



AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

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August 23, 1996

Mr. Joseph Yavonditte, Project Manager
New York State Department of
Environmental Conservation
Division of Hazardous Waste Remediation
50 Wolf Road
Albany, New York 12233-7010

RE: RAMAPO LANDFILL REMEDIATION
RESULTS OF ~~FIRST~~ QUARTER MONITORING FOR 1996
2nd

Dear Mr. Yavonditte:

Attached are the results of the second quarter monitoring event for 1996. This sampling event was the second for 1996 in support of the Ramapo Landfill Remediation project. This document provides the validated analytical data for this sampling event as well as historical analytical data tables for the four target compounds, i.e., benzene, chromium, iron, and manganese. Locations sampled are shown in Figure 1. Samples were collected the week of June 10, 1996, and were analyzed for routine and site-related parameters.

The analytical holding time for volatile compounds did not conform with the method referenced in the New York State Department of Environmental Conservation (NYSDEC) Analytical Services Protocols (ASP), September 1989, December 1991 Revision. Samples were analyzed 13 days after the validated time of sample receipt (VTSR), which exceeds the NYSDEC ASP holding time of 10 days. However, the results are considered acceptable according to the procedure referenced by the Federal Register, 40 CFR Part 136, November 1995, which designates a 14 day holding time. The results are therefore usable as reported.

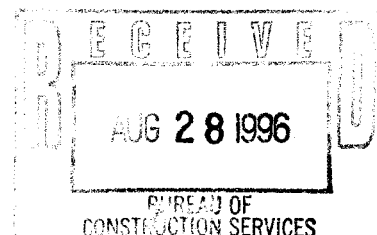
The third quarter monitoring event for 1996 is planned for the week of September 16, 1996. Please feel free to call if you have any questions or wish to discuss.

Sincerely,

URS CONSULTANTS, INC.


James Lanzo, P.E.
Project Manager

Enclosure





AN INTERNATIONAL PROFESSIONAL SERVICES ORGANIZATION

cc: Supervisor Reisman - Town of Ramapo
Mr. Gene Kolman - Town of Ramapo
Mr. Alan Simon - Town of Ramapo
Mr. Robert Nunes - USEPA
Mr. Thomas Micelli - Rockland County Department of Health
Ms. Judy Hunderfund - Rockland County Department of Health
Mr. Geoff Laccetti - NYSDOH
Ms. Arlene Lapidos - Ramapo Land Company, Inc.
Mr. George Demas - Torne Brook Farm
Mr. Raymond Cywinski - United Water New Jersey
Mr. Tanyo Parashkevov - United Water New Jersey
Mr. Mike Nee - United Water New York
Mr. Craig Flanagan
Ms. Kathleen McCue - NYSDEC
File: 05-35314.50 (C-3 and AD-2)

