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GROUNDWATER MONITORING
ANALYTICAL RESULTS FOR THE FIRST QUARTER 1993
OB GROUNDS, SENECA ARMY DEPOT

PREPARED FOR:
U.S. Army Corps of Engineers
Hunstville, Alabama

PREPARED BY:

Engineering-Science, Inc.
Boston, Massachusetts

March 1993
D#10

ENGINEERING-SCIENCE, INC.

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March 23, 1993
770454-01005

Mr. Kevin Healy
U.S. Army Corps of Engineers,
Huntsville Division
ATTN: CEHND-ED-CS
P.O. Box 1600
Huntsville, AL 35807-4301

SUBJECT: First Quarter Groundwater Monitoring Report for 1993, OB Grounds, Seneca Army Depot, Romulus, New York

Dear Mr. Healy:

Enclosed is the First Quarter Groundwater Monitoring Report for 1993. The analytical results are divided into three major groups, explosives, metals and miscellaneous parameters (Sections 1, 2 and 3, respectively, in the enclosed document). The last sample delivery group was received from the laboratory on March 12, 1993. Generally, the results of the first quarter 1993 analyses are consistent with historical results.

Please do not hesitate to call me if you have any questions.

Sincerely,

ENGINEERING-SCIENCE, INC.

Michael Duchesneau
Project Manager

MD/cmf/D#10

Enclosure

GROUNDWATER MONITORING
ANALYTICAL RESULTS FOR THE FIRST QUARTER 1993
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PREPARED FOR:
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1.1 Summary of Explosive Analysis

OB GROUNDS FIRST QUARTER 1993 MONITORING
SUMMARY OF EXPLOSIVES ANALYSES
OB GROUNDS
SENECA ARMY DEPOT
ROMULUS, NEW YORK

COMPOUND	MONITORING WELLS			
	MW-13	MW-13D	MW-24	MW-24D
HMX	0.12U	0.12U	0.12U	0.12U
RDX	0.29	0.32	0.12U	0.11J
1,3,5-Trinitrobenzene	0.12U	0.12U	0.12U	0.12U
1,3-Dinotrobenzene	0.12U	0.12U	0.12U	0.12U
Tetryl	0.12U	0.12U	0.12U	0.12U
2,4,6-Trinitrotoluene	0.12U	0.12U	0.12U	0.12U
4-amino-2,6-Dinitrotoluene	0.12U	0.12U	0.12U	0.12U
2-amino-4,6-Dinitrotoluene	0.12U	0.12U	0.12U	0.12U
2,6-Dinitrotoluene	0.12U	0.12U	0.12U	0.12U
2,4-Dinotrotoluene	0.12U	0.12U	0.12U	0.12U

Notes:

(1) Only those wells in which explosives were detected in either sampling event are presented
(2) All units in ug/l
(3) Definition of qualifiers: U = Undected; J = Estimated value.

1.2 Explosive Analysis Results

OB GROUNDS FIRST QUARTER 1993 MONITORING
NITROAROMATICS ANALYSIS RESULTS

	OB1QMEXP.WK3	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	SDG 35141, 35182	SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/19/93	01/21/93	01/25/93	01/21/93	01/20/93	01/14/93	01/19/93
		ES ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
		LAB ID	177500	177577	177714	177578	177579	177366	177267
FORM	COMPOUND	UNITS							
1	HMX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	RDX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.16 B
1	1,3,5-Trinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	1,3-Dinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	Tetryl	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4,6-Trinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	4-amino-2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2-amino-4,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U

OB GROUNDS FIRST QUARTER 1993 MONITORING
NITROAROMATICS ANALYSIS RESULTS

	OB1QMEXP.WK3	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	SDG 35141, 35182	SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/19/93	01/19/93	01/20/93	01/18/93	01/15/93	01/19/93	01/19/93
		ES ID	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-13D(1)
		LAB ID	177501	177502	177580	177433	177367	177503	177504
FORM	COMPOUND	UNITS							
1	HMX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	RDX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.29	0.32
1	1,3,5-Trinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	1,3-Dinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	Tetryl	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4,6-Trinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	4-amino-2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2-amino-4,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U

