UNITED STATES DEPARTMENT OF THE INTERIOR

GEOLOGICAL SURVEY

Analytical results for 186 water samples collected in Berks, Bucks, Chester, Lancaster, and Montgomery Counties, Pennsylvania

by

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ABSTRACT

Ground water and a few surface water samples were collected in Berks, Bucks, Chester, Lancaster, and Montgomery Counties, Pennsylvania. The concentration of the major and trace consitituents were determined by ion chromatography, flame and flameless atomic absorption spectrometry. Temperature, pH, and specific conductance were determined by conventional techniques. The analytical results were used in a hydrogeochemical exploration survey of the Pennsylvania portion of the Newark Basin.

INTRODUCTION

The Newark Basin in southeastern Pennsylvania is the location for two important magnetite skarn deposits: the Cornwall mine at Cornwall and the Grace mine at Morgantown. Numerous other small mineral deposits are located throughout the Basin. The nickel mine near Gap is not in the Newark Basin, but it is close enough that it was inlcuded in this survey.

The water samples used for this study were collected in October 1983 and April and May 1984.

SAMPLING TECHNIQUE

The water samples were collected from a variety of domestic wells that serve homes and small businesses as domestic water supplies. At the sample site the water was allowed to flow for at least five minutes, whenever possible, before a sample was collected. Fifty milliters of the sample water were filtered through a 0.45-micron Millipore filter at the sample location. The water was stored in an acid rinsed polyethylene bottle. Five drops of concentrated nitric acid were added to the filtered water. Another unfiltered portion of the sample was collected at each location.

ANALYTICAL TECHNIQUES

The water was analyzed for all of the major constituents (sodium, potassium, calcium, magnesium, fluoride, chloride, nitrate, sulfate, and alkalinity). Trace constituents determined were copper, zinc, arsenic, molybdenum, nickel, cobalt, chromium, iron, manganese, aluminum, and uranium. Trace constituents were determined from the acidified sample usually by graphite furnace atomic absorption spectrophotometry (GFAAS). Uranium was determined by laser excited fluorescence from the unacidified sample. Major constituent concentrations of cations were determined by atomic absorption spectrophotometry. Major anion concentrations were determined by ion chromatography. Alkalinity was determined by Gran's plot titration. A complete list of analytical techniques used and a reference for each are listed in table 1.

RESULTS

Results obtained for the samples collected in October 1983 are listed in table 2; a sample location map for these samples is shown in figure 1. The results for the samples collected during April-May 1984 are given in table 3; the sample location map for these samples is Plate 1. Where possible, the well depth is included in the tables. Miscellaneous information, such as pH and conductivity, is also included.

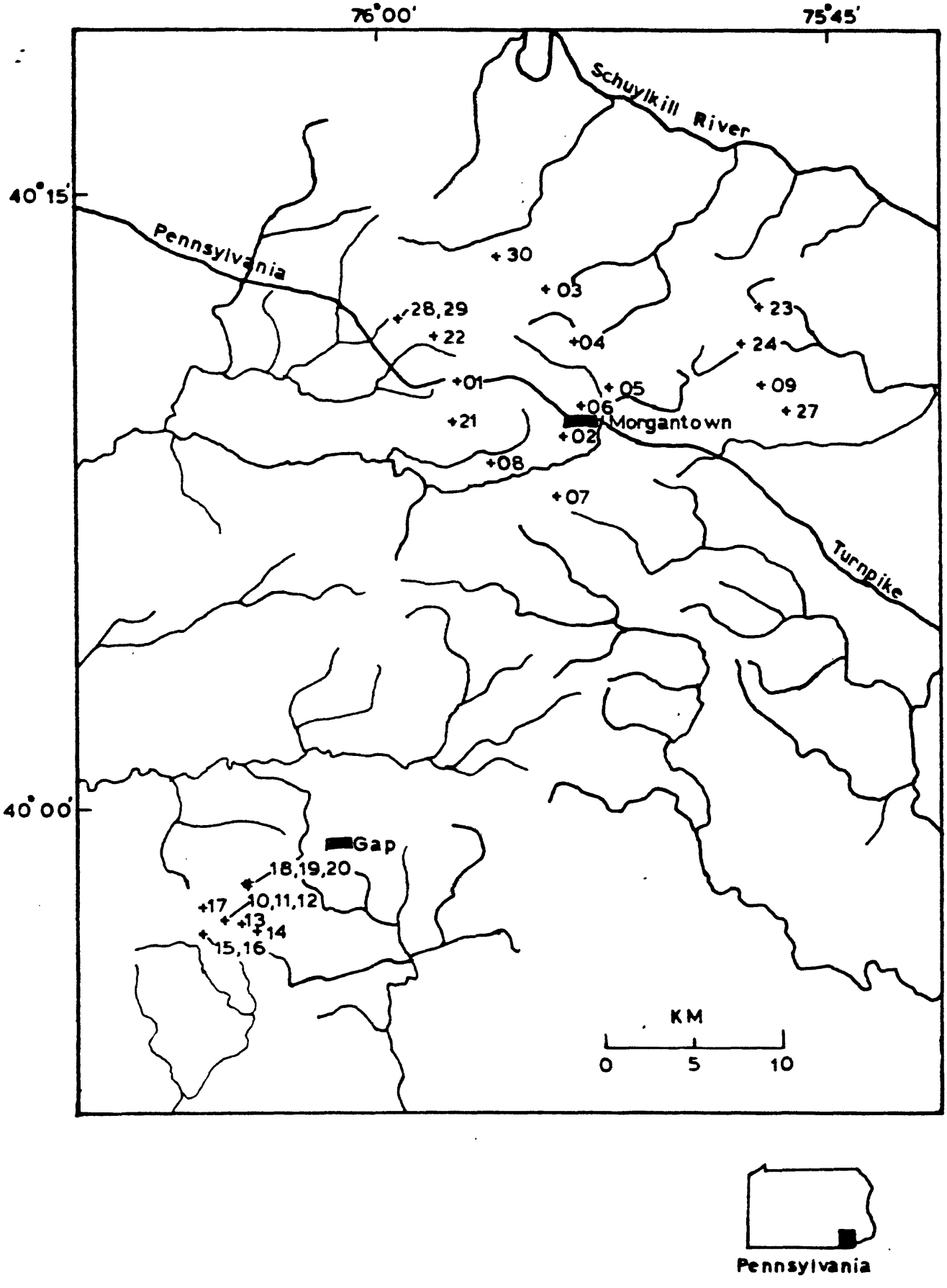

Figure 1.--Sample locations for waters collected in October 1983. The numebers on the map refer to sample numbers in table 1.

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Table 1.--Analytical methods used for water analysis, southeastern Pennsylvania

Constituent	Method	Reference
Alkalinity	Gran's plot potentiometric titration	Orion Research, Inc. (1978).
Sulfate	Ion chromatography	Fishman and Pyen (1979).
Chloride	---do	Do.
Fluoride	---do	Do.
Nitrate	---do	Do.
Bromide	---do	Do.
Calcium	Flame atomic-absorption spectrophotometry	Perkin-Elmer Corp. (1976).
Magnesium	---do	Do.
Sodium	---do	Do.
Potassium	---do	Do.
Silica	---do	Do.
Zinc	---do	Do.
Aluminum	Flame AA	
Copper	Flameless atomic-absorption spectrophotometry	Perkin-Elmer Corp. (1977).
Lead	Flameless AA	Do.
Nickel	---do	Do.
Cobalt	---do	Do.
Iron	---do	Do.
Manganese	---do	Do.
Molybdenum	Flameless atomic-absorption spectrophotometry	Do.
Arsenic	---do	Do.
Uranium	Laser excited fluorescence	Scintrex Corp. (1979).
Specific conductance	Conductivity bridge	Skougstad et al. (1979), p. 545.