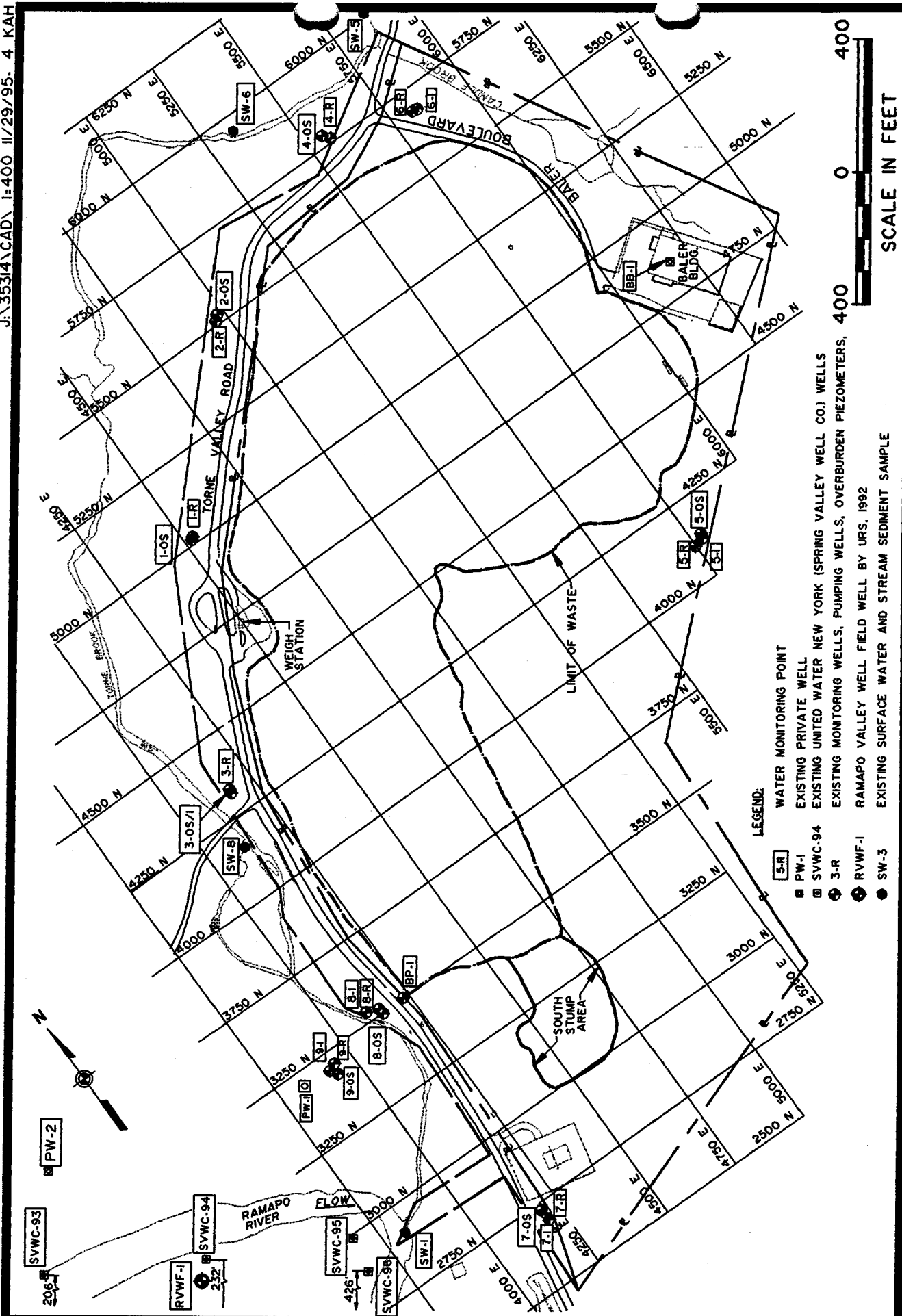


TABLE 1
RAMAPO LANDFILL - JUNE 1996 SAMPLING
GROUNDWATER SAMPLES

Analyte	Concentration (µg/l)*					
	8-I	8-OS	8-R	9-I	9-OS	9-R
Benzene	2	—	—	—	—	—
Chlorobenzene	3	—	3	—	—	—
Antimony	8.5	8.4	9.3	—	—	—
Arsenic	12.8	6.6	11.6	—	—	—
Cadmium	—	—	—	1.1	2.2	4.2
Chromium	26.2	35.8	23.8	11.4	11.2	12.8
Copper	24.6	49.6	2.6	3.2	4.3	4.2
Iron	38700	4370	14300	443	1350	2270
Magnesium	56500	39300	46200	1540	1470	2990
Manganese	3200	3120	3230	13.1	70.9	1840
Nickel	32.7	33.9	52.7	8.6	9.8	10.2
Sodium	361000	120000	113000	2730	2380	13000
Zinc	20.3	28.5	12.4	27.3	22.1	14.7

Only detected results reported.

* - All concentrations given in µg/l unless otherwise noted.

MADE BY SN DATE 8/16/96
CHKD BY ms DATE 8/16/96

TABLE 1
RAMAPO LANDFILL - JUNE 1996 SAMPLING
DRINKING WATER SAMPLES

Analyte	Concentration (µg/l)*						ARARs** (µg/l)
	PW-1	PW-2	SVWC-93	SVWC-94	SVWC-95	SVWC-96	
Chromium	---	0.94	—	—	—	—	50
Copper	92	4.6	—	2.5	3.3	2.5	200
Iron	38.1	—	—	—	—	—	300
Magnesium	2730	4490	3400	4970	4820	4450	35000
Manganese	25.7	5	3.4	—	67.4	—	300
Nickel	4.3	3.1	—	—	—	—	—
Sodium	4760	8960	26700	34600	32200	26900	20000
Zinc	43	50	11.1	7.5	9	7	300

Only detected results reported.

* - All concentrations given in µg/l unless otherwise noted.

** - Values obtained from Water Quality Regulations for Surface Waters and Groundwaters 6 NYCRR Parts 700-705, September 1, 1991, unless otherwise indicated.