Note:
(1) = Duplicate of MW-13

OB GROUNDS FIRST QUARTER 1993 MONITOROB GROUNDS
NITROAROMATICS ANALYSIS RESULTS

	OB1QMEXP.WK3	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	SDG 35141, 35182	SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/20/93	01/14/93	01/15/93	01/15/93	01/14/93	01/18/93	01/21/93
		ES ID	MW-13R(2)	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19
		LAB ID	177505	177368	177268	177269	177369	177370	177581
FORM	COMPOUND	UNITS							
1	HMX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	RDX	ug/L	0.12 U	0.12 U	0.21 MB	0.19 MB	0.12 U	0.12 U	0.12 U
1	1,3,5-Trinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	1,3-Dinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	Tetryl	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4,6-Trinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	4-amino-2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2-amino-4,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U

Note:
(2) = Rinsate for MW-13

OB GROUNDS FIRST QUARTER 1993 MONITORING
NITROAROMATICS ANALYSIS RESULTS

	OB1QMEXP.WK3	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	SDG 35141, 35182	SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/20/93	01/14/93	01/14/93	01/18/93	01/18/93	01/18/93	01/15/93
		ES ID	MW-21	MW-22	MW-23	MW-24	MW-24D(3)	MW-24R(4)	MW-25
		LAB ID	177582	177371	177372	177434	177435	177436	177270
FORM	COMPOUND	UNITS							
1	HMX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	RDX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.11 J	0.12 U	0.21 MB
1	1,3,5-Trinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	1,3-Dinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	Tetryl	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4,8-Trinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	4-amino-2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2-amino-4,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.08 J	0.12 U

Note:
(3) = Duplicate of MW-24
(4) = Rinsate for MW-24

OB GROUNDS FIRST QUARTER 1993 MONITORING
NITROAROMATICS ANALYSIS RESULTS

	OB1QMEXP.WK3	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	SDG 35141, 35162	SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/13/93	01/15/93	01/14/93	01/14/93	01/14/93	01/14/93	01/18/93
		ES ID	MW-26	MW-27	MW-28	MW-28D(5)	MW-28R(6)	MW-29	MW-30
		LAB ID	177271	177373	177374	177375	177376	177377	177437
FORM	COMPOUND	UNITS							
1	HMX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	RDX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.063 JM	0.12 U
1	1,3,5-Trinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	1,3-Dinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	Tetryl	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4,6-Trinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	4-amino-2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2-amino-4,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U	0.12 U

Note:
(5) = Duplicate of MW-28
(6) = Rinsate for MW-28

OB GROUNDS FIRST QUARTER 1993 MONITORING
NITROAROMATICS ANALYSIS RESULTS

	OB1QMEXP.WK3	MATRIX	WATER	WATER	WATER	WATER
	SDG 35141, 35182	SITE	OB	OB	OB	OB
		DATE SAMP'D	01/19/93	01/18/93	01/13/93	01/19/93
		ES ID	MW-31	MW-32	MW-34	MW-35
		LAB ID	177506	177438	177272	177273
FORM	COMPOUND	UNITS				
1	HMX	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	RDX	ug/L	0.12 U	0.12 U	0.19 MB	0.17 MB
1	1,3,5-Trinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	1,3-Dinitrobenzene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	Tetryl	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4,6-Trinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	4-amino-2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	2-amino-4,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	2,6-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U
1	2,4-Dinitrotoluene	ug/L	0.12 U	0.12 U	0.12 U	0.12 U