Table 1. Analytical results for water samples collected in the Newark Basin, Pennsylvania, October 1983

Sample	LATITUDE	LONGITUD	CA(mg/L)	MG(mg/L)	NA(mg/L)	K(mg/L)	SIO2(mg/	ALK(mg/L	SO4(mg/L
P1S	40 10 33	75 57 28	26.0	12.0	8.3	1.1	26.0	55.0	7.0
P2G	40 9 12	75 53 58	41.0	10.0	9.4	1.4	26.0	60.0	81.0
P3G	40 12 46	75 54 30	12.0	4.6	3.6	1.3	8.0	5.0	14.0
P4S	40 11 30	75 53 36	5.6	1.7	2.2	.4	11.0	18.0	6.6
P5G	40 10 24	75 52 28	8.2	1.8	1.7	.3	8.0	29.0	5.0
P6G	40 9 57	75 53 24	65.0	12.0	11.0	1.8	22.0	180.0	49.0
P7G	40 7 45	75 54 12	1.1	.5	1.3	1.4	9.5	6.0	1.2
P8SP	40 8 33	75 56 21	28.0	3.5	4.4	1.2	10.0	35.0	28.0
P9G	40 10 27	75 47 28	43.0	15.0	6.1	.6	34.0	91.0	23.0
P10G	39 57 27	76 5 3	11.0	6.4	8.8	3.0	15.0	18.0	15.0
P11G	39 57 27	76 5 3	15.0	9.1	6.4	5.3	14.0	9.8	24.0
P12S	39 57 28	76 5 4	16.0	7.3	8.1	5.3	18.0	41.0	24.0
P13S	39 57 22	76 4 30	18.0	8.6	6.8	4.0	13.0	39.0	16.0
P14G	39 57 11	76 4 1	17.0	7.9	7.8	3.4	19.0	11.0	40.0
P15G	39 57 7	76 5 45	22.0	7.5	11.0	2.6	9.5	51.0	29.0
P16G	39 57 7	76 5 45	25.0	8.6	15.0	2.5	10.0	48.0	30.0
P17G	39 57 46	76 5 45	5.0	5.5	4.7	4.8	8.5	13.0	2.8
P18G	39 58 21	76 4 22	2.0	2.6	4.0	1.7	7.5	1.2	1.0
P19G	39 58 17	76 4 17	2.1	3.5	1.2	1.6	6.5	<1.0	14.0
P20G	39 58 23	76 4 15	4.1	5.5	5.0	3.2	8.0	1.0	2.6
P21G	40 9 34	75 57 38	15.0	3.8	6.2	.5	24.0	72.0	6.4
P22G	40 11 38	75 58 15	8.7	2.9	7.1	.7	16.0	33.0	7.9
P23S	40 12 20	75 47 30	4.0	1.2	2.3	.9	7.0	12.0	5.1
P24S	40 11 27	75 48 7	3.3	.9	1.7	.8	7.5	5.0	5.2
P25SP	39 54 43	77 20 6	11.0	3.1	5.4	1.9	21.0	35.0	16.0
P26G	39 55 49	77 18 1	41.0	9.1	4.7	1.1	42.0	135.0	10.0
P27G	40 9 49	75 46 38	25.0	11.0	11.0	2.1	36.0	38.0	9.0
P28G	40 12 3	75 59 23	190.0	25.0	29.0	1.3	21.0	110.0	445.0
P29G	40 12 3	75 59 23	180.0	24.0	28.0	1.3	22.0	110.0	450.0
P30S	40 13 34	75 56 6	14.0	2.9	6.2	1.5	16.0	39.0	11.0

Table 1. Analytical results for water samples collected in the Newark Basin, Pennsylvania, October 1983 (continued)

Sample	CL(mg/L)	F(mg/L)	NO3(mg/L	ZN(ug'L)	CU(ug/L)	PB(ug/L)	AS(ug/L)	MO(ug/L)	NI(ug/L)
P1S	56.0	<.01	8.2	6	2.2	<1.0	.7	<1.0	<1.0
P2G	4.5	<.01	.5	45	27.0	<1.0	1.7	<1.0	1.3
P3G	15.0	<.01	25.0	36	180.0	6.3	1.2	<1.0	8.5
P4S	1.8	<.01	.7	3	2.0	<1.0	1.0	<1.0	<1.0
P5G	3.3	<.01	<.1	21	15.0	<1.0	.9	<1.0	1.9
P6G	22.0	<.01	7.0	72	4.8	<1.0	1.7	<1.0	<1.0
P7G	1.5	<.01	.8	5	150.0	5.1	1.0	<1.0	<1.0
P8SP	5.8	<.01	32.0	6	2.5	<1.0	1.6	<1.0	<1.0
P9G	61.0	<.01	15.0	12	21.0	<1.0	1.6	<1.0	<1.0
P10G	15.0	<.01	40.0	32	830.0	8.0	.9	<1.0	230.0
P11G	18.0	<.01	43.0	2,100	540.0	<1.0	1.7	<1.0	93.0
P12S	18.0	<.01	18.0	5	15.0	<1.0	1.6	<1.0	3.9
P13S	15.0	<.01	40.0	1	4.4	<1.0	1.5	<1.0	3.3
P14G	9.0	<.01	38.0	44	260.0	9.0	1.4	<1.0	2.9
P15G	14.0	<.01	27.0	25	3.7	<1.0	1.4	<1.0	3.5
P16G	25.0	<.01	25.0	940	22.0	1.7	1.3	<1.0	1.3
P17G	13.0	<.01	37.0	46	28.0	2.9	.9	<1.0	6.7
P18G	10.0	<.01	12.0	68	35.0	3.7	1.3	<1.0	1.2
P19G	3.6	<.01	3.0	54	18.0	3.7	1.6	<1.0	2.1
P20G	8.3	<.01	39.0	12	200.0	2.5	.9	<1.0	2.0
P21G	1.9	<.01	<.1	450	18.0	<1.0	2.0	<1.0	<1.0
P22G	7.7	<.01	<.1	82	27.0	<1.0	1.5	<1.0	2.8
P23S	3.4	<.01	.5	4	1.9	<1.0	1.2	<1.0	<1.0
P24S	3.1	<.01	.9	16	1.6	<1.0	1.4	<1.0	1.2
P25SP	5.5	<.01	3.9	2	1.4	<1.0	1.4	<1.0	<1.0
P26G	7.9	<.01	16.0	5	21.0	<1.0	1.7	<1.0	<1.0
P27G	40.0	<.01	18.0	36	130.0	<1.0	2.0	<1.0	<1.0
P28G	2.5	5.40	<.1	39	1.9	<1.0	21.0	6.6	<1.0
P29G	3.6	5.30	<.1	35	1.8	<1.0	22.0	6.7	<1.0
P30S	6.0	<.01	<.1	2	1.0	<1.0	1.9	<1.0	<1.0

Table 1. Analytical results for water samples collected in the Newark Basin, Pennsylvania, October 1983 (continued)

Sample	CO(ug/L)	CR(ug/L)	FE(ug/L)	MN(ug/L)	AL(ug/L)	U(ug/L)	SP.C ND.	pH	TEMP.(C)	CHAR BAL
P1S	<1.0	3.1	55	28.0	13	.12	325	7.6	10	-1.4
P2G	<1.0	<1.0	180	12.0	3	.64	350	7.5	10	4.3
P3G	2.5	2.0	160	40.0	38	.10	145	6.1	10	-1.8
P4S	<1.0	<1.0	15	8.4	7	<.10	57	7.8	7	3.1
P5G	<1.0	1.4	1,000	21.0	2	<.10	65	6.9	7	-2.3
P6G	<1.0	<1.0	14	700.0	3	10.00	450	7.9	7	.6
P7G	<1.0	1.6	9	4.5	3	.10	27	7.8	8	2.7
P8SP	<1.0	<1.0	2	1.0	2	.12	220	7.4	7	2.0
P9G	<1.0	5.6	8	1.1	3	<.10	425	7.4	8	-3.4
P10G	18.0	1.9	110	90.0	130	.10	210	6.8	8	-4.7
P11G	23.0	1.6	250	170.0	140	.10	250	7.9	7	1.0
P12S	8.7	1.9	1,280	90.0	40	.24	230	6.9	11	-2.1
P13S	<1.0	<1.0	63	60.0	6	.10	230	7.2	11	-1.2
P14G	<1.0	1.8	50	19.0	5	.10	235	5.9	11	.9
P15G	<1.0	<1.0	4	60.0	3	.12	250	6.2	10	-.3
P16G	<1.0	1.6	160	10.0	2	.12	310	6.7	12	2.8
P17G	6.6	2.2	10	90.0	19	.26	152	6.4	10	-9.5
P18G	1.2	1.2	44	40.0	35	<.10	73	6.2	10	-7.1
P19G	3.0	2.2	8	60.0	130	.16	73	6.7	10	4.9
P20G	2.5	1.3	110	130.0	53	<.10	110	5.9	11	1.0
P21G	<1.0	2.0	27	7.2	1	.14	130	7.8	10	.6
P22G	<1.0	2.3	8	3.8	2	<.10	120	7.4	11	4.1
P23S	<1.0	1.4	90	50.0	6	.10	47	7.9	11	1.9
P24S	<1.0	1.9	100	70.0	9	<.10	40	7.6	11	-9.2
P25SP	<1.0	<1.0	50	30.0	5	<.10	110	7.6	12	-1.6
P26G	<1.0	5.8	5	1.5	3	.10	280	7.3	11	2.1
P27G	<1.0	11.0	9	1.0	2	<.10	380	6.3	10	9.2
P28G	<1.0	<1.0	11	<1.0	4	7.20	950	6.7	9	6.1
P29G	<1.0	<1.0	10	<1.0	4	7.60	950	7.0	9	2.9
P30S	<1.0	1.6	40	11.0	6	.14	140	7.4	10	9.2