MADE BY SN DATE 8/16/96
CHKD BY MEB DATE 8/16/96

TABLE 2
RAMAPO LANDFILL - JUNE 1996 SAMPLING
GROUNDWATER SAMPLES

Analyte	Concentration (mg/l)*					
	8-I	8-OS	8-R	9-I	9-OS	9-R
COD	140	27	66	<6	<6	<6
Total Hardness (mg CaCO ₃)	570	520	620	21	19	39
TKN	113	10	66	0.2	<0.2	2
Total Alkalinity (mg CaCO ₃)	832	433	686	6.24	8.32	41.6
Total Dissolved Solids	1600	900	1400	70	36	110
Total Organic Carbon	58.6	14.6	25.5	<1.0	<1.0	2.89
Turbidity (NTu)	175.0	34	95	4.1	1.3	11

Only detected results reported.

* - All concentrations given in mg/l unless otherwise noted.

MADE BY SN DATE 8-16-96
CHKD BY MEB DATE 8/16/96

TABLE 2
RAMAPO LANDFILL - JUNE 1996 SAMPLING
DRINKING WATER SAMPLES

Analyte	Concentration (mg/l)*						ARAPs** (mg/l)
	PW-1	PW-2	SVWC-93	SVWC-94	SVWC-95	SVWC-96	
COD	<6	<6	<6	<6	<6	<6	—
Total Hardness (mg CaCO ₃)	35	120	48	67	65	55	—
TKN	0.3	0.2	0.2	0.2	0.2	0.3	—
Total Alkalinity (mg CaCO ₃)	16.6	64.5	31.2	35.4	45.8	35.4	—
Total Dissolved Solids	86	210	170	190	190	150	500
Total Organic Carbon	<1.0	<1.0	<1.0	<1.0	1.34	<1.0	—
Turbidity (NTu)	0.1	0.12	0.1	0.12	0.2	0.15	—

Only detected results reported.

* - All concentrations given in mg/l unless otherwise noted.

** - NYSDEC Water Quality Standards and Guidance Values, TOGS 1.1.1, October 1993, Table 1.

MADE BY SW DATE 8-16-96
CHKD BY MLB DATE 8/16/96

TABLE 3
RAMAPO LANDFILL
GROUNDWATER AND SURFACE WATER
MONITORING DATA
COMPOUND: Benzene

Sample ID	Date of Sampling Event									
	1/90	9/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
1-OS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1-R	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
2-OS	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND
2-R	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND
3-OS/I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
3-R	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-OS	ND	0.3	ND	ND	ND	ND	ND	ND	ND	ND
4-R	1.0	1.0	ND	0.7	ND	ND	ND	ND	ND	ND
5-OS	2.0	ND	ND	ND	NA	NA	NA	ND	NA	NA
5-I	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND
5-R	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
6-I	NA	0.2	ND	ND	ND	ND	ND	ND	ND	ND
6-R	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-OS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
7-R	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
8-OS	2.0	0.3	ND	ND	ND	ND	ND	ND	ND	ND
8-I	2.0	2.9	NA	ND	ND	ND	ND	ND	ND	2.0
8-R	3.0	0.4	ND	0.9	ND	ND	ND	ND	ND	ND
9-OS	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND
9-I	NA	0.2	NA	NA	NA	NA	ND	ND	ND	ND
9-R	NA	0.9	ND	ND	ND	NA	ND	ND	ND	1.0
PW-1	NA	ND	ND	ND	ND	NA	ND	ND	ND	ND
PW-2	NA	NA *	ND	ND	ND	NA	NA	NA	ND	ND
PW-3	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
BP-1	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
BB-1	NA	NA	ND	ND	ND	NA	ND	ND	ND	ND
RVWF-1	NA	NA	ND	ND	ND	NA	ND	ND	ND	ND
SVWC-93	NA	NA	ND	ND	NA	NA	ND	ND	ND	ND
SVWC-94	NA	NA	ND	ND	NA	NA	ND	ND	ND	1.0
SVWC-95	NA	NA	ND	ND	ND	NA	ND	ND	ND	ND
SVWC-96	NA	NA	ND	ND	NA	NA	ND	ND	ND	ND
Surface Water										
Sample ID	Date of Sampling Event									
	10/89	7/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
SW-1	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
SW-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SW-6	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND
SW-8	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes: Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)

* NYSDOH results from 3/92 sampling.

- Exceeded ARAR value of 0.7 ppb for groundwater.

TABLE 3 (Cont.)

