

May 26, 1994

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Ms. Kathleen McCue
Project Manager
Division of Hazardous Waste Remediation
New York State Department of
Environmental Conservation
50 Wolf Road
Albany, New York 12233-7010

**RE: RAMAPO LANDFILL REMEDIATION
RESULTS OF FIRST QUARTER MONITORING FOR 1994**

Dear Ms. McCue:

Attached are the results of the first quarter monitoring event for 1994. This sampling is the first round of sampling included as part of the Remedial Action phase of the Ramapo Landfill Remediation Project. This document provides the validated analytical data for the first of eight sampling rounds included during this phase of the project and historical analytical data tables for the four target compounds, i.e., benzene, chromium, iron and manganese. Locations sampled are shown in Figure 1. The water level in monitoring well 5OS was again too low to sample, therefore, well 5I was sampled in its place. The samples for this monitoring event, which was conducted the week of March 21, 1994, were analyzed for the baseline parameters.

As you know, the second quarter monitoring event for 1994 is planned for late June. Please feel free to call if you have any questions or if you wish to discuss.

Sincerely,

URS CONSULTANTS, INC.

Gronne Maritz

for James Lanzo
Project Manager

B.E.R.A.		FILE SECTION
FOR LABLE Y-N		
DATE NAME		I
DATE CODE		II
DATE SECTIONS		III
DATE ELEMENT		IV
DATE FILE UNIT NO. DESC.		V
DATE ON FINAL		VI

MAY 21 1994

Enc.

cc: Supervisor Reisman - Town of Ramapo
Mr. Gene Ostertag - 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. John Olm - NYSDOH
Ms. Arlene Lapidus - Ramapo Land Company, Inc.
Mr. George Demas - Torne Brook Farm
Mr. Raymond Cywinski - Hackensack Water Company
Mr. Tanyo Parashkevov - Hackensack Water Company
Mr. Michael Barnes, Director of Operations - Spring Valley Water Company
Mr. Craig Flanagan
File: 35314 (VI-C and XII-C)