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984

SAMPLE	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	SIO2(MG/	ALK(MG/L	SO4(MG/L
01	40 16 33	75 48 24	58.0	10.0	9.2	.80	17.0	217.0	21.0
02	40 16 16	75 46 12	47.0	10.0	21.0	1.50	15.0	140.0	47.0
03	40 15 39	75 42 34	45.0	17.0	12.0	1.80	31.0	224.0	22.0
04A	40 15 42	75 41 30	31.0	24.0	3.9	.55	56.0	158.0	46.0
04B	40 16 7	75 40 25	68.0	12.0	13.0	.82	20.0	204.0	47.0
04C	40 16 7	75 40 27	67.0	12.0	13.0	.79	20.0	200.0	53.0
04D	40 16 7	75 40 27	66.0	12.0	13.0	.80	19.0	209.0	51.0
05	40 17 2	75 38 22	47.0	13.0	12.0	1.60	27.0	114.0	28.0
06A	40 16 25	75 35 39	18.0	6.1	6.5	.46	48.0	57.0	30.0
06B	40 15 12	75 35 21	69.0	14.0	11.0	.66	17.0	232.0	27.0
06C	40 15 13	75 35 20	72.0	12.0	13.0	.69	16.0	216.0	26.0
06D	40 15 13	75 35 20	70.0	12.0	13.0	.69	16.0	213.0	28.0
07	40 16 20	75 34 27	53.0	12.0	11.0	.71	26.0	146.0	87.0
08	40 15 21	75 32 22	26.0	39.0	62.0	3.20	31.0	249.0	54.0
09A	40 15 3	75 28 43	36.0	17.0	9.8	.72	21.0	194.0	14.0
09B	40 17 4	75 27 36	34.0	17.0	4.6	.32	52.0	131.0	39.0
09C	40 17 8	75 27 37	38.0	20.0	5.8	.39	51.0	166.0	37.0
09D	40 17 8	75 27 37	38.0	20.0	5.8	.39	52.0	163.0	38.0
10	40 15 56	75 27 3	100.0	33.0	25.0	1.50	24.0	337.0	63.0
11	40 16 6	75 23 59	.6	.3	116.0	.03	18.0	204.0	32.0
12	40 19 33	75 22 35	68.0	19.0	14.0	.80	17.0	171.0	29.0
13	40 19 7	75 26 36	55.0	12.0	16.0	1.80	37.0	204.0	42.0
14	40 19 13	75 29 2	24.0	12.0	3.4	.38	58.0	108.0	26.0
15	40 19 7	75 31 17	22.0	10.0	8.4	2.30	34.0	117.0	18.0
16	40 18 23	75 34 42	65.0	16.0	9.8	.77	14.0	229.0	19.0
17	40 18 2	75 37 4	51.0	17.0	10.0	.96	20.0	211.0	19.0
18	40 17 34	75 37 35	58.0	22.0	22.0	4.30	22.0	203.0	56.0
19A	40 18 55	75 41 54	35.0	20.0	4.5	1.30	16.0	207.0	24.0
19B	40 19 7	75 40 20	31.0	5.8	7.8	1.20	14.0	107.0	10.0
19C	40 19 2	75 40 24	1.6	.9	1.5	.90	7.8	5.7	3.6
19D	40 19 2	75 40 24	1.4	.8	1.5	.89	7.6	4.8	4.1
20	40 19 8	75 44 2	41.0	20.0	2.3	1.70	9.6	181.0	14.0
21	40 19 15	75 46 44	92.0	14.0	5.8	1.10	12.0	269.0	31.0
22	40 18 20	75 49 41	44.0	11.0	5.6	.52	50.0	156.0	38.0
23A	40 18 47	75 50 52	200.0	3.8	30.0	.62	26.0	90.0	370.0
23B	40 19 54	75 52 21	11.0	3.6	1.7	4.70	6.8	17.0	21.0
23C	40 19 55	75 52 22	22.0	9.1	2.9	1.40	7.0	111.0	6.8
23D	40 19 55	75 52 22	23.0	9.3	2.8	1.40	6.0	106.0	5.9
24	40 20 25	75 36 58	40.0	18.0	13.0	.53	21.0	239.0	19.0
25A	40 20 32	75 34 27	62.0	14.0	21.0	1.10	18.0	183.0	46.0
25B	40 20 56	75 34 54	87.0	32.0	19.0	1.70	20.0	205.0	42.0
25C	40 20 55	75 34 53	86.0	23.0	18.0	1.70	20.0	203.0	38.0
25D	40 20 55	75 34 53	90.0	23.0	18.0	1.70	21.0	201.0	41.0
26A	40 20 59	75 31 13	34.0	11.0	7.8	1.70	44.0	124.0	31.0
26B	40 21 49	75 31 27	46.0	8.9	13.0	2.70	25.0	127.0	30.0

