses and preferred alternative. Comments received on the Proposed Plan are an important indicator of community acceptance.

principal threat LNAPL and comply with the substantive requirements of the applicable laws and regulations. EPA has developed site-specific remediation goals that are consistent with the expectations of the New Jersey Technical Requirements for the remediation of free product (N.J.A.C 7:26E-1). The Resource Conservation and Recovery Act (RCRA), 40 CFR 261, is applicable for assessing the disposal requirements of potentially hazardous solid wastes, such as the LNAPL-contaminated soils. Based upon the available documentation, EPA has concluded that the LNAPL wastes are not listed hazardous waste, nor do they exhibit hazardous characteristics; therefore, they do not require treatment to meet RCRA Land Disposal Restrictions.

It should be noted that the active alternatives require the disturbance of the on-site wetlands. Restoration of the wetlands is not included in these alternatives, as a significant full-scale remediation effort is expected to follow this Early Action. Therefore, wetland restoration will need to be considered as part of the overall remedial action for the site.

3. Long-term Effectiveness and Permanence

The No Action alternative offers no long-term effectiveness or permanence. For Alternatives 2 and 3, the potential risks from the principal threat LNAPL would be reduced, although both alternatives can be expected to leave some residual LNAPL in the remedial target areas. Alternative 4 eliminates principal threat LNAPL within the remedial target areas. As discussed earlier, this action only addresses LNAPL that is considered a principal threat; under all the active alternatives, lower-level threat LNAPL would remain on other areas of the site.

Other than water from biocell dewatering during operation, no treatment residuals are expected from Alternative 2. Treatment residuals, in addition to water from dewatering, are expected from Alternative 3; the concentrations of principal threat LNAPL and associated contaminants are expected to be high in these residuals (e.g., filter cake and blowdown water from soil washing). The residuals from Alternative 3 are assumed to require off-site treatment and disposal. There are

no treatment residuals for Alternative 4, as this alternative involves the excavation and off-site disposal of all the waste.

For Alternatives 2 and 3, at the end of the implementation period, an isolation barrier would not be needed around the treated soil, as the treated soil is expected to be of similar characteristics to the surrounding soil, including some residual LNAPL and some underlying constituents that would not be treated.

Under Alternative 4, an isolation barrier around the perimeter of the remedial target areas would need to be maintained between the new backfill and the surrounding soil. This isolation barrier would be needed as the remediated area is expected to contain no LNAPL and no other contaminants compared to the surrounding soil. The surface would need to be graded to drain clean surface water toward remediated soil such that there is a slight positive gradient from within the remedial target areas to the outside. Thus, while Alternative 4 provides more long-term permanence by addressing all the LNAPL and all the underlying constituents not treated by Alternatives 2 and 3, it achieves a level of remediation - a "clean island" in the middle of still-contaminated soils - that requires more rigorous efforts to maintain.

4. Reduction of Toxicity, Mobility, or Volume of Contaminants Through Treatment

Alternative 1 provides no reduction in toxicity, mobility or volume. Alternatives 2 and 3 would reduce the toxicity, mobility and volume of the contaminants in the remedial target areas through treatment. For Alternatives 2 and 3, the treatment is permanent.

Alternative 4 does not use treatment – rather, the toxicity and volume are transferred from the site through off-site disposal.

5. Short-term Effectiveness

There are no short-term effectiveness issues

associated with the No Action alternative.

Alternatives 2, 3 and 4 would present some short-term risks to the community (dust, emissions, soil erosion); however, these risks can be controlled through engineering controls. Risks to workers during implementation also can be controlled through safety procedures and the use of personal protection. As noted earlier in this Proposed Plan, there are no residences within half a mile of the site. Short-term concerns would relate to any potential impacts on industrial and commercial neighbors.

All of the alternatives involve excavation. Risks to commercial and industrial neighbors can be controlled through engineering controls such as soil erosion controls, dust suppressants, and the implementation of spill prevention and response procedures. Risks to workers also can be controlled by using safety procedures and protective equipment.

Short-term risks associated with Alternative 4 would be the greatest because of its larger transportation component (both contaminated soil and clean backfill need to be transported from and to the site). The short-term risks are expected to be the lowest for the biocell construction and operation.

This Early Action will be the first of several remedial actions for the site; therefore, one short-term consideration would be whether this action delays or otherwise limits future remedial decision-making. Alternative 2 appears to pose the highest likelihood of confounding future remedial planning because of its longer operational phase. The biocell may also take additional time, beyond the projected five years in the FFS, to reach the remediation goals, and a longer time period may interfere with other remedial planning or with the timely reuse of the property. As discussed above, under Long-Term Effectiveness and Permanence, Alternative 4 poses the plausible scenario of a "clean island" within an area with a long history of industrial use, where a future remedy may need to choose to either to maintain

this cleaner zone at high expense, or allow it to be recontaminated.

6. Implementability

There are no implementability issues associated with the No Action alternative. Alternatives 2, 3 and 4 are considered implementable from a constructability perspective. Possible challenges common to all three alternatives include the difficulty of installing sheet piles in clayey soils, excavation dewatering and water treatment, phasing cell construction, and uncertainties in the depth to and variability of the native clay layer.

Because of the complexities of the equipment and process, the soil washing technology is expected to have a higher potential for delays associated with equipment problems. Portions of the principal threat LNAPL soils are clays and oily wastes that will pose significant materials handling challenges; therefore, preparation of material for placement in the biocell and for the feed to the soil washing process is critical for both alternatives, although probably more so for the soil washing process. As described in Alternatives 2 and 3, the most highly concentrated areas of the site, where floating product is found, cannot likely be treated through either the biocell or through soil washing, and would need to be transported off site for disposal.

Equipment and specialists are commercially available and sufficiently proven for all three alternatives, although fewer vendors are available for competitive bidding for the soil washing technology.

Alternative 2 would require operation over a longer period (five years of operations are estimated) than Alternatives 3 and 4. The O&M activities needed for this alternative are routine, and failure of a component of the alternative is not expected to result in any significant threats to public health or the environment.

7. Cost

The estimated present worth costs of Alternatives 2, 3 and 4 are \$17.3 million, \$18.4 million and \$19.5 million, respectively. There are no costs associated with Alternative 1.

8. State/Support Agency Acceptance

The State of New Jersey concurs with EPA's preferred alternative in this Proposed Plan.

9. Community Acceptance

Community acceptance of the preferred alternative will be evaluated after the public comment period ends and will be described in the Record of Decision, the document that formalizes the selection of the remedy for the site.

PREFERRED ALTERNATIVE

Based on an evaluation of the various alternatives, EPA and NJDEP recommend Alternative 2, the on-site biocell along with excavation and off-site disposal of the more highly contaminated material, as the preferred alternative to address the principal threat LNAPL. This alternative involves isolating the remedial target areas with sheet pile walls, and excavating the principal threat LNAPL areas, a total of approximately 45,825 cubic yards of material. The more highly contaminated portion of this material, including all liquid LNAPL at a minimum, will be transported off site for disposal. The remaining excavated material would then be augmented with nutrients and bulking agents to enhance permeability and the conditions for biological activity, and the area within the sheet pile walls would be converted into a biocell by installing piping for air and nutrient distribution and a collection system for air and water that may accumulate in the biocell. The augmented LNAPL material would then be placed in the biocell for treatment, and capped.

Operation of the aeration, nutrient distribution, and water collection systems for the biocell would

be required for an estimated five-year period. Performance sampling and final confirmation sampling would be conducted to demonstrate that the LNAPL wastes have been destroyed through biological degradation, at which time the biocell components would be dismantled.

In addition to liquid LNAPL, soils with LNAPL concentrations that are found during the remedial design to be unsuitable for treatment in the biocell (based on factors including the effectiveness of the technology to achieve cleanup goals, the projected time period to do so, engineering concerns, etc) would be excavated and treated via stabilization, if needed to allow for transportation, and transported for off-site disposal.

The preferred alternative would achieve the remediation goals that are protective for the principal threat LNAPL, but a subsequent decision is still necessary to address the underlying constituents within this material. Thus, the need for institutional controls, such as a deed notice or covenant, would be determined as part of a future remedy.

The preferred alternative is believed to provide the best balance of trade-offs among the alternatives based on the information available to EPA at this time. EPA believes that the preferred alternative would be protective of human health and the environment, would comply with ARARs, would be cost-effective, and would utilize permanent solutions and alternative treatment technologies to the maximum extent practicable. The selected alternative can change in response to public comment or new information.

Consistent with EPA Region 2's Clean and Green Policy, EPA will evaluate the use of sustainable technologies and practices with respect to any remedial alternative selected for the site.

COMMUNITY PARTICIPATION

EPA encourages the public to gain a more comprehensive understanding of the site and the

Superfund activities that have been conducted there.

The dates for the public comment period, the date, location and time of the public meeting, and the locations of the Administrative Record files, are provided on the front page of this Proposed Plan. Written comments on the Proposed Plan should be addressed to the Remedial Project Manager, Grisell V. Díaz-Cotto, at the address below.

EPA Region 2 has designated a public liaison as a point-of-contact for the community concerns and questions about the federal Superfund program in New York, New Jersey, Puerto Rico, and the U.S. Virgin Islands. To support this effort, the Agency has established a 24-hour, toll-free number that the public can call to request information, express concerns, or register complaints about Superfund.

For further information on the Diamondhead site, please speak with:

Grisell V. Díaz-Cotto Remedial Project Manager (212) 637-4430 Email: diaz-cotto.grisell@epa.gov	Wanda Ayala Community Relations Coordinator (212) 637-3676
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U.S. EPA
290 Broadway 19th Floor
New York, New York 10007-1866

Written comments on this proposed plan should be addressed to Ms. Díaz-Cotto

The public liaison for EPA's Region 2 is:

George H. Zachos
Regional Public Liaison
Toll-free (888) 283-7626
(732) 321-6621

U.S. EPA Region 2
2890 Woodbridge Avenue, MS-211
Edison, New Jersey 08837-3679

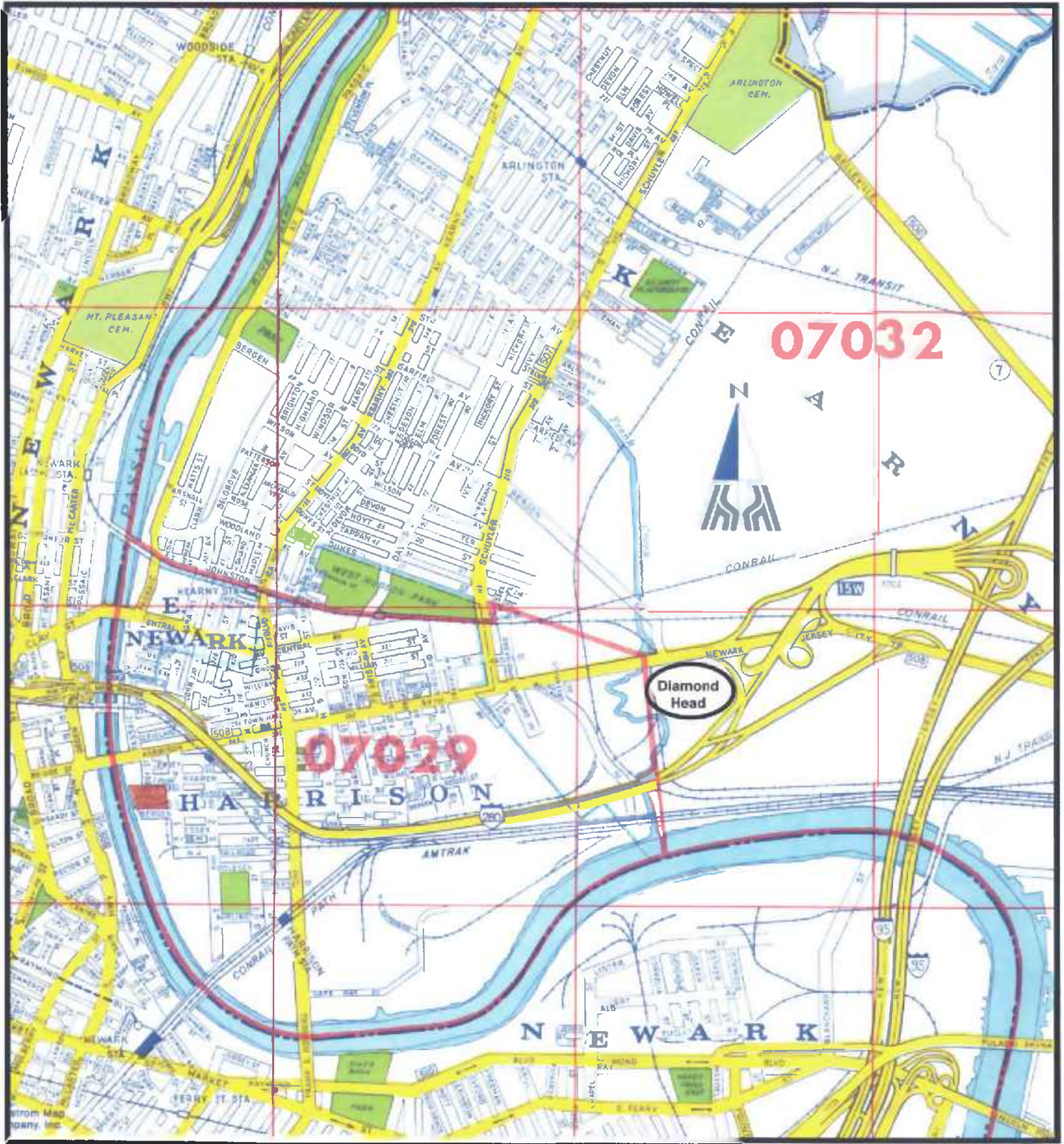








Figure 1 - Diamond Head Oil - Site Location Map
Vacant Lot Adjacent to 1235 Harrison Avenue
Kearny, NJ 07032 (Hudson County)

See Also: USGS 7.5' Quadrangle: Elizabeth, NJ Photorevised 1981
40° 44' 50" lat., 74° 07' 55.9" long. (NAD 83)



Legend

-  Temporary Gravel Road
-  Proposed Remedial Target Area
-  Measureable LNAPL in Wells
-  Delineated Wetlands
-  Extent of Historical Source Area (1976 Aerial Photo)
-  LNAPL Plume



0 87.5 175 350
Feet

Figure 2
Proposed Remedial Target Areas
Diamond Head RI/FS
Kearny, NJ



Table 1
Summary of Chemicals of Potential Concern for the HHRA
Diamond Head RI/FS, Kearny, NJ

Surface Water	Groundwater	Sediment	Surface Soil (0 to 2 feet below ground surface)	Subsurface Soil (2 to 12 feet below ground surface)
Chlorobenzene	Benzene	Benzene	Benzene	Benzene
Chloroethane	Chlorobenzene	Dichlorobenzene-1,4	Ethylbenzene	Bromomethane
Dichlorobenzene-1,4	Chloroethane	Ethylbenzene	Tetrachloroethylene	Carbon tetrachloride
Dichloroethane-1,2	Dichlorobenzene-1,3	Tetrachloroethylene	Trichloroethylene	Chloroform
Dichloroethylene-1,2 cis	Dichlorobenzene-1,4	Trichloroethylene	Xylenes, total	Dibromoethane-1,2
Tetrachloroethylene	Dichloroethene-1,2 trans	Xylenes, total	Acetophenone	Dichlorobenzene-1,3
Trichloroethylene	Dichloroethylene-1,2 cis	Acetophenone	Benzo(a)anthracene	Dichlorobenzene-1,4
Vinyl chloride	Ethylbenzene	Benzo(a)anthracene	Benzo(a)pyrene	Dichloroethane-1,2
Benzo(a)pyrene	Methyl isobutyl ketone (4-methyl-2-pentanone)	Benzo(a)pyrene	Benzo(b)fluoranthene	Dichloroethylene-1,2 cis
Benzo(b)fluoranthene	Tetrachloroethane-1,1,2,2	Benzo(b)fluoranthene	Benzo(k)fluoranthene	Dichloropropane-1,2
BHC, beta	Tetrachloroethylene	Benzo(k)fluoranthene	Dibenzo(a,h)anthracene	Ethylbenzene
BHC, delta	Trichloroethylene	Cresol-p	Indeno(1,2,3-cd)pyrene	Methyl isobutyl ketone (4-methyl-2-pentanone)
Barium	Vinyl chloride	Dibenzo(a,h)anthracene	Methylnaphthalene-2	Tetrachloroethylene
Beryllium	Xylenes, total	Indeno(1,2,3-cd)pyrene	Naphthalene	Trichloroethane-1,1,2
Cadmium	Acetophenone	Methylnaphthalene-2	Aldrin	Trichloroethylene
Chromium	Cresol-o	Naphthalene	BHC, alpha	Vinyl chloride
Iron	Cresol-p	Aldrin	BHC, beta	Xylenes, total
Lead	Cresol-parachloro-meta	BHC, alpha	<i>Dieldrin</i>	Acetophenone
Manganese	Dimethylphenol-2,4	DDT-4,4	Heptachlor Epoxide	Benzo(a)anthracene
Thallium	Ether, bis-chloroisopropyl	Dieldrin	Pcb-aroclor 1016	Benzo(a)pyrene
	Methylnaphthalene-2	Heptachlor Epoxide	Pcb-aroclor 1242	Benzo(b)fluoranthene
	Naphthalene	Pcb-aroclor 1242	Pcb-aroclor 1248	Benzo(k)fluoranthene
	Nitrophenol-4	Pcb-aroclor 1248	Pcb-aroclor 1260	Dibenzo(a,h)anthracene
	PCP (Pentachlorophenol)	Pcb-aroclor 1260	Aluminum	Indeno(1,2,3-cd)pyrene
	Phenol	Aluminum	Antimony	Methylnaphthalene-2
	Phthalate, bis(2-ethylhexyl) (DEHP)	Antimony	Arsenic	Naphthalene
	Trichlorophenol-2,4,6	Arsenic	Barium	Aldrin
	DDD-4,4	Barium	Cadmium	BHC, alpha
	Dieldrin	Cadmium	Chromium	Dieldrin
	Heptachlor Epoxide	Chromium	Copper	Heptachlor Epoxide
	Aluminum	Copper	Iron	Pcb-aroclor 1016
	Antimony	Iron	Lead	Pcb-aroclor 1242
	Arsenic	Lead	Manganese	Pcb-aroclor 1248
	Barium	Manganese	Mercury	Pcb-aroclor 1254
	Chromium	Mercury	Nickel	Pcb-aroclor 1260
	Lead	Silver	Selenium	Aluminum
	Manganese	Thallium	Silver	Antimony
	Nickel	Vanadium	Thallium	Arsenic
	Selenium	Zinc	Vanadium	Barium
	Thallium		Zinc	Beryllium
	Vanadium			Cadmium
				Chromium
				Copper
				Iron
				Lead
				Manganese
				Mercury
				Nickel
				Selenium
				Silver
				Thallium
				Vanadium
				Zinc

Diamond head oil

WDSP



Preliminary Assessment

Diamond Head Oil Refinery Division
Harrison Turnpike (Rt.508)
Kearny, Hudson Co.

BAD000002

CONFIDENTIAL

BUREAU OF FIELD OPERATIONS
RESPONSIBLE PARTY INVESTIGATIONS UNIT
INVESTIGATIVE SUMMARY

Case Name: Diamond Head Oil
AKA: Diamond Head Oil Refining Co.
AKA: Bay City Oil
AKA: Northeast Oil Service
AKA: Newtown Refining Corporation
AKA: PSC Resources, Inc.
AKA: Ag-MET Oil Service

CASE SUMMARY

The Diamond Head Oil site is a 5.5 acre property located at 1401 Harrison Avenue/Turnpike, Kearny, Hudson County (Block 285, Lot 3). The site is bounded on the north by Harrison Avenue; on the east by properties owned by NJDOT (Block 285 Lot 4) and the Town of Kearny (Block 285 Lot 15); on the south by property owned by the NJDOT (Block 285 Lot 2A); and on the west by property owned by the town of Kearny (Block 285 Lot 14). The northern portion (3.88 acres) of the subject property is currently owned by Mimi Urban Renewal Corporation (formerly Mimi Development Corporation). The remaining southern portion of the site (approximately 1.62 acres) is owned by the New Jersey State Department of Transportation (as part of the right-of way for I-280 which runs south of the site). Diamond Head Oil Refining Company and its subsequent successor companies operated a waste oil refining facility at the subject site from approximately 1949 to 1979.

The subject site was formerly part of a larger, 349.4 acre, property (County Block 1434) bounded on the north by Harrison Avenue (formerly the Newark Turnpike); on the east by land belonging to the Delaware, Lackawanna and Western Railroad Company; on the west by Franks Creek and the boundary line of the adjoining property.

On July 1, 1901, the subject site was sold (as part of a larger parcel which includes County Block 1434, referred to as Tract 6) by Ellen M. Pike (widow of Samuel N. Pike) et als. of New York to John R. Ferrier of New York for the sum of \$1,492,180. John R. Ferrier then sold the property for \$1.00 to Henry L. Sprague of New York on October 17, 1901.

On November 16, 1901 Henry L. Sprague sold the property for \$1.00 to the Hackensack Meadows Company (a New Jersey Corp.).