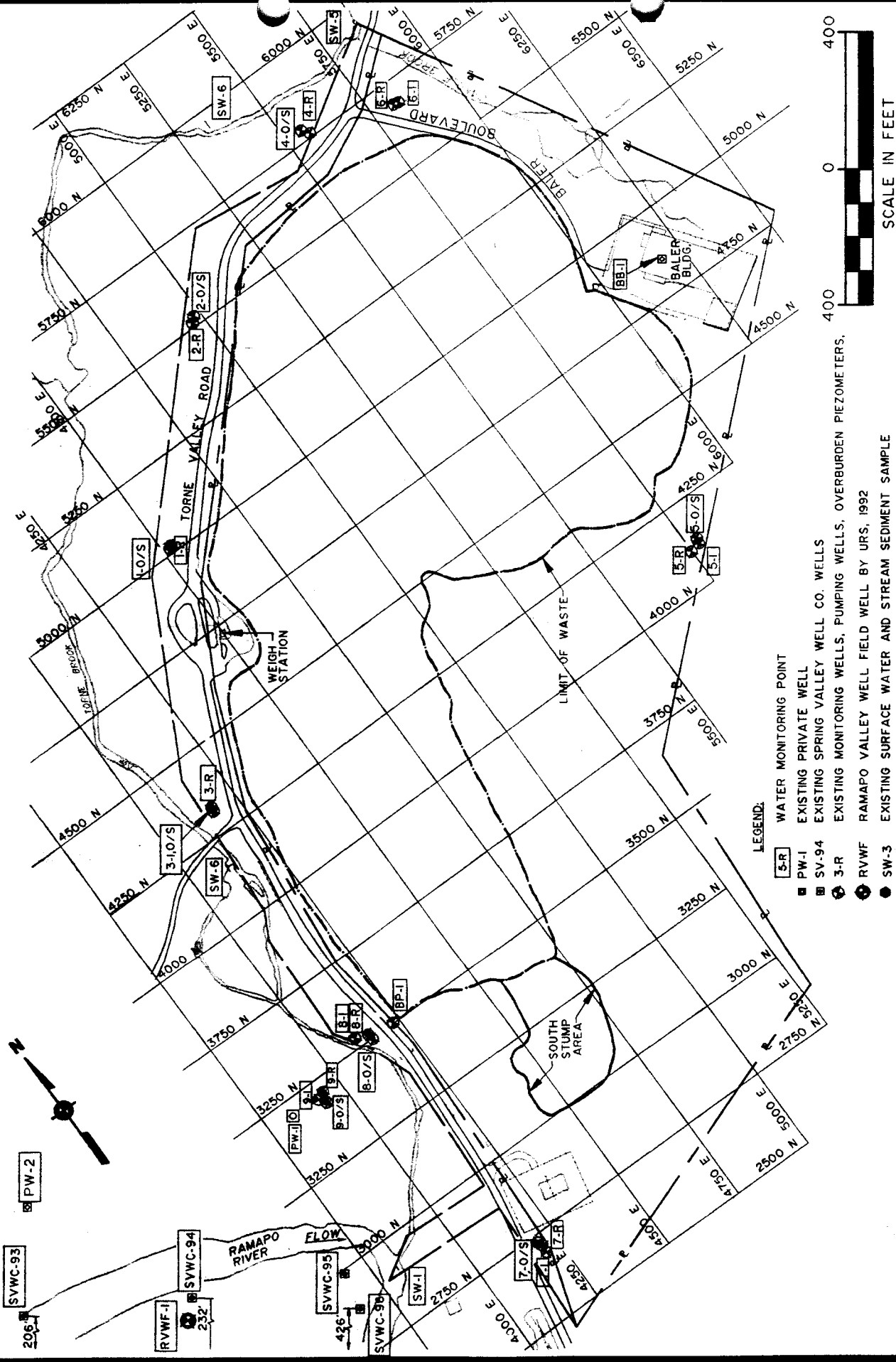


TABLE 1
RAMAPO LANDFILL - MARCH 1994 SAMPLING

ANALYTE	CONCENTRATION (µg/l)									
	1-OS	1-R	2-OS	2-R	3-OS/I	3-R	4-OS	4-R	5-I	
Dichlorofluoromethane	--	--	--	--	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	--
1,1,1-Dichloroethane	--	1	--	--	--	--	--	1	--	--
Chlorobenzene	--	--	--	--	--	--	--	--	--	--
Chloroethane	--	--	--	--	--	--	--	3	--	--
Benzene	--	--	--	--	--	--	--	--	--	--
Toluene	--	--	--	--	--	--	--	--	--	--
Vinyl Chloride	--	--	--	--	--	--	--	--	--	--
Hexachlorobenzene	--	--	--	--	--	--	--	R	--	--
Di-n-octylphthalate	--	--	--	--	--	--	--	R	--	--
Diethylphthalate	--	--	--	--	--	--	--	R	--	--
bis(2-Ethylhexyl)phthalate	R	R	R	R	R	R	R	R	R	R
Dibenzofuran	--	--	--	--	--	--	--	R	--	--
Di-n-octylphthalate	--	--	--	--	--	--	--	R	--	--
gamma BHC	--	--	--	--	--	--	--	--	--	--
delta-BHC	--	--	--	--	--	--	--	--	--	--
alpha-BHC	--	--	--	--	--	--	--	--	--	--
Aluminum	6,480	64.7 []	598	134 []	9,710	69.3 []	2,000	209	1,810	--
Antimony	--	--	--	--	--	--	--	1.6 []W	--	--
Arsenic	1.6 []	--	--	--	1.6 []	--	2 []	--	--	--
Barium	75.4 []	9.7 []	16.2 []	7.4 []	144 []	38 []	33.5 []	11.5 []	11.9 []	--
Beryllium	--	--	--	--	0.77 []	--	--	--	--	--
Boron	108	116	90.9 []	17.6 []	74.6 []	110	29.8 []	56.4 []	--	--
Cadmium	--	--	--	--	--	--	--	--	--	--
Calcium	53,900	84,700	75,700	55,000	72,500	74,900	31,900	52,100	7,840	--
Chromium	65.5	10.3	11.8	--	784	10.5	15.1	4.4 []	30.2	--
Cobalt	7.6 []	--	--	--	11.1 []	4.4 []	5.9 []	--	--	--
Copper	23.2 []	2.8 []	2.8 []	3.6 []	25.2	4.4 []	9.1 []	3.7 []	4.3 []	--
Iron	12,200	186	946	187	19,400	1,970	5,720	4,790	2,080	--
Lead	4.8	--	--	--	7	--	2.6 []	--	--	--
Magnesium	15,100	16,200	15,400	11,400	19,700	25,300	13,200	18,900	5,030	--
Manganese	3,510	29.3	92.5	99.5	5,640	11,800	598	1,460	40.6	--
Mercury	--	--	--	--	--	--	--	--	--	--
Nickel	46.6	32.7 []	7.7 []	--	207	10.5 []	12.2 []	--	13.8 []	--
Potassium	3,220 []	1,760 []	1,080 []	1,110 []	5,340	1,560 []	1,570 []	1,430 []	1,070 []	--
Silver	--	--	--	--	5.2 []	--	--	--	--	--
Sodium	18,100	15,900	8,430	6,520	63,000	47,700	29,400	12,600	4,290 []	--
Thallium	--	--	--	--	--	--	--	--	--	--
Vanadium	13.9 []	--	--	--	21.4 []	--	5.4 []	--	4.6 []	--
Zinc	37.3	6.8 []	12.6 []	12.2 []	58.2	12 []	26	17.4 []	13.7 []	--

Only detected results reported.