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CL(MG/L)	F(MG/L)	NO3(MG/L	ZN(UG/L)	CU(UG/L)	AS(UG/L)	MO(UG/L)	NI(UG/L)	CO(UG/L)
01	11.0	.21	8.4	730	30.0	1	<1.0	2.2	11.0
02	29.0	<.01	15.0	94	40.0	3	5.0	3.1	8.2
03	9.2	<.01	6.1	720	9.9	4	1.2	1.9	11.0
04A	11.0	<.01	<.1	340	150.0	<1	<1.0	4.2	4.5
04B	15.0	<.01	24.0	170	21.0	1	2.0	3.1	12.0
04C	14.0	.10	19.0	14	5.6	1	2.4	2.7	10.0
04D	14.0	.13	19.0	13	5.8	2	3.0	4.0	11.0
05	51.0	.33	20.0	360	8.4	<1	<1.0	2.4	7.2
06A	2.9	<.01	2.0	56	100.0	<1	<1.0	2.9	2.9
06B	31.0	<.01	12.0	67	21.0	1	1.6	2.0	7.0
06C	37.0	<.01	13.0	220	30.0	2	1.0	2.6	9.8
06D	41.0	<.01	14.0	220	35.0	<1	1.0	2.3	8.9
07	5.4	.31	1.6	690	<1.0	<1	4.3	3.0	11.0
08	85.0	.36	1.0	51	4.4	<1	<1.0	4.9	8.5
09A	9.3	<.01	14.0	130	7.7	1	1.1	2.0	8.5
09B	13.0	<.01	3.7	240	40.0	<1	<1.0	3.8	6.0
09C	11.0	<.01	7.6	8	24.0	<1	<1.0	3.9	6.5
09D	11.0	<.01	8.7	9	24.0	<1	<1.0	3.7	7.0
10	37.0	.24	7.2	400	15.0	3	<1.0	4.5	8.8
11	41.0	<.01	38.0	11	4.7	2	<1.0	3.2	4.7
12	90.0	<.01	6.9	20	4.5	12	12.0	2.9	9.7
13	17.0	.35	<.1	10	21.0	<1	1.0	2.6	5.5
14	2.7	<.01	<.1	13	30.0	<1	<1.0	2.7	2.5
15	4.6	<.01	3.0	160	60.0	1	3.2	1.2	2.2
16	35.0	<.01	12.0	650	14.0	1	<1.0	2.3	8.3
17	22.0	<.01	14.0	210	23.0	1	1.0	1.8	8.8
18	52.0	.35	18.0	2,300	180.0	<1	<1.0	3.3	6.3
19A	3.5	.25	<.1	10	7.2	1	6.8	2.1	7.2
19B	15.0	<.01	<.1	270	21.0	2	2.0	1.9	4.5
19C	2.2	<.01	<.1	24	670.0	<1	<1.0	1.0	<1.0
19D	1.0	<.01	<.1	23	670.0	<1	<1.0	2.3	<1.0
20	6.0	<.01	43.0	100	7.6	<1	<1.0	1.9	8.2
21	20.0	.30	55.0	4	<1.0	1	<1.0	1.8	13.0
22	5.2	.12	2.0	24	45.0	<1	1.3	2.8	6.4
23A	10.0	.69	2.3	50	10.0	<1	4.3	11.0	25.0
23B	3.3	<.01	12.0	44	140.0	<1	<1.0	1.7	2.1
23C	7.0	.06	2.7	9	3.6	<1	<1.0	1.0	2.2
23D	5.1	<.01	<.1	10	3.7	<1	<1.0	<1.0	2.0
24	7.1	<.01	<.1	22	6.0	3	7.8	3.6	12.0
25A	44.0	.80	<.1	250	4.4	8	7.0	3.0	10.0
25B	175.0	.22	16.0	75	3.3	<1	<1.0	4.5	11.0
25C	52.0	.20	22.0	67	30.0	2	2.5	3.2	6.3
25D	140.0	.31	23.0	67	35.0	3	2.3	3.2	6.8
26A	23.0	.40	3.9	15	10.0	<1	<1.0	1.2	3.5
26B	26.0	<.01	19.0	22	6.7	6	4.7	2.0	6.6

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CR(UG/L)	FE(MG/L)	MN(MG/L)	AL(MG/L)	U(UG/L)	SP.COND.	PH	TEMP.C	CHAR BAL	DEPTH FT
01	<1.0	.13	.01	<.1	4.70	410	6.72	14	-3.5	N
02	<1.0	<.01	<.01	<.1	1.10	380	6.46	15	-2.4	N
03	<1.0	.01	<.01	<.1	5.50	375	7.12	12	-2.9	N
04A	3.4	.02	<.01	<.1	.10	380	6.05	14	-1.7	N
04B	<1.0	.01	<.01	<.1	2.10	470	6.58	14	-1.5	N
04C	<1.0	<.01	<.01	<.1	2.30	420	6.63	13	-1.6	N
04D	<1.0	<.01	<.01	<.1	2.30	420	6.63	13	-3.1	N
05	<1.0	.01	<.01	<.1	3.90	420	6.62	13	-2.9	N
06A	4.2	.02	<.01	<.1	<.10	180	5.84	13	.8	N
06B	<1.0	<.01	<.01	<.1	1.90	440	6.70	14	-3.0	N
06C	<1.0	.01	<.01	<.1	1.90	500	6.83	12	-1.5	N
06D	<1.0	.02	.01	<.1	1.90	500	6.83	12	-3.6	N
07	<1.0	.03	<.01	<.1	1.00	375	6.39	9	-3.4	0
08	<1.0	.12	.01	<.1	13.00	720	6.46	13	-2.1	N
09A	<1.0	<.01	<.01	<.1	4.30	345	6.72	12	-4.0	N
09B	5.9	.06	<.01	<.1	.10	320	5.86	14	-.9	N
09C	11.0	.03	.01	<.1	.14	350	5.93	14	-1.3	N
09D	12.0	.03	.01	<.1	.18	350	5.93	14	-1.1	N
10	<1.0	.01	<.01	<.1	3.70	760	6.65	14	5.1	N
11	<1.0	<.01	<.01	<.1	1.10	510	7.02	15	-6.3	165
12	<1.0	<.01	<.01	<.1	12.00	560	7.16	14	-3.9	N
13	<1.0	.01	.15	<.1	5.10	430	6.92	13	-2.5	N
14	28.0	<.01	<.01	<.1	<.10	220	6.12	13	-.7	N
15	<1.0	<.01	<.01	<.1	1.50	215	6.76	14	-2.4	N
16	<1.0	<.01	<.01	<.1	1.30	440	6.89	15	-2.9	120
17	<1.0	.02	<.01	<.1	1.60	400	6.86	13	-3.0	N
18	<1.0	.02	<.01	<.1	1.50	520	6.10	15	-3.9	N
19A	<1.0	<.01	<.01	<.1	3.50	350	7.25	13	-4.7	N
19B	<1.0	.04	.60	<.1	.66	240	7.21	14	.3	N
19C	<1.0	<.01	<.01	<.1	<.10	30	5.05	12	2.1	0
19D	<1.0	<.01	<.01	<.1	<.10	30	5.05	12	8.1	0
20	1.5	.01	<.01	<.1	.34	370	6.89	13	-3.3	N
21	1.1	.01	<.01	<.1	.22	530	6.24	11	-3.8	0
22	3.1	.02	<.01	<.1	.30	310	6.61	14	-2.3	N
23A	1.3	.03	.07	<.1	1.10	880	7.12	13	10.0	N
23B	<1.0	.02	<.01	<.1	<.10	120	5.49	12	1.9	N
23C	<1.0	<.01	<.01	<.1	.22	195	7.00	10	-4.4	N
23D	<1.0	.01	<.01	<.1	.22	195	7.00	10	1.8	N
24	<1.0	<.01	.04	<.1	7.50	370	6.89	13	-5.1	N
25A	<1.0	.01	.01	<.1	17.00	480	7.19	13	-.4	214
25B	1.1	.04	.01	<.1	1.90	760	6.93	14	-9.0	N
25C	<1.0	<.01	<.01	<.1	4.70	710	6.95	15	8.4	N
25D	<1.0	.01	<.01	<.1	4.70	710	6.95	15	-7.9	N
26A	<1.0	<.01	<.01	<.1	3.90	310	6.77	12	-6.5	N
26B	<1.0	.01	<.01	<.1	6.90	360	6.67	13	-1.0	N