1.3 Summary of Explosive Historical Data for Selected Wells

SUMMARY OF HISTORICAL EXPLOSIVES ANALYSES
OB GROUNDS
SENECA ARMY DEPOT
ROMULUS, NEW YORK

COMPOUND	MONITORING WELLS										
	MW-13			MW-15		MW-24			MW-28		
	Jan 1992	Jan 1993	Jan 1993 (Duplicate)	Jan 1992	Jan 1993	Jan 1992	Jan 1993	Jan 1993 (Duplicate)	Jan 1992	Jan 1993	Jan 1993 (Duplicate)
HMX	1U	0.12U	0.12U	1U	0.12U	1U	0.12U	0.12U	1U	0.12U	0.12U
RDX	0.6	0.29	0.32	0.082Y	0.21MB	0.12U	0.12U	0.11J	0.12U	0.12U	0.12U
1,3,5-Trinitrobenzene	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U
1,3-Dinotrobenzene	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U
Tetryl	0.4U	0.12U	0.12U	0.4U	0.12U	0.4U	0.12U	0.12U	0.4U	0.12U	0.12U
2,4,6-Trinitrotoluene	0.12U	0.12U	0.12U	0.12U	0.12U	0.21	0.12U	0.12U	0.12U	0.12U	0.12U
4-amino-2,6-Dinitrotoluene	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U
2-amino-4,6-Dinitrotoluene	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U
2,6-Dinitrotoluene	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.087Y	0.12U	0.12U
2,4-Dinotrotoluene	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U	0.12U

Notes:

(1) Only those wells in which explosives were detected in either sampling event are presented

(2) All units in ug/l

(3) Definition of qualifiers: U = Undected; Y = Dectected below the reportable limit; MB = Compound also detected in method blank; J = Estimated value.

Section 2.0
Inorganics

OB GROUNDS FIRST QUARTER 1993 MONITORING
INORGANICS ANALYSIS RESULTS

OB1QMMET.WK3		MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
35141.I1A		SITE	OB	OB	OB	OB	OB	OB	OB
35182.I1A		DATE SAMP'D	01/19/93	01/21/93	01/25/93	01/21/93	01/20/93	01/14/93	01/19/93
		ES ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
		LAB ID	177500	177577	177714	175578	177579	177366	177267
	ANALYTE	UNITS							
I	Aluminum	ug/l	129000	42000	367	71300	2390	1360	2770
I	Antimony	ug/l	53.7 B	53.8 U	53.9 U	54 U	54 U	53.8 U	53.8 U
I	Arsenic	ug/l	4.4 B	3.5 B	1.2 U	4 B	1.2 U	1.7 U	1.7 U
I	Barium	ug/l	1050	510	46.8 B	721	72.9 B	104 B	138 B
I	Beryllium	ug/l	11	3.2 B	0.3 U	4.8 B	0.3 U	0.3 U	0.3 U
I	Cadmium	ug/l	8.9	3.4 B	3.1 U	19.6	3.1 U	3.1 B	3.1 U
I	Calcium	ug/l	600000	201000	128000	429000	112000	130000	102000
I	Chromium	ug/l	161	60.9	2 U	104	2.3 B	2 B	3.3 B
I	Cobalt	ug/l	181	44.9 B	5 U	61.7	5 U	5 U	6.5 B
I	Copper	ug/l	792	233	2.2 B	505	2.2 B	3.9 B	14.1 B
I	Iron	ug/l	167000	67800	462	113000	2830	1540	3010
I	Lead	ug/l	495	116	1.7 B	120	1.3 B	4.1	18.3
I	Magnesium	ug/l	119000	34200	25400	70500	27000	38500	21900
I	Manganese	ug/l	6710	1950	24.8	2700	62.2	184	376
I	Mercury	ug/l	3.5	0.99	0.15 B	11.1	0.06 U	0.06 U	0.11 B
I	Nickel	ug/l	356	146	3.5 U	186	3.5 U	5 B	10.5 B
I	Potassium	ug/l	18400	7650	958 B	13500	1100 B	1630 B	702 B
I	Selenium	ug/l	12.6	4.1 B	1.2 B	3.9 B	1.6 B	1.4 B	1.1 U
I	Silver	ug/l	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
I	Sodium	ug/l	14000	14900	3990 B	23300	16600	12300	3270 B
I	Thallium	ug/l	2.6 U	2.6 U	2.6 U	13 U	2.6 U	2.6 U	2.6 U
I	Vanadium	ug/l	167	68	2.1 U	98.5	3.1 B	2.1 U	5.7 B
I	Zinc	ug/l	6660	450	6.2 B	817	8.5 B	12.9 B	29.5
I	Cyanide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U