On September 18, 1911 the subject property was sold by the Newark Meadows Improvement Company, et als. to Harry M. Durning.

Harry M. Durning by a deed dated March 4, 1915, sold the property, which included the subject site, to Newark Factory Sites, Inc. (a New Jersey Corp.).

BAD000005

The Town of Kearny purchased the property from Newark Factory Sites, Inc. on February 4, 1942.

On November 24, 1948, the Office of the Building Inspector for the Town of Kearny (Building Dept.) issued a building permit to Diamond Head Oil Refining Co., Inc. for the purpose of erecting a tank foundation on the subject site Block 285 Lot 3. The dimensions of the foundation, as described on the permit, are 40'4" width with a depth of 11'4".

The Diamond Head Oil Refining Company, Inc. (Diamond Head Company) was incorporated in the State of New Jersey on December 12, 1949.

Diamond Head Company originally operated on the property that is located to the east of the subject site (1427 Harrison Avenue, Block 285 Lot 4). Corporate officers of Diamond Head Company leased this adjacent property (Block 285 Lot 4) from Abe Finkelstein of Glen Ridge, NJ from December 1, 1945 to December 1, 1950. According to the lease agreement, the property was to be "used and occupied only for the refining and sale of waste and used oils of all kinds and such petroleum products...".

On December 12, 1945 (the same date that Diamond Head Oil Refining Company incorporated) Bay City Oil Service incorporated in the State of New Jersey. The principal office for both corporations, as described in their certificates of incorporation, was 1427 Harrison Turnpike, Kearny. The incorporators and directors of both Diamond Head and Bay City Oil were the same.

One of the objects for which Bay City Oil Service was incorporated, as stated in their certificate of incorporation, was to "acquire and take over as a going concern the business now carried on at #38 West 41st Street, in the City of Bayonne, New Jersey, under the firm name or style of Bay City Oil Service, and in connection with the acquisition of such business to purchase the goodwill and all or any of the assets, and assume all or any of the liabilities of the proprietors of such business."

Another object for which Bay City Oil Service was incorporated, as stated in the certificate of incorporation, was "to buy and sell waste and used oils of all kinds and such petroleum products, mineral and vegetable oils as the Directors may determine would be for the financial benefit of the corporation."

Bay City Oil describes the character of their business in annual reports filed with the NJ Department of State for the years 1946 through 1961, as follows:

"buying and selling waste and used oils of all kinds and petroleum products, mineral and vegetable oils" (1946 through 1956)

"Collectors of Waste Oil" (1958)

"Collectors of used crankcase oils" (1959)

"Collectors of used Petroleum Oils" (1961)

The NJ State Industrial Directory (NJSID) for the years 1949 through 1955 and 1958 through 1968 listed Diamond Head Oil Refining Company at 1427 Harrison Turnpike/Avenue. Directories for the years 1956-1957 and 1969 through 1980 lists Diamond Head Oil at 1401 Harrison Turnpike/Avenue.

A corporation named Shur-Flo Oil Co., Inc. is listed in the Industrial Directory as having operated at 1401 Harrison Turnpike/Avenue from 1952 to 1961. The descriptions given in the Directory for the operations of Diamond Head Oil Refining and Shur-Flo Oil are oil refining and canning motor oil respectively.

In annual reports filed with the Division of Commercial Recording for Diamond Head Oil Company from 1946 to 1951, Diamond Head Oil described the character of their business as follows:

Buying and refining waste and used oils of all kinds and selling same when so refined at wholesale or retail"

Shur-Flo Oil Co., Inc. incorporated in New Jersey on August 1, 1949. Both Diamond Head and Shur-Flo shared the same registered agent and had several directors and corporate officers in common.

In annual reports filed with the Division of Commercial Recording, Shur-Flo described the character of their business for the years 1949 through 1959 as follows:

"Buying, selling and canning motor oils, lubricating oils and petroleum products of all kinds and any other lubricants whether derived from petroleum products or otherwise."

On January 9, 1952, Shur-Flo filed papers with the Division of Commercial Recording to change their registered office from 1427 to 1401 Harrison Turnpike, Kearny.

The following building permits were issued to Diamond Head Oil in 1951 for the subject property (Block 284 Lot 3):

- 1) Permit #11004 Issued 01/11/51

Erect a concrete block building for use as a garage and office

Width 40'
Depth 126'
Height 1 & 2 story
(complete 07/13/51)

- 2) Permit #11313

Issued 09/21/51

DIAMOND HEAD OIL
 INVESTIGATIVE SUMMARY
 PAGE 4

Erect a concrete block building for use as a warehouse

Width 40'
 Depth 100'
 Height 32'
 (complete 04/26/52)

3) Permit #11314 Issued 09/21/51

Erect a tank foundation and dike

Tank Foundation 50' Diameter
 Dike 9' Height

4) Permit #11347 Issued 10/16/51

Erect a concrete block building for use as a switch house
 and meter

Width 7'4"
 Depth 11'4"
 Height 10'

On January 10, 1952, the Building Dept. issued a building permit to Diamond Head for the purpose of erecting a one story masonry building for use as a boiler house.

Shur-Flo filed a certificate of dissolution with the Department of State on April 17, 1961. It is unknown if Shur-Flo operated at the subject site between 1953 (the final year that Shur-Flo was listed in the Industrial Directory) and 1961 (the year of dissolution).

The waste oil refining operations Diamond Head Oil and Shur-Flo caused the formation of a large pool or "lake" of oil, located mainly on an adjacent property which is currently owned by the New Jersey Department of Transportation (NJDOT) (Block 285, Lot 2) and partially on the subject site. It is not known when and from whom the NJDOT came to acquire Block 285 Lot 2.

On October 12, 1971, an inspector from the Hackensack Meadowlands Development Commission (HMDC), while conducting an inspection in the vicinity of the subject site, observed a stream of liquid with an oily sheen flowing into a storm drain on the south side of Harrison Turnpike (approximately 800 feet east of the subject facility). The stream of oily liquid was further observed to flow into a catch basin (located approximately 175 feet west along the storm drain), then from the catch basin it traveled under Harrison Turnpike, into a drainage ditch which ultimately carried the liquid into the Passaic River.

The oily liquid was traced back to a large pool of oil (commonly referred to as "Oil Lake") located partially on the southern portion of the subject site and mainly on property owned by the NJDOT

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(situated to the south and east of the subject facility; Block 285 Lot 2).

Upon further inspection of the southern and eastern sides of the subject site, the inspector observed a number of storage tanks from which a series of pipes extended southward toward the rear of the property, where several ponds (of earthen construction) were located. The ponds adjoined the main body of the Oil Lake and was separated by earthen berms/dikes. According to the inspector the ponds appeared to have been built up above the level of the surrounding ground and that of Oil Lake. The liquid contained within the ponds exhibited an oily sheen and was of a similar color and consistency as the liquid which was observed in Oil Lake. The pipes that were observed extending from the storage tank area terminated in the vicinity of the ponds. The inspector also observed a number of flexible hoses with couplings lying on the ground around the ponds.

According to a letter dated December 8, 1971, to the Department from the Passaic Valley Sewerage Commissioners (PVSC), it was reported that during heavy rain storms, oil and water would overflow and enter county storm drains and Frank's Creek. The runoff would also run onto an adjacent roadway (presumably Harrison Avenue) causing a traffic hazard.

On May 11, 1972, Diamond Head Oil Refining Co., Inc. submitted a completed Waste Effluent Survey to the Passaic Valley Sewerage Commissioners. On the survey form Diamond Head Oil Company listed their type of business as "Recyclers (Re-refiners) of Used Oils SIC 2911". The operations were described as follows: "Waste Oils are treated and settled in holding Tanks, then fractionated by distillation, and contacted with activated clay to restore the oils color, and then filtered to remove spent clay and any remaining impurities."

According to the survey the finished product was lubricating oils (average production of 300,000 gallons per month). Diamond Head Oil Company listed the raw materials used as waste crankcase oils collected from service stations, motor car companies, and industrial plants. Diamond Head Oil Company listed the following substances as being in their discharge to the storm sewer:

emulsified oils (100.2 ppm), aluminum (1.6 ppm), boron (0.1 ppm), barium (0.3 ppm), calcium (9.3 ppm), chromium (3.3 ppm), iron (4.3 ppm), magnesium (1.9 ppm), manganese (0.1 ppm), molybdenum (0.1 ppm), sodium (70 ppm), lead (3.2 ppm), silicon (9.3 ppm), vanadium (0.1 ppm), and potassium (1.4 ppm).

NOTE: The discharge described above was from a sample collected on March 29, 1972 during a 1-2 hour span.

According to the Waste Effluent Survey, Diamond Head Oil Refining Company discharged 75,000 gallons of waste water to the storm sewer, river, or ditch.

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On June 1, 1972, Diamond Head Oil Refining Co., Inc. submitted an application to the Department for a certification to collect or haul solid waste. The nature of their operation was described on the application as "Recycle used lubricating oils". They also stated that they did not collect waste and that they did not have trucks for waste disposal purposes.

The following were listed as officers of Diamond Head Oil Refining Co., Inc.:

Martin Morrison	President
Nicholas Matin	Vice President
Michael Stellato	Secretary
Martin Morrison, Jr.	Treasurer

Bay City Oil Service, Inc. also submitted an application to the Department for a certification to collect or haul solid waste on June 2, 1972. The nature of the operation of Bay City Oil was described as "collector of used lubricating oil".

Bay City Oil stated on the application that they collected an estimated 26,000 gallons of waste oil per week from New Jersey; 24,000 gallons of waste oil from New York; and 1,500 gallons of waste oil from Connecticut. Bay City Oil stated that the lubricating oils were delivered to Diamond Head Oil Refining Co., Inc. for recycling.

NOTE: The address given on the application for Bay City Oil Service, 1401 Harrison Turnpike, Kearny, was the same as the address given for Diamond Head Oil Refining Co., Inc. (the subject site).

The following were listed as officers of Bay City Oil Service, Inc.:

Nicholas Matin*	President
Martin Morrison*	Vice President
Martin Morrison, Jr.*	Treasurer
John Hudzik	Secretary

*Officers of Diamond Head Oil Refining Company, Inc.

Diamond Head Oil Refining Co., Inc. and Bay City Oil Service, Inc. filed applications with the Department for renewal of their certifications to collect or haul solid waste on April 30, 1973 and May 14, 1973 respectively. The same individuals served as corporate officers for both corporations. The names of the officers and their respective titles were listed as follows:

NAME	TITLE AT DIAMOND HEAD OIL	TITLE AT BAY CITY OIL
Martin Morrison	President	Vice President
Nicholas Matin	Vice President	President
John L. Hudzik	Secretary	Secretary

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Martin Morrison, Jr.

Treasurer

Treasurer

Both corporations reported operating from the same address and having the same telephone number.

Bay City Oil Service reported that they collected approximately 20,750 gallons of waste oil per week for disposal/recycling at Diamond Head Oil Refining Co., Inc. (subject site). They also reported collecting approximately 24,250 gallons of waste oil per week from New York for disposal/recycling at Diamond Head Oil Refining Co., Inc. Bay City Oil indicated that they had six 1500 gallon capacity trucks which they used for transporting the waste oil.

On February 6, 1973, representatives of the NJDEP, Bureau of Water Pollution Control (BWPC) conducted an inspection of the subject site. The inspectors noted the presence of Oil Lake to the south and east of the subject facility. An inspector described Oil Lake as containing a large quantity of petroleum, oil, and other petroleum products. During the course of the inspection the inspectors observed that oil was leaking from several valves in use at the subject facility; several open cans of oil were full and running over; and an oil water separator in use at the facility was not maintained and running over.

The inspector also noted that the ground at the subject site was saturated with oil. According to one inspector, the saturated condition of the ground during the time of the inspection, resulted in the runoff of oil into a storm drain located on Harrison Avenue. The inspector stated in an affidavit, that he observed drain pipes that had been placed so as to run into the Oil Lake from the facility's oil water separator; and a drain-off line had been placed in the bottom of the facility's sludge holding tanks (Affidavit of John Vernam dated June 16, 1978).

The BWPC inspector also noted that the topography of the site during the time of the inspection was such that it permitted surface runoff, including oil and other petroleum products which were saturating the ground area of the facility to flow both onto Harrison Avenue and into Oil Lake.

In a letter to Martin Morrison, Sr., of Diamond Head Oil Refining Co., Inc., dated February 22, 1973, from John Vernam of the NJDEP, BWPC stated the findings of the February 6, 1973 inspection of the subject site. Mr. Vernam also stated that during the inspection, the NJDEP representatives were accompanied by Martin Morrison, Jr., of Diamond Head Oil, who stated that he completely agreed with the Department inspectors with regard to the poor condition of the site.

A memorandum dated March 1, 1973, by John Vernam provided the following information:

"Diamond Head is [was] basically a refining company. They use[d] a three step process to extract lubricating oils, grease, and low grade heating oils from waste oils, 'mostly crank case oil'."

"Their through-put is [was] about 50,000,000 gallons per year, of this amount approximately 220,000 gallons a month is [was] refined into a usable product." (Resulting in approximately .6 million gallons of usable products per year.)

"...their sludge waste amount[ed] to 3,600 gallons per day."

Mr. Vernam also stated that Martin Morrison, Jr., who accompanied him during the inspection, made the contention that their oil problems stemmed from Oil Lake which was located on the adjacent NJDOT property. However, Mr. Vernam later stated the following "But, after viewing his [Morrison's] grounds and operations, Diamond Head Oil is also directly responsible for the oil pollution problems on Harrison Avenue".

During a followup inspection on March 22, 1973, the NJDEP, BWPC inspector noted that Diamond Head had shut down their facility to enable them to fix the leaking valves, repair the dike area, remove the "illegal" drain pipes and to start cleanup of their grounds. Diamond Head had completely removed the oil water separator which had a discharge into the pond of oil (i.e Oil Lake) off their property.

NOTE: In his June 1978 affidavit the inspector stated that he was aware that Oil Lake had overflowed numerous times, both prior to and subsequent to February 6, 1973.

According to a May 2, 1973 HMDC letter to the Commissioner of the NJDEP, members of the HMDC's environmental section met with representatives of the NJDEP, Bureau of Water Pollution Control to discuss a solution to the oil pollution problems at the Diamond Head Oil Refining Company site. During the course of the discussions, questions were raised as to the status of the "Lake of Oil" located on Block 285 Lot 2 (on the I-280 ROW). The size of the lake was estimated to be 15 acres in size and up to one foot in depth. The capacity was estimated as being 2,000,000 gallons of which 500,000 gallons were oil and oily water, and 1,500,000 gallons were oil sludge.

It was further stated in the letter that the HMDC was concerned about the ultimate disposal of the lake, because of the pending construction of I-280 in this section which was to occur within the next few years. The letter stressed that improper dumping of the oil and sludge during construction could be a disaster. The letter concluded by stating that a plan of action should be made at that time, before construction of I-280 began.

As of April 25, 1974, the HMDC had not received a reply from the NJDEP, to the May 2, 1973 letter. On April 25, the HMDC requested assistance from the NJDOT in involving the NJDEP in exploring solutions to the problems associated with Oil Lake.

On October 26, 1973, PSC Resources, Inc., a subsidiary of Phillips Screw Company, Inc. a Delaware Corporation, entered into a stock purchase agreement which resulted in the acquisition of 100% of the

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issued outstanding stock of Diamond Head Oil Refining Co., Inc. on November 1, 1973 (175 NJ Superior Court, NJDOT v. PSC Resources, Inc.).

As stated in the Superior Court of NJ, Law Division synopsis cited above:

"The terms of the agreement required the officers and directors of Diamond Head to resign on November 1, 1973, while PSC's nominees, Arthur M. Vash, president and director of PSC, John J. Casey, treasurer and director of PSC, and Jerome E. Rosen, secretary and director of PSC, became the new directors and officers of Diamond Head."

On November 1, 1973, within hours after the appointments (of the new directors and officers of Diamond Head), the new director of Diamond Head submitted a "Plan of Complete Liquidation and Dissolution" which PSC Resources, as sole shareholder, adopted.

PSC Resources continued to operate the subject facility under the names Diamond Head Oil Refining Company, Division of PSC Resources and Diamond Head Oil Refining Company Inc. until November 3, 1976.

The 1973 NJSID lists Martin Morrison as President, Nicholas Martin as Executive Vice President, Michael Stellato as Secretary, Martin Morrison, Jr. as Treasurer, and John Hudzik as Office Manager for Diamond Head Oil Refining Co., Inc.

On November 5, 1973, Diamond Head Oil Refining Co., Inc. sold the subject property to Phillips Resources, Inc., a Delaware corporation with its principal office in Natick, Massachusetts. The property was sold for less than one hundred dollars. Arthur M. Vash and Martin Morrison Jr. signed the deed as president and secretary of Diamond Head Oil Refining Co., Inc. respectively.

On December 5, 1973, Diamond Head Oil Refining Co., Inc. submitted a revised Waste Effluent Survey to the PVSC. Diamond Head Oil reported that their production remained at 300,000 gallons per month. They also stated that they had installed a water recycling system during the second quarter of 1973 which eliminated all discharges to the storm sewer, river or ditch. Martin Morrison, Jr. signed the survey as the General Manager of Diamond Head Oil Refining Co., Inc.

Diamond Head Oil Refining Company, Inc. and Bay City Oil Service, Inc. filed Certificates of Dissolution with the Department of State on December 28, 1973. John J. Casey, Jerome E. Rosen, and Arthur M. Vash constituted all of the directors of Diamond Head Oil Refining Co., Inc.

The 1974 through 1976 NJSIDs list Diamond Head Oil as a Division of Phillips Resources, Inc. Arthur M. Vash, Jerome E. Rosen, and John J. Casey (Directors of Diamond Head Oil Refining Company at the time of dissolution) appear in the 1974 Directory as President, Secretary, and

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Treasurer respectively of Diamond Head Oil Refining Company, Inc./Division of Phillips Resources, Inc.. John Hudzik was again listed as Office Manager in 1974. Martin Morrison, Jr., who was listed as Treasurer in 1973, was listed as Purchasing Agent in Directories from 1974 to 1976.

In a letter to the PVSC dated March 20, 1974, Diamond Head Oil Refining Company stated that they were not tied into a sewer. They reported that they had their own septic system. The letterhead that was used by Diamond Head Oil Refining Company for this letter indicated that Diamond Head Oil Refining Company was a Division of Phillips Resources, Inc.

An undated Waste Effluent Survey for 1974 (for industries served by the Passaic Valley Sewerage Commissioners), which was signed by Edward Cincotta of Diamond Head Oil Refining Co., briefly described the operations at the subject facility in the following way: "Receive Waste Oil, Chemical Treat, Caustic to Separate Solids, Super Natant Oil Heated and refined with Clay."

By letter dated May 2, 1974, the HMDC informed the NJDOT that they may have come up with a solution to eliminating Oil Lake and its associated problems. In the letter the HMDC stated "We have worked out an agreement to have the pond pumped out, and expect to use the material as a road base for the landfills in Kearny". The letter further stated that the HMDC expected to begin in the next week or so. It is unknown if this plan was ever implemented.

On June 13, 1974, the Law Department of Hudson County wrote a letter to the Department summarizing problems that were related to the pool of oil that existed on the NJDOT property that is adjacent to the subject site. According to the letter, there was a drainage ditch which led from the pool of oil to the adjacent roadway causing an extremely dangerous road condition. The letter went on to state that results of an investigation by the County indicated that Diamond Head Oil Refining Company, located at 1401 Harrison Turnpike, was directly responsible for the oil related problems that existed in the area.

On December 12, 1974, Diamond Head Oil Refining Company, Div. of PSC Resources, Inc. applied for a National Pollutant Discharge Elimination System (NPDES), Permit to Discharge. In a letter dated December 10, 1974 to the USEPA, Diamond Head Oil Refining Co. described their process and waste disposal practices as follows:

"We rerefine used oil. We produce approximately 200,000 gallons per month. It is sold from here both wholesale and retail. We have several waste products:

1. Oil Sludge - this waste is removed by Jonas Waste Removal, Sewell, N.J. It is dumped at an approved dump site.
2. Human Waste - this waste is stored in septic tanks and periodically pumped out.

3. Contaminated runoff, boiler blowdown and process water - these wastes are removed by Jonas.

4. Uncontaminated runoff - this waste flows to the street and the meadowlands.

We are presently studying water treatment to handle #3 due to the high cost of disposing of the water..."

NOTE: The Jonas referred to in number 1 above is Marvin Jonas which is an active case in the NJDEPE, DRPSR, BSCM.

The letter to the USEPA and the application for the NPDES permit were both signed by Fred H. Simmons, Plant Manager, of Diamond Head Oil.

On April 28, 1976 the USEPA conducted a SPCC (Spill Prevention Compensation and Control) inspection at the subject site. The inspection was scheduled due to questions concerning the large oil lake that was located mainly on the adjacent NJDOT property. The sales manager for Diamond Head Oil Refining Co., Ed Cincotta, was present during the inspection.