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	SIO2(MG/	ALK(MG/L	SO4(MG/L
26C	40 21 46	75 31 34	27.0	7.2	19.0	1.90	25.0	44.0	26.0
26D	40 21 46	75 31 34	27.0	7.0	19.0	1.90	27.0	45.0	26.0
27	40 20 48	75 28 46	54.0	14.0	15.0	5.30	28.0	226.0	3.9
28	40 20 4	75 26 51	26.0	14.0	3.7	.40	50.0	120.0	28.0
29A	40 21 5	75 24 30	28.0	15.0	3.6	.54	52.0	121.0	37.0
29B	40 21 0	75 22 54	75.0	45.0	35.0	4.20	33.0	317.0	79.0
29C	40 20 59	75 22 57	64.0	32.0	28.0	4.60	36.0	264.0	60.0
29D	40 20 59	75 22 57	66.0	33.0	28.0	4.60	34.0	269.0	55.0
30A	40 23 53	75 22 38	42.0	43.0	26.0	6.70	41.0	130.0	64.0
30B	40 23 3	75 24 24	27.0	12.0	6.2	.53	31.0	95.0	13.0
30C	40 22 55	75 24 5	39.0	14.0	5.2	.43	32.0	129.0	21.0
30D	40 22 55	75 24 5	39.0	14.0	5.2	.44	32.0	128.0	21.0
31	40 23 12	75 27 2	42.0	11.0	12.0	2.70	30.0	145.0	33.0
32	40 24 27	75 29 32	45.0	16.0	9.2	.84	27.0	167.0	28.0
33	40 24 28	75 31 16	41.0	14.0	8.5	.78	22.0	183.0	23.0
34	40 23 47	75 33 42	70.0	4.4	6.1	1.10	16.0	155.0	28.0
35	40 23 4	75 36 10	53.0	8.2	10.0	1.00	32.0	122.0	38.0
36	40 25 10	75 34 51	12.0	3.7	5.3	1.30	21.0	39.0	18.0
37	40 26 54	75 31 17	22.0	6.9	5.1	1.10	21.0	74.0	10.0
38A	40 25 22	75 28 45	38.0	8.4	6.0	.82	20.0	135.0	18.0
38B	40 26 48	75 29 13	21.0	.9	2.4	1.50	15.0	67.0	2.0
38C	40 26 59	75 29 26	43.0	4.1	5.0	1.30	14.0	114.0	22.0
38D	40 26 59	75 29 26	43.0	4.1	5.0	1.30	14.0	113.0	20.0
39	40 25 33	75 26 58	25.0	11.0	13.0	1.40	24.0	59.0	27.0
40	40 26 10	75 24 34	21.0	9.2	11.0	1.40	44.0	117.0	10.0
41	40 28 55	75 24 57	55.0	6.6	29.0	2.10	11.0	101.0	12.0
42	40 28 30	75 25 4	28.0	3.2	2.8	1.00	13.0	90.0	.4
43	40 31 27	75 22 53	46.0	13.0	5.3	.81	16.0	143.0	26.0
MV1	40 5 58	75 28 25	38.0	5.7	2.2	.92	9.5	127.0	12.0
MV2	40 5 42	75 30 57	22.0	8.0	9.1	2.50	28.0	101.0	25.0
PH3	40 9 21	75 30 33	44.0	15.0	9.5	1.90	15.0	182.0	34.0
PH4	40 9 17	75 34 8	91.0	35.0	22.0	3.40	16.0	320.0	46.0
PH5	40 9 7	75 37 14	67.0	10.0	23.0	2.70	17.0	159.0	17.0
PH6	40 9 53	75 39 4	6.0	3.6	4.8	18.00	7.0	23.0	25.0
PH7	40 10 46	75 34 34	33.0	14.0	11.0	1.90	21.0	137.0	36.0
PH8A	40 10 28	75 37 13	6.2	3.0	9.7	1.50	36.0	21.0	<.1
PH8B	40 10 45	75 35 31	11.0	6.1	13.0	1.10	32.0	22.0	15.0
PH8C	40 10 39	75 35 28	49.0	10.0	13.0	.96	24.0	135.0	36.0
PH8D	40 10 39	75 35 28	49.0	10.0	13.0	.95	23.0	138.0	37.0
PO9	40 11 50	75 38 32	6.3	2.9	6.6	1.40	15.0	7.8	6.8
PO10A	40 11 47	75 41 58	2.5	.7	3.4	.41	5.6	3.6	<.1
PO10B	40 10 12	75 41 56	12.0	3.7	6.0	1.00	27.0	38.0	12.0
PO10C	40 10 14	75 41 56	14.0	4.2	7.2	1.00	23.0	43.0	12.0
PO10D	40 10 14	75 41 56	13.0	4.1	7.1	1.00	24.0	42.0	16.0
PO11	40 11 58	75 43 15	10.0	4.6	3.3	.40	17.0	36.0	18.0

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CL(MG/L)	F(MG/L)	NO3(MG/L	ZN(UG/L)	CU(UG/L)	AS(UG/L)	MO(UG/L)	NI(UG/L)	CO(UG/L)
26C	42.0	<.01	29.0	200	170.0	<1	<1.0	2.7	4.9
26D	32.0	.08	21.0	200	170.0	<1	<1.0	2.5	6.9
27	16.0	.31	3.3	180	35.0	5	14.0	2.4	15.0
28	3.4	<.01	<.1	70	16.0	<1	<1.0	2.3	5.5
29A	3.9	<.01	<.1	16	45.0	<1	<1.0	2.7	3.5
29B	103.0	.43	24.0	41	13.0	<1	<1.0	4.6	5.7
29C	76.0	<.01	31.0	370	12.0	<1	<1.0	3.2	4.7
29D	76.0	.21	27.0	380	13.0	1	<1.0	3.0	5.7
30A	110.0	.25	4.4	210	50.0	<1	1.6	3.9	5.0
30B	24.0	.07	9.0	15	45.0	<1	<1.0	2.1	6.6
30C	27.0	<.01	12.0	7	30.0	3	<1.0	1.6	13.0
30D	28.0	<.01	<.1	7	25.0	2	<1.0	1.4	5.3
31	14.0	.29	8.7	7	35.0	7	1.0	2.0	5.4
32	22.0	<.01	15.0	10	8.8	4	1.8	2.9	6.5
33	7.4	<.01	11.0	5	1.7	4	2.4	1.3	11.0
34	10.0	<.01	50.0	44	65.0	<1	<1.0	2.0	9.3
35	12.0	<.01	48.0	410	170.0	<1	1.6	2.5	6.2
36	2.7	.11	5.1	590	340.0	<1	<1.0	1.3	1.4
37	4.8	<.01	27.0	2	<1.0	<1	<1.0	1.2	2.6
38A	4.2	.10	13.0	320	30.0	3	2.0	1.6	5.6
38B	5.2	<.01	8.4	560	1.8	<1	<1.0	<1.0	<1.0
38C	11.0	<.01	12.0	37	150.0	<1	<1.0	2.0	5.3
38D	9.9	<.01	11.0	38	150.0	<1	<1.0	1.9	4.1
39	44.0	.16	34.0	160	110.0	<1	<1.0	3.7	5.4
40	16.0	.14	<.1	79	<1.0	<1	2.4	7.1	9.7
41	96.0	<.01	27.0	190	120.0	<1	<1.0	7.3	6.6
42	5.4	<.01	13.0	34	15.0	<1	<1.0	1.0	1.5
43	8.5	<.01	40.0	7	6.9	1	<1.0	2.2	10.0
MV1	4.6	.09	2.0	120	5.9	<1	<1.0	1.7	3.6
MV2	8.9	.20	.6	53	8.0	<1	1.0	2.6	7.0
PH3	6.6	<.01	11.0	82	45.0	1	50.0	4.4	15.0
PH4	96.0	<.01	11.0	640	22.0	<1	1.6	4.4	7.0
PH5	88.0	.17	10.0	22	50.0	<1	<1.0	2.4	6.4
PO6	4.5	<.01	15.0	36	1,900.0	<1	<1.0	3.8	2.8
PH7	12.0	<.01	9.0	29	4.0	1	1.5	1.8	8.0
PH8A	10.0	<.01	23.0	18	960.0	2	<1.0	3.1	1.0
PH8B	15.0	<.01	29.0	11	540.0	<1	<1.0	5.9	1.9
PH8C	18.0	<.01	29.0	12	9.0	6	1.1	2.9	8.3
PH8D	19.0	<.01	30.0	12	15.0	7	1.6	2.4	15.0
PO9	7.1	<.01	20.0	78	250.0	<1	1.0	8.5	1.2
PO10A	5.4	<.01	2.0	53	440.0	<1	<1.0	3.7	2.5
PO10B	3.5	<.01	7.6	22	1,200.0	<1	<1.0	4.5	1.3
PO10C	4.1	<.01	7.1	22	110.0	<1	<1.0	2.4	1.7
PO10D	4.2	.09	7.2	24	130.0	<1	<1.0	2.9	2.2
PO11	3.7	.05	2.0	280	300.0	<1	<1.0	1.7	2.0