R - Compound rejected due to contamination in the associated blank

I - The reported value is less than CRDL but greater than the IDL.

W - Post digestion spike for furnace AA is out of control limits (85-115%) while sample absorbance is <50% of spike absorbance.

TABLE 1
RAMAPO LANDFILL - MARCH 1994 SAMPLING

ANALYTE	CONCENTRATION (µg/l)									
	5-R	6-I	6-R	7-OS	7-R	8-I	8-OS	8-R	9-I	
Dichlorofluoromethane	--	--	--	--	--	--	1	10	--	
1,4-Dichlorobenzene	--	--	--	--	--	--	--	--	--	
1,1,1-Dichloroethane	--	--	--	--	--	--	--	1	--	
Chlorobenzene	--	--	--	--	--	2	1	6	--	
Chloroethane	--	--	--	--	--	--	--	--	--	
Benzene	--	--	--	--	--	--	--	--	--	
Toluene	--	--	--	--	--	--	--	--	--	
Vinyl Chloride	--	--	--	--	--	--	--	2	--	
Hexachlorobenzene	--	--	--	--	--	--	--	--	--	
Di-n-octylphthalate	--	--	--	--	--	--	--	--	--	
Diethylphthalate	--	--	--	3 J	1 J	--	--	--	--	
bis(2-Ethylhexyl)phthalate	R	R	R	R	42 B	R	R	R	--	
Dibenzofuran	--	--	--	--	--	--	--	--	--	
Di-n-octylphthalate	--	--	--	--	1 J	--	--	--	--	
gamma BHC	--	--	--	--	--	--	--	--	--	
delta-BHC	--	--	--	--	--	--	--	--	--	
alpha-BHC	--	--	--	--	--	--	--	--	--	
Aluminum	471	179 ▯	128 ▯	1,490	250	390	6,640	483	1,090	
Antimony	--	--	--	--	--	--	--	--	--	
Arsenic	--	--	--	--	--	10	6.6 ▯	2.4 ▯	--	
Barium	8 ▯	15.7 ▯	11.2 ▯	20.2 ▯	8.2 ▯	363	184 ▯	43 ▯	13.7 ▯	
Beryllium	--	--	--	--	--	--	0.50 ▯	--	--	
Boron	--	--	--	56.2 ▯	85 ▯	1,860	407	168	--	
Cadmium	--	--	--	--	--	1.5 ▯	--	71.8	3.9 ▯	
Calcium	12,700	19,300	23,700	10,000	67,000	98,400	75,000	19,600	8,170	
Chromium	13.8	32.7	71.3	31	--	29	86.6	7.5 ▯	28	
Cobalt	--	--	--	--	--	22.6 ▯	13.9 ▯	19.5 ▯	--	
Copper	5.5 ▯	2.4 ▯	5.5 ▯	8.6 ▯	7.2 ▯	7.1 ▯	36.4	13.4 ▯	5.6 ▯	
Iron	742	4,020	698	2,340	762	22,300	20,300	2,510	2,040	
Lead	--	--	--	--	--	--	11.3	--	--	
Magnesium	4,620 ▯	4,980 ▯	5,920	3,050 ▯	17,000	56,900	24,800	49,600	2,280 ▯	
Manganese	9.6 ▯	1,060	59.8	67.4	99.8	877	4,090	2,220	40.6	
Mercury	--	--	--	--	--	--	--	--	--	
Nickel	6.8 ▯	19.9 ▯	15 ▯	14.9 ▯	--	106	66.6	27.8 ▯	20.5 ▯	
Potassium	917 ▯	1,280 ▯	1,310 ▯	3,820 ▯	1,730 ▯	136,000	22,600	9,300	446 ▯	
Silver	--	--	--	--	--	17.9	12.7	--	--	
Sodium	4,170 ▯	5,530	5,920	8,930	18,100	448,000	117,000	50,800	3,160 ▯	
Thallium	2.4 ▯	3 ▯	--	4 ▯	--	9.5 ▯	19.3 ▯	--	--	
Vanadium	4.1 ▯	5.2 ▯	--	--	--	--	--	--	2.3 ▯	
Zinc	13 ▯	13.4 ▯	13.6 ▯	17.3 ▯	9.4 ▯	24.1	47.1	15.4 ▯	11.9 ▯	

Only detected results reported.

R - Compound rejected due to contamination in the associated blank

B - Compound detected in the associated method blank

[] - The reported value is less than CRDL but greater than the IDL.