The USEPA inspector noted that the facility was a waste oil reprocessing plant with a storage capacity of approximately 440,000 gallons. The USEPA inspectors observed that the majority of tanks at the facility were not diked and the ground beneath the tanks was saturated with oil. Oil and water from numerous small leaks and spills was observed flowing towards the rear of the Diamond Head Oil Refining plant.

Several open lagoons containing oil and water were observed at the far rear of the plant. One of the lagoons had a discharge pipe extending to the large waste oil lake which was located on the adjacent property (owned by NJDOT). The USEPA inspector noted that the oil and water that was observed flowing to the rear of the property was caught in a sump and discharged into the lagoons where the oil was supposed to be separated and reused and the waste was then discharged into the oil lake. The inspector described the facility as old, in a state of disrepair, and very poorly maintained.

As revealed during discovery in a NJDOT law suit filed against PSC Resources in September 1977 (discussed later in the this report), Tammy's Oil Service, Inc., a corporation of the State of New York, owned 100% of the stock of PSC Resources (since March 17, 1975). On May 25, 1976, the directors and stockholder of both Tammy's Oil Service, Inc. and PSC Resources, Inc. approved a Plan of Complete Liquidation and Dissolution for each of the two corporations. Authorization was also given to Russell W. Mahler as President and Director of both corporations to liquidate the assets of the corporations and receive the proceeds in trust for the corporations.

On June 25, 1976, an inspector from the USEPA, while tracing the source of an oil flow into the marshes surrounding Exit 15W of the NJ Turnpike, inspected the subject facility. During the inspection of the

facility, the inspector observed a brownish liquid (which appeared to contain oil) being delivered through a pipe to a lagoon in the rear of the facility. The inspector further observed that a black liquid was flowing from the bottom of the lagoon through a pipe with an open valve. The inspector also observed visible signs that the black liquid was leaching from the lagoon into Oil Lake. Analysis of a sample of the black liquid (which was collected by the USEPA on that same date) revealed that the sample had a hydrocarbon content of 41%. (Affidavit dated September 28, 1979 by Michael V. Polito, of the USEPA). Robert Mahler, of Diamond Head, stated to the USEPA inspector that Diamond Head Oil had no NPDES permit because the facility was totally self contained.

According to an inspection report that was written by the USEPA inspector, the NJDEP had reportedly given the facility permission to release water (including water from dripping condensate lines and steam lines) from the property without regard to the permit system. The RPIU has not found any documentation confirming this claim. According to the USEPA inspector, water from the ground was collected and released through an effluent pipe (presumably the same pipe that was previously described as discharging an oil containing liquid to the property).

The USEPA inspector also went on to state that the oil had leached out into the navigable waters of the United States and that the USEPA had expended at least \$10,000 to date for the cleanup.

The following was stated in a notification to the creditors of PSC Resources, Inc. dated October 12, 1976, PSC Resources, Inc.:

- PSC Resources is [was] about to transfer to Ag-MET Oil Service, Inc., in bulk all of the materials, supplies, merchandise, equipment, fixtures, and inventory of PSC Resources now [then] located at 10 Water Street, Palmer, Massachusetts and 1401 Harrison Turnpike, Kearny, New Jersey.
- The business names and addresses used by PSC Resources in the past three years are [were]: PSC Resources, Inc., Phillips Resources, Inc., Diamond Head Oil Company and Diamond Head Oil Refining Company at 1401 Harrison Turnpike, Kearny, New Jersey; at 10 Water Street, Palmer, Massachusetts.

On October 29, 1976, Bay City Oil Service submitted a registration for a solid/liquid waste collector or hauler to NJDEP, Bureau of Solid Waste Management. The address given for Bay City was 1401 Harrison Turnpike, Kearny (the subject site). Robert Mahler was listed in the section marked "Person having prime administrative authority or person to be contacted in an emergency". The registration statement was signed by Anthony J. Dattolo, Terminal Manager. NOTE: Bay City Oil Service, Inc. was dissolved in December, 1973.

On November 3, 1976, PSC Resources, Inc., a successor to Phillips Resources, Inc. sold the subject site for the sum of \$563,978.68 to Ag-Met Oil Service, Inc., a New York corporation qualified to do

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business in the State of New Jersey, care of Ag-Met, Inc. Russell W. Mahler and Thomas Humiston signed the deed as president and secretary of PSC Resources, Inc. respectively.

Ag-MET Oil Services continued to operate the subject facility. On November 29, 1976, Ag-MET Oil Services, Inc. changed its name to Newtown Refining Corporation.

Ag-Met Oil Service, Inc. had submitted a registration for a solid/liquid waste collector or hauler to NJDEP, Bureau of Solid Waste Management on November 1, 1976. The address given for Ag-Met was 1401 Harrison Turnpike, Kearny (the subject site). Russell W. Mahler was listed in the section marked "Person having prime administrative authority or person to be contacted in an emergency". The signature of the person who signed the registration statement as vice president is not legible.

On November 29, 1976, the USEPA, Region II, issued a Findings of Violation and Order to Show Cause to Diamond Head Oil Refining Company pursuant to Section 309 (a)(3) and (a)(4), Federal Water Pollution Control Acts Amendments of 1972 (33 U.S.C. subsection 1319).

It was stated in the findings portion of notice that Diamond Head Oil had been discharging a water and oil mixture into a large 7,000,000 gallon lagoon which was located behind its property. The USEPA also stated that during wet weather periods the lagoon overflowed into a navigable waterway (discharging without a permit). According to the USEPA, on December 12, 1974 Diamond Head Oil Refining Co. submitted a Short Form C application for a NPDES permit for discharge of pollutants from its facility to Franks Creek. On October 29, 1975 the USEPA had requested in writing additional information on their discharge. As of the date of the issuance of the Findings of Violation, Diamond Head failed to submit such data as requested by the USEPA.

Diamond Head Oil Refining Company was ordered to appear at the USEPA on December 28, 1976 and show cause as to why the USEPA should not refer them (Diamond Head) to the US Department of Justice for imposition of civil and criminal penalties.

On December 22, 1976, counsel for Ag-MET, Inc. and its wholly owned subsidiary, Newtown Refining Corporation responded by letter to the Findings of Violation and Order to Show Cause. The letter stated that the USEPA, during a telephone call on December 21, 1976, had agreed to adjourn the date on which the Findings of Violation and Order to Show Cause was returnable from December 28, 1976 to January 11, 1977. According to the letter Newtown Refining Corporation acquired the assets of PSC Resources, Inc. on November 3, 1976. It was the belief of Ag-Met's counsel that PSC Resources had previously acquired the assets of Diamond Head Oil Refining Company.

Counsel for Ag-MET also stated that Ag-MET was unable to locate the both the Short Form C application for a NPDES permit filed by Diamond Head on December 12, 1974 and the letter from the USEPA, dated October

29, 1975, to Diamond Head requesting additional information for the NPDES permit.

On January 20, 1977, counsel to Russell W. Mahler and Newtown Refining Corporation forwarded a memorandum to the USEPA. The memorandum, written by Russell W. Mahler (also dated January 20, 1977) described the history of the subject site which was owned by Newtown Refining Corporation.

Russell Mahler described the history of site ownership as follows:

"On March 17, 1975, Tammy's Oil Service, Inc. ("Tammy's") purchased all the issued and outstanding stock of PSC Resources, Inc. ("PSC") from Phillips Screw Company. At that time, PSC owned the Facility as successor to Phillips Resources, Inc., which acquired it from Diamond Head Oil Refining Co., Inc. on November 1, 1973. On November 3, 1976, Tammy's sold substantially all its assets, including its stock in PSC, to Ag-MET OIL SERVICE, INC. which subsequently changed its name to Newtown Refining Corporation ("Newtown"). I am currently President of Newtown and was the President and principal owner of Tammy's when it acquired and when it sold PSC. It was the custom of PSC to operate the Facility as Diamond Head Oil Refining Co., Division of PSC Resources, Inc.

When Tammy's acquired the PSC stock on March 17, 1975 none of Tammy's officers or stockholders was aware of the existence of violations of environmental regulations, governmental orders or license applications with respect to the Facility. Furthermore, Tammy's was informed at that time by Phillips Screw that none existed...."

On January 24, 1977, Riverside Engineers, Inc. (Riverside), consulting engineers for Diamond Head Oil Refining Company, sent a letter to the USEPA. The letter included the following completed items:

- 1) Standard Form C (NPDES permit application)
- 2) Process Flow Diagram
- 3) Plant Schematic Arrangement
- 4) Site Plan and
- 5) Pond Location

Riverside stated that the enclosures represented the current concept of operation of the subject facility. The letter contained a proposal by the site owner to change the concept of operation to include a treatment operation.

According to Riverside, the engineering program would include the following as its primary objectives:

- 1) additional containment to avoid potential mixing of product or waste with any water stream,
- 2) greater in-plant reuse of water and
- 3) greater design of suitable treatment units for

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discharge of effluent

On January 11, 1977, Robert Mahler of Diamond Head Oil Refining Company along with the consulting engineer for Diamond Head, appeared at the USEPA office without counsel. Mr. Mahler was advised by the USEPA of the alleged violations by Diamond Head that were set forth in the Findings of Violations and Order to Show Cause. He was then given an opportunity to explain why he believed the matter should not be referred to the US Department of Justice for imposition of civil and criminal penalties. A formal resolution was not reached since counsel was not present for Diamond Head.

In a letter from the USEPA to counsel for Russell Mahler/Newton Refining, dated February 4, 1977, the USEPA suggested that a meeting be held to resolve the matter of past violations which were still pending and to discuss what action would be required of the site owners to ensure their compliance with federal pollution control laws and regulations. The USEPA also stated that they expected Russell Mahler/Newton to be prepared to make a formal showing as to why the matter of past violations should not be referred to the US Department of Justice. It was recommended by the USEPA that a copy of the SPCC plan for the subject facility be submitted by Russell Mahler/Newton.

On February 15, 1977, a copy of the SPCC plan which was certified on May 7, 1976 was sent to the USEPA. The RPIU has not obtained a copy of this SPCC.

On March 15, 1977, counsel representing Newtown Refining Corporation sent a letter to the Enforcement Division of the USEPA Region II, in response to the Findings of Violation and Order to Show Cause that was issued to them. In this letter they stated that the man-made "lake" which developed behind Newtown's property was caused when the Town of Kearny created a refuse dump blocking the normal drainage of the area. Counsel for Newtown also stated that it appeared that during periods of heavy rainfall the "lake" floods Newtown's property as well as the nearby property.

Counsel for Newtown addressed the points specifically set forth in the Findings of Violation and Order to Show Cause. Among the points made in the letter were:

1. Newtown believes that they had furnished the information required to process its application for a NPDES permit for the reasons stated below.

According to Newtown, the several changes of ownership which have occurred since the original NPDES permit application was filed had disrupted communications and contact on this matter (the NPDES permit application). They also stated that the only managerial employee held over beyond March, 1975 was the old plant manager, Edward Cincotta. According to counsel for Newtown, Mr. Cincotta did not prove to be an effective manager and in January, 1976 he was replaced. They claimed that the request for information which the USEPA made of

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Diamond Head Oil Refining Company by letter dated October 29, 1975 and addressed to Fred Simmons was never made known to any member of management or ownership other than Edward Cincotta. Newtown stated that they did not know why Mr. Cincotta failed either to respond to the USEPA request or to make such request known to the management or ownership.

It was stated in this letter that the new owners were under the impression that a NPDES permit was not required for the facility and therefore did not contact the USEPA on its own initiative to follow up the initial application which was filed on December 12, 1974 by the previous owner. Newtown's management was not aware that a compliance problem might exist with the USEPA until May of 1976. According to Newtown, the first time that the owners and management and the present plant manager, Robert Mahler, saw the October 29, 1975 letter (letter requesting additional information regarding their discharge) was when the USEPA supplied a copy to them in January 1977.

Newtown also stated that prior to an inspection by the USEPA in May of 1976, their management was unaware that while complying with the instructions and requirements of the HMDC, the NJDEP, and the NJDOT, they did not also satisfy federal pollution laws and regulations.

Prior to the USEPA visit in May of 1976, the facility management was unaware that the "lake" was not completely landlocked and believed therefore, that the discharge was not subject to federal jurisdiction.

Newtown went on to state that whatever violation may have resulted from the inadvertent failure to reply to the letter of October 29, 1975, by reason of lack of notice and lack of knowledge concerning federal requirements and jurisdiction in addition to that of the state agencies, has been corrected by Newtown's filing of a revised NPDES permit application (#NJ0030864) on January 24, 1977.

2. Newton stated that to the best of its knowledge, that they were not discharging pollutants in violation of the Act.

Newtown claimed that any discharge into the "lake" after November 1975 (the date of the alleged failure to respond), which was approved by management, was sporadic and comprised of principally rain water and lake water.

A company named Diamond Head Oil Refining Corporation, Inc. incorporated in the State of New Jersey on August 24, 1978. (NOTE: emphasis added by underlining) Robert Mahler and David Riso constituted the first Board of Directors.

On May 13, 1977 Bay City Oil Service submitted a registration statement for solid/liquid waste collector-haulers to the Department's

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Solid Waste Administration for fiscal year 1978. This application listed Robert S. Mahler as the person having prime administrative authority for Bay City Oil Service. It was indicated on the application that Bay City Oil hauled 500,000 gallons of waste oil and sludge from locations in various counties and municipalities and disposed of them at Diamond Head Oil Refinery, 1401 Harrison Avenue, Kearny (subject site). This application was signed by Robert S. Mahler, Manager.

On June 17, 1977 North East Oil Service, Inc., of Grafton, Massachusetts submitted a registration statement for solid/liquid waste collector-haulers to the Department's Solid Waste Administration for fiscal year 1978. This application listed Robert S. Mahler as the person having prime administrative authority for North East Oil Service. It was indicated on the application that North East Oil Service hauled 360.00 (sic) gallons of waste oil and sludge from locations in various counties and municipalities and disposed of them at Diamond Head Oil Refinery, 1401 Harrison Avenue, Kearny (subject site). This application was signed by Lloyd P. Mahler, Vice President.

On May 3, 1977 the Hackensack Meadowlands Development Commission (HMDC) reviewed and approved a plan by a NJDOT contractor for the disposal of 72,000 cubic yards of oil contaminated materials (soil) from sections 8A and 8D of the I-280 construction project (areas including portions of the right-of-way where the oil "lake" was located and parts of Frank's Creek) in a secure land burial facility located at MSLA Landfill Site I-D. The MSLA Landfill Site I-D is located at the eastern portion of what was formerly designated as County Block 1434 (east of the subject site and immediately west of Ramp "M" of Route I-280).

Subsequent to this approval substantial additional quantities of contaminated materials were found. The discovery of the additional amounts of contamination increased the initial estimated volume of 72,000 cubic yards to a minimum volume of 150,000 cubic yards.

On September 14, 1977, the New Jersey State Department of Transportation (NJDOT) filed civil suit (Docket # L-1718-77) with the Superior Court of New Jersey, Law Division against PSC Resources, Inc. (successor of Phillips Resources, Inc.) and Diamond Head Oil Refining Company, Incorporated. The primary reasons that the NJDOT filed this suit was 1) because of damages suffered by the NJDOT as a result of oil contaminated water which entered onto their property from the "oil lake", which was located on the PSC Resources property (the subject site), and 2) to recover costs incurred as a result NJDOT's remediation of same.

The following were among statements made by the NJDOT in the complaint:

(NOTE: the underlined portions were later denied by PSC Resources in Answer and Counterclaim, filed by Attorney for PSC Resources, Inc., November 10, 1977)

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- On November 1, 1973, PSC Resources, Inc., through its predecessor Phillips Resources, Inc., acquired the subject site and had been engaged in the operation of a waste oil reprocessing and canning facility.
- It had been the custom PSC Resources, Inc. to operate the facility as "Diamond Head Oil Refining Co., Division of PSC Resources, Inc." and "Diamond Head Oil Refining Co., Inc."
- Prior to the construction activity of the NJDOT (construction of Sections 8A and 8D, I-280), a body of water known as Oil Lake was located on the NJDOT's property.
- A portion of Oil Lake was located on the property of PSC Resources, Inc. (the subject site).
- For many years and at various times PSC Resources had been discharging a mixture of water and oil into Oil Lake.
- It had been the practice of PSC Resources to accumulate ground water seepage, surface water runoff, plant drainage, and condensate and to pump or permit such accumulated material to flow into a low area of its facility. PSC Resources maintained a runoff drain in the low area through which the accumulated material may have been discharged into Oil Lake thereby entering the NJDOT's property.
- On May 25, 1976, February 11, 1977, September 3, 1974, July 25, 1974, and April 29, 1974 PSC Resources discharged and/or otherwise caused material collected at the facility to enter into Oil Lake.
- The NJDOT incurred additional expense related to the construction of I-280, Sections 8A and 8D, including removing and disposing of oil, oil emulsion and oil contaminated material, providing water pollution control measures, excavating unsuitable material, providing suitable backfill material, dewatering to prevent refloatation of trapped oil and petroleum liquids, and providing topsoil in replacement of that rendered unsuitable by oil contamination.
- Diamond Head Oil Refining Co., Inc. (a dissolved NJ Corp.) was engaged in a waste oil reprocessing and canning facility at the subject site from January 1, 1952 until November 1, 1973.
- On February 6, 1973, Diamond Head Oil Refining Co., Inc. permitted oil to leak from several valves located on its facility, permitted open cans of oil to run over and discharge, maintained drain pipes running off its property from oil water separator, and permitted the ground area around its yard to be loaded with oil products allowing oil runoff into a storm drain.
- Diamond Head Oil Refining Co., Inc. caused material described in the preceding paragraph to enter into Oil Lake.

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On December 12, 1977, the resident engineer for Route 280 project (Sections 8A and 8D) observed that a large quantity of oil was located in an area that was adjacent to the Diamond Head Oil Company. According to the engineer the oil, which followed existing drainage patterns moved to an area to the south side of the access road to the Diamond Head Oil Company. According to the NJDOT engineer, the standing water in this area was displaced by the oil and the water moved across the access road to the area between the access road and Harrison Avenue.

The NJDOT engineer also reported that heavy rains on December 14, 1977 displaced the oil causing an approximately 100 foot long section of Harrison Avenue to be covered with oil. On December 15, 1977 the oil level had receded substantially. Also, the Crescent Construction Company, the Hudson County Road Development and the Kearny Fire Department helped to correct the problem.

On January 4, 1978, a representative of the NJDOT notified the HMDC of the presence of oil on the south side of Harrison Turnpike adjacent to the subject site. Immediately after receiving this notification, a representative of the HMDC inspected the subject site. The inspector observed large pools of oil and oily wastes along the facility's western property line, on an access road which had been constructed by the NJDOT, and on an area immediately adjacent to Harrison Turnpike. The inspector also observed a stream of oil and oily wastes leading between the subject facility and the pools of oil. The HMDC inspector later stated in an affidavit, dated May 5, 1978, that he believed, based on his observations made during the January 4 inspection, that the source of the discharges was the subject facility.

A certified letter dated January 6, 1978, was sent from the HMDC to Robert Mahler of Diamond Head Oil Refining Co. This letter informed Diamond Head Oil of the observations made during the inspection of January 4. It was pointed out in the letter that it appeared that rain could have easily caused move the pools of oil and oil wastes onto Harrison Avenue resulting in a traffic and safety hazard. The letter concluded by stating that "it is apparent that the source of these oil and oily wastes are from Diamond Head's operation" and ordered Diamond Head to cease and desist the discharge of the wastes immediately. Diamond Head was further ordered to take all necessary steps to immediately remove the pools of waste and any contamination caused on properties owned by the Town of Kearny and the NJDOT.

By January 10, 1978, 87,000 cubic yards of contaminated materials from the construction of Route 280, sections 8A and 8D were placed in a secure land burial facility located at MSLA Landfill Site I-D, in accordance with permission granted by the HMDC. Four 12 inch monitoring wells were also installed at the landfill. The addition of the 87,000 cubic yards of contaminated materials filled the landfill to capacity.

A followup inspection by the HMDC of the subject site on January 12,

1978 revealed that no action to clean up the contamination, observed on January 6, 1978, had taken place. In addition to previously noted contamination, the HMDC inspector noted that fresh contamination had occurred at the subject site and on properties owned by the NJDOT (adjacent to ramp "M" of I-280).

The subject site was reinspected by the HMDC on January 19, 1978. No effort to cleanup the site was observed. The inspector observed a trench, or swale, and hoses in place at the facility. Based on the observations made during the inspection, the inspector concluded that the hoses were used to discharge the contaminating material and the trench was used to convey the material.

The HMDC, by way of letter dated January 25, 1978, notified Diamond Head Oil Refining Co. of the observations made during the inspection of January 19. The HMDC assessed Diamond Head Oil \$200.00 per day for each day after January 25, 1978 that the cleanup of the two areas was not completed. It is not known if the HMDC received any payment from Diamond Head Oil.