OB GROUNDS FIRST QUARTER 1993 MONITORING
INORGANICS ANALYSIS RESULTS

OB1QMMET.WK3		MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
35141.I1A		SITE	OB	OB	OB	OB	OB	OB	OB
35182.I1A		DATE SAMP'D	01/19/93	01/19/93	01/20/93	01/18/93	01/15/93	01/19/93	01/19/93
		ES ID	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-13D(1)
		LAB ID	177501	177502	177580	177433	177367	177503	177504
	ANALYTE	UNITS							
I	Aluminum	ug/l	13100	6670	25700	267	3940	2490	1450
I	Antimony	ug/l	54.1 U	54 U	53.8 U	53.6 U	53.8 U	54 U	53.6 U
I	Arsenic	ug/l	5.8 B	1.2 U	3.9 B	1.7 U	1.9 B	1.2 U	1.2 U
I	Barium	ug/l	176 B	134 B	282	105 B	135 B	103 B	96.7 B
I	Beryllium	ug/l	0.8 B	0.3 U	1.7 B	0.3 U	0.3 U	0.3 U	0.3 U
I	Cadmium	ug/l	3.1 U	3.1 U	3.1 U	3.9 B	3.1 U	3.1 U	3.1 U
I	Calcium	ug/l	381000	134000	243000	194000	98000	162000	162000
I	Chromium	ug/l	19.4	9 B	36.5	2 U	6.3 B	2.5 B	2 U
I	Cobalt	ug/l	30.6 B	5 U	73.1	5 U	5.5 B	5 U	5 U
I	Copper	ug/l	27.4	10.8 B	40.4	1.9 U	9.3 B	4.3 B	2.6 B
I	Iron	ug/l	23200	9150	39100	437	5690	2650	1640
I	Lead	ug/l	46.6	7.6	42.5	1.5 B	6.9	5.3	3.5
I	Magnesium	ug/l	78400	33900	28000	31400	69700	31500	31400
I	Manganese	ug/l	825	198	2740	63	147	54.3	40.3
I	Mercury	ug/l	0.06 U	0.06 U	0.15 B	0.06 U	0.06 U	0.06 U	0.06 U
I	Nickel	ug/l	55.9	17.8 B	74.6	3.5 U	10.1 B	5.8 B	3.5 U
I	Potassium	ug/l	5030	3770 B	6170	1440 B	8030	2030 B	1500 B
I	Selenium	ug/l	4.1 B	3.1 B	2.9 B	1.1 U	1.1 U	3.4 B	2.7 B
I	Silver	ug/l	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
I	Sodium	ug/l	21700	8660	11400	31700	18100	17300	16900
I	Thallium	ug/l	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
I	Vanadium	ug/l	21.9 B	9.6 B	37 B	2.1 U	5.1 B	3.1 B	2.1 U
I	Zinc	ug/l	58.6	21.1	122	3.7 B	30.9	19.2 B	16.1 B
I	Cyanide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Note:
(1) = Duplicate of MW-13