**RAMAPO LANDFILL
MONITORING DATA
COMPOUND: Benzene**

Sample ID	Sample Type	Date of Sampling Event					
		3/95	6/95	9/95	12/95	03/96	06/96
1-OS	Groundwater	ND	ND	NA	ND	ND	NA
1-R	Groundwater	ND	ND	ND	ND	ND	NA
2-OS	Groundwater	ND	ND	NA	ND	ND	NA
2-R	Groundwater	ND	ND	NA	ND	ND	NA
3-OS/I	Groundwater	ND	ND	NA	ND	ND	NA
3-R	Groundwater	ND	ND	NA	ND	ND	NA
4-OS	Groundwater	ND	ND	NA	ND	ND	NA
4-R	Groundwater	ND	ND	ND	ND	ND	NA
5-OS	Groundwater	NA	ND	NA	NA	ND	NA
5-I	Groundwater	ND	NA	NA	ND	NA	NA
5-R	Groundwater	ND	ND	NA	ND	ND	NA
6-I	Groundwater	ND	ND	NA	ND	ND	NA
6-R	Groundwater	ND	0.5	ND	ND	ND	NA
7-OS	Groundwater	ND	NA	NA	ND	ND	NA
7-I	Groundwater	NA	ND	NA	NA	NA	NA
7-R	Groundwater	ND	ND	NA	ND	ND	NA
8-OS	Groundwater	ND	ND	ND	ND	ND	ND
8-I	Groundwater	ND	ND	ND	1.2	1	2
8-R	Groundwater	2	0.9	ND	0.65	ND	ND
9-OS	Groundwater	ND	ND	ND	NA	ND	ND
9-I	Groundwater	ND	ND	ND	ND	ND	ND
9-R	Groundwater	ND	ND	ND	ND	ND	ND
BP-1	Groundwater	NA	NA	NA	NA	NA	NA
BB-1	Groundwater	ND	ND	NA	ND	ND	NA
RVWF-1	Groundwater	ND	ND	ND	ND	ND	NA
PW-1	Drinking Water	ND	ND	ND	ND	ND	ND
PW-2	Drinking Water	NA	0.5	ND	ND	ND	ND
PW-3	Drinking Water	NA	NA	NA	NA	NA	NA
SVWC-93	Drinking Water	ND	ND	ND	ND	ND	ND
SVWC-94	Drinking Water	ND	ND	ND	ND	ND	ND
SVWC-95	Drinking Water	ND	ND	ND	ND	ND	ND
SVWC-96	Drinking Water	ND	ND	ND	ND	ND	ND
SW-1	Surface Water	ND	ND	NA	ND	ND	NA
SW-5	Surface Water	ND	ND	NA	ND	ND	NA
SW-6	Surface Water	ND	ND	NA	ND	ND	NA
SW-8	Surface Water	ND	ND	NA	ND	ND	NA

Notes:

Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)

 - Exceeded ARAR value of 0.7 ppb for groundwater.

TABLE 4
RAMAPO LANDFILL
GROUNDWATER AND SURFACE WATER
MONITORING DATA
COMPOUND: Chromium

Sample ID	Date of Sampling Event									
	1/90	9/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
1-OS	153	57.3	8	ND	60.0	257.0	65.5	7.2	284	134
1-R	39.7	17.5	ND	ND	84.9	46.8	10.3	ND	39.3	58.3
2-OS	180	141	NA	ND	50.2	95.9	11.8	89.3	45.9	25.1
2-R	16.1	5.5	NA	ND	14.8	6.1	ND	5.1	8.3	4.9
3-OS/I	587	1290	807	40.4	1350	1100	784	304	561	1020
3-R	28	11.4	ND	ND	ND	14.7	10.5	17.8	4.8	4.9
4-OS	139	40.1	5.8	ND	10.8	11.2	15.1	25.4	23.1	53.1
4-R	35.5	13.1	ND	8.8	ND	5.9	4.4	ND	13.3	2
5-OS	90	35.6	48.8	ND	NA	NA	NA	NA	NA	NA
5-I	NA	NA	NA	NA	NA	80	30.2	7.2	40	63.1
5-R	27.4	29.3	6.8	ND	ND	8.6	13.8	6.3	52.3	105
6-I	NA	28.7	ND	ND	13.4	17.0	32.7	9.5	488	9.9
6-R	NA	31.1	24	34.8	27.7	67.4	71.3	27.1	37.7	13.6
7-OS	33.5	40.1	24.2	13.0	1890	218	31	210	571	258
7-R	16.2	16.8	ND	ND	ND	ND	ND	5.3	8.6	3.4
8-OS	34.8	16.7	ND	ND	ND	7.6	86.6	28.7	13.2	4.2
8-I	215	32.5	NA	ND	ND	ND	29	17	12.8	8.4
8-R	20	23.1	9.9	ND	17.7	18.2	7.5	17.0	10.4	6.8
9-OS	NA	6.8	ND	ND	ND	ND	22.9	27.1	14.8	2.9
9-I	NA	8.1	NA	NA	NA	NA	28	ND	2.4	5.8
9-R	NA	8.8	3.9	16.4	16.7	11.6	35.4	48.2	29.9	10.5
PW-1	NA	ND	ND	ND	ND	ND	ND	ND	0.6	ND
PW-2	NA	ND *	ND	ND	ND	4.9	NA	ND	ND	ND
PW-3	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
BP-1	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA
BB-1	NA	NA	ND	ND	ND	ND	ND	ND	1.2	ND
RVWF-1	NA	NA	25.2	14.7	13.2	20.5	8.4	ND	ND	ND
SVWC-93	NA	NA	ND	ND	NA	ND	ND	ND	ND	ND
SVWC-94	NA	NA	ND	ND	NA	NA	ND	ND	ND	0.97
SVWC-95	NA	NA	ND	ND	ND	NA	ND	ND	ND	ND
SVWC-96	NA	NA	ND	ND	NA	ND	ND	ND	ND	0.87
Surface Water										
Sample ID	Date of Sampling Event									
	10/89	7/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
SW-1	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND
SW-5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SW-6	NA	ND	ND	ND	ND	5.1	ND	ND	ND	ND
SW-8	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND

Notes: Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)

* NYSDOH results from 3/92 sampling.

 - Exceeded ARAR value of 50 ppb for groundwater.

 - Exceeded ARAR value of 50 ppb for surface water.

The ARAR for SW-1 (Class A water body) is 50 ppb.

TABLE 4 (Cont.)

**RAMAPO LANDFILL
MONITORING DATA
COMPOUND: Chromium**

Sample ID	Sample Type	Date of Sampling Event					
		3/95	6/95	9/95	12/95	03/96	06/96
1-OS	Groundwater	727	17	102	70.5	127	NA
1-R	Groundwater	146	49.5	136	42.8	133	NA
2-OS	Groundwater	39.7	34.1	137	50.3	83.6	NA
2-R	Groundwater	4.4	ND	5.0	5.7	ND	NA
3-OS/I	Groundwater	144	406	589.0	253	372	NA
3-R	Groundwater	3.6	2.0	10.3	7.0	ND	NA
4-OS	Groundwater	21.1	ND	38.8	12.2	11	NA
4-R	Groundwater	2.5	ND	9.0	5.8	ND	NA
5-OS	Groundwater	NA	39.0	NA	NA	216	NA
5-I	Groundwater	109	NA	17.4	22.4	NA	NA
5-R	Groundwater	19.9	7.9	22.9	27.9	10.1	NA
6-I	Groundwater	6.9	9.1	22.6	13.3	6.3	NA
6-R	Groundwater	11.9	8.4	13.4	44.6	145	NA
7-OS	Groundwater	324	NA	NA	37	125	NA
7-I	Groundwater	NA	34.8	49.2	NA	NA	NA
7-R	Groundwater	2.8	12.4	13.4	9.2	ND	NA
8-OS	Groundwater	129	40.4	13.9	7.2	62.2	35.8
8-I	Groundwater	8.0	3.4	24.1	29.2	12.3	26.2
8-R	Groundwater	6.3	10.1	13.4	8.5	6.7	23.8
9-OS	Groundwater	6.6	7.6	NA	NA	9.8	11.2
9-I	Groundwater	3.9	8.0	34.6	25.3	8.1	11.4
9-R	Groundwater	16.9	26.5	66.7	45.4	43.8	12.8
BP-1	Groundwater	NA	NA	NA	NA	NA	NA
BB-1	Groundwater	ND	ND	ND	ND	ND	NA
RVWF-1	Groundwater	ND	ND	ND	ND	ND	NA
PW-1	Drinking Water	0.8	ND	ND	ND	ND	ND
PW-2	Drinking Water	NA	ND	ND	ND	ND	0.94
PW-3	Drinking Water	NA	NA	NA	NA	NA	NA
SVWC-93	Drinking Water	ND	ND	NA	ND	ND	ND
SVWC-94	Drinking Water	ND	ND	NA	ND	ND	ND
SVWC-95	Drinking Water	ND	ND	NA	ND	ND	ND
SVWC-96	Drinking Water	ND	1.7	NA	ND	ND	ND
SW-1	Surface Water	ND	ND	ND	ND	ND	NA
SW-5	Surface Water	ND	ND	ND	3.3	ND	NA
SW-6	Surface Water	ND	ND	ND	3.7	ND	NA
SW-8	Surface Water	0.67	ND	ND	ND	ND	NA

Notes:

Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)



- Exceeded ARAR value of 50 ppb for groundwater.