On January 30, 1978, the HMDC granted the NJDOT permission to create a second (new) on-site disposal area, located on Block 285 Lot 2 (immediately west of the subject site), for the additional quantities of contaminated materials from Route 280, Sections 8A and 8D. The new area was designed to contain a maximum of 197,000 cubic yards. The request for the new disposal area, which was reviewed by the both the HMDC and the Solid Waste Administration of the NJDEP, was approved subject to the several conditions including but not limited to the following:

- A liner of a minimum compacted thickness of six inches of sand would be placed under all materials disposed of in the new area
- The disposal area was to be worked in full depth sections separated by sectional dikes of sand
- A minimum setback of 50 feet would be maintained between the disposal area and Diamond Head Oil's western property line
- Three combination methane/monitoring wells was to be installed
- A two foot compacted thickness silty-clay cover material was to be placed on the completed disposal site
- A four inch thick topsoil layer, mulched, fertilized and seeded with Type A grass seed was to be placed over the silty-clay cover material

According to the HMDC, the NJDEP expressed some concern about 1) the long term affects of storing oil-contaminated materials in sand-lined areas, and 2) the responsibility of NJDOT if the sand liner should fail, causing oil contamination to be released from the disposal area. For these reasons the HMDC requested that a plan of action for dealing with liner failures be submitted by the NJDOT. It is unknown if this

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plan was ever submitted to the HMDC.

Inspections by the HMDC on February 27, and March 30, 1978 revealed oily wastes being discharged from the subject facility onto properties owned by the Town of Kearny and the NJDOT through a hose which was connected to a storage tank on the Diamond Head property.

On March 23, 1978, an employee of Diamond Head Oil, who wished to remain anonymous, contacted the Department and stated that they had information on the sources of point and non-point pollution (oil, water, and sludge or the company's process waste). The employee further stated that they would like to meet with someone from the Department to pass on the information. It is unknown if anyone from the Department has ever met with the employee.

On March 30, 1978 a representative of the NJDOT observed a hose draining a tank, located at the subject site, onto the west side of the subject property. The inspector in a memorandum regarding this inspection stated that the oil and water mixture followed the existing ground contours and ended up on the NJDOT's right-of-way for I-280.

On April 28, 1978, North East Oil Service, Inc. submitted a registration statement for a solid/liquid waste collector or hauler for fiscal year 1979 to the NJDEP, Solid Waste Administration. The statement which was signed by Russell Mahler, President, listed the address for North East Oil Service as Box #477 Worster Avenue, North Grafton, Massachusetts. Russell W. Mahler was listed as the person having prime administrative authority for North East Oil Service.

Bay City Oil Service, also submitted a registration statement for a solid/liquid waste collector or hauler for fiscal year 1979 to the NJDEP, Solid Waste Administration. Russell W. Mahler was listed as the person having prime administrative authority for Bay City Oil Service and also signed the registration statement as President. The address for Bay City Oil Service was listed as 1401 Harrison Turnpike, Kearny, NJ (the subject site). Bay City Oil Service indicated that they hauled 589,404 gallons or cubic yards (gallons and/or cubic yards not specified on the statement) from locations various municipalities within Hudson County to Diamond Head Oil Refinery in Kearny.

Russell W. Mahler, President and Chief Operating Officer of Newtown Refining Corporation, stated that all refinery operations of Newtown had been closed/terminated as of midnight on May 28, 1978 (Affidavit of Russell W. Mahler dated June 8, 1978).

In an affidavit dated June 8, 1978, Russell Mahler stated that he had "several years of experience in supervising the overall operation" of the subject facility.

On June 7, 1978, the Solid Waste Administration received an application (dated June 5, 1978) from Newtown Refining Corporation, Diamond Head Oil Refining Division for a temporary (one year) operating authorization (TOA) to operate a special waste facility at the subject site. The application stated that Newtown had incorporated

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in the State of New York. Russell Mahler was listed as the person that had prime administrative authority for Diamond Head Oil Refining. The property owner was listed as Newtown Refining Corporation. The on site processes was described as reprocessing of used crankcase oil into usable lubricating oil. The specific waste types handled was stated as waste oil and oil sludge. The application was signed by Lloyd Mahler, Vice President, on June 5, 1978.

On July 14, 1978, the NJDEP, Solid Waste Administration issued a TOA to Diamond Head Oil Refining Division for the purpose of operating a special waste facility (facility #6907B) at the subject site. The TOA, which had an expiration date of April 30, 1979, was conditioned upon compliance with and implementation of the following:

1. Permitted Waste Types:

Only Waste ID #70 (waste oil and oil sludge) specifically waste oil and used crank oil was authorized to be accepted by Diamond Head Oil Refining*

*The facility was NOT authorized to accept PCB waste.

2. Engineering Design

An engineering design per Solid Waste Administration requirements was to be submitted within four months of the date of the TOA.

On November 28, 1978 the NJDEP inspected the subject facility. The inspectors noted that oil spills were prevalent throughout the site, but could not ascertain the source. In talking to the Diamond Head Oil representative that was on site during the inspection, it was revealed to the NJDEP inspectors that the oil processing operations had been halted due to a court order. According to the facility representative, the facility was packaging only virgin oil and was not receiving any waste oil.

According to a NJDEP memorandum dated February 6, 1979, the Diamond Head Oil Refinery (sic) had indicated that they were closing. The memorandum went on to order that a followup field inspection be performed by the NJDEP.

An inspection of the subject facility was performed by a representative of the NJDEP on February 6, 1979. The inspector noted that there was no evidence of current reprocessing operations observed during the inspection. According to the inspector, two underground storage pits were observed to contain a dark liquid which resembled contaminated oil. When the inspector asked an individual at the site what the substance in the pits was, he was told that it was probably a thin film of oil on top of some water that seeped into the pits.

The NJDEP inspector noted that oil spillage was observed throughout the facility. "The same amount of spillage was noted during this inspection as was evident the last time." The inspector recommended

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that it be determined if any waste oil was being stored on the facility.

The subject facility was inspected by NJDEP representatives on April 12, 1979. Leaks and spills were observed at the site and the overall housekeeping was described as being very poor. The spills/leaks were attributed to drainage and tanks. No security measures were noted at the site.

On August 28, 1979, a corporation named Diamond Recycling Corporation of 1401 Harrison Avenue, Kearny, filed an initial registration statement for a solid/liquid waste collector-hauler for fiscal year 1980 with the NJDEP, Solid Waste Administration. The registration statement listed Robert S. Mahler as the person having prime administrative authority for the corporation. The corporation also listed waste oil and sludge as the types of wastes to be carried for disposal. The statement was signed by Robert S. Mahler, President.

A November 30, 1979 memorandum from the HMDC indicated that recent inspections (for oil-contaminated soils) at the NJDOT disposal area, which is located adjacent to ramp "M", Route I-280, revealed that top soil covering the side slopes of the disposal area had eroded, exposing contaminated materials. Also, tidal penetrations in the ditch adjacent to the ramp had eroded the compacted sand liner of the disposal area. According to the HMDC, subsequent rain falls had caused oily discharges from the eroded areas into the ditch which is adjacent to Ramp "M". The HMDC also noted that an oily discharge had been observed where the ditch was connected to Franks Creek.

By memorandum dated January 4, 1980, the HMDC informed the NJDOT that sampling data from one of the monitoring wells located at MSLA I-D showed increasing concentrations of BOD₅, COD and chlorides. According to the HMDC, there was a black liquid observed in that same well indicating liner damage at the disposal area. The HMDC memorandum concluded by stating at that point it was not possible to determine if materials in the disposal area were leaching into the surrounding soils. It was recommended that additional sampling be undertaken as soon as possible to determine the magnitude of the liner damage.

The following companies are identified, in Industrial Waste Surveys submitted to the NJDEP from 1977 to 1979, as 1) having sent their wastes to the subject site and/or 2) using Bay City Oil, North East Oil, or Diamond Head Oil as their hauler:

American Aluminum Company
Mountainside, NJ 07092 (Union Co.)

Clarkson and Ford Company
Clifton, NJ 07012 (Passaic Co.)

Falke Corporation
Waldwick, NJ 07463 (Bergen Co.)

Gayton Lucchi Tool Company

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Carteret, NJ 07008 (Middlesex Co.)

G&L Tool Company
Rahway, NJ 07065 (Union Co.)

Monsanto Company
Kenilworth, NJ 07037 (Union Co.)

Monsanto Company
Trenton, NJ 08620 (Mercer Co.)

Red Devil, Inc.
Union Twp., NJ 07083 (Union Co.)

Texaco, Inc.
Teterboro, NJ 07730 (Bergen Co.)

Action Plastic Company/Division Dart Industries
Totowa Borough, NJ 07512 (Passaic Co.)

Beacon Die Mold, Inc.
Clifton City, NJ 07011 (Passaic Co.)

Campton Tool and Die Company
Kenilworth Boro, NJ 07033 (Union Co.)

Design and Molding Services
Piscataway Twp., NJ 08854 (Middlesex Co.)

Dianem Company
Lodi Borough, NJ 07644 (Bergen Co.)

Digital Computer Controls
Fairfield Borough, NJ 07006 (Essex Co.)

Einson-Freeman Detroy Corporation
Fair Lawn, NJ 07410 (Bergen Co.)

Foremost Manufacturing Company, Inc.
Union Twp., NJ 07083 (Union Co.)

Carmet Company/Amcar Division
East Rutherford, NJ 07073 (Bergen Co.)

International Telephone and Telegraph Corp.
Midland Park, NJ 07432 (Bergen Co.)

ITT Marlow
Midland Park, NJ 07432 (Bergen Co.)

Bekker Garret and Sons, Inc.
Clifton City, NJ 07012 (Passaic Co.)

Arrow Plastics Corporation

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Garfield City, NJ 07026 (Bergen Co.)

Jae Trucking (hailed for American Aluminum)

Pinto Service (hailed for Arrow Plastic Corp.)

Robert More (hailed for Falke Engine Rebuilding Corp.)

DePalma Oil Company (hailed for Red Devil, Inc.)

Monsanto Company indicated in the Eckhardt Report that from 1973 to 1979, Monsanto's Kenilworth, NJ plant sent 33 tons of wastes to the subject site for disposal (reprocessing/recycling). The waste types listed were organics, and oils and oil sludges.

On March 19, 1980, the subject site was inspected by a representative of the NJDEP and a representative of Environmental Assessment Council in order to determine if Diamond Head Oil Company was still operating at the facility. EAC was inspecting the site on behalf of the USEPA. The inspectors found that the site no longer appeared to be operating as an oil reprocessing facility. This conclusion was based on the fact that all of the doors and windows were locked and it appeared as if most of the equipment was not used for a long period of time. However, the inspectors did find some evidence which led them to believe that the site was being used for illegal dumping of waste oils.

Among the evidence that was cited by the NJDEP inspector were the following: Certain equipment including valves and pipes located in the vicinity of the off loading area appeared to have been used very recently (relative to the other equipment on site); there were also several recent truck tire tracks concentrated in the vicinity of the off loading area; and some of the storage tanks contained significant amounts of oil which may or may not have been left over from Diamond Head Oil. No site security measures were noted at the site.

The EAC representative stated that a contractor (Modern Transportation) was hired to clean up the site and that representatives from the Modern had already visited the site. The EAC representative stated that he did not know when the cleanup was to take place. It is unknown who hired Modern Transportation to conduct the cleanup.

On April 4, 1980, the site was inspected by the NJDEP. A watchman present at the site stated to the inspector that the facility was being "taken down" shortly. The NJDEP inspector noted large amounts of standing oil throughout the facility (particularly within the diked areas). The inspector was informed that Modern Transportation periodically came to the facility to vacuum up the standing oil. The inspector also noted that some piping had been removed and some of the tanks were either in the process of being pumped out or had already been pumped out.

The NJ Superior Court, Law Division decided on July 31, 1980, that PSC

Resources, Inc., was the successor to Diamond Head Oil Refining Co., Inc., and is subject to liability for any claims against it arising from the discharge of pollutants onto the NJDOT's property.

In an opinion that was filed by the NJ Superior Court on May 29, 1981, the Court found that PSC Resources, as successor to Diamond Head Oil Refining Co., transferred the subject facility as an operating unit to Newtown Refining Corporation essentially unchanged. The Court found that Newtown Refining Corporation was liable for claims against it arising from the torts committed by its predecessor corporation, PSC Resources.

A soils investigation report dated June 1981, entitled "Proposed Hotel Development, Harrison Avenue, Kearny, NJ" was submitted to Mimi Development of Kearny, NJ (now known as Mimi Urban Renewal Corporation; the current site owner) by Johnson Soils Engineering Company.

The soil investigation consisted of 24 test borings that were taken to depths between 22 to 102 feet. Five previous borings, which were drilled on site by William Walsh, Inc., were also consulted.
NOTE: The RPIU has not found any other information pertaining to the William Walsh borings.

The purpose of the site investigation as stated was "to provide information to adequately support the 1,2, and 7 story structures proposed for the site and property site development concerning the oil contaminated fill area. The scope of this investigation included both Lots 2 and 3 of Block 285. Lot 3 (the subject site) was described in the report as "... the site of Diamond Head Oil Refining Company which had oil ponds on site.".

Borings B-1 to B12 were drilled in Lot 2. Borings B-13 to B-24 were drilled in Lot 3. The findings relative to Lot 3 (the subject site) include the following:

- depth of fill and organic varied between 11 and 20 feet,
- borings indicate oil contaminated soils,
- hydrocarbons were present at the following depths:

B-13	6 to 10 ft.
B-14	6 to 10 ft.
B-15	6 to 15 ft.
B-16	8 to 16 ft.
B-17	8 to 10 ft., 12 to 18 ft.
B-18	8 to 12 ft.
B-19	10 to 22 ft.
B-20	10 to 20 ft.
B-21	10 to 12 ft.
B-22	7 to 10 ft.
B-23	3 to 10 ft.
B-24	6 to 10 ft.

- every sample taken on the site indicated the presence, even if in small quantities, of hydrocarbons at some depth,
- the existing 75' diameter pond on lot 3 had a small amount of oil on the surface that could be pumped out.

The subject site was inspected on May 20 and 24, 1982 by the NJDEP. The inspection resulted because of a complaint from the Kearny Health Department regarding activity at the subject site (material was being pumped from tanks into drums).

On May 20, 1982, the NJDEP inspector met a Mr. Walt Witt, Operations Manager for Eastern Chemical Cleaning Co. of Secaucus, NJ. Mr. Witt explained that Eastern Chemical was hired by Refinemet International Co. of Woonsocket, Rhode Island to clean up the site. According to Mr. Witt, Diamond Head Oil had cleaned out the two 100,000 gallon storage tanks two to three years earlier, when Route I-280 was being constructed; and demolished the building. Mr. Witt alleged that "someone" (whose identity was unknown) had been depositing oil sludges in the tanks for an unknown period of time. Refinemet was the parent corporation of Newtown Corporation (the current site owner).

According to the NJDEP inspection report the cleanup of the property began with the analyzing of the material in both tanks. One tank reportedly contained approximately 50 gallons of water and oil with a concentration of less than 50 ppm of PCBs. The second tank contained approximately 7,450 gallons of oil with a concentration of 206 ppm of PCBs.

Both tanks were reportedly vacuumed out starting on May 19 and ending on May 20, 1982. The contents of both tanks, totaling approximately 7,500 gallons, were transferred into 147 new 55 gallon steel "tight-head" (open head) drums. Each drum was subsequently labeled with a PCB label and a hazardous waste label (which listed Newtown Refining Corp., EPA ID #NJD980642117 as the generator).

On May 21, 1982 the NJDEP inspector spoke with John Scott of Eastern Chemical on the telephone. Mr. Scott stated that Newtown Refining Corporation, which was a wholly owned subsidiary of Refinemet International Co., decided to put an end to the illegal dumping into their tanks by having the tanks removed. Mr. Scott gave Newtown's EPA ID# as NJD980642117.

According to the NJDEP inspector the drums were manifested off site by box trailer on May 24 (77 drums) and May 25 (70 drums). The first shipment of 77 drums was sent to Chemical Waste Management in Alabama. The second shipment of 70 drums was to be shipped initially to Resource Technology Service (RTS) of Conshohocken, PA to await shipment to Chemical Waste Management.

The NJDEP inspector met with a Mr. Steve Gutfeld, Assistant Vice President of Refinemet International, at the subject site on May 24, 1982. Mr. Gutfeld stated that Newtown was no longer in the oil

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business and was not located in New Jersey. According to Mr. Gutfeld, Newtown was a precious and scrap metals reclaimer.

Mr. Gutfeld reportedly was interested in getting the NJDEP inspector's assurance that Eastern Chemical was conducting the cleanup properly. The inspector checked both tanks and determined that they were "clean". Mr. Gutfeld claimed that he was getting several estimates for the removal of the tanks but had not made any decision at that time. The NJDEP inspector observed that the soil surrounding the tanks (especially the second tank) was black with oil. When asked if the soil surrounding the tanks would be scraped up, Mr. Gutfeld stated that he did not know.

The NJDEP contacted RTS to inquire about the status of the 147 drums of oil. RTS informed the NJDEP that the drums had been shipped to the CWM facility in Alabama. However, the drums were being stored at the site pending further analysis prior to disposal. Apparently, subsequent analysis of the shipment revealed levels of PCBs (3300 ppm) that were significantly higher than the original analysis by Eastern Chemical (206 ppm). NOTE: CWM was not permitted to accept waste containing over 500 ppm of PCBs.

The drums were subsequently sampled by Refinemet and revealed a concentration of 3100 ppm of PCBs. All the drums were ultimately sent to Mobile, Alabama to be incinerated at sea.

On June 14, 1982, Mr. Gutfeld of Refinemet International contacted the NJDEP and stated that Refinemet would have the oil and contaminated soil from around the second tank removed. Gutfeld also stated that piles of oily sludges and a lagoon at the site were not on Refinement's property and therefore Refinemet was not going to clean it up. Gutfeld suggested that that portion of the property may be owned by the NJDOT or the Town of Kearny. Mr. Gutfeld further stated that he had additional fencing installed at the site to prevent further dumping on the property.

On June 15, 1982, the subject site was inspected by a Department representative. Oil was observed in the base of tank #2. The piles of sludge and the lagoon at the site appeared unchanged. No evidence of new dumping was observed. No guard was present at the site. Fence posts were installed however, the gate was not up yet.

After the inspection of June 15, Steve Gutfeld of Refinemet International contacted the Department inspector and stated that he had copies of the analysis to present to the inspector. He also stated that the soil around tank #2 and the remaining oil in the tank would be removed. However, Mr. Gutfeld also stated that he wanted to know from the Department just how deep they would have to excavate around the tank. Mr. Gutfeld went on to state that there was a pool of oil 60 feet down, below the tank, and he did not intend to get too close to it. The RPIU has not found any other information regarding this "pool" of oil that was located 60 ft. down.

During a telephone conversation with the Department inspector on

August 13, 1982, Mr. Gutfeld explained that Refinemet/Newtown had originally decided to clean up the subject site when they had learned, through their attorney, that someone was using the two tanks on their property to dispose of waste oil. Their attorney had been negotiating the sale of the subject site at the time, so he advised Newtown to clean up the site. Gutfeld ended by stating that Refinemet/Newtown intended to complete the cleanup of the soil at the subject site but, they had not decided on which contractor to hire at that time.

On October 13, 1982, Newtown Refining shipped two loads (NJ Manifest #s NJ0135037 and NJ0135038) of PCB contaminated soil, totaling 27 tons, from the subject site to CECOS International in New York. It is not known from which area of the site these soils were taken from.

By letter dated November 4, 1983, the DAG representing the NJDOT in this law suit, confirmed that Russell Mahler had agreed to contribute \$30,000 toward an overall settlement package of \$630,000 previously agreed to by the parties. NOTE: The RPIU has not been able to document when this agreement was initially reached.

On May 30, 1984 the subject facility was inspected by the Department. The facility was closed with no one on site. The two storage tanks were cut off at the base and had grass growing out of them. The building on site was described by the inspector as being "just a pile of rubble". A slight oil sheen was observed on puddled rain water. The inspector recommended, based on his observations that Diamond Head Oil Co., be removed from the RCRA major facility list.

On November 2, 1984, the Superior Court, Law Division, ordered that the following settlement proceeds be deposited as follows with the Clerk of the Court within 30 days:

Aetna Insurance Company	\$500,000
Newtown Refining Corp.	\$100,000
Russell Mahler	<u>\$ 30,000</u>
	\$630,000 Total

By letter dated November 26, 1984 to the Department, the attorney for Newtown Refining Corporation requested confirmation from the Department as to the non-applicability of the Environmental Cleanup Responsibility Act (ECRA) to a pending sale of the subject property to Mimi Urban Development Corporation. The letter stated in part:

"...Until May 1978, a waste oil re-refinery operation was conducted at 1401 Harrison Ave., Kearny. At that time the operation was discontinued, and thereafter the buildings and other facilities on the land were removed. In 1982, two remaining oil storage tanks were dismantled and removed, after the remaining contents thereof and certain surrounding soil had been removed..."

(NOTE: Underlining added for emphasis.)

An affidavit from Steve Gutfeld, Assistant Vice President of Newtown

in 1982 was attached to the November 26 letter. As stated in the letter the affidavit pertained to facts involving the removal operations in May and October, 1982.

On December 11, 1984, the NJDEP, DWM, Bureau of Industrial Site Evaluation sent a letter to Counsel representing Newtown Refining Corporation. This letter stated that, on the basis of the information presented by Newtown and the affidavit signed by Steven Gutfeld, the Department found that the transaction was not subject to the provisions of ECRA. The letter further stated that the decision was made in light of the absence of an industrial establishment as defined within the Standard Industrial Classification numbers covered by the Act.