OB GROUNDS FIRST QUARTER 1993 MONITORING
INORGANICS ANALYSIS RESULTS

OB1QMMET.WK3		MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
35141.I1A		SITE	OB	OB	OB	OB	OB	OB	OB
35182.I1A		DATE SAMP'D	01/19/93	01/14/93	01/15/93	01/15/93	01/14/93	01/18/93	01/21/93
		ES ID	MW-13R(2)	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19
		LAB ID	177505	177368	177268	177269	177369	177370	177581
	ANALYTE	UNITS							
I	Aluminum	ug/l	62.6 U	5380	2990	1460	4060	3360	40200
I	Antimony	ug/l	54.1 U	54 U	53.9 U	53.9 U	53.7 U	53.6 U	54 U
I	Arsenic	ug/l	1.2 U	3.5 B	1.7 U	1.7 U	1.7 B	1.7 U	6.9 B
I	Barium	ug/l	12 U	126 B	83.3 B	59 B	143 B	82.2 B	353
I	Beryllium	ug/l	0.3 U	0.86 B	0.5 B	0.3 U	0.3 U	0.3 U	3.1 B
I	Cadmium	ug/l	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
I	Calcium	ug/l	204 U	176000	272000	130000	86000	118000	401000
I	Chromium	ug/l	2 U	8.7 B	8 B	2.3 B	5.9 B	6 B	68.9
I	Cobalt	ug/l	5 U	10.2 B	9.6 B	5 U	10.6 B	5 U	50.9
I	Copper	ug/l	1.9 U	20.5 B	25.4	7.4 B	9.5 B	6.2 B	81.2
I	Iron	ug/l	21.9 U	8360	5610	2410	5240	3820	63800
I	Lead	ug/l	0.89 U	25.8	33.9	8.3	8.7	6.4	63.9
I	Magnesium	ug/l	264 U	34800	50600	23700	14000	22200	93500
I	Manganese	ug/l	0.7 U	347	198	102	466	299	1840
I	Mercury	ug/l	0.06 U	0.08 B	0.11 B	0.1 B	0.06 U	0.06 U	0.25
I	Nickel	ug/l	3.5 U	18.4 B	17.1 B	8.3 B	20.1 B	8.3 B	136
I	Potassium	ug/l	447 U	2470 B	1990 B	678 B	1730 B	1990 B	8500
I	Selenium	ug/l	1.1 U	1.7 B	1.1 U	1.1 U	1.1 U	1.2 B	4.4 B
I	Silver	ug/l	3.2 U	3.2 U	3.6 B	3.2 U	3.2 U	3.2 U	3.2 U
I	Sodium	ug/l	299 U	35600	26900	3540 B	4110 B	19500	50900
I	Thallium	ug/l	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	12.9 U
I	Vanadium	ug/l	2.1 U	10.3 B	8.4 B	2.9 B	5.7 B	5.7 B	56.6
I	Zinc	ug/l	5.6 B	45.2	61.7	24.8	22.1	19.9	628
I	Cyanide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Note:
(2) = Rinsate for MW-13

OB GROUNDS FIRST QUARTER 1993 MONITORING
INORGANICS ANALYSIS RESULTS

OB1QMMET.WK3		MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
35141.I1A		SITE	OB	OB	OB	OB	OB	OB	OB
35182.I1A		DATE SAMP'D	01/20/93	01/14/93	01/14/93	01/18/93	01/18/93	01/18/93	01/15/93
		ES ID	MW-21	MW-22	MW-23	MW-24	MW-24D(3)	MW-24R(4)	MW-25
		LAB ID	177582	177371	177372	177434	177435	177436	177270
	ANALYTE	UNITS							
I	Aluminum	ug/l	1160	539	67.4 B	4600	6970	62.3 U	649
I	Antimony	ug/l	53.8 U	53.9 U	54 U	53.9 U	53.9 U	53.9 U	53.6 U
I	Arsenic	ug/l	1.2 U	1.7 U	1.7 U	1.2 U	1.2 U	1.2 U	1.7 U
I	Barium	ug/l	40.9 B	38.8 B	38.5 B	138 B	171 B	11.9 U	89.6 B
I	Beryllium	ug/l	0.3 U	0.3 U	0.3 U	0.75 B	0.45 B	0.3 U	0.3 U
I	Cadmium	ug/l	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U
I	Calcium	ug/l	82900	101000	136000	142000	145000	203 U	110000
I	Chromium	ug/l	2 U	3.3 B	2 U	7.1 B	11.7	2 U	2 U
I	Cobalt	ug/l	5 U	5 U	5 U	5 U	6 B	5 U	5 U
I	Copper	ug/l	1.9 U	3.3 B	1.9 U	37.1	59.2	1.9 U	1.9 U
I	Iron	ug/l	1570	709	247	6220	9810	21.8 U	1100
I	Lead	ug/l	1.5 B	2 B	0.89 U	35.1	61.2	0.9 U	4
I	Magnesium	ug/l	13100	14700	25900	56000	56400	263 U	19700
I	Manganese	ug/l	218	41.3	71.7	116	169	0.7 U	57.8
I	Mercury	ug/l	0.06 U	0.07 B	0.07 B	0.06 U	0.08 B	0.06 U	0.06 B
I	Nickel	ug/l	3.5 U	3.6 B	3.5 U	10.7 B	16.2 B	3.5 U	3.5 U
I	Potassium	ug/l	2260 B	821 B	1460 B	4530 B	5330	445 U	1480 B
I	Selenium	ug/l	1.6 B	1.1 U	1.1 U	4.9 B	4.1 B	1.1 U	1.1 U
I	Silver	ug/l	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U	3.2 U
I	Sodium	ug/l	40000	4350 B	12400	37800	38000	298 U	2700 B
I	Thallium	ug/l	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
I	Vanadium	ug/l	2.1 U	3.2 B	2.1 U	6 B	8.5 B	2.1 U	2.1 U
I	Zinc	ug/l	15.6 B	9.4 B	4.2 B	62.5	93.7	6 B	5.7 B
I	Cyanide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Note:
(3) = Duplicate of MW-24
(4) = Rinsate for MW-24