TABLE 1
RAMAPO LANDFILL - MARCH 1994 SAMPLING

ANALYTE	CONCENTRATION (µg/l)					
	9-OS	9-R	BB-1	PW-1	PW-2	RVWF-1
Dichlorofluoromethane	--	5	--	--	NA	--
1,4-Dichlorobenzene	--	1	--	--	NA	--
1,1-Dichloroethane	--	--	--	--	NA	--
Chlorobenzene	--	--	--	--	NA	--
Chloroethane	--	9	--	--	NA	--
Benzene	--	--	--	--	NA	--
Toluene	--	--	--	--	NA	--
Vinyl Chloride	--	4	--	--	NA	--
Hexachlorobenzene	--	--	--	--	NA	--
Di-n-octylphthalate	--	--	--	--	NA	--
Diethylphthalate	--	--	--	--	NA	--
bis(2-Ethylhexyl)phthalate	18 B	R	R	R	NA	R
Dibenzofuran	--	--	--	--	NA	--
Di-n-octylphthalate	--	--	--	--	NA	--
gamma BHC	--	--	--	--	NA	--
delta-BHC	--	--	--	--	NA	--
alpha-BHC	--	--	--	--	NA	--
Aluminum	1,240	1,450	13 []	20.4 []	NA	338
Antimony	--	--	--	--	NA	--
Arsenic	--	2 []	--	--	NA	--
Barium	16 []	54.5 []	--	4.1 []	NA	7.3 []
Beryllium	--	--	--	--	NA	--
Boron	--	265	--	27.9 []	NA	54.2 []
Cadmium	3.4 []	28.7	--	--	NA	--
Calcium	9,730	30,000	17,100	10,400	NA	16,800
Chromium	22.9	35.4	--	--	NA	8.4 []
Cobalt	--	6.1 []	--	--	NA	3.6 []
Copper	5.5 []	13.9 []	42.4	293	NA	1.6 []
Iron	2,210	8,850	263	85.3 []	NA	221
Lead	--	4 []	--	90	NA	--
Magnesium	2,840 []	10,300	3,720 []	3,190 []	NA	4,470
Manganese	74.8	1,660	8.9 []	5.4 []	NA	46.5
Mercury	--	--	--	--	NA	--
Nickel	15.8 []	29.4 []	--	--	NA	--
Potassium	1,290 []	16,400	718 []	807 []	NA	1,540 []
Silver	--	--	--	--	NA	--
Sodium	6,900	64,100	5,190	5,420	NA	15,800
Thallium	--	--	--	--	NA	--
Vanadium	3.8 []	3.5 []	--	--	NA	--
Zinc	11.0 []	46.9	258	80.5	NA	9.8 []

Only detected results reported.

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B - Compound detected in the associated method blank

[] - The reported value is less than CRDL but greater than the IDL.

TABLE 1
RAMAPO LANDFILL - MARCH 1994 SAMPLING

ANALYTE	CONCENTRATION (µg/l)				ARARs @
	SVWC-93	SVWC-94	SVWC-95	SVWC-96	
Dichlorofluoromethane	--	--	--	NA	--
1,4-Dichlorobenzene	--	--	--	NA	4.7
1,1-Dichloroethane	--	--	--	NA	5
Chlorobenzene	--	--	--	NA	5 §
Chloroethane	--	--	--	NA	5
Benzene	--	--	--	NA	0.7 @
Toluene	--	--	--	NA	--
Vinyl Chloride	--	--	--	NA	2
Hexachlorobenzene	--	--	--	NA	0.35
Di-n-octylphthalate	--	--	--	NA	--
Diethylphthalate	--	--	--	NA	50
bis(2-Ethylhexyl)phthalate	R	R	R	R	50
Dibenzofuran	--	--	--	--	50 o
Di-n-octylphthalate	--	--	--	--	50
gamma BHC	--	--	--	--	ND
delta-BHC	--	--	--	--	ND
alpha-BHC	--	--	--	--	ND
Aluminum	--	--	--	--	--
Antimony	--	--	--	--	3
Arsenic	--	--	--	--	25
Barium	6.9 □	9.7 □	7.3 □	5.9 □	1,000
Beryllium	--	--	--	--	3
Boron	29.2 □	33 □	35.3 □	28.4 □	1,000
Cadmium	--	--	--	--	10
Calcium	22,700	25,000	21,700	2,060	--
Chromium	--	--	--	--	50
Cobalt	--	--	3.2 □	--	--
Copper	51.6	130	22 □	11.8 □	200
Iron	179	49.4 □	45.5 □	14.9 □	300
Lead	7.1 W	2.0 □W	--	--	15 ¥
Magnesium	5,580	6,480	5,860	5,930	35,000
Manganese	--	6.3 □	91.6	--	300
Mercury	--	--	--	--	2
Nickel	--	--	--	--	--
Potassium	1,270 □	1,190 □	1,090 □	992 □	--
Silver	--	--	--	--	50
Sodium	32,800	35,600	33,300	29,100	20,000
Thallium	--	--	--	--	4
Vanadium	--	--	--	--	--
Zinc	41.8	74.6	23.8	12.3 □	300

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

§ - Values obtained from Chapter I - New York State Sanitary Code, Subpart 5-1, Principle Organic Contaminants.

o - Value obtained from Chapter I - New York State Sanitary Code, Subpart 5-1, Unspecified Organic Contaminants.