In a January 8, 1985 letter to Counsel for the defendants, the State Attorney General's Office stated that Aetna Insurance Company had paid the sum of \$500,000 to the Court as required in the November 2, 1984 Order. It was also stated that Russell Mahler and Newtown had failed to comply at that time.

On January 11, 1985, Newtown Refining Corporation, successor by change of name to Ag-Met Oil Service, Inc., sold the subject site to Mimi Urban Renewal Development Corporation for the sum of \$290,000. As previously discussed, Mimi Development had a soils investigation conducted for the subject site in June of 1981.

In a letter dated January 29, 1985 to the NJ Attorney General, the attorney representing Russell Mahler stated that his client had every intention of making the \$30,000 payment as per the settlement agreement. It was further stated that Russell Mahler, at that time, was residing in the Federal Penitentiary in Danbury and was unable to raise the funds to make the deposit at the time. According to the letter Russell Mahler was scheduled for release on March 22, 1985. Mahler's Attorney stated that his client proposed that he be allowed to make the \$30,000 settlement payment in six equal installments over a six month period with the first payment being made one month after his release from Danbury.

The Attorney General's Office, in a March 18, 1985 reply to the letter from Mahler's attorney, stated that the terms described in the January 29, 1985 letter were unacceptable to the State. The DAG also stated that all other parties (Newtown and Aetna Insurance) have made their payment, and as of December 2, 1984, Russell Mahler had been in violation of the November 2, 1984 Court Order. The DAG then stated that the State was willing to discuss a short term installation arrangement, however, the State would require Mahler to pay at least one-third of the amount due by the end of the month. The letter closed by stating that "once Mr. Mahler has demonstrated a 'good faith' attempt to live up to the terms of his previous agreement and the Court Order by making this payment, the State would be more willing to entertain the installment payment concept". It is not known if Mahler ever made the required payment.

The subject site was inspected by the Department on April 23, 1985.

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The inspector noted that the facility had been demolished and the bases of two tanks, the foundation of a building, and a lagoon (approximately 30' x 40') were all that remained. Other observations that were made by the inspector are as follows:

- the gate on the driveway was propped open with a rock,
- a black, oily stain measuring approximately 30' x 10' was found directly inside the gate, next to the foundation,
- fresh tire tracks which crossed through the above mentioned stain and led to the lagoon,
- the lagoon was filled with muddy water with a milky grey edge. The "lip" of the lagoon, 2', was black, and oil stained down to the water,
- crushed drums, building rubble, and black, oily stains were observed throughout the site,
- no one was on site

No photographs or samples were taken during the inspection.

On May 1, 1985, the NJDEP Bureau of Environmental Measurements and Site Assessment inspected the subject site. Various spills and two lagoons were observed on site. The site was fenced however, the gate was unlocked. Six soil samples and two surface water samples (from the lagoons) were collected during the inspection.

The results of the sample analysis confirmed the presence of volatile organics (VOs), Base/Neutrals, and metals in soil and surface water samples collected from the subject site. Pesticides and PCBs were also detected in soil samples (See Substances Discharged/Abandoned on pg. 34).

On January 8, 1986, the subject site was inspected by the NJDEP, BFO. The gate to the property was unlocked and open. The condition of the site appeared to have remained unchanged from previous inspections. Some observations that were made are as follows:

- An approximately 60' x 30' oil stain immediately to the west of the building foundation,
- several oil stains near one tank
- a heavy black tar-like material in the second tank base,
- a thick tar-like substance, covering "dozens" of square feet, mounding up from the ground surface, approximately 200' to 250' from the old building foundation,
- evidence of illegal dumping of solid waste,

CONFIDENTIAL

- six to ten partially buried drums
- heavily stained soil in the vicinity of the drums

The NJDEP, Division of Hazardous Waste Management, Metro Field Office (MFO), inspected the site on January 5, 1988. A construction office trailer was observed on the property bearing the name "Hudson Meadows Urban Development Corp.". There also was a sign on the trailer which read "Office - Commercial - Industrial/ Will Build To Suit/ 10,000-50,000 sq. ft."

The ground at the site was frozen and snow covered during the inspection. The NJDEP inspector also noted the following during the inspection:

ON THE EAST SIDE OF THE PROPERTY;

- "much" debris including at least five rusted 55 gallon drums (empty),
- various metal buckets and containers,
- material from the demolition of the facility,

ON THE WEST SIDE OF THE PROPERTY;

- ground appeared to have been built up by earth moving machinery approximately four to five feet above the grade of the east side of the property,
- less debris on the west side compared to the east side,
- not able to detect/observe any ground contamination due to snow cover and frozen ground.

The DHWM, MFO reinspected the site on February 23, 1988, after the snow cover had melted. According to the inspector, petroleum sheens were noted on virtually all standing water, and oil contamination of soil around the old tank foundation was observed. Some pools of water exhibited an unusual white or pinkish coloration.

The DHWM, MFO contacted the Hudson Meadows Urban Development Corporation via telephone on February 18, 1988. The purpose of the telephone call was to inform Hudson Meadows of the potential problems that existed at their site in regards to the development of the site. Hudson Meadows stated that they had taken their own samples and were awaiting the sample results.

On March 15, 1988, the DHWM, MFO sent a followup letter to the Hudson Meadows Urban Development Corporation. This letter, which confirmed the telephone conversation of February 18, outlined the potential problems that existed at the site. The letter stated that the Department had not been able to locate the responsible party, Russell

DIAMOND HEAD OIL
INVESTIGATIVE SUMMARY
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Mahler, but, if possible will issue Mr. Mahler an order requiring cleanup of the site.

The letter closed by stating that if the Department could not locate the responsible party, the Department would take alternate measures to ensure that proper remediation was done before development of the site. The Department also recommended that Hudson Meadows Development Corporation undertake a "clean-up" investigation for the site.

NOTE: Some time subsequent to MFO's initial contact with Hudson Meadows Development Corporation (date unknown), Hudson Meadows retained the services of Killam Associates to conduct a remedial investigation (RI).

The RPIU has not located any additional information regarding the remedial investigation. It is not known whether or not any RI's were initiated.

No other activity has been documented relative to the subject site subsequent to the March 15, 1988 letter to Hudson Meadows Urban Development Corporation.

CONFIDENTIAL

DISCHARGE/ABANDONMENT INFORMATION

Diamond Head Oil Company
1401 Harrison Avenue

Kearny Town

Hudson County

Block: 285

Lot: 3

CURRENT OWNER

Mimi Urban Renewal Corporation
525 Riverside Avenue
Lyndhurst, NJ 07071 (Bergen County)
(201)460-0088/761-1800

Mailing Address: Same as above

SUBSTANCES DISCHARGED/ABANDONED

Analysis of soil and surface water (lagoon) samples collected by the NJDEP, BEMSA, SEU from the subject site in May, 1985 revealed the presence of the following contaminants:

SOIL:

Volatile Organics

Benzene, 1,1-dichloroethane, 1,2-dichloroethane, 1,1-dichloroethylene, ethylbenzene, methylene chloride, tetrachloroethylene, toluene, 1,2-trans-dichloroethylene, 1,1,1-trichloroethane, trichloroethylene, trichlorofluoromethane, vinyl chloride,

Base/Neutrals

Acenaphthene, acenaphthylene, anthracene, benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, bis(2-ethylhexyl)phthalate, chrysene, 1,3-dichlorobenzene, di-n-butyl phthalate, 2,4-dinitrotoluene, fluoranthene, fluorene, indeno(1,2,3-c,d)pyrene, naphthalene, phenanthrene, pyrene, 1,2,4-trichlorobenzene

Pesticides

Endosulfan II, alpha-BHC, 4,4'-DDD, Endrin aldehyde

PCBs

Aroclor 1260

Metals, Cyanide, and Phenols

Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, silver, zinc, cyanide (total), phenolics (total)

Tentatively Identified Organic Compounds

unknowns, 1,1,2-trichloro-1,2,2-trifluoro ethane, cyclohexane, methyl cyclopentane, methyl cyclohexane, 2,3-dimethyl pentane, dimethyl benzene, 1-ethyl-4-methyl benzene, 2-methyl-3-heptene, naphthalene 1-methyl, naphthalene 2-methyl, 1-methyl-4-propyl benzene, 2-ethyl-1,4-dimethyl benzene, 1-ethyl-2-propyl cyclohexane, decahydro-2-methyl naphthalene, alkane, 1,8-dimethyl naphthalene, 1,6,7-trimethyl naphthalene, naphthalene 1,4-dimethyl

SURFACE WATER:

Volatile Organics

Benzene, 1,1-dichloroethane, ethylbenzene, tetrachloroethylene, toluene, 1,2-trans-dichloroethylene, 1,1,1-trichloroethane

Acid Extractable Compounds

2,4-dimethylphenol, phenol

Base/Neutrals

dimethyl phthalate, isophorone, di-n-butyl phthalate

Metals, Cyanide, and Phenols

Arsenic, cadmium, chromium, copper, lead, mercury, nickel, zinc, cyanide (total), phenolics (total)

Tentatively Identified Organic Compounds

unknowns, dimethyl sulfide, alkane, xylene, 1,3-isobenzofurandione, N-methoxy-succinimide, 5-propyl tridecane, 2,6,8-trimethyl decane, 2,4-dimethyl undecane,

DESCRIPTION OF SITE CONTAMINATION

There is both soil and surface water contamination on site. The contamination appears to have resulted from the daily operations of Diamond Head Oil, which permitted waste oils to be discharged into the environment. The high water table at this site brings oily residues to the surface. Soil samples were taken in May, 1985 by the Site Evaluation Unit of the Bureau of Environmental Measurements and Site Assessment (See Substances Discharged/Abandoned). The results of the sample analysis confirmed the presence of Volatile organics (VOs), Base/Neutrals, and metals in soil and surface water samples collected from the subject site. Pesticides and PCBs were also detected in soil samples.

In addition to the waste oil contamination of the site, it is also suspected that the site may have been filled with waste chromate production slag/fill. The use of waste chromate production slag as fill in many areas of Hudson County was a common practice from the early 1950s to the early 1980s.

DIAMOND HEAD OIL
INVESTIGATIVE SUMMARY
PAGE 36

Associated with the site are contaminated soil disposal cells located in areas adjacent to the subject site. These cells were constructed in early 1978 by NJDOT for the cleanup of debris from the "oil lake" that was situated partially on the adjacent NJDOT property (Block 285 Lot 2) and partially on the subject site (Block 285 Lot 3). Due to a lack of capacity at the Hackensack Meadowlands Development Commission's MSLA I-D disposal cell, NJDOT constructed 86,570 yd³ of on-site disposal cells. These cells border the Diamond Head Oil site on the south and the east sides.

The cells are associated as being on Town of Kearny property (Block 285 Lots 14 and 15) but are also at the south of Diamond Head Oil Company site (Block 285 Lot 3). Following construction of the cells, ground water monitoring was required for the cells. Monitoring of ground water was pursued by NJDOT; initially to provide documentation on performance of disposal cells.

By memorandum dated January 4, 1980, the HMDC informed the NJDOT that sampling data from one of the monitoring wells located at MSLA I-D showed increasing concentrations of BOD₅, COD and chlorides. According to the HMDC, there was a black liquid observed in that same well indicating liner damage at the disposal area. The HMDC memorandum concluded by stating at that point it was not possible to determine if materials in the disposal area were leaching into the surrounding soils. It was recommended that additional sampling be undertaken as soon as possible to determine the magnitude of the liner damage. It appears that there was no monitoring data submitted beyond July, 1980.

The oil lake discharged its oils to Frank's Creek, a tributary to the Hackensack River. During the construction of Route 280, Frank's Creek was sampled by NJDOT. The results were not reported to the NJDEP.

Responsible Party:
MIMI URBAN RENEWAL CORPORATION (formerly known as MIMI DEVELOPMENT CORPORATION)
Current Owners
525 Riverside Avenue
Lyndhurst, NJ 07071

Registered Agent:
Hudson Meadows Urban Renewal Corporation
Delores Turco
525 Riverside Avenue
Lyndhurst, NJ 07071

Corporate Status:
Active, incorporated in the State of New Jersey in June 29, 1978.

Financial Status:
Not Available

Principals:
Delores Turco
54 Enclosure Road
Nutly, NJ

Comments:
Current site owner; Prior to the January 1985 purchase of the subject site, Mimi had a soils investigation conducted for the subject property.

Responsible Party:

NEWTOWN REFINING CORPORATION (formerly Ag-MET Oil Service, Inc.)
37-80 Review Avenue
Long Island City, New York 11101

Mailing Address:

Landmark Tower
One Landmark Square, Suite No.303
Stamford, CT 06901

Registered Agent:

Corporation Trust Company
28 West State Street
Trenton, NJ 08608

Corporate Status:

Active, foreign corporation, incorporated in the State of New York on
January 12, 1976

Financial Status:

Not Available

Principals:

Not Available

Comments:

Former site owner/operator.

Responsible Party:
NORTHEAST OIL SERVICE OF SYRACUSE, INC.
North Grafton Shopping Center
North Grafton, MA 01536

Mailing Address:
Box 477
North Grafton, MA 01536

Registered Agent:
Corporation Trust Company
28 West State Street
Trenton, NJ 08608

Corporate Status:
Revoked; Foreign incorporated in Massachusetts

Financial Status:
Not Available

Principals:
Russell Mahler
Address Unknown

Lloyd P. Mahler
Vice President
Box 477 (Last Known Address)
North Grafton, MA 01536

Comments:
Transported waste oil and oil sludges to the subject site.

Responsible Party:
DIAMOND HEAD OIL REFINING CORPORATION

Registered Agent:
Last Registered Agent: Ralph M. Lowenbach
Gateway One
Newark, NJ 07102

Corporate Status:
VOID, November 17, 1983; incorporated in the State of New Jersey on
August 24, 1978.

Financial Status:
Not Available

Principals:
Robert Mahler, Director, President
David Riso, Director

Comments:
Operated at subject site

Responsible Party:
PSC RESOURCES, INC. (formerly Phillips Resources, Inc.)
229 South State Street
Dover, DE 19901

Registered Agent:
The Prentice Hall Corporation System, New Jersey, Inc.
One Exchange Place
First Jersey National Bank
Jersey City, NJ 07303

Corporate Status:
Revoked, February 23, 1983; incorporated in the State of Delaware as
Phillips Resources, Inc. on October 23, 1973

Financial Status:
Not Available

Principals:
Arthur M. Vash
President
229 South State Street
Dover, DE 19901

Comments:
Operated at subject site

Responsible Party:
DIAMOND HEAD OIL REFINING COMPANY, INC

Last Registered Agent:
Martin Morrison
Last known address
1504 East 95th Street
Brooklyn, NY

Corporate Status:
Dissolved as of December 28, 1973; incorporated in the State of New Jersey on December 12, 1949

Financial Status:
Not Available

Principals:
Nicholas Matin
Shareholder
c/o 129 West 48th Street
Bayonne, NJ 07002

Comments:
Operated waste oil refining plant at the subject site from approximately 1950 to 1973.

Responsible Party:
SHUR-FLO OIL COMPANY, INC.

Registered Agent:

N/A

Corporate Status:
Dissolved as of April 17, 1961; incorporated in the State of New
Jersey on August 1, 1949

Financial Status:

N/A

Principals:
Martin Morrison, President
Nicholas Matin, Director

Comments:
Operated at the subject site

Responsible Party:

Diamond Recycling Corporation
1401 Harrison Avenue (Last known address)
Kearny, NJ 07032

Registered Agent:

Ralph M. Lowenbach
Gateway One
Newark, NJ 07101

Corporate Status:

Void, in New Jersey as of November 17, 1893; originally incorporated
in the state of New Jersey on July 20, 1979.

Financial Status:

N/A

Principals:

Robert Mahler, Director
1401 Harrison Turnpike
Kearny, NJ 07032

Comments:

Operated at subject site

Responsible Party:
Tammy's Oil Service

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
N/A

Principals:
Russell W. Mahler, President and Principal Owner

Comments:
Owned all outstanding stock of PSC Resources from November 1, 1973 to
November 3, 1976

CONFIDENTIAL

Responsible Party:
EDGEWATER TERMINAL

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
N/A

Comments:

Eckhart reports states that this company operating at the subject site received approximately 33 tons of oil and oil sludge wastes from Monsanto's Kenilworth, NJ plant (1973 to 1979).

CONFIDENTIAL

Responsible Party:
REFINEMET INTERNATIONAL COMPANY (Formerly Ag-MET, Inc.)

Last Known Registered Agent:
Corporation Trust Company
28 West State Street
Trenton, NJ 08608

Corporate Status:
Revoked; Foreign corporation; incorporated in Delaware

Financial Status:
N/A

Comments:
Former Site Owner/Operator

CONFIDENTIAL

Responsible Party:
BAY CITY OIL SERVICE

Registered Agent:
N/A

Corporate Status:
Dissolved as of December 28, 1973; incorporated in the State of New Jersey on December 12, 1945.

Financial Status:
N/A

Comments:
Operated at subject site and hauled waste oil and oil sludge to the site

CONFIDENTIAL

Responsible Party:
NEW JERSEY DEPARTMENT OF TRANSPORTATION
1035 Parkway Avenue
CN 600
Trenton, NJ 08625

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
N/A

Principals:
Thomas M. Downs, Commissioner

Comments:
Owner of portion of I-280 right-of-way on the subject site (Block 285
Lot 3)

CONFIDENTIAL

Responsible Party:

MONSANTO COMPANY
800 N. Lindbergh Blvd
St. Louis, MO 63141-7843

Registered Agent:

Corporation Trust Company
28 West State Street
Trenton, NJ 08608

Corporate Status:

Active, incorporated in the State of Delaware as Monsanto Chemical Company on April 19, 1933. Registered to do business in New Jersey on January 31, 1936.

Financial Status:

D&B Estimated latest year sales of \$8,995,000,000; 22% sales growth;
Net worth \$3,146,000,000.

Principals:

Richard J. Mahoney, Chairman of the Board, CEO
28 Upper Ladue Road
St. Louis, MO 63124

Earle H. Harbison, President & Chief Operating Officer
48 Portland Drive
St. Louis, MO 63131

Comments: According to the Industrial Waste Survey, two different Monsanto facilities reportedly sent to waste to the subject site;

North 8th and Monroe Avenue
Kenilworth, NJ 07037.

584 US Highway 130
Trenton, NJ 08620

The facility located at North 8th and Monroe Avenue also reported (in the Eckhart Report) using the subject site as a disposal facility for 33 tons of oil and oil sludge wastes from 1973 to 1979.

CONFIDENTIAL

Responsible Party:
AMERICAN ALUMINUM COMPANY
230 Sheffield Street
Mountainside, NJ

Registered Agent:
Edward J Duggan
230 Sheffield Street
Mountainside, NJ 07092

Corporate Status:
Active, incorporated in the State of New Jersey on April 8, 1911 as
Aluminum & Metal Specialty Manufacturing Co.

Financial Status:
D&B Estimated latest year sales of \$11,000,000; 25% sales growth.

Principals:
Henry J. Brucker, Chairman
Robert J. Brucker, President
Edward J. Duggan, Exec. Vice President/Secretary

Comments: American Aluminum Company is currently listed as a hazardous waste generator; NJD002155166; Reported sending waste to the subject site in the Industrial Waste Survey.

CONFIDENTIAL

Responsible Party:
CLARKSON AND FORD COMPANY
30 Industrial St. W
Clifton, NJ 07012-1712

Registered Agent:
Franklin T. Johnson
30 Industrial St., West
Clifton, NJ 07012

Corporate Status:
Active, incorporated in the State of New York on January 17, 1903.

Financial Status:
D&B Estimated latest year sales of \$550,000. 10% sales growth.

Principals:
Franklin T. Johnson, President/Treasurer
41 Lake End
Green Pond, NJ 07435

Alfred C. Johnson, Vice President/Secretary
238 Alpine Trail
Sparta, NJ 07871

Comments: Reported sending waste to the subject site in the Industrial Waste Survey.

CONFIDENTIAL

Responsible Party:
FALKE ENGINE REBUILDING CORP./FALKE CORPORATION
24 Frederick Street
Waldwick, NJ 07463

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
N/A

Comments:
Reported sending waste to the subject site in the Industrial Waste
Survey.

CONFIDENTIAL

Responsible Party:
GAYTON LUCCHI TOOL COMPANY
27 Skita Avenue
Carteret, NJ 07008

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
N/A

Comments:
Reported sending waste to the subject site in the Industrial Waste
Survey

CONFIDENTIAL

Responsible Party:
G&L TOOL COMPANY
830 Elston Street
PO Box 642

Registered Agent:
No Record with Division of Commercial Recording 08/28/91

Corporate Status:
No Record with Division of Commercial Recording 08/28/91

Financial Status:
D&B Estimated latest year sales of \$3,500,000 (11/15/1990). 36% sales growth.