- Exceeded ARAR value of 50 ppb for surface water.

TABLE 5
RAMAPO LANDFILL
GROUNDWATER AND SURFACE WATER
MONITORING DATA
COMPOUND: Iron

Sample ID	Date of Sampling Event									
	1/90	9/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
1-OS	45000	17500	1870	884	32300	162000	12200	69.6	4950	47700
1-R	1180	2650	395	197	1940	1210	186	70600	830	1710
2-OS	912	41800	NA	186	11800	9800	946	5080	14700	4120
2-R	409	602	NA	674	1120	1450	187	83.1	248	363
3-OS/I	6830	9750	5110	333	21300	37900	19400	29900	14400	37500
3-R	1930	1370	11500	2940	3280	4800	1970	2090	2440	1730
4-OS	15600	12400	529	520	5560	10600	5720	17600	16900	15200
4-R	8230	5290	3520	4920	3100	5290	4790	4020	6850	5100
5-OS	27000	11200	11100	4700	NA	NA	NA	NA	NA	NA
5-I	NA	NA	NA	NA	NA	2030	2080	2380	8990	30700
5-R	658	368	620	2310	751	243	742	71.2	21400	64000
6-I	NA	486	953	17.3	332	2860	4020	1360	1590	153
6-R	NA	683	1220	715	662	1710	698	379	501	332
7-OS	981	24500	1250	521	619000	2200	2340	15600	14500	14400
7-R	ND	1940	31.5	56.6	989	600	762	226	681	270
8-OS	229000	43800	3230	2080	6180	12000	20300	6240	7490	6740
8-I	15700	30500	NA	ND	ND	ND	22300	41200	24200	18200
8-R	1360	2940	11600	2590	9160	4710	2510	11100	22000	10200
9-OS	NA	249	50.7	1200	383	393	2210	1040	1020	1490
9-I	NA	145	NA	NA	NA	NA	2040	62.3	84	260
9-R	NA	20200	2680	8250	11500	10800	8850	19400	9110	2700
PW-1	NA	64	186	130	1260	916	85.3	11.2	561	39.7
PW-2	NA	11 *	41.8	49.5	ND	22.7	NA	ND	53.5	13.6
PW-3	NA	NA	NA	NA	NA	NA	NA	6.4	NA	NA
BP-1	NA	NA	274	NA	NA	NA	NA	NA	NA	NA
BB-1	NA	NA	NA	297	247	225	263	282	367	332
RVWF-1	NA	NA	362	207	202	294	221	ND	47.7	58.2
SVWC-93	NA	NA	32.6	10.6	NA	553	179	ND	17.2	20.7
SVWC-94	NA	NA	40.3	19.1	NA	NA	49.4	ND	6.1	13.8
SVWC-95	NA	NA	51.7	74.4	ND	NA	45.5	ND	274	40.3
SVWC-96	NA	NA	22.3	17.3	NA	22.6	14.9	ND	61.5	66.8
Surface Water										
Sample ID	Date of Sampling Event									
	10/89	7/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
SW-1	2630	NA	141	1670	170	119	367	287	66.2	242
SW-5	93	163	194	204	168	71.7	41.9	291	124	63.1
SW-6	NA	177	82.5	245	76.7	55.2	55	159	92.4	42.6
SW-8	NA	1290	109	341	ND	26.7	66.2	187	92.6	186

Notes: Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)

* NYSDOH results from 3/92 sampling.

- Exceeded ARAR value of 300 ppb for groundwater.

- Exceeded ARAR value of 300 ppb for surface water.

TABLE 5 (Cont.)