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CR(UG/L)	FE(MG/L)	MN(MG/L)	AL(MG/L)	U(UG/L)	SP.COND.	PH	TEMP.C	CHAR BAL	DEPTH FT
26C	<1.0	.03	<.01	<.1	.20	310	5.86	13	-1.6	N
26D	<1.0	.03	<.01	<.1	.18	310	5.86	13	5.1	N
27	<1.0	.01	<.01	<.1	3.70	470	6.85	14	3.8	N
28	25.0	<.01	<.01	<.1	<.10	260	6.26	12	-.2	N
29A	36.0	.01	<.01	<.1	<.10	265	6.34	13	-.8	N
29B	1.3	.01	.01	<.1	2.70	860	6.84	13	.4	N
29C	<1.0	<.01	.01	<.1	6.50	660	7.04	13	-6.7	N
29D	<1.0	.02	<.01	<.1	6.50	660	7.04	13	-4.9	N
30A	<1.0	.02	<.01	<.1	2.70	700	6.19	13	2.4	N
30B	10.0	.01	<.01	<.1	.26	290	5.98	13	-.5	N
30C	11.0	<.01	<.01	<.1	.22	335	5.72	13	-3.0	N
30D	10.0	<.01	<.01	<.1	.18	335	5.72	13	.4	N
31	<1.0	<.01	<.01	<.1	7.50	310	6.66	13	-.1	N
32	1.2	.01	<.01	<.1	2.30	380	7.04	13	-2.2	200
33	<1.0	<.01	<.01	<.1	2.10	370	7.02	11	-3.5	300
34	<1.0	.02	<.01	<.1	.26	410	6.94	13	-.6	N
35	<1.0	<.01	.01	<.1	.12	390	6.34	13	-1.5	N
36	<1.0	<.01	<.01	<.1	<.10	130	5.64	10	-.3	0
37	<1.0	<.01	<.01	<.1	.10	200	6.44	10	-1.8	0
38A	<1.0	<.01	<.01	<.1	4.30	290	7.13	14	-.8	N
38B	<1.0	<.01	<.01	<.1	<.10	120	6.65	14	-5.8	N
38C	<1.0	.03	<.01	<.1	.18	260	7.07	14	-1.6	N
38D	<1.0	.01	<.01	<.1	.18	260	7.07	14	.3	N
39	1.3	<.01	<.01	<.1	.14	320	5.67	13	-9.2	N
40	<1.0	9.40	.91	<.1	.10	230	5.98	13	-5.2	N
41	<1.0	.04	.03	<.1	.20	480	6.02	13	-4.6	N
42	<1.0	<.01	<.01	<.1	<.10	175	6.33	11	-.9	N
43	<1.0	.01	<.01	<.1	.74	340	6.97	12	-1.9	50
MV1	<1.0	<.01	<.01	<.1	.22	220	7.40	14	4.2	N
MV2	<1.0	.31	.20	<.1	<.10	205	7.30	13	-4.8	220
PH3	<1.0	<.01	<.01	<.1	2.70	330	7.90	14	-1.9	345
PH4	<1.0	.02	<.01	<.1	8.30	680	7.00	11	-3.3	N
PH5	<1.0	.03	<.01	<.1	1.50	490	7.10	14	-3.4	150
PO6	<1.0	.03	.01	<.1	<.10	160	7.85	14	-.4	N
PH7	<1.0	<.01	.01	<.1	2.90	330	7.85	14	-2.0	135
PH8A	<1.0	.01	<.01	<.1	<.10	130	6.95	14	.9	145
PH8B	<1.0	<.01	<.01	<.1	.10	220	7.15	13	2.7	N
PH8C	<1.0	<.01	.02	<.1	1.70	420	7.35	13	2.2	200
PH8D	<1.0	<.01	.02	<.1	1.60	420	7.35	13	-2.3	200
PO9	<1.0	.06	<.01	<.1	.10	125	7.15	13	5.1	92
PO10A	<1.0	.12	.04	<.1	<.10	26	4.80	12	.0	112
PO10B	<1.0	.03	<.01	<.1	<.10	130	5.40	13	4.3	200
PO10C	<1.0	<.01	.01	<.1	<.10	175	6.90	12	7.6	75
PO10D	<1.0	<.01	.01	<.1	<.10	175	6.90	12	2.5	75
PO11	<1.0	.03	<.01	<.1	<.10	170	7.10	12	-3.0	71

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	SIO2(MG/	ALK(MG/L	SO4(MG/L
EL12	40 10 48	75 45 10	15.0	6.5	3.4	.38	31.0	58.0	11.0
EL13	40 10 33	75 49 39	39.0	19.0	3.1	1.70	11.0	178.0	6.4
EL14A	40 10 24	75 51 45	34.0	6.5	7.2	.70	18.0	152.0	5.0
EL14B	40 10 28	75 51 17	3.9	2.4	8.0	1.10	17.0	10.0	1.9
EL14C	40 10 32	75 51 13	13.0	4.5	6.0	.83	25.0	67.0	2.0
EL14D	40 10 32	75 51 13	12.0	4.5	6.1	.83	21.0	71.0	3.0
MO15A	40 11 43	75 52 48	4.1	1.6	1.5	.53	9.4	12.0	7.0
MO15B	40 11 19	75 53 13	62.0	16.0	13.0	1.10	20.0	156.0	79.0
MO15C	40 11 20	75 53 20	19.0	6.2	13.0	1.00	9.1	44.0	15.0
MO15D	40 11 20	75 53 20	20.0	6.2	13.0	1.00	9.5	43.0	16.0
MO16A	40 10 11	75 55 5	3.2	2.9	8.0	.84	9.0	5.3	4.3
MO16B	40 10 16	75 55 39	24.0	4.1	5.9	.40	21.0	100.0	.7
MO16C	40 10 15	75 55 43	11.0	5.0	6.0	.51	18.0	38.0	.7
MO16D	40 10 15	75 55 43	12.0	5.0	5.9	.51	18.0	39.0	<.1
MO17	40 11 23	75 57 34	2.2	1.0	2.5	.96	8.8	10.0	3.0
TH18	40 10 21	76 0 3	19.0	9.3	6.9	1.20	15.0	17.0	24.0
TH19	40 12 23	76 3 36	19.0	3.2	7.1	.90	35.0	77.0	.2
TH20	40 10 16	76 7 25	58.0	7.3	11.0	1.60	21.0	159.0	16.0
FP21	40 10 18	76 9 22	5.6	2.7	4.4	1.10	16.0	19.0	10.0
PH22	40 12 34	75 36 2	25.0	7.4	9.5	.55	30.0	116.0	14.0
PO23	40 12 54	75 39 1	4.3	2.7	4.5	1.80	14.0	3.5	12.0
PO24A	40 12 51	75 41 15	5.0	2.5	8.4	.70	28.0	19.0	9.7
PO24B	40 13 38	75 42 0	15.0	2.6	9.6	.69	32.0	50.0	15.0
PO24C	40 13 41	75 42 21	11.0	3.2	8.4	.94	25.0	31.0	17.0
PO24D	40 13 41	75 42 21	7.5	3.1	8.5	.95	26.0	30.0	17.0
PO25	40 14 2	75 44 39	25.0	5.5	6.5	.49	29.0	101.0	10.0
EL26	40 14 32	75 45 53	23.0	4.2	7.2	.89	21.0	71.0	9.1
EL27	40 13 9	75 49 22	17.0	3.4	3.5	.81	15.0	43.0	17.0
EL28	40 13 52	75 50 38	23.0	5.7	5.7	2.40	18.0	73.0	8.0
MO29	40 13 3	75 54 7	7.0	2.0	3.5	1.20	10.0	12.0	13.0
MO30	40 13 28	75 55 30	13.0	2.5	3.5	.82	11.0	18.0	20.0
MO31	40 14 58	75 58 13	12.0	2.6	5.1	1.90	17.0	24.0	12.0
TH32	40 14 11	76 2 23	39.0	19.0	11.0	1.40	45.0	170.0	32.0
ATH32	40 14 11	76 2 22	45.0	21.0	8.0	1.40	54.0	160.0	46.0
TH33	40 14 25	76 4 13	5.0	2.0	1.7	.94	6.6	7.1	8.1
TH34	40 14 42	76 6 53	82.0	8.3	8.6	.72	15.0	227.0	17.0
EP35	40 14 18	76 9 44	105.0	11.0	8.9	2.90	19.0	243.0	18.0
EP36	40 14 14	76 10 15	88.0	6.6	12.0	4.30	11.0	213.0	27.0
EP37A	40 14 43	76 14 58	11.0	2.7	5.6	.87	17.0	23.0	11.0
EP37B	40 13 0	76 14 17	86.0	14.0	6.1	2.40	7.5	201.0	19.0
EP37C	40 12 54	76 14 28	73.0	15.0	7.7	2.10	5.8	228.0	16.0
EP37D	40 12 54	76 14 28	71.0	15.0	7.7	2.20	5.8	222.0	21.0
BI39A	40 15 9	75 48 22	23.0	18.0	7.8	.59	18.0	172.0	14.0
BI39B	40 15 20	75 49 29	11.0	4.2	7.2	.44	22.0	34.0	14.0
BI39C	40 15 16	75 49 43	16.0	5.8	4.1	.76	22.0	48.0	23.0