Principals:
Gayton Lucchi, Owner
Anne Lucchi, Office Manager

Comments:
Reported sending waste to the subject site in the Industrial Waste Survey

CONFIDENTIAL

Responsible Party:
RED DEVIL, INC.
2400 Vauxhall Road
Union, NJ 07083

Registered Agent:
George Lee
2400 Vauxhall Road
Union, NJ 07083

Corporate Status:
Active, incorporated in the State of New Jersey on January 28, 1926.

Financial Status:
D&B Latest Year Sales of \$47,525,622. 28% sales growth. Net worth
\$9,270,372

Principals:
George L Lee, Jr., Chairman
2400 Vauxhall Road
Union, NJ 07083

Donald Hall, President
2400 Vauxhall Road
Union, NJ 07083

Comments: Red Devil, Inc. is currently listed as a RCRA generator EPA
ID#: NJD002136232; Reported sending waste to the subject site in the
Industrial Waste Survey

Responsible Party:

TEXACO, INC.
177 Industrial Avenue
Teterboro, NJ 07730

HEADQUARTERS ADDRESS

2000 West Chester Avenue
White Plains, NY 10604-3613

Registered Agent:

Prentice-Hall Corp. System I
150 West State Street
Trenton, NJ 08608

Corporate Status:

Active, incorporated in Delaware on August 26, 1926 and subsequently authorized to transact business in New Jersey in October 1941.

Financial Status:

D&B reports latest year sales of \$40,899,000,000; net worth of \$9,385,000,000.

Principals:

Alfred C. DeCrane, Jr.
Chairman of the Board

William P. Doyle
President

James W. Kinnear
President

Earl J. Johnson
President

Comments: Texaco (Teterboro) is currently listed as a RCRA generator EPA ID#: NJD084015452. Reported sending waste to the subject site in the Industrial Waste Survey

Responsible Party:

ACTION PLASTIC COMPANY/DIVISION OF DART INDUSTRIES
50 Furler Street (Last known address)
Totowa, NJ 07512

Registered Agent: (DART INDUSTRIES)
Corporation Trust Company
28 West State Street
Trenton, NJ 08608

Corporate Status:

DART INDUSTRIES
Active, incorporated in Delaware on August 9, 1960 (formerly known as
Rexall Drug and Chemical Company)

Financial Status:

N/A

Comments:

Reported sending waste to the subject site in the Industrial Waste
Survey

CONFIDENTIAL

Responsible Party:
BEACON DIE MOLD, INC.
57 Crooks Avenue
Clifton City, NJ 07011

Registered Agent:
Pascal A. Esposito
6 Arrowhead Lane
Saddle River, NJ 07458

Corporate Status:
Active, incorporated in the State of New Jersey on January 26, 1956.

Financial Status:
According to D&B, on July 21, 1987 Pascal A. Esposito, President,
stated that Beacon Die Mold, Inc. discontinued operations in 1985. On
September 5, 1991, outside sources

Principals:
Pascal A. Esposito, President
6 Arrowhead Lane
Saddle River, NJ 07458

Anglea A. Esposito, Secretary
6 Arrowhead Lane
Saddle River, NJ 07458

Richard G. Esposito, Vice President
6 Arrowhead Lane
Saddle River, NJ 07458

Comments:
Reported sending waste to the subject site in the Industrial Waste
Survey

CONFIDENTIAL

Responsible Party:
CAMPTON TOOL AND DIE COMPANY
40 Sidney Circle
Kenilworth Borough, NJ 07033

Registered Agent:
Albert W. Bossert, Jr.
25 Sidney Circle
Kenilworth Borough, NJ 07033

Corporate Status:
Active, incorporated in the State of New Jersey on August 23, 1966.

Financial Status:
N/A

Principals:
Albert W. Bossert, President
886 Sunset Ridge
Bridgewater, NJ 08807

Lee R. Rosander, Vice President
1412 Golf Street
Scotch Plains, NJ 07076

Mary Ann Bossert, Secretary/Treasurer
886 Sunset Ridge
Bridgewater, NJ 08807

Comments:
Reported sending waste to the subject site in the Industrial Waste
Survey

Responsible Party:
DESIGN AND MOLDING SERVICES
25 Howard Street
Piscataway Twp., NJ 08854

Registered Agent:
Paul R. Williams, Jr.
302 East Broad Street
Westfield, NJ 07090

Corporate Status:
Active, incorporated in the State of New Jersey on February 2, 1969.

Financial Status:
N/A

Principals:
Jerry P. Fontenelli, President
205 Hockenbury Road
Neshanic, NJ 08853

John L. Fontenelli, Exec. Vice Pres.
384 Rolling Knolls Way
Bridgewater, NJ 08807

Robert C. Malenchek, Secretary
279 Sunnymead Road
Somerville, NJ 08876

Comments:
Reported sending waste to the subject site in the Industrial Waste
Survey

Responsible Party:

DIANEM COMPANY
Lodi Borough, NJ 07644

Registered Agent:

N/A

Corporate Status:

N/A

Financial Status:

N/A

Comments:

Reported sending waste to the subject site in the Industrial Waste
Survey

CONFIDENTIAL

Responsible Party:
DIGITAL COMPUTER CONTROLS
12 Industrial Road
Fairfield Borough, NJ 07006

Registered Agent:
Corporation Trust Company
28 West State Street
Trenton, NJ 08608

Corporate Status:
Active, incorporated in the State of Delaware on March 8, 1971.

Financial Status:
N/A

Principals:
Michael B. Evans, President
4400 Computer Drive
Westboro, MA 01580

John Gavin, Jr., Treasurer
4400 Computer Drive
Westboro, MA 01580

Jacob Frank, Secretary
4400 Computer Drive
Westboro, MA 01580

William F. Robinson, Jr., Ass't Sec.
4400 Computer Drive
Westboro, MA 01580

Comments:
Reported sending waste to the subject site in the Industrial Waste Survey

CONFIDENTIAL

Responsible Party:
EINSON-FREEMAN DETROY CORPORATION
20-10 Maple Avenue
Fair Lawn

Registered Agent:
Ronald A. Joy
20-10 Maple Avenue
Fair Lawn, NJ 07410

Corporate Status:
Active, incorporated in the State of New Jersey on July 6, 1978.

Financial Status:
N/A

Principals:
Robert C. Quinn, President
Ronald A. Joy, Vice President

Comments: Einson-Freeman & Detroy Corp. is currently listed as a RCRA generator EPA ID#: NJD052092616; Reported sending waste to the subject site in the Industrial Waste Survey

DIAMOND HEAD OIL
INVESTIGATIVE SUMMARY
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Responsible Party:
FOREMOST MANUFACTURING COMPANY, INC.
941 Ball Avenue
Union Twp., NJ 07410

Registered Agent:
Herbert Schiller, Jr.
941 Ball Avenue
Union, NJ 07083

Corporate Status:
Active, incorporated in the State of New Jersey on May 1, 1957

Financial Status:
D&B projected sales of \$9,000,000.

Principals:
Herbert Schiller, Jr., President Herbert S. Schiller, Vice President
40 Jared Court 1 Heather Lane
Watchung, NJ 07060 Warren, NJ 07060

Helen Schiller, Secretary
40 Jared Court
Watchung, NJ 07060

Comments: Foremost Manufacturing Co. is currently listed as a RCRA generator and transporter EPA ID#: NJD002177285; Reported sending waste to the subject site in the Industrial Waste Survey

CONFIDENTIAL

Responsible Party:
CARMET COMPANY/AMCAR DIVISION
160 East Union Avenue
East Rutherford, NJ 07073

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
N/A

Comments:
Reported sending waste to the subject site in the Industrial Waste
Survey

CONFIDENTIAL

Responsible Party:
INTERNATIONAL TELEPHONE & TELEGRAPH CORP. (ITT MARLOW)
1330 Avenue of Americas (Headquarters Location)
New York, NY 10019

Registered Agent:
Corporation Trust Company
28 West State Street
Trenton, NJ 08608

Corporate Status:
Active; Foreign corporation; incorporated in the State of Delaware

Financial Status:
D&B reports gross revenues of \$20,604,000,000; Worth \$7,415,000,000.

Principals:
Rand V. Araskog, President and Chief Operating Officer

Comments: ITT Marlow is currently listed as a RCRA generator EPA ID#: NJD001572999; Reported sending waste to the subject site in the Industrial Waste Survey

CONFIDENTIAL

Responsible Party:

GERRIT BEKKER AND SONS, INC. (Subsidiary of Ramon, C Inc.)
228 Scoles Avenue
Clifton, NJ 07012

Registered Agent:

William L Handler, Esq.
91 Main Street
West Orange, NJ 07052

Corporate Status:

Active; incorporated in the State of New Jersey on January 27, 1981

Financial Status:

Ramon, C Inc. - D&B projected sales of \$500,000

Principals:

Harshad Shah, Chairman of the Board/President

Dennis Shah, Vice President/Secretary

Comments:

Reported sending waste to the subject site in the Industrial Waste Survey; Reportedly, Gerrit Bekker and Sons, Inc. discontinued operations at their Clifton site prior to October 1984.

CONFIDENTIAL

Responsible Party:
ARROW PLASTICS CORPORATION
83 Commerce Street
Garfield City, NJ 07026

Registered Agent:
Bernard L. Albert
365 West Passaic Street
Rochelle Park, NJ 07662

Corporate Status:
Active, incorporated in the State of New Jersey on February 26, 1946.

Financial Status:
N/A

Comments:
Reported sending waste to the subject site in the Industrial Waste
Survey

CONFIDENTIAL

Responsible Party:
JAE TRUCKING
Address Unknown

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
N/A

Comments: According to their response to the NJDEP Industrial Waste Survey, the American Aluminum Company reportedly used JAE TRUCKING to transport waste from their facility to the subject site.

CONFIDENTIAL

Responsible Party:

PINTO SERVICE
445 North Main Street
Lodi, NJ 07644

Registered Agent:

Charles Pinto
95 Route 46 West
Lodi, NJ 07644

Corporate Status:

Active, incorporated in the State of New Jersey on November 21, 1963.

Financial Status:

D&B Projected sales of \$3,000,000
Pinto Service reportedly has 900 accounts.

Principals:

Joseph Pinto, President

Gloria Pinto, Secretary/Treasurer

Comments: Listed in Industrial Waste Survey as waste transporter for Arrow Plastic Corp. Currently a registered solid waste transporter in the State of New Jersey; NJS000028852; NJDEP S#: S2885

CONFIDENTIAL

Responsible Party:
ROBERT MORE WASTE OIL SERVICE
124 Biltmore Street
North Arlington, NJ 07032

Registered Agent:
N/A

Corporate Status:
N/A

Financial Status:
D&B Estimated latest year sales of \$68,000.

Principals:
Robert More, Owner

Comments: Listed in Industrial Waste Survey as waste transporter for Falke Engine Rebuilding Corp. Currently listed as a NJ hazardous waste transporter; NJD000513218; NJDEP S#: S6262

CONFIDENTIAL

Responsible Party:
DEPALMA OIL COMPANY
713 Pinewood Road
Union, NJ 07083

Registered Agent:
N/A

Corporate Status:
Dead; Incorporated in the State of New Jersey on March 18, 1948

Financial Status:
N/A

Comments: Listed in the Industrial Waste Survey as the waste transporter for Red Devil, Inc. Currently listed as a NJ hazardous waste transporter; NJD065788556; NJDEP S#: 6689

CONFIDENTIAL

Responsible Parties (Individuals):

Russell W. Mahler
Robert Mahler
Lloyd Mahler

Registered Agent:

N/A

Corporate Status:

N/A

Financial Status:

N/A

Comments:

These individuals were officers of many of the various corporate entities which operated at the subject site however, their current whereabouts are unknown.

CONCLUSIONS AND RECOMMENDATIONS

Mimi Urban Renewal Corporation (formerly known as Mimi Development Corporation), as current owner of the subject site, is a responsible party for site contamination. As previously noted in the case summary, in 1981, prior to the January 1985 purchase of the subject site, Mimi had a soils investigation conducted for the subject property. The soils investigation, which was done as part of a proposed hotel development study for the site, revealed that the site had extensive petroleum hydrocarbon contamination. This investigation (which was submitted to Mimi in June 1981) shows that Mimi had knowledge of the site conditions (relative to soil contamination) prior to purchasing the property.

The following companies and/or individuals are primary responsible parties at the subject site as former site owners and/or operators:

Newtown Refining Corporation (formerly Ag-MET Oil Service, Inc.) owned the subject site from November 3, 1976 until January 11, 1985, at which time the site was sold to the current owner Mimi Urban Renewal Corporation. Newtown continued to operate the waste oil refining facility at the site from November 1976 to approximately 1979. As cited in the case summary, on numerous occasions during Newtown's ownership of the property, spills and discharges were documented at the subject site by representatives of the HMDC, NJDEP, and the USEPA.

Northeast Oil Service was a liquid waste hauler whose NJDEP, SWA registration statements for fiscal years 1978 and 1979 listed the subject facility as the disposal location. Northeast was also identified as the hauler for several companies identified in the NJDEP, Industrial Waste Survey from 1977 to 1979.

Diamond Head Oil Refining Corporation is believed to have operated at the subject site in 1978.

PSC Resources, Inc. was owner operator of the subject facility from November 1, 1973 to November 3, 1976. As cited in the case summary, on numerous occasions during PSC's ownership of the property, spills and discharges were documented at the subject site by representatives of the HMDC, NJDEP, and the USEPA.

Diamond Head Oil Refining Company, Inc. was owner and operator of the subject site from 1950 to 1973. During years of operation, the practices of this company at this facility led to waste oil contamination of this site. This corporation no longer appears to be viable at this time.

Shur-Flo Oil Company operated at the subject site from approximately 1952 to 1961 as a waste oil refiner and canner of motor oils. Many of the officers of this corporation were the same as those of Diamond Head Oil Refining Company from 1952 to 1961. This corporation no longer appears to be viable at this time.

Diamond Recycling Corporation filed an initial registration statement

for a liquid waste hauler with the NJDEP, SWA in August 1979 for fiscal year 1980. They listed the subject site as the disposal location. This corporation no longer appears to be viable at this time.

Tammy's Oil Service owned all outstanding stock of PSC Resources (site owners) from November 1, 1973 to November 3, 1976.

Edgewater Terminal was listed as the name of the facility operating at the subject site in the Eckhart Report. In this report Monsanto stated that they had sent 33 tons of oil and oil sludge to the subject site.

Refinemet International reportedly was the parent corporation of Newtown Refining. In 1982, Refinemet hired a contractor to remove two oil storage tanks which were allegedly receiving illegally dumped waste oil. The contents of the tanks were analyzed and found to be PCB contaminated. Refinemet also had a limited soil removal performed in the area immediately surrounding the tanks.

Bay City Oil Service, Inc. was a waste oil collector hauler who hauled waste oil to the subject site from approximately 1950 to 1973 (Note the officer during this period were also officers of Diamond Head Oil. This corporation dissolved in 1973. The name was later used by a company which was operated by PSC Resources/Russell Mahler (as President) and Robert Mahler. This company as stated in the summary hauled waste oil from New York, Connecticut, and New Jersey to the subject site. In an application for certification to collect or haul solid waste which was submitted to the Department in 1972 (by the original Bay City Oil), the estimated amount of waste to be collected was 51,500 gallons per year. By 1976, Bay City Oil was reporting estimates of 500,000 per year.

The NJ Department of Transportation is a responsible party as owner of a portion of the subject site (right-of-way for I-280).

Monsanto Company; According to the Industrial Waste Survey, two different Monsanto facilities reportedly sent to waste to the subject site;

North 8th and Monroe Avenue
Kenilworth, NJ 07037.

584 US Highway 130
Trenton, NJ 08620

The facility located at North 8th and Monroe Avenue also reported (in the Eckhart Report) using the subject site as a disposal facility for 33 tons of oil and oil sludge wastes from 1973 to 1979.

Russell Mahler as the president and director of PSC Resources, Ag-Mel, Bay City Oil, Northeast Oil, and Newtown, is a responsible party. In an affidavit dated June 8, 1978, Russell Mahler stated that he had several years of experience in supervising the overall operation of the subject facility.

Robert and Lloyd Mahler have also been identified as responsible parties as they were also officers of some or all of the companies named in the paragraph above. Robert was even identified as plant manager of the subject facility in October 1975. The whereabouts of Russell, Robert, and Lloyd Mahler are unknown.

The above named companies and individuals, the following companies were identified as responsible parties based on a survey of the NJDEP, Industrial Waste Survey files:

American Aluminum Company
Mountainside, NJ 07092 (Union Co.)

Clarkson and Ford Company
Clifton, NJ 07012 (Passaic Co.)

Falke Corporation
Waldwick, NJ 07463 (Bergen Co.)

Gayton Lucchi Tool Company
Carteret, NJ 07008 (Middlesex Co.)

G&L Tool Company
Rahway, NJ 07065 (Union Co.)

Monsanto Company
Kenilworth, NJ 07037 (Union Co.)

Monsanto Company
Trenton, NJ 08620 (Mercer Co.)

Red Devil, Inc.
Union Twp., NJ 07083 (Union Co.)

Texaco, Inc.
Teterboro, NJ 07730 (Bergen Co.)

Action Plastic Company/Division Dart Industries
Totowa Borough, NJ 07512 (Passaic Co.)

Beacon Die Mold, Inc.
Clifton City, NJ 07011 (Passaic Co.)

Campton Tool and Die Company
Kenilworth Boro, NJ 07033 (Union Co.)

Design and Molding Services
Piscataway Twp., NJ 08854 (Middlesex Co.)

Dianem Company
Lodi Borough, NJ 07644 (Bergen Co.)

Digital Computer Controls

Fairfield Borough, NJ 07006 (Essex Co.)

Einson-Freeman Detroy Corporation
Fair Lawn, NJ 07410 (Bergen Co.)

Foremost Manufacturing Company, Inc.
Union Twp., NJ 07083 (Union Co.)

Carmet Company/Amcar Division
East Rutherford, NJ 07073 (Bergen Co.)

International Telephone and Telegraph Corp.
Midland Park, NJ 07432 (Bergen Co.)

ITT Marlow
Midland Park, NJ 07432 (Bergen Co.)

Bekker Garret and Sons, Inc.
Clifton City, NJ 07012 (Passaic Co.)

Arrow Plastics Corporation
Garfield City, NJ 07026 (Bergen Co.)

Jae Trucking (hauled for American Aluminum)

Pinto Service (hauled for Arrow Plastic Corp.)

Robert More (hauled for Falke Engine Rebuilding Corp.)

DePalma Oil Company (hauled for Red Devil, Inc.)

The RPs identified in this report should be given the opportunity to organize into a single representative body that could pursue negotiations with the Department. This joint participation of all of the RPs will allow the RPs to use one consultant/contractor and act through a liaison group to the Department. This will reduce the effort required by both the RPs and the Department in negotiations and remediation.

Project Activity Code AXT was used for this investigation. It is recommended that administrative cost recovery and recovery of Spill Fund expenditures be an objective of future Departmental actions relative to this case. Please contact this bureau to review case file documents or request additional information and assistance.

INVESTIGATOR:

Carlton Dudley, HSMS II
NJDEPE, Division of Responsible Party Site Remediation
Bureau of Field Operations
Responsible Party Investigations Unit
300 Horizon Center
CN 407
Trenton, NJ 08625-407
March 1992

CONFIDENTIAL

FILES UTILIZED

Files: North East Hazardous Waste Project
Division of Criminal Justice
Hughes Justice Complex
Market Street
Trenton, NJ 08625

Content: Reports on organized crime in waste hauling industry,
referral on inquiries from other States about Russell Mahler/Diamond
Head Oil Company/North East Oil Service, Inc.

Files: Industrial Waste Survey
NJDEPE/Division of Responsible Party Site Remediation
Bureau of Field Operations
300 Horizon Center
Trenton, NJ 08625

Contact: Carlton Dudley (609) 584-4280
Content: Generators and/or transporters who reported using subject
site/operator for disposal of waste.

Files: Deeds
Hudson County Clerks Office
Hudson County Administration Bldg.
595 Newark Avenue
Jersey City, NJ 07306

(201) 795-6000
Content: Records of deeds and property transactions

Files: Manifest Records
NJDEPE/Hazardous Waste Regulation
Bureau of Advisement & Manifest
401 East State Street
Trenton, NJ 08625

Contact: Phil Cole
Content: No record of manifested wastes received by Diamond Head Oil
Refining Co.

CONFIDENTIAL

FILES UTILIZED

Files: Diamond Head Oil Co.
NJDEPE/Division of Responsible Party Site Remediation
Bureau of Field Operations
300 Horizon Center
Trenton, NJ

Contact: Deborah Pinto
Content: Samples analysis, preliminary assessments, reports, site
maps, inspection memos

Files: Diamond Head Oil/Quanta (Hudson Terminals)
NJ Dept. of Law and Public Safety
Hazardous Site Litigations Section
Hughes Justice Complex, 7th Floor
Trenton, NJ 08625

George Smajda
Content: No file on Diamond Head Oil Co. however there is an
extensive file on a related corporation, Quanta Resources, owned by
Russell Mahler (aka Hudson Terminals).

Files: Air Pollution Control File
NJDEPE/Division of Environmental Quality
Bureau of Air Pollution Control
2 Babcock Place
West Orange, NJ

Contact: Byron Sullivan (201)669-3935
Content: No file on Diamond Head Oil Co.