¥ - USEPA action level

Only detected results reported.

R - Compound rejected due to contamination in the associated blank
W - Post digestion spike for furnace AA analysis is out of control limits (85-115%), while sample absorbance is < 50% of spike absorbance.

□ - The reported value is less than CRDL but greater than the IDL.

TABLE 1
RAMAPO LANDFILL - MARCH 1994 SAMPLING

ANALYTE	CONCENTRATION (µg/l)					ARARs @
	SW-1	SW-5	SW-6	SW-8		
Dichlorofluoromethane	--	--	--	--	--	--
1,4-Dichlorobenzene	--	--	--	--	--	4.7
1,1-Dichloroethane	--	--	--	--	--	0.07
Chlorobenzene	--	--	--	--	--	20
Chloroethane	--	--	--	1	--	5
Benzene	--	--	--	--	--	0.7
Toluene	--	1	--	--	--	--
Vinyl Chloride	--	--	--	--	--	0.3
Hexachlorobenzene	--	--	--	--	--	0.02
Di-n-octylphthalate	--	--	--	--	--	--
Diethylphthalate	--	--	--	--	--	50
bis(2-Ethylhexyl)phthalate	R	R	R	R	--	0.6
Dibenzofuran	--	--	--	--	--	50
Di-n-octylphthalate	--	--	--	--	--	50
gamma BHC	--	--	--	--	--	0.01
delta-BHC	--	--	--	--	--	0.01
alpha-BHC	--	--	--	--	--	0.01
Aluminum	263	185	154	130	--	--
Antimony	--	--	--	--	--	3
Arsenic	--	--	--	--	--	50
Barium	12.3	12.4	10.5	10.8	--	1,000
Beryllium	--	--	--	--	--	3
Boron	--	--	--	--	--	1,000
Cadmium	--	--	--	--	--	10
Calcium	9,590	2,690	2,800	3,040	--	--
Chromium	--	--	--	--	--	50
Cobalt	--	--	--	--	--	--
Copper	3	--	--	2.5	--	200
Iron	367	41.9	55	66.2	--	300
Lead	--	--	--	--	--	50
Magnesium	2,470	697	727	786	--	35,000
Manganese	63	23	19.6	17.6	--	300
Mercury	--	--	--	--	--	0.012
Nickel	5.4	--	--	--	--	1.30E-07
Potassium	726	259	309	311	--	--
Silver	--	--	--	--	--	50
Sodium	17,000	1,940	1,940	1,950	--	--
Thallium	--	--	--	1.4	--	4
Vanadium	--	--	2.9	--	--	--
Zinc	13.3	15.1	26.8	21.6	--	30

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

£ - Clean Water Act

ç - ARAR value must be calculated; see next page.

Only detected results reported.

R - Compound rejected due to contamination in the associated blank
[] - The reported value is less than CRDL but greater than the IDL.

TABLE 2
RAMAPO LANDFILL - MARCH 1994 SAMPLING

INDICATOR	CONCENTRATION (mg/l)*											
	1-OS	1-R	2-OS	2-R	3-OS/I	3-R	4-OS	4-R	5-I	5-R	6-I	6-R
Biochemical Oxygen Demand	<4	<4	<4	4.2	<4	11.3	<4	4.6	<4	5	<4	6
Chloride	13	32	11	20	87	66	64	31	5	4	17	15
COD	20	<15	<15	40	50	100	35	40	30	65	<15	<15
Color (units)	20	<5	5	<5	10	5	20	70	10	<5	30	5
Hexavalent Chromium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Total Hardness	197	278	253	184	262	291	134	208	40.2	50.6	68.6	83.5
Ammonia	0.04	0.05	<0.02	0.04	0.10	0.12	<0.02	0.11	0.03	<0.02	0.11	0.05
Nitrate	<0.1	0.7	0.4	<0.1	<0.1	<0.1	<0.1	0.1	0.3	0.3	<0.1	0.1
Total Phenols (ug/l)	<1	<1	<1	<1	<1	<1	<1	<1	<1	6.0	3.5	<1
Sulfate	63	29.4	20.8	20.9	15.1	20.9	44.8	18.6	12.9	14.1	13.2	17.9
Total Alkalinity	151	244	254	161	271	321	75.3	175	34.5	43.3	48.8	57.1
Total Dissolved Solids	258	346	300	197	403	424	197	237	31	37	77	83
Total Kjeldahl Nitrogen	2.7	0.6	0.2	<0.2	0.2	0.6	0.3	0.2	0.2	0.2	0.7	0.5
Total Organic Carbon	6.3	5.2	5.7	4.2	11.7	12.4	3.4	8.8	3.2	3.4	5.5	3.5
Turbidity (units)	15	1.4	6.7	2.7	26	8.5	12	24	18	8	3.2	4.0