**RAMAPO LANDFILL
MONITORING DATA
COMPOUND: Iron**

Sample ID	Sample Type	Date of Sampling Event					
		3/95	6/95	9/95	12/95	03/96	06/96
1-OS	Groundwater	5970	2820	27900	23400	21700	NA
1-R	Groundwater	1430	1080	2750	1050	3240	NA
2-OS	Groundwater	1310	1730	24300	5660	1770	NA
2-R	Groundwater	259	369	541	822	189	NA
3-OS/I	Groundwater	54600	16600	31400	3710	7750	NA
3-R	Groundwater	1260	1450	3100	1330	1060	NA
4-OS	Groundwater	6110	3010	28600	7460	7470	NA
4-R	Groundwater	5650	5590	6320	4880	4910	NA
5-OS	Groundwater	NA	17100	NA	NA	60000	NA
5-I	Groundwater	56200	NA	2200	1870	NA	NA
5-R	Groundwater	11300	2260	1620	1120	434	NA
6-I	Groundwater	172	565	1080	37.3	507	NA
6-R	Groundwater	225	625	728	758	849	NA
7-OS	Groundwater	12200	NA	NA	1870	11400	NA
7-I	Groundwater	NA	4280	2770	NA	NA	NA
7-R	Groundwater	485	886	717	794	363	NA
8-OS	Groundwater	13500	5760	46900	1160	4870	4370
8-I	Groundwater	24300	21100	32300	28500	27300	38700
8-R	Groundwater	24900	25700	26600	12400	18400	14300
9-OS	Groundwater	1340	294	NA	NA	2330	1350
9-I	Groundwater	788	468	4530	762	232	443
9-R	Groundwater	1080	2230	4080	1370	2060	2270
BP-1	Groundwater	NA	NA	NA	NA	NA	NA
BB-1	Groundwater	250	608	744	577	262	NA
RVWF-1	Groundwater	ND	816	1260	134	ND	NA
PW-1	Drinking Water	283	400	238	252	53.9	38.1
PW-2	Drinking Water	NA	253	276	225	ND	ND
PW-3	Drinking Water	NA	NA	NA	NA	NA	NA
SVWC-93	Drinking Water	19	154	NA	585	ND	ND
SVWC-94	Drinking Water	ND	143	NA	124	ND	ND
SVWC-95	Drinking Water	279	161	NA	148	ND	ND
SVWC-96	Drinking Water	ND	173	NA	136	ND	ND
SW-1	Surface Water	183	396	168	213	231	NA
SW-5	Surface Water	74.4	324	379	236	25.4	NA
SW-6	Surface Water	54	551	385	204	43.5	NA
SW-8	Surface Water	339	315	276	182	29.4	NA

Notes:

Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)

- Exceeded ARAR value of 300 ppb for groundwater.

- Exceeded ARAR value of 300 ppb for surface water.

TABLE 6
RAMAPO LANDFILL
GROUNDWATER AND SURFACE WATER
MONITORING DATA
COMPOUND: Manganese

Sample ID	Date of Sampling Event									
	1/90	9/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
1-OS	3790	3700	809	1410	4010	5590	3510	26.8	5150	4770
1-R	144	98.5	61.4	38.7	143	62	29.3	6020	67	97.6
2-OS	298	4770	NA	27.0	4850	1580	92.5	985	2450	827
2-R	197	135	NA	118	126	116	99.5	91.1	92.9	88.8
3-OS/I	8700	18100	3450	1690	9590	8780	5640	10300	2240	5540
3-R	7230	12400	10700	12900	11000	12000	11800	112800	10600	11300
4-OS	4210	5020	547	506	2080	995	598	2850	3050	1130
4-R	1730	1520	1660	1890	1160	1230	1460	1350	1210	1190
5-OS	981	530	192	43.2	NA	NA	NA	NA	NA	NA
5-I	NA	NA	NA	NA	NA	52.8	40.6	215	221	474
5-R	22.3	9.3	9.6	21.9	11.4	8.2	9.6	2.5	232	624
6-I	NA	33.1	151	1.3	34.4	84.7	1060	275	156	13.2
6-R	NA	14.3	100	57.5	60.7	195	59.8	72.6	56	45.8
7-OS	1240	3260	48.3	46.1	45100	122	67.4	1580	9820	992
7-R	51.9	102	46.1	51.8	114	81.6	99.8	186	126	80.9
8-OS	2830	2750	1680	1640	3330	1910	4090	1790	3230	1840
8-I	4230	1110	NA	ND	ND	ND	877	1180	692	862
8-R	872	181	1660	2600	2440	2650	2220	1890	1740	1980
9-OS	NA	14.6	ND	21.1	9.6	8.7	74.8	34.7	26.2	40.8
9-I	NA	377	NA	NA	NA	NA	40.6	3.2	21.7	9.8
9-R	NA	3270	2320	2280	2540	1890	1660	1830	1650	1460
PW-1	NA	ND	1.2	1.8	ND	3.6	5.4	ND	5.1	15.3
PW-2	NA	ND *	4.7	7.5	6.3	6.6	NA	2.4	8.7	6.1
PW-3	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA
BP-1	NA	NA	4630	NA	NA	NA	NA	NA	NA	NA
BB-1	NA	NA	7.9	11.7	11.1	10.3	8.9	12.5	20.1	12.5
RVWF-1	NA	NA	839	40.2	1710	111	46.5	767	2170	3810
SVWC-93	NA	NA	ND	1.7	NA	72.2	ND	ND	2	0.37
SVWC-94	NA	NA	7.3	ND	NA	NA	6.3	ND	10.4	11.9
SVWC-95	NA	NA	56.4	1.8	ND	NA	91.6	108	273	85.9
SVWC-96	NA	NA	ND	ND	NA	ND	ND	ND	2.1	11.9
Surface Water										
Sample ID	Date of Sampling Event									
	1/90	9/90	1/93	4/93	9/93	12/93	3/94	6/94	9/94	12/94
SW-1	1120	NA	16.6	107	50.4	29.6	63	83.8	27.4	27
SW-5	19.5	44.5	19.3	27.9	70.8	20.5	23	50.3	65.1	16.4
SW-6	NA	31.9	14.5	23.9	14.4	16.9	19.6	23.5	20.7	12.9
SW-8	NA	153	10.9	28.5	8.6	9.9	17.6	64.3	19.4	25.4