Files: Corporate Records
NJ Dept. of State/Division of Commercial Recording
820 Bear Tavern Road
West Trenton, NJ

Content: Certificates of incorporation and statuses for PRP
corporations

CONFIDENTIAL

FILES UTILIZED

Files: Diamond Head Oil Company, File #07-07-40
NJDEPE/Office of Enforcement Policy
Metro Bureau of Field Operations
2 Babcock Place
West Orange, NJ 07052

Contact: Jeff Sterling (201)669-3960
Content: Facility inspection reports/memos, correspondence, photos,
analysis, maps, enforcement history

Files: Diamond Head Oil Company
Town of Kearny Health Office
645 Kearny Avenue
Kearny, NJ 07032

Contact: Ed Grosveno (201)991-2700
Content: Facility inspections, correspondence, photos

Files: Diamond Head Oil & Refining Company
Passaic Valley Sewerage Commissioners
600 Wilson Avenue
Newark, NJ 07105

Contact: Thomas Mack (201)344-1800
Content: Waste Effluent Surveys, correspondence

Files: Diamond Head Oil Refining Co., Division of PSC
NJDEPE/Division of Water Resources
Central Files
401 East State Street
Trenton, NJ 08625

Content: NJPDES Permit #NJ0028045, inspection reports,
administrative orders, correspondence

CONFIDENTIAL

FILES UTILIZED

Files: MSLA 1-D Landfill, File No.88-396 and 76-026
Hackensack Meadowlands Development Commission (HMDC)
NJ Department of Community Affairs
One DeKorte Park Plaza
Lyndhurst, NJ 07071

Contact: Christopher D'our (201)460-1700
Content: Disposal of contaminated soils in MSLA 1-D Landfill and
construction of on-site disposal cells at Diamond Head Oil Co.
facility by NJDOT, maps, engineering details; correspondence

Files: MSLA Landfill, File #09-07-H/Site #7
NJDEPE/Division of Solid Waste Management
Bureau of Sanitary Landfill Closure
401 East State Street
Trenton, NJ 08625

Contact: Valerie Woods
Content: Hauler and Facility Registration Applications by FEID
Numbers

Files: Dun and Bradstreet Data Base
NJDEPE/Division of Science and Research
Information Resource Center
438 East State Street
Trenton, NJ

Contact: Maria Baratta (609)984-2249
Content: No Dunn & Bradstreet for subject facility or affiliated
companies.

Files: Map Collection
NJ State Library
West State Street
Trenton, NJ 08625

Content: Sanborn Fire Insurance Maps

FILES UTILIZED

CONFIDENTIAL

Files: Building Permits
Construction Code Enforcement Department, Town of Kearny
Town Hall
402 Kearny Avenue
Kearny, NJ 07032

Contact: Ray Narwid (201)991-2700
Content: Building and demolition permits (1948-1987)

Files: NJDOT v. PSC Resources et al NJ Sup. Court Law Div. #L-1718-77
Superior Court of New Jersey
Public Information Center
171 Jersey Street
Trenton, NJ 08611

Contact: Sandra Johnson (609)777-0092
Content: Court records for the subject case.

THOMAS LAZZIO
CHAIRMAN
WALTER J. DAVIS
VICE CHAIRMAN
CARMINE T. PERRAPATO
BENJAMIN W. GORDON
LOUIS BAY, 2ND
COMMISSIONERS

PASSAIC VALLEY SEWERAGE COMMISSIONERS
790 BROAD STREET
NEWARK, N. J. 07102

SEYMOUR A. LUBETKIN
CHIEF ENGINEER
JAMES V. SEGRETO
CHIEF COUNSEL
MRS. CHARLES T. SCHAEDEL
CLERK-TREASURER

January 28, 1972

Mr. Douglas Clark
State Department of
Environmental Protection
P. O. Box 1390
Trenton, New Jersey 08625

RECEIVED
JAN 31 1972
U.S. STATE DEPT. OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER POLLUTION CONTROL

Dear Mr. Clark:

The Commissioners would appreciate receiving a report on what is being done concerning the pool of oil on the Department of Transportation's property in Kearny, which overflows during rain storms, discharging oil into Frank's Creek.

File ->

This matter was referred to your department by the Deputy Attorney General on November 12, 1971.

Very truly yours,

PASSAIC VALLEY SEWERAGE COMMISSIONERS

S. A. Lubetkin

S. A. Lubetkin
Chief Engineer

SAL/k1

cc: PVSC
Chief Counsel

BAA000005

THOMAS LAZIO
CHAIRMAN
WALTER J. DAVIS
VICE CHAIRMAN
CAROLINE T. FERRAPATO
BENJAMIN W. GORDON
LOUIS BAY, 2ND
COMMISSIONERS

PASSAIC VALLEY SEWERAGE COMMISSIONERS
580 BROAD STREET
NEWARK, N.J. 07102

SEYMOUR A. LUBETKIN
JAMES
MRS. CHARLES V. SCHADEL
TREASURER

March 8, 1972

State Department of
Environmental Protection
P. O. Box 1390
Trenton, New Jersey 08625

Attn: Douglas Clark

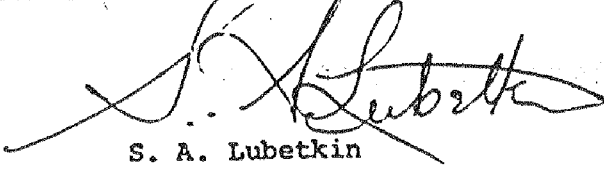
Dear Sir:

On January 28, 1972, I requested a progress report on what is being done by the State Department of Environmental Protection concerning the pool of oil in Kearny, which discharges oil into Frank's Creek during rain storms. As you recall, this matter was referred to your Department by the Deputy Attorney General on November 12, 1971, and as of this date the Commissioners have received no reports concerning what is happening.

Would you please bring the Commissioners up to date concerning this matter.

Very truly yours,

PASSAIC VALLEY SEWERAGE COMMISSIONERS


S. A. Lubetkin
Chief Engineer

SAL/kl

cc: P.V.S.C.
Chief Counsel

BAA000007 RECEIVED

MAR 9 1972

R.J. STATE DEPT. OF ENVIRONMENTAL PROTECTION
BUREAU OF WATER POLLUTION CONTROL

Frank's Creek


 Hackensack Meadowlands Development Commission

Memorandum

TO Theodore J. Fischer, Division of Design, Area II, NJDOT
 FROM John T. Boian, NMDC JB Date November 30, 1979
 Subject Abatement of leakage from contaminated disposal area near Ramp "M", I-280
Sections 8A & 8D

Recent inspections of the disposal area for oil-contaminated soils adjacent to Ramp "M" indicates that top soil covering the side slopes of the disposal area has eroded, exposing contaminated materials (see attached map). Additionally, tidal penetrations in the ditch adjacent to the ramp have eroded the compacted sandliner of the disposal area.

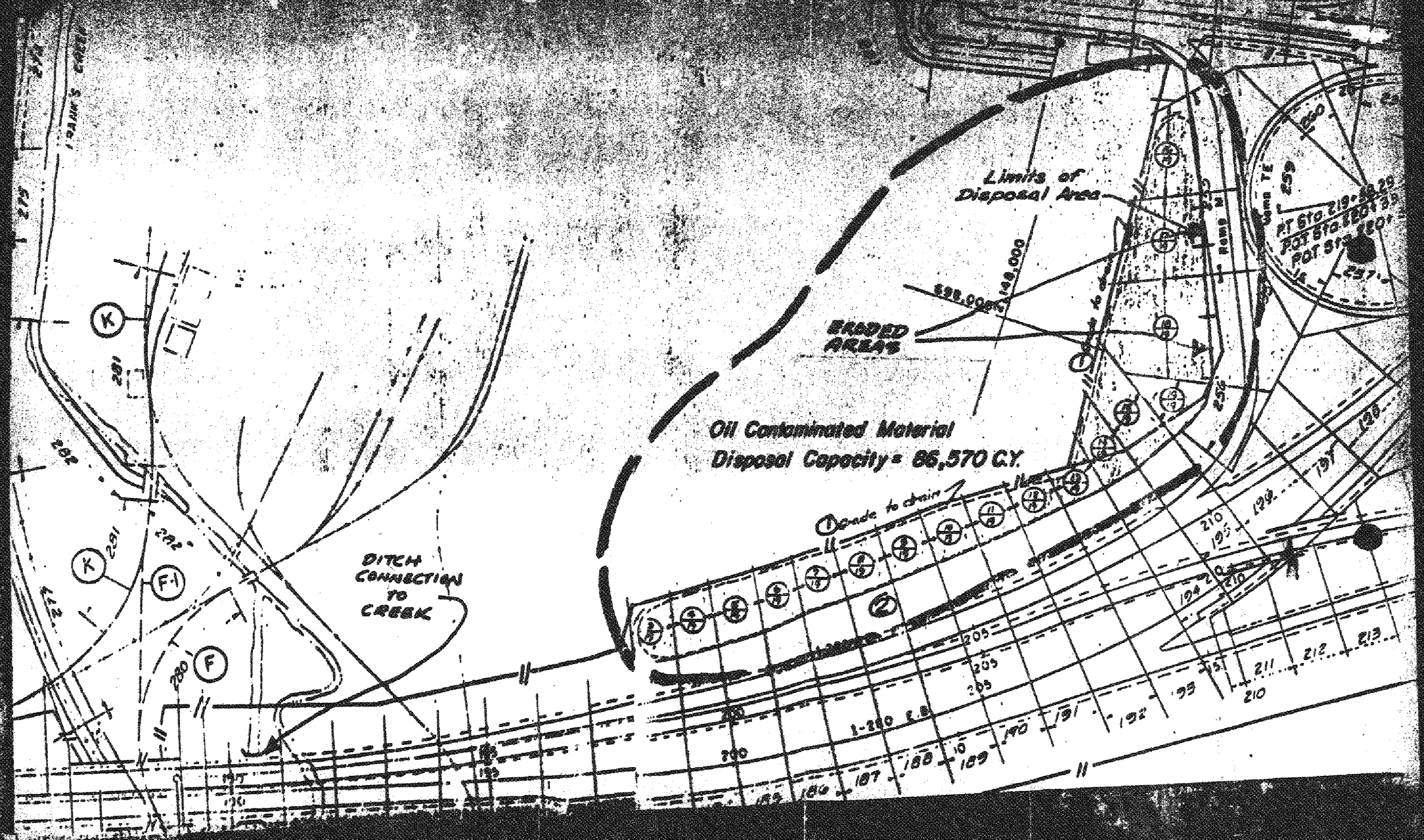
Subsequent, rainfalls have caused oily discharges from the eroded areas into the ditch adjacent to Ramp "M". As this ditch connects directly into Franks Creek, oily discharges have been observed in Franks Creek at the ditch connection. This is a violation of the Federal Water Pollution Control Act. Some kind of immediate action to abate or treat these oily discharges is needed.

Inspectors from the USEPA during the course of a recent visit to the Diamond Head Refining Co. have also seen this problem and have asked what will be done. Accordingly, could you please advise me what steps will be taken to remove this problem.

Enc.
/cv

cc: T. Germina, DAG (w/enc)
U. Steinberg, I-280 Field (w/enc)
F. Cimonetti, NJDOT-Newark (w/enc)

BAA000088

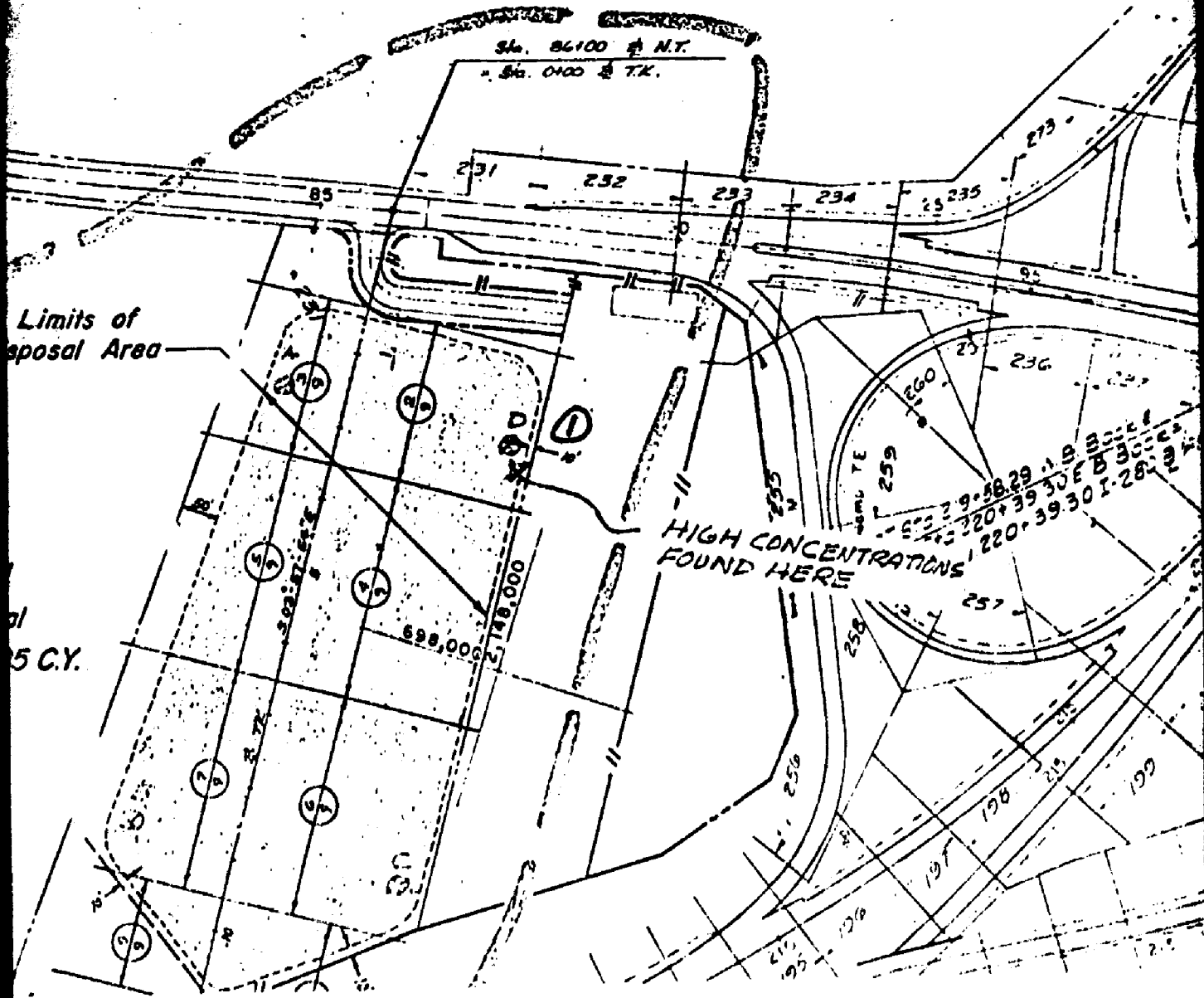


Sta. 86100 N.T.
Sta. 0100 T.K.

Limits of
posal Area

5 C.Y.

HIGH CONCENTRATIONS
FOUND HERE





Hackensack Meadowlands Development Commission

Memorandum

TO Theodore J. Fischer, Division of Design, Area II, N.J.D.O.T.

FROM John T. Bolan, HMDC *JB* Date January 4, 1980

Subject Liner Damage in the Kearny Disposal Area

Based upon a review of the monitoring data for wells 1A, 1B, 1C, and 1D, in the Kearny Disposal Area (see attached map), one of the wells, 1D, appears to show increasing concentrations of BOD₅, COD and Chlorides. Additionally, a recent physical inspection of the well reveals a black liquid in the bottom of the well.

Therefore, it appears that the liner enclosing the disposal area has been damaged. Since the liner material is compacted sand, a non-cohesive soil, corrective actions will be needed before further damage to the liner occurs.

At this point, it is not possible to determine if the materials in the disposal area are leaching into the surrounding soils. It is recommended that additional testing, commencing as soon as possible, be undertaken to identify the magnitude of the liner damage. Sampling of wells 1A, 1B, 1C, and 1D, on a bi-weekly basis, during a two month period for Petroleum Hydrocarbons only, (EPA Silica Gel & NDIR Procedure) should be sufficient.

If you have any questions, please contact me.

Enc.

cc: T. Germine, DAG (w/enc)
U. Steinberg, I-280 Field (w/enc)
F. Cimonetti, NJDOT-Newark (w/enc)

BAA000152

152

Limits of
posal Area

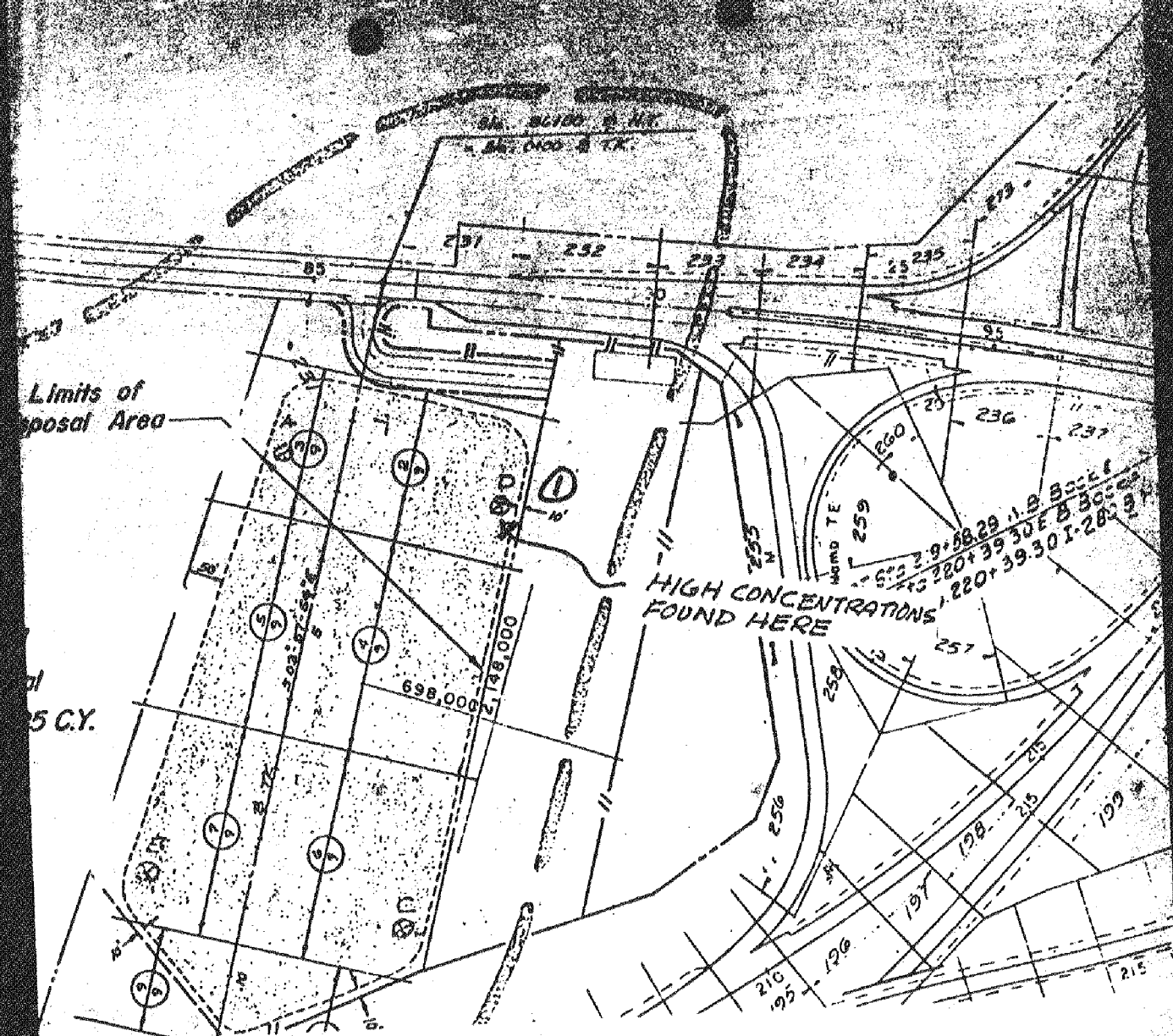
5 C.Y.

34. 86100 2 117
34. 0100 2 17

HIGH CONCENTRATIONS
FOUND HERE

WORLD TE
570 2.9 58.29 11.8 8000 6
220 4 39 30E 8 8000 6
220 4 39.30 1-28 9

698,000
118,000



File
Tom Seessel, Deputy Commissioner

Steven Corwin, Special Assistant to the
Commissioner
Diamond Head Projects - Kearny, New Jersey

August 23, 1974

It is our recommendation that you negotiate with the Department of Transportation the immediate removal of the oil lake from their property.

We do not feel that containment is an adequate solution, nor is spraying on roads. Evidence to date (US EPA) indicates that oil sprays wash into the ground and contribute to the pollution problem.

Karl Birn's attached memo gives you a good insight into the background. He has gone so far as to contact firms which could handle the problem at a minimum of cost to DOT.