* - All concentrations given in mg/l unless otherwise noted.
NA - Not analyzed

TABLE 2
RAMAPO LANDFILL - MARCH 1994 SAMPLING

INDICATOR	CONCENTRATION (mg/l)*											
	7-OS	7-R	8-I	8-OS	8-R	9-I	9-OS	9-R	BB-1	PW-1	PW-2	RVWF-1
Biochemical Oxygen Demand	9.5	<4	36.5	32.3	7.8	<4	11	10	<4	<4	NA	<4
Chloride	5	25	570	200	230	7	36	58	<2	7	NA	28
COD	<15	35	70	100	45	15	<15	45	<15	12	NA	<15
Color (units)	30	<5	90	50	30	10	10	70	<5	<5	NA	<5
Hexavalent Chromium	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	NA	<0.02
Total Hardness	37.5	237	480	289	693	29.8	36	117	58.1	39.1	NA	60.4
Ammonia	0.29	<0.02	43.0	25.5	7.0	0.04	0.06	6.9	<0.02	0.03	NA	0.03
Nitrate	1.6	1.3	<0.1	1.2	<0.1	0.2	1.7	0.2	<0.1	1.4	NA	1.6
Total Phenols (ug/l)	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	NA	<1
Sulfate	6.6	32	<5	33.4	17.6	11.6	11.8	<5	14	10.7	NA	9.3
Total Alkalinity	37.2	208	1,260	352	540	17.9	31.2	132	51	28.7	NA	41.2
Total Dissolved Solids	167	321	1,650	711	1080	67	79	261	111	72	NA	133
Total Kjeldahl Nitrogen	1.1	<0.2	45	26	7.6	0.4	0.7	7.1	<0.2	<0.2	NA	<0.2
Total Organic Carbon	6.5	8.0	25	25.4	22	1.5	2.7	9.3	<1	1.2	NA	3.1
Turbidity (units)	5.7	3.1	33	11	5.9	7.5	6.8	9.5	1.7	<1	NA	<1

* - All concentrations given in mg/l unless otherwise noted.
NA - Not analyzed

TABLE 2
RAMAPO LANDFILL - MARCH 1994 SAMPLING

INDICATOR	CONCENTRATION (mg/l)*					ARARs @ (ug/l)
	SVWC-93	SVWC-94	SVWC-95	SVWC-96		
Biochemical Oxygen Demand	<4	<4	<4	<4		--
Chloride	76	81	69	67		250,000
COD	<15	155	15	35		--
Color (units)	<5	<5	<5	<5		--
Hexavalent Chromium	<0.02	<0.02	<0.02	<0.02		--
Total Hardness	79.6	89.2	78.4	75.9		--
Ammonia	<0.02	0.06	0.10	0.06		2,000
Nitrate	1.3	1.4	1.0	1.3		10,000
Total Phenols (ug/l)	<1	<1	<1	<1		--
Sulfate	16.7	19.8	15.1	17		250,000
Total Alkalinity	31.0	44.0	47.4	34.7		--
Total Dissolved Solids	229	231	205	155		500,000
Total Kjeldahl Nitrogen	0.2	<0.2	<0.2	<0.2		--
Total Organic Carbon	2.2	2.7	2.8	1.9		--
Turbidity (units)	<1	<1	<1	<1		--

* - All concentrations given in mg/l unless otherwise noted.
N/A - Not analyzed

@ NYSDEC Water Quality Standards and
Guidance Values, TOGS 1.1.1,
October 1993, Table 1

TABLE 2
RAMAPO LANDFILL - MARCH 1994 SAMPLING

INDICATOR	CONCENTRATION (mg/l)*					ARARs @ (ug/l)
	SW-1	SW-5	SW-6	SW-8		
Biochemical Oxygen Demand	<4	<4	<4	<4		--
Chloride	33	8	4	5	250,000	
COD	<15	<15	15	<15	--	
Color (units)	5	5	5	5	--	
Hexavalent Chromium	<0.02	<0.02	<0.02	<0.02	--	
Total Hardness	34.1	4.7	10	10.8	--	
Ammonia	0.15	0.06	0.05	0.02	2,000	
Nitrate	0.4	0.3	<0.1	0.1	10,000	
Total Phenols (ug/l)	<1	<1	<1	<1	--	
Sulfate	11.8	7.1	7.1	7.8	250,000	
Total Alkalinity	15.7	2.6	3.1	3.6	--	
Total Dissolved Solids	97	40	44	36	500,000	
Total Kjeldahl Nitrogen	0.5	0.2	0.2	<0.2	--	
Total Organic Carbon	2.9	1.6	1.8	1.8	--	
Turbidity (units)	2.2	<1	<1	<1	--	

@ NYSDEC Water Quality Standards and
Guidance Values, TOGS 1.1.1,
October 1993, Table 1