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CL(MG/L)	F(MG/L)	NO3(MG/L	ZN(UG/L)	CU(UG/L)	AS(UG/L)	MO(UG/L)	NI(UG/L)	CO(UG/L)
EL12	4.9	.05	4.0	9	100.0	<1	<1.0	1.3	1.7
EL13	8.9	<.01	42.0	14	19.0	<1	<1.0	1.5	4.9
EL14A	1.2	.08	<.1	12	5.9	5	1.0	1.5	7.9
EL14B	18.0	<.01	2.6	31	350.0	<1	<1.0	8.0	1.1
EL14C	1.0	<.01	<.1	82	14.0	1	<1.0	1.0	1.0
EL14D	1.0	.08	<.1	83	14.0	<1	<1.0	1.1	<1.0
MO15A	1.7	<.01	<.1	260	13.0	<1	<1.0	1.0	<1.0
MO15B	4.7	<.01	<.1	290	30.0	<1	1.8	5.8	9.4
MO15C	38.0	<.01	<.1	96	90.0	<1	<1.0	4.0	4.1
MO15D	35.0	.06	<.1	99	100.0	<1	<1.0	3.4	1.7
MO16A	11.0	.05	8.6	22	165.0	<1	<1.0	6.4	7.3
MO16B	1.9	.07	4.2	17	9.3	<1	<1.0	1.4	1.5
MO16C	8.5	.04	16.0	17	65.0	<1	<1.0	1.2	<1.0
MO16D	8.6	<.01	22.0	18	70.0	<1	<1.0	1.2	<1.0
MO17	2.6	<.01	2.2	270	130.0	<1	<1.0	5.1	<1.0
TH18	14.0	<.01	31.0	100	15.0	<1	<1.0	7.1	3.3
TH19	1.7	.04	9.3	1	<1.0	3	<1.0	1.0	1.8
TH20	20.0	.11	27.0	27	12.0	<1	<1.0	2.4	6.6
EP21	3.9	<.01	5.5	52	380.0	<1	<1.0	6.1	1.0
PH22	1.6	<.01	<.1	13	5.4	<1	<1.0	1.4	2.0
PO23	5.0	.04	11.0	230	22.0	<1	<1.0	12.0	4.5
PO24A	4.4	<.01	12.0	33	35.0	<1	<1.0	2.8	1.0
PO24B	4.7	.05	5.2	90	50.0	<1	<1.0	2.0	1.4
PO24C	4.0	.05	4.9	46	280.0	<1	<1.0	4.8	<1.0
PO24D	3.8	.05	5.4	47	280.0	<1	<1.0	4.5	<1.0
PO25	2.8	.07	5.3	620	30.0	<1	<1.0	1.3	1.8
EL26	5.3	.06	9.5	33	100.0	<1	<1.0	3.0	1.6
EL27	3.1	.04	5.5	1,300	16.0	1	<1.0	1.6	1.1
EL28	13.0	<.01	4.4	66	30.0	2	<1.0	2.4	1.3
MO29	5.2	<.01	2.4	5	7.7	<1	<1.0	1.9	<1.0
MO30	3.6	<.01	3.0	160	240.0	<1	<1.0	7.0	1.7
MO31	6.5	<.01	13.0	56	200.0	<1	<1.0	3.4	1.4
TH32	16.0	<.01	23.0	21	40.0	<1	<1.0	3.6	6.4
ATH32	14.0	<.01	38.0	82	5.3	<1	<1.0	3.8	6.9
TH33	4.4	<.01	5.6	19	290.0	<1	<1.0	6.0	1.7
TH34	27.0	.16	14.0	430	30.0	<1	1.0	2.6	14.0
EP35	30.0	<.01	87.0	82	8.1	<1	1.7	3.3	17.0
EP36	31.0	.19	22.0	32	12.0	<1	<1.0	2.9	15.0
EP37A	6.8	.06	14.0	22	260.0	<1	<1.0	2.6	<1.0
EP37B	14.0	<.01	61.0	22	21.0	<1	1.0	2.5	15.0
EP37C	14.0	<.01	49.0	420	7.3	<1	<1.0	3.8	15.0
EP37D	15.0	<.01	45.0	420	7.1	<1	<1.0	2.5	17.0
BI39A	4.2	<.01	<.1	150	40.0	2	1.2	1.1	7.4
BI39B	7.1	<.01	<.1	22	320.0	<1	<1.0	2.0	1.4
BI39C	6.0	.04	3.7	3,400	55.0	<1	<1.0	1.7	1.1

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CR(UG/L)	FE(MG/L)	MN(MG/L)	AL(MG/L)	U(UG/L)	SP.COND.	PH	TEMP.C	CHAR BAL	DEPTH FT
EL12	10.0	<.01	<.01	<.1	<.10	175	7.20	13	2.2	N
EL13	2.3	.01	<.01	<.1	.12	420	7.10	13	-3.7	90
EL14A	<1.0	.01	.03	<.1	1.10	380	7.60	14	-1.1	68
EL14B	<1.0	.01	.01	<.1	<.10	130	6.80	13	1.0	N
EL14C	<1.0	.03	.01	<.1	.12	150	7.60	13	5.5	200
EL14D	<1.0	.02	.01	<.1	.24	150	7.60	13	.0	200
MO15A	<1.0	<.01	<.01	<.1	<.10	60	7.05	10	3.0	200
MO15B	<1.0	.03	<.01	<.1	.70	580	6.80	11	7.3	160
MO15C	<1.0	.07	<.01	<.1	.46	290	7.30	11	-1.1	N
MO15D	<1.0	.06	<.01	<.1	.50	290	7.30	11	1.8	N
MO16A	<1.0	<.01	.11	<.1	<.10	135	6.45	11	10.0	90
MO16B	<1.0	<.01	<.01	<.1	.30	195	6.75	12	.8	185
MO16C	<1.0	<.01	<.01	<.1	.14	115	6.40	11	4.3	90
MO16D	<1.0	<.01	<.01	<.1	.18	115	6.40	11	1.8	90
MO17	<1.0	.08	.01	<.1	<.10	41	6.90	10	-1.5	60
TH18	2.9	<.01	.01	<.1	<.10	280	6.12	11	10.0	30
TH19	<1.0	<.01	<.01	<.1	.14	150	7.15	11	2.7	120
TH20	<1.0	<.01	<.01	<.1	.82	420	7.40	12	1.0	105
FH21	<1.0	<.01	<.01	<.1	<.10	110	6.55	12	.3	N
PH22	<1.0	<.01	<.01	<.1	.38	250	7.15	12	1.2	45
PO23	<1.0	1.60	.13	<.1	<.10	99	6.65	15	4.0	N
PO24A	4.0	<.01	<.01	<.1	<.10	114	6.95	14	.5	130
PO24B	2.5	<.01	<.01	<.1	<.10	130	6.90	13	1.8	130
PO24C	<1.0	.01	.01	<.1	<.10	130	6.45	13	6.6	130
PO24D	<1.0	.01	<.01	<.1	<.10	130	6.45	13	-.8	130
PO25	<1.0	.02	<.01	<.1	.20	230	6.05	14	-.7	150
FI26	1.0	<.01	.01	<.1	<.10	210	7.65	13	5.0	100
EL27	<1.0	.01	.01	<.1	.14	165	7.35	14	2.7	170
EL28	<1.0	.03	<.01	<.1	.26	225	7.80	13	3.5	N
MO29	<1.0	<.01	<.01	<.1	<.10	92	5.60	12	3.3	75
MO30	<1.0	.51	.04	<.1	<.10	180	6.00	13	8.9	N
MO31	1.3	.03	<.01	<.1	<.10	140	6.75	11	2.0	N
TH32	9.4	<.01	<.01	<.1	.38	500	7.00	13	-2.8	85
ATH32	8.6	<.01	<.01	<.1	.42	520	6.85	13	-2.3	325
TH33	<1.0	<.01	.04	<.1	.10	76	6.65	12	1.4	220
TH34	<1.0	.01	<.01	<.1	1.90	520	7.70	13	1.0	N
EP35	<1.0	.01	<.01	<.1	.24	720	6.90	12	.1	200
EP36	<1.0	<.01	<.01	<.1	.28	680	7.20	12	2.6	50
EP37A	<1.0	<.01	<.01	<.1	<.10	150	7.45	11	.2	50
EP37B	<1.0	.02	<.01	<.1	.30	750	7.50	14	6.6	N
EP37C	<1.0	<.01	<.01	<.1	.26	690	7.60	14	.3	100
EP37D	<1.0	<.01	<.01	<.1	.30	690	7.60	14	-.4	100
BI39A	<1.0	<.01	<.01	<.1	2.30	340	7.45	13	-3.6	N
BI39B	<1.0	.03	<.01	<.1	<.10	150	7.65	13	7.6	60
BI39C	<1.0	.05	<.01	<.1	<.10	190	7.40	14	-.6	90