It is wrong to allow DOT to continue their pollution, as well as inconsistent with our other efforts.

) SC:C:A18

cc: R. Ricci
K. Birns

)
BBB000047

DOT0177

MAXUS005674

Mr. Ricci

Mr. Birns

August 23, 1974

Diamond Head Oil Refinery - Kearny, New Jersey

The Diamond Head Oil Refining Company has, for a period of years, used a property behind its Harrison Avenue facility for the disposal of waste oil. This disposal has created a lake containing, by various estimates, upwards of a million and half gallons of oil/water emulsion. The problem was brought to the attention of the Oil and Hazardous Materials Group in early 1973. A joint investigation was made by its Department of Environmental Protection and the Hackensack Meadowlands Development Commission. It was learned that the N.J. Department of Transportation had purchased a major portion of the contaminated oil lake for the construction of Route 280.

Because of the DOT involvement in the case, Mr. Al Guido, Assistant to the Commissioner, was informed of the severe pollution problem at the site and it was requested that his office coordinate a clean-up response by the DOT.

The U.S. Coast Guard also investigated the problem and brought to our attention in May of 1973, the fact that the oil from the facility was being washed out during periods of rain into navigable waters of the United States in violation of Federal law.

During the course of the past year, very little has been done other than continued investigation to determine the extent of the oil pollution. It appears that there was a misunderstanding between DOT and our department. It was our impression that DOT was going to take some immediate steps to remove the oil, their actual intention was to wait until the highway goes through; which might not be for a period of years.

Mr. Cascino, the Chief Engineer of the Hackensack Meadowlands Development Commission, requested we reevaluate the case due to the continuing pollution problem. Also, there were some vehicle accidents on Harrison Avenue as a result of oil flushing across the road. On May 20, 1974 a meeting was held with the State DOT, DEP, HMDC, and the U.S. Coast Guard. The attached memos explain in more detail the status of the problem. Essentially, at this point in time, it has been decided to allow Dr. Edgar Clark of Villanova University, who represents Blackwood Carbon Products, a waste oil recycler, to make a proposal to DOT for the removal and treatment of the oil. This proposal would include the payment to DOT of a fixed

sum for removal of the oil, and the cost to DOT for treatment of the oil water mixture remaining to equal the payment to DOT for the oil removal itself. In this method no funds would change hands.

The Coast Guard has informed us that any further discharges from this site would be subject to penalties under Federal law. The State DOT would be defendant in any action by the Coast Guard.

E32:H:A14,A15



Hackensack Meadowlands Development Commission

100 MEADOWLAND PARKWAY - SECAUCUS, NEW JERSEY 07094
TELEPHONE: (201) 964-1220 N.J. CENTRAL: (201) 648-2322

PATRICIA Q. SUTHERAN
Chairman

WILLIAM D. McDOWELL
Executive Director

January 30, 1978

Theodore J. Fischer
Division of Design - Area II
New Jersey Dept. of Transportation
1035 Parkway Ave.
Trenton, NJ 08625

Re: I-280, Sections 8A and 8D
Contaminated Materials Disposal Plan
File 76-026

BAA000038

Dear Mr. Fischer:

This Office has reviewed the request of NJDOT for the creation of a second new on-site disposal area, located on Block 285, Lot 2 (West of Diamond Head Oil) for additional quantities of contaminated materials from I-280, Sections 8A and 8D. This area is designed to contain a maximum of 197,000 cubic yards. In addition, we have also reviewed engineering plans for this work.

Based upon our joint review of your request with the Solid Waste Administration, NJDEP, your request is hereby approved subject to the following conditions:

1. We find, upon reading the lease with the Town of Kearny, that the property shown on the engineering plans is not the property actually delineated in the agreement with the Town of Kearny. Therefore, a copy of the lease agreement for the proposed disposal area must be submitted.
2. A liner of a minimum compacted thickness of 6 inches of sand shall be placed under all materials disposed of in the new area.
3. The liner of sand shall be compacted with a minimum of three passes of a vibratory compactor, conforming to the description of page 82 of the Standard Specifications.
4. The disposal area is to be worked in full depth sections separated by sectional dikes of sand.
5. A minimum setback of 50 feet shall be maintained between the disposal area and Diamond Head Oil's westerly property line.

6. Three combination methane/monitoring wells shall be installed within the dike areas as shown on the as-noted plans. A copy of the as-noted plans is being returned to Mr. William Shader, DOT, Resident Engineer for his use. These wells shall be 4 inch diameter PVC pipe installed to a maximum depth of 8 feet below the bottom of the basin and shall consist of a perforated section below the bottom of the basin, a solid section thru the dikes and a three foot capped perforated section above the top of the dikes.
7. A two foot compacted thickness silty-clay cover material shall be placed on the completed disposal site. This cover material shall contain not less than 50% clay, have a liquid limit of greater than 40 or contain organic materials. This cover material shall be compacted with a vibratory compactor.
8. A four inch thick topsoil layer, mulched, fertilized and seeded with Type A grass seed, shall be placed over the silty-clay cover material.

In addition to the specific conditions of approval above, DEP has expressed some concern about the long affects of storing oil-contaminated materials in sand-lined areas and the responsibility of DOT if the sand liner should fail, causing oil contamination to be released from the disposal area. Therefore, we request that a plan of action for dealing with liner failures be submitted.

If you have any questions on these matters, do not hesitate to contact this Office.

Sincerely,

Office of the Chief Engineer



George D. Cascino, P.E., P.P.
Chief Engineer

JB/cv

cc:

W. Shader, NJDOT (W/Enclosure)
J. Pompilio, Crescent Construction Co.
W. Burshtin, Solid Waste Administration, NJDEP
M. Polito, U.S.E.P.A. Edison, NJ
J. Neglia, Neglia Engineering Assoc.
Mayor & Council, Town of Kearny



State of New Jersey
DEPARTMENT OF TRANSPORTATION
1035 PARKWAY AVENUE
CN 500
TRENTON, NEW JERSEY 08625

THOMAS M. DOVNS
COMMISSIONER

IN REPLY PLEASE REFER TO
NJDOT Interstate
Route 280
NJPDES No. NJ0034959
Kearny, Hudson County

June 21, 1991

Mr. Edward Neafsey, Director
Office for Enforcement Policy
New Jersey Department of Environmental Protection
CN 029
401 East State Street
Trenton, New Jersey 08625

Dear Mr. Neafsey:

This letter is in regards to the New Jersey Department of Transportation (NJDOT)/Interstate Route I-280 North Ditch Drainage Facility located in the Town of Kearny, Hudson County. The NJDOT, through the issuance of a NJPDES Permit (Permit No. 0034959), is authorized to discharge from the I-280 facility to receiving waters named Frank's Creek.

Attached is a Fact Sheet detailing site history, existing conditions and the current status of the I-280 facility.

Compliance Evaluation Inspections of the I-280 facility have been routinely conducted by the NJDEP-Surface Water/Sewer Extensions Metro Bureau of Regional Enforcement. Based on these inspections the I-280 facility has received a rating of "unacceptable" on a number of occasions. However, it should be noted that a review of the results from the last six sampling events conducted at the N. Ditch indicate that this facility has not exceeded the permit limits.

Due to periodic non-compliance of the NJPDES permit limits for the I-280 facility, the NJDOT has been issued directives from the NJDEP to accomplish the following:

- institute corrective measures to achieve an acceptable discharge rating,
- submit an application for modification of the I-280 facility permit, and
- within thirty (30) calendar days of the date of notice, submit a report concerning specific details of remedial measures to be instituted and an implementation timetable.

As a result of the periodic non-compliance of the NJPDES permit and the NJDEP directives, L. Robert Kimball & Associates (Kimball) was retained by the NJDOT to investigate feasible alternatives for mitigation of contamination and report upon the findings relative to the I-280 facility.

On March 27, 1991, Kimball submitted a Draft Feasibility Study that discussed the primary sources of contamination and investigated mitigation alternatives.

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Kimball's report concludes that the primary sources of contamination in the North Ditch include Diamond Head Oil Company overload flows and contaminated groundwater infiltration and oil seeps from adjoining stockpiled oil-contaminated soils. Diamond Head Oil Company is no longer in operation and the site is vacant. The primary sources of contamination in the South Ditch include contaminated groundwater infiltration and Kearny Landfill run-on leachate seepage. Drainage from the South Ditch flows through a submerged pipe into the North Ditch.

Kimball investigated eleven (11) alternatives, but due to constraints and/or flaws of several alternatives, only five (5) were selected for detailed evaluation.

Based on an internal NJDOT review of the alternatives selected for detailed evaluation it was concluded that through the implementation of any one of the alternatives, except Alternative 1- Clearing and Maintaining the Existing System, an acceptable discharge rating could be achieved at the I-280 facility. However, the overload flow from the former Diamond Head Oil Company site and Kearny Landfill run-on leachate seepage would not be eliminated. The above-mentioned contamination, instead of entering the I-280 facility would just be diverted to another property.

Therefore, it is the NJDOT's opinion that implementing a costly mitigation alternative, ranging from approximately \$1 million to \$6.5 million that would bring the NJDOT into compliance with the issued permit, but would not eliminate or control the area-wide contamination problem, is not in the best interest of the State of New Jersey with respect to the use of public funds.

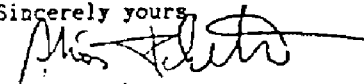
Consequently, the NJDOT requests your assistance in the development of an overall solution to the problem. It is Kimball's opinion that if the surface flows from the former Diamond Head Oil Company property surface and subsurface flows from the landfill could be eliminated from entering the I-280 facility, the NJDOT could continually achieve an acceptable discharge rating.

I will be arranging a meeting to discuss this situation within the next three weeks. Please contact this office with a list of people from your Department who should be in attendance.

If you require additional information on the I-280 facility, please contact Robert Gebrick of my staff at (609) 530-2838.

Thank you for your assistance in this matter.

Sincerely yours



Andras Fekete
Manager

Bureau of Environmental Analysis

FACT SHEET
ROUTE I-280 NORTH DITCH
TOWN OF KEARNY
HUDSON COUNTY

SITE HISTORY

Prior to construction of I-280, the project area consisted of marshland bounded by Frank's Creek (a tributary of the Passaic River), Diamond Head Oil Refining Co., the NJ Turnpike and the Kearny LF. The marsh area through which I-280 was constructed contained a thick layer of oil, debris and fill from both the Oil Co. and LF. A large volume of oil was pumped out in an attempt to remove contamination prior to construction. However, due to the large volume, oil and water removal was terminated and unsuitable material was removed. Excavated material unsuitable for roadway embankment drainage system construction was placed on state owned properties adjacent to the roadway.

As Figure 2 shows, soils were placed in mounds north of the roadway, west of Ramp M and as cloverleaf infields. Debris and fill associated with the Kearny LF and excavated from roadway ROW were placed into the LF and in a waste area northwest of the N. Ditch. Following removal of contaminated unsuitable material, present roadway embankments, drainage systems and structures were constructed and the contaminated soil piles covered with clean soil.

Due to the presence of oil contamination adjacent to the N. Ditch, LF material adjacent to the S. Ditch and oil contaminated groundwater throughout the ROW, the N. Ditch siphon was constructed as an oil water separator and a NJPDES permit obtained.

The N. Ditch NJPDES permit (No. 0034959) was obtained in 1981 for monitoring of total suspended solids (TSS), oil and grease, total organic carbon (TOC), phenols, pH and xylene (see attached).

DEP COMPLIANCE EVALUATION INSPECTIONS OF THE N. DITCH

Compliance Evaluation Inspections of the N. Ditch have been routinely conducted by the DEP. Based on these inspections the N. Ditch facility has received a rating of "UNACCEPTABLE" on several occasions (November 1, 1986-November 31, 1986, November 1, 1987-October 31, 1988, November 1, 1989-October 31, 1990).

As indicated in DEP's Compliance Evaluation Inspection, the "UNACCEPTABLE" rating places the N. Ditch in significant violation of the terms and conditions of the NJPDES permit and/or Water Pollution Control Act regulations (NJAC 7:14A-1 et seq.).

NJDEP DIRECTIVE(S)

Due to continued non-compliance of the NJPDES permit limits for the I-280 N. Ditch discharge, the DOT has been issued directives from the DEP to accomplish the following:

- institute corrective measures to achieve an acceptable discharge rating,
- submit an application for modification of the N. Ditch permit, and
- within thirty (30) calendar days of the date of notice, submit a report concerning specific details of remedial measures to be instituted and an implementation timetable.

It should be noted that the I-280 facility permit expired on October 31, 1986. The Department reapplied on July 13, 1986. After not hearing within six months of reapplication the Department contacted DEP to ascertain the status of the permit. DOT was informed that DEP never received the application. Subsequently, the Department submitted another application and has still not heard on the status.

CONSULTANT ACTIVITY

As a result of the continued non-compliance of the NJPDES permit and DEP directives, L. Robert Kimball & Assoc. was retained by the DOT to review available data, present feasible alternatives for mitigation of contamination and report upon the findings relative to the I-280 N. Ditch discharge.

Kimball submitted the Draft Engineering Report for mitigation of the I-280 N. Ditch discharge on November 1, 1990. The Engineering Report presents Kimball's evaluation of the discharge problem.

Subsequently, on March 27, 1991, Kimball submitted a Draft Feasibility Study. The Feasibility Study expanded on the discharge problem and investigated possible mitigation measures.

SOURCES OF CONTAMINATION

The N. Ditch discharge is on the north side of I-280. The N. Ditch discharge is a roadway drainage discharge point where drainage collected from north and south surface water drainage systems of I-280 flow through a submerged pipe (siphon) into Frank's Creek.

The primary sources of contamination in the N. Ditch include Diamond Head Oil Co. overload flow and contaminated groundwater infiltration and oil seeps from adjoining stockpiled oil-contaminated soils. Diamond Head Oil Co. is no longer in operation and the site is vacant. The oil seeps come from excavated materials unsuitable for roadway embankment drainage system construction stockpiled on state owned properties adjacent to I-280.

The primary sources of contamination in the S. Ditch include contaminated groundwater infiltration and Kearny LF run-on leachate seepage.

REMEDIAL ALTERNATIVES (AS IDENTIFIED BY KIMBALL)

Kimball identified five (5) alternatives which include:

- clearing and maintaining the existing system- clearing accumulated materials from the system (siphon and N. and S. Ditches) would reduce oil and grease and suspended solids. However, sediment and debris will reaccumulate with time, requiring continued maintenance of the system to maintain the positive results. Presence of contaminated groundwater will continue to contaminate future sediment and debris washing into the system.

Time to implement this alternative, following design, establishment of a funding source and advertisement and award of the construction contract, would be 4 months at a cost of \$962,694.

-utilization of a synthetic liner-includes installation of a synthetic liner in the base of the ditches to prevent infiltration of contaminated groundwater. Synthetic liner prevents infiltration of contaminated groundwater while maintaining control of surface runoff. LF run-on would be prevented using a berm. Diamond Head run-on would still be collected. The liner would prevent direct contact and discharge of contaminated groundwater. Properly maintained, the liner would be expected to last at least 30 years.

Time to implement this alternative, following design, establishment of a funding source and advertisement and award of the construction contract, would be 4 months at a cost ranging from 1.3 to 2.9 million dollars. The construction cost is dependant on whether excess material will be disposed of on-site or off-site.

-utilization of a concrete lined ditch-includes installation of a concrete liner in the base of the ditches to prevent infiltration of contaminated groundwater. The liner would prevent infiltration of contaminated groundwater while maintaining control of surface runoff. LF run-on would be prevented with the use of a berm. Diamond Head run-on would be collected. Concrete deterioration would have to be repaired on a regular basis to prevent infiltration. Continual maintenance will be required.

Time to implement this alternative, following design, establishment of a funding source and advertisement and award of the construction contract, would be 6 months at a cost ranging from 2.6 to 3.9 million dollars. The construction cost fluctuates based on whether excess material will be disposed of on-site or off-site.

-utilization of a clay liner-includes installation of a clay liner in the base of the ditches. The clay liner would restrict the transport and infiltration of contaminated groundwater and oil in the groundwater. The clay liner would restrict but not prevent groundwater infiltration. Infiltration would be limited to migration through the barriers and through flow paths created by animals or vegetation. Clay as a naturally occurring substance has excellent lifetime.

Time to implement this alternative, following design, establishment of a funding source and advertisement and award of the construction contract, would be 4 months at a cost ranging from 1.8 to 6.5 million dollars.

-utilization of an enclosed drainage system-includes installation of drainage pipe to carry roadway stormwater flows and prevent infiltration of contaminated groundwater. Enclosing the system eliminates infiltration by use of sealed pipes. The use of a coated concrete pipe has a life of at least 20 years. Due to the shallow slope of the drainage systems, sediment build-up is expected. Annual sediment removal is mandatory.

Time to implement this alternative, following design, establishment of a funding source and advertisement and award of the construction contract, is 7 months at a cost of 1.9 million dollars.

CURRENT STATUS

A review of the results from the last 6 sampling events (November 1990-April 1991) conducted at the N. Ditch indicate that this facility has not exceeded the respective permit limits. Therefore, at this time the facility would not be considered a "Significant Non-Complier" as defined in the provisions of the Clean Water Enforcement Act.



IN REPLY PLEASE REFER TO

State of New Jersey
DEPARTMENT OF TRANSPORTATION

HAROLD FRANK GLUCK
COMMISSIONER

1035 PARKWAY AVENUE
CN 600
TRENTON, NEW JERSEY 08625

April 25, 1989

NJ Department of Environmental Protection
Helen Wright
Division of Water Resources
Metro Bureau of Regional Enforcement
2 Babcock Place
West Orange, New Jersey 07052

Dear Ms. Wright:

I have received your Bureau notification dated March 27, 1989 that our Interstate Route 280 facility (NJ0034959) has received a rating of "unacceptable." This rating is a result of your review of DMR's for the period November 1, 1987 through October 31, 1988.

Please be advised this department will take the necessary action to see that our discharge into Frank's Creek complies with those limits set by our NJPDES permit. A recent meeting with our Regional Maintenance Engineer has initiated corrective actions and a scheduled field evaluation will result in the development of a plan to improve our discharge. Until this field evaluation has been conducted however we will be unable to provide specific measures and we request an extension of time in providing the written report and timetable on the implementation of remedial measures as requested. My staff will provide your office with the information you have requested within the next 30 days. If you have any questions or would like to discuss this matter further please contact Wayne Smith of my staff at (609) 530-2975.

Very truly yours,

ORIGINAL SIGNED
JOHN A. WALZ

John A. Walz, Manager
Bureau of Project Support

JAN:WS:th

cc: M. E. Kjetsaa
R. Micai w/att.
R. Jones
W. Smith
Dr. P. Baker, USEPA

BB8000171



Hackensack Meadowlands Development Commission

Memorandum

TO Theodore J. Fischer, Division of Design, Area II, NJDOT

FROM John T. Bolan, IRDC JB Date November 30, 1979

Subject Abatement of leakage from contaminated disposal area near Ramp "M", I-280
Sections 8A & 8D

Recent inspections of the disposal area for oil-contaminated soils adjacent to Ramp "M" indicates that top soil covering the side slopes of the disposal area has eroded, exposing contaminated materials (see attached map). Additionally, tidal penetrations in the ditch adjacent to the ramp have eroded the compacted sandliner of the disposal area.

Subsequent, rainfalls have caused oily discharges from the eroded areas into the ditch adjacent to Ramp "M". As this ditch connects directly into Franks Creek, oily discharges have been observed in Franks Creek at the ditch connection. This is a violation of the Federal Water Pollution Control Act. Some kind of immediate action to abate or treat these oily discharges is needed.

Inspectors from the USEPA during the course of a recent visit to the Diamond Head Refining Co. have also seen this problem and have asked what will be done. Accordingly, could you please advise me what steps will be taken to remove this problem.

Enc.
/cv
cc: T. Germino, DAC (w/enc)
U. Steinberg, I-280 Field (w/enc)
F. Cimontetti, NJDOT-Newark (w/enc)

BAA000088

MEMORANDUM

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION

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21781

TO: Mr. Frank J. Cahill
Department of State, Laws, Commissions & Publications
FROM: Karl F. Birns, Division of Water Resources
Office of Special Services thru Jeff Zelikson
SUBJECT: New Jersey Department of Transportation
Kearny, New Jersey

DATE: July 1, 1976

The letter addressed to you and forwarded to this office on June 24, 1976 from Mr. Henry Gluckstern, Attorney for the Enforcement Division of the United States Environmental Protection Agency dated June 21, 1976 is an official notification to the State of New Jersey of a violation of Federal Law by the New Jersey Department of Transportation (DOT).

This alleged violation occurred when a pond on DOT's property overflowed releasing oil into waters of the United States. The USEPA has begun cleanup of this oil using the money from the revolving fund administered by the United States Coast Guard. As of the morning of June 30, 1976 EPA has spent approximately \$20,000.00. It is their intent to recover any monies spent on this clean-up operation from the NJDOT since the oil allegedly came from land owned by DOT.

This office will continue to monitor this operation. We do not have any control over enforcement action taken by the USEPA.

c.c.: Commissioner Barber
Commissioner Sagner -
Director Freidenrick

E23:G6

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JUL 7 1976

cc: Tim Carver