* - All concentrations given in mg/l unless otherwise noted.
NA - Not analyzed

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
1 O/S	ND	ND	ND	ND	ND	ND	ND
1 R	ND	ND	ND	ND	ND	ND	ND
2 O/S	ND	ND	NA	ND	ND	ND	ND
2R	ND	ND	NA	ND	ND	ND	ND
3 O/S/I	ND	ND	ND	ND	ND	ND	ND
3 R	ND	ND	ND	ND	ND	ND	ND
4 O/S	ND	0.3	ND	ND	ND	ND	ND
4 R	1.0	1.0	ND	0.7	ND	ND	ND
5I	NA	NA	NA	NA	NA	ND	ND
5 O/S	2.0	ND	ND	ND	NA	NA	NA
5 R	ND	ND	ND	ND	ND	ND	ND
6 I	NA	0.2	ND	ND	ND	ND	ND
6 R	NA	ND	ND	ND	ND	ND	ND
7 O/S	ND	ND	ND	ND	ND	ND	ND
7 R	ND	ND	ND	ND	ND	ND	ND
8 I	2.0	2.9	NA	ND	ND	ND	ND
8 O/S	2.0	0.3	ND	ND	ND	ND	ND
8 R	3.0	0.4	ND	0.9	ND	ND	ND
9I	NA	0.2	NA	NA	NA	NA	ND
9 O/S	NA	ND	ND	ND	ND	NA	ND
9 R	NA	0.9	ND	ND	ND	NA	ND
PW-1	NA	ND	ND	ND	ND	NA	ND
PW-2	NA	NA *	ND	ND	ND	NA	NA
BP-1	NA	NA	ND	NA	NA	NA	NA
BB-1	NA	NA	ND	ND	ND	NA	ND
RVWF-1	NA	NA	ND	ND	ND	NA	ND
SVWC-93	NA	NA	ND	ND	NA	NA	ND
SVWC-94	NA	NA	ND	ND	NA	NA	ND
SVWC-95	NA	NA	ND	ND	ND	NA	ND
SVWC-96	NA	NA	ND	ND	NA	NA	ND
Surface Water							
Sample ID	Date of Sampling Event						
	10/89	7/90	1/93	4/93	9/93	12/93	3/94
SW-1	ND	NA	ND	ND	ND	ND	ND
SW-5	ND	ND	ND	ND	ND	ND	ND
SW-6	NA	ND	ND	ND	ND	ND	ND
SW-8	NA	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 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
1 O/S	153	57.3	8	ND	60.0	257.0	65.5
1 R	39.7	17.5	ND	ND	84.9	46.8	10.3
2 O/S	180	141	NA	ND	50.2	95.9	11.8
2R	16.1	5.5	NA	ND	14.8	6.1	ND
3 O/S/I	587	1290	807	40.4	1350	1100	784
3 R	28	11.4	ND	ND	ND	14.7	10.5
4 O/S	139	40.1	5.8	ND	10.8	11.2	15.1
4 R	35.5	13.1	ND	8.8	ND	5.9	4.4
5I	NA	NA	NA	NA	NA	80	30.2
5 O/S	90	35.6	48.8	ND	NA	NA	NA
5 R	27.4	29.3	6.8	ND	ND	8.6	13.8
6 I	NA	28.7	ND	ND	13.4	17.0	32.7
6 R	NA	31.1	24	34.8	27.7	67.4	71.3
7 O/S	33.5	40.1	24.2	13.0	1890	218	31
7 R	16.2	16.8	ND	ND	ND	ND	ND
8 I	215	32.5	NA	ND	ND	ND	29
8 O/S	34.8	16.7	ND	ND	ND	7.6	86.6
8 R	20	23.1	9.9	ND	17.7	18.2	7.5
9 I	NA	8.1	NA	NA	NA	NA	28
9 O/S	NA	6.8	ND	ND	ND	ND	22.9
9 R	NA	8.8	3.9	16.4	16.7	11.6	35.4
PW-1	NA	ND	ND	ND	ND	ND	ND
PW-2	NA	ND *	ND	ND	ND	4.9	NA
BP-1	NA	NA	ND	NA	NA	NA	NA
BB-1	NA	NA	ND	ND	ND	ND	ND
RVWF-1	NA	NA	25.2	14.7	13.2	20.5	8.4
SVWC-93	NA	NA	ND	ND	NA	ND	ND
SVWC-94	NA	NA	ND	ND	NA	NA	ND
SVWC-95	NA	NA	ND	ND	ND	NA	ND
SVWC-96	NA	NA	ND	ND	NA	ND	ND
Surface Water							
Sample ID	Date of Sampling Event						
	10/89	7/90	1/93	4/93	9/93	12/93	3/94
SW-1	ND	NA	ND	ND	ND	ND	ND
SW-5	ND	ND	ND	ND	ND	ND	ND
SW-6	NA	ND	ND	ND	ND	5.1	ND
SW-8	NA	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 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
1 O/S	45000	17500	1870	884	32300	162000	12200
1 R	1180	2650	395	197	1940	1210	186
2 O/S	912	41800	NA	186	11800	9800	946
2R	409	602	NA	674	1120	1450	187
3 O/S	6830	9750	5110	333	21300	37900	19400
3 R	1930	1370	11500	2940	3280	4800	1970
4 O/S	15600	12400	529	520	5560	10600	5720
4 R	8230	5290	3520	4920	3100	5290	4790
5I	NA	NA	NA	NA	NA	2030	2080
5 O/S	27000	11200	11100	4700	NA	NA	NA
5 R	658	368	620	2310	751	243	742
6 I	NA	486	953	17.3	332	2860	4020
6 R	NA	683	1220	715	662	1710	698
7 O/S	981	24500	1250	521	619000	2200	2340
7 R	ND	1940	31.5	56.6	989	600	762
8 I	15700	30500	NA	ND	ND	ND	22300
8 O/S	229000	43800	3230	2080	6180	12000	20300
8 R	1360	2940	11600	2590	9160	4710	2510
9 I	NA	145	NA	NA	NA	NA	2040
9 O/S	NA	249	50.7	1200	383	393	2210
9 R	NA	20200	2680	8250	11500	10800	8850
PW-1	NA	64	186	130	1260	916	85.3
PW-2	NA	11 *	41.8	49.5	ND	22.7	NA
BP-1	NA	NA	274	NA	NA	NA	NA
BB-1	NA	NA	NA	297	247	225	263
RVWF-1	NA	NA	362	207	202	294	221
SVWC-93	NA	NA	32.6	10.6	NA	553	179
SVWC-94	NA	NA	40.3	19.1	NA	NA	49.4
SVWC-95	NA	NA	51.7	74.4	ND	NA	45.5
SVWC-96	NA	NA	22.3	17.3	NA	22.6	14.9
Surface Water							
Sample ID	Date of Sampling Event						
	10/89	7/90	1/93	4/93	9/93	12/93	3/94
SW-1	2630	NA	141	1670	170	119	367
SW-5	93	163	194	204	168	71.7	41.9
SW-6	NA	177	82.5	245	76.7	55.2	55
SW-8	NA	1290	109	341	ND	26.7	66.2