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	LATITUDE	LONGITUD	CA(MG/L)	MG(MG/L)	NA(MG/L)	K(MG/L)	SIO2(MG/	ALK(MG/L	SO4(MG/L
BI39D	40 15 16	75 49 43	16.0	5.9	4.2	.78	21.0	43.0	23.0
PI40	40 15 27	75 50 39	19.0	7.9	8.4	7.60	29.0	46.0	31.0
API40	40 15 27	75 50 40	17.0	5.5	5.5	.86	32.0	40.0	29.0
PI41	40 16 32	75 53 45	15.0	3.1	9.4	3.80	16.0	32.0	23.0
PI42	40 16 33	75 56 17	11.0	4.7	9.2	3.00	10.0	12.0	3.1
PI43	40 15 39	75 58 31	21.0	1.4	7.3	.62	14.0	43.0	2.2
SS44A	40 15 23	76 0 55	31.0	1.2	3.2	.66	14.0	65.0	9.0
SS44B	40 15 3	76 2 20	3.4	1.5	2.7	.45	14.0	18.0	4.4
SS44C	40 15 33	76 2 14	45.0	19.0	20.0	.75	37.0	177.0	19.0
SS44D	40 15 33	76 2 14	47.0	20.0	20.0	.76	33.0	179.0	21.0
SS45	40 16 47	76 3 8	5.4	2.3	3.4	1.10	13.0	13.0	1.3
SS46	40 15 29	76 6 22	29.0	6.4	11.0	.92	20.0	148.0	3.4
WO47	40 16 21	76 8 45	70.0	3.0	7.9	2.50	12.0	189.0	13.0
WO48A	40 17 22	76 10 39	6.5	3.0	2.7	1.40	6.5	21.0	13.0
WO48B	40 16 32	76 11 59	.8	.2	14.0	.08	14.0	18.0	4.0
WO48C	40 16 18	76 11 40	52.0	4.6	20.0	.82	19.0	133.0	36.0
WO48D	40 16 18	76 11 40	55.0	4.6	20.0	.81	18.0	137.0	43.0
WO49A	40 16 27	76 14 50	7.8	1.8	1.4	1.30	9.1	12.0	1.4
WO49B	40 16 4	76 14 4	12.0	1.7	3.5	.46	19.0	40.0	6.0
WO49C	40 16 5	76 13 57	3.5	1.2	1.5	.62	9.5	14.0	2.4
WO49D	40 16 5	76 13 57	3.5	1.1	1.5	.62	8.4	12.0	5.6

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CL(MG/L)	F(MG/L)	NO3(MG/L	ZN(UG/L)	CU(UG/L)	AS(UG/L)	MO(UG/L)	NI(UG/L)	CO(UG/L)
BI39D	5.0	<.01	4.5	3,400	55.0	<1	<1.0	2.2	1.2
PI40	9.5	.07	18.0	150	65.0	<1	<1.0	3.7	2.5
ABI40	4.6	<.01	8.9	290	170.0	<1	<1.0	3.8	1.1
RE41	6.5	<.01	8.6	32	430.0	1	<1.0	2.5	<1.0
RF42	19.0	<.01	24.0	690	660.0	<1	<1.0	11.0	1.6
RF43	26.0	.05	5.6	17	30.0	<1	<1.0	<1.0	1.1
SS44A	4.8	<.01	18.0	72	13.0	<1	<1.0	1.5	2.3
SS44B	1.8	<.01	<.1	11	250.0	<1	<1.0	2.0	<1.0
SS44C	50.0	.13	13.0	21	65.0	<1	<1.0	3.1	5.4
SS44D	62.0	.15	13.0	23	70.0	<1	<1.0	2.7	5.6
SS45	5.8	<.01	13.0	25	45.0	<1	<1.0	6.7	<1.0
SS46	2.8	.08	4.8	13	17.0	6	<1.0	1.0	3.3
WO47	23.0	<.01	10.0	30	320.0	<1	<1.0	4.1	8.0
WO48A	4.0	<.01	9.4	10,500	390.0	<1	<1.0	25.0	1.2
WO48B	2.8	<.01	12.0	18	210.0	<1	<1.0	<1.0	<1.0
WO48C	8.1	<.01	36.0	190	13.0	1	1.2	3.1	10.0
WO48D	<.1	.13	21.0	190	13.0	<1	<1.0	2.7	10.0
WO49A	5.7	1.80	7.2	48	14.0	<1	<1.0	5.3	1.3
WO49B	.7	.03	<.1	92	1.1	<1	<1.0	1.0	<1.0
WO49C	1.3	<.01	.3	38	1.8	<1	<1.0	2.6	<1.0
WO49D	1.1	<.01	.7	37	1.9	<1	<1.0	2.5	<1.0

Table 2. Analytical results for water samples collected in the Newark Basin, Pennsylvania, April-May 1984 (continued)

SAMPLE	CR(UG/L)	FE(MG/L)	MN(MG/L)	AL(MG/L)	U(UG/L)	SP.COND.	PH	TEMP.C	CHAR BAL	DEPTH FT
BI39D	<1.0	.04	<.01	<.1	<.10	190	7.40	14	3.3	90
BI40	<1.0	.04	.04	<.1	<.10	350	6.20	13	4.9	250
API40	2.2	.01	<.01	<.1	<.10	200	6.10	13	1.1	240
RE41	<1.0	.02	<.01	<.1	<.10	180	7.80	12	6.5	70
RF42	<1.0	.22	.04	<.1	<.10	170	6.25	12	8.9	110
RF43	<1.0	.01	<.01	<.1	<.10	170	6.65	12	-2.6	200
SS44A	<1.0	<.01	.02	<.1	<.10	220	6.85	14	3.6	300
SS44B	<1.0	<.01	<.01	<.1	<.10	60	7.25	13	-1.9	130
SS44C	8.1	.01	<.01	<.1	.30	610	6.85	11	-2.1	60
SS44D	8.4	<.01	<.01	<.1	.30	610	6.85	11	-4.3	60
SS45	2.2	.01	<.01	<.1	<.10	85	7.55	12	1.8	52
SS46	<1.0	<.01	<.01	<.1	2.70	260	7.50	12	-3.4	N
WO47	<1.0	.01	.02	<.1	.38	550	7.65	12	-.3	130
WO48A	<1.0	<.01	.04	<.1	<.10	150	7.05	11	-9.5	100
WO48B	1.5	<.01	<.01	<.1	<.10	110	6.85	11	1.2	N
WO48C	<1.0	<.01	<.01	<.1	2.10	506	7.80	11	1.7	N
WO48D	<1.0	.01	<.01	<.1	2.10	506	7.80	11	7.1	N
WO49A	<1.0	.22	.04	<.1	<.10	98	7.35	10	2.9	365
WO49B	<1.0	.38	.02	<.1	<.10	88	7.40	10	5.9	200
WO49C	<1.0	3.40	.04	<.1	<.10	53	7.45	10	5.0	200
WO49D	<1.0	3.40	.04	<.1	<.10	53	7.45	10	-1.3	200