Notes: Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)

* NYSDOH results from 3/92 sampling.

- Exceeded ARAR value of 300 ppb for groundwater.

TABLE 6 (Cont.)

**RAMAPO LANDFILL
MONITORING DATA
COMPOUND: Manganese**

Sample ID	Sample Type	Date of Sampling Event					
		3/95	6/95	9/95	12/95	03/96	06/96
1-OS	Groundwater	2950	2010	4930	3130	2020	NA
1-R	Groundwater	96.9	153	219	137	120	NA
2-OS	Groundwater	221	982	5570	883	280	NA
2-R	Groundwater	94.8	70.2	143	85.5	93.8	NA
3-OS/I	Groundwater	3590	3270	3860	6090	11900	NA
3-R	Groundwater	11900	10900	12400	9710	11100	NA
4-OS	Groundwater	602	2860	2080	682	636	NA
4-R	Groundwater	1430	1120	1120	1140	1530	NA
5-I	Groundwater	1410	NA	49.5	NA	616	NA
5-OS	Groundwater	NA	248	NA	53.6	NA	NA
5-R	Groundwater	116	21.6	28.6	11.9	7.1	NA
6-I	Groundwater	19.9	31.3	89.5	51.9	17.7	NA
6-R	Groundwater	17.4	33.4	42.6	50.9	35.3	NA
7-OS	Groundwater	1180	NA	NA	56.8	390	NA
7-I	Groundwater	NA	3500	4910	NA	NA	NA
7-R	Groundwater	69.1	48.8	62.2	34.8	46.4	NA
8-OS	Groundwater	2050	2690	1420	903	2460	3120
8-I	Groundwater	1480	1110	2430	945	1860	3200
8-R	Groundwater	3290	1300	2500	2610	4040	3230
9-OS	Groundwater	32.9	3.9	NA	NA	75.7	70.9
9-I	Groundwater	40.5	10.9	129	15.9	5.2	13.1
9-R	Groundwater	1590	1790	1810	1070	738	1840
BP-1	Groundwater	NA	NA	NA	NA	NA	NA
BB-1	Groundwater	10.7	11.2	15.1	11.2	10.7	NA
RVWF-1	Groundwater	2880	3070	2470	3.7	630	NA
PW-1	Drinking Water	18.1	5.2	83.1	57.7	83.7	25.7
PW-2	Drinking Water	NA	6.1	11.6	7.7	2.6	5
PW-3	Drinking Water	NA	NA	NA	NA	NA	NA
SVWC-93	Drinking Water	9.6	0.95	NA	11.9	ND	3.4
SVWC-94	Drinking Water	6.7	11.4	NA	ND	3.1	ND
SVWC-95	Drinking Water	29	49.7	NA	22.1	47.4	67.4
SVWC-96	Drinking Water	1.3	ND	NA	48	ND	ND
SW-1	Surface Water	39.8	71.6	17.9	36.3	41.8	NA
SW-5	Surface Water	15.4	18.3	75.3	21.8	18.4	NA
SW-6	Surface Water	12.8	51.9	36.1	14.8	14.7	NA
SW-8	Surface Water	25.8	80.1	25.5	4.2	10.8	NA

Notes:

Concentration reported in µg/L (ppb).

ND - Not detected

NA - Not applicable (e.g. well not installed by this date or if installed, not sampled)

- Exceeded ARAR value of 300 ppb for groundwater.