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 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
1 O/S	3790	3700	809	1410	4010	5590	3510
1 R	144	98.5	61.4	38.7	143	62	29.3
2 O/S	298	4770	NA	27.0	4850	1580	92.5
2R	197	135	NA	118	126	116	99.5
3 O/S/I	8700	18100	3450	1690	9590	8780	5640
3 R	7230	12400	10700	12900	11000	12000	11800
4 O/S	4210	5020	547	506	2080	995	598
4 R	1730	1520	1660	1890	1160	1230	1460
5I	NA	NA	NA	NA	NA	52.8	40.6
5 O/S	981	530	192	43.2	NA	NA	NA
5 R	22.3	9.3	9.6	21.9	11.4	8.2	9.6
6 I	NA	33.1	151	1.3	34.4	84.7	1060
6 R	NA	14.3	100	57.5	60.7	195	59.8
7 O/S	1240	3260	48.3	46.1	45100	122	67.4
7 R	51.9	102	46.1	51.8	114	81.6	99.8
8 I	4230	1110	NA	ND	ND	ND	877
8 O/S	2830	2750	1680	1640	3330	1910	4090
8 R	872	181	1660	2600	2440	2650	2220
9 I	NA	377	NA	NA	NA	NA	40.6
9 O/S	NA	14.6	ND	21.1	9.6	8.7	74.8
9 R	NA	3270	2320	2280	2540	1890	1660
PW-1	NA	ND	1.2	1.8	ND	3.6	5.4
PW-2	NA	ND *	4.7	7.5	6.3	6.6	NA
BP-1	NA	NA	4630	NA	NA	NA	NA
BB-1	NA	NA	7.9	11.7	11.1	10.3	8.9
RVWF-1	NA	NA	839	40.2	1710	111	46.5
SVWC-93	NA	NA	ND	1.7	NA	72.2	ND
SVWC-94	NA	NA	7.3	ND	NA	NA	6.3
SVWC-95	NA	NA	56.4	1.8	ND	NA	91.6
SVWC-96	NA	NA	ND	ND	NA	ND	ND
Surface Water							
Sample ID	Date of Sampling Event						
	1/90	9/90	1/93	4/93	9/93	12/93	3/94
SW-1	1120	NA	16.6	107	50.4	29.6	63
SW-5	19.5	44.5	19.3	27.9	70.8	20.5	23
SW-6	NA	31.9	14.5	23.9	14.4	16.9	19.6
SW-8	NA	153	10.9	28.5	8.6	9.9	17.6

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.