OB GROUNDS FIRST QUARTER 1993 MONITORING
INORGANICS ANALYSIS RESULTS

OB1QMMET.WK3		MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
35141.I1A		SITE	OB	OB	OB	OB	OB	OB	OB
35182.I1A		DATE SAMP'D	01/13/93	01/15/93	01/14/93	01/14/93	01/14/93	01/14/93	01/18/93
		ES ID	MW-26	MW-27	MW-28	MW-28D(5)	MW-28R(6)	MW-29	MW-30
		LAB ID	177271	177373	177374	177375	177376	177377	177437
	ANALYTE	UNITS							
I	Aluminum	ug/l	1660	1380	654	766	62.3 U	1670	450
I	Antimony	ug/l	53.6 U	53.9 U	53.8 U	53.9 U	53.8 U	53.8 U	53.6 U
I	Arsenic	ug/l	4.1 B	1.7 U	1.7 U	2.2 B	1.7 U	1.7 U	1.2 U
I	Barium	ug/l	63.1 B	132 B	68.6 B	61.2 B	11.9 U	103 B	90.2 B
I	Beryllium	ug/l	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.53 B
I	Cadmium	ug/l	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	3.1 U	8.3
I	Calcium	ug/l	135000	127000	69700	63000	203 U	113000	157000
I	Chromium	ug/l	5.4 B	3.5 B	2.6 B	3.3 B	2 U	3.7 B	2 U
I	Cobalt	ug/l	5 U	5.2 B	5 U	5 U	5 U	9.9 B	5 U
I	Copper	ug/l	48.1	7 B	2.5 B	1.9 U	3.1 B	3.8 B	1.9 U
I	Iron	ug/l	308	2380	132	436	28.4 B	2410	608
I	Lead	ug/l	3.1	10.9	0.9 U	0.9 U	0.9 U	5.6	0.9 U
I	Magnesium	ug/l	262 B	63200	3470 B	5660	263 U	27700	24200
I	Manganese	ug/l	10.5 B	228	3.7 B	9.9 B	0.7 U	185	24.9
I	Mercury	ug/l	0.07 B	0.06 U	0.06 U	0.06 U	0.06 U	0.06 U	0.07 B
I	Nickel	ug/l	9.3 B	9.1 B	3.5 U	3.9 B	3.5 U	8.2 B	4.1 B
I	Potassium	ug/l	24700	7330	10800	8350	444 U	1130 B	1980 B
I	Selenium	ug/l	1.1 U	1.1 U	1.3 B	1.1 B	1.1 U	1.3 B	1.2 B
I	Silver	ug/l	3.2 U	3.3 B	3.2 U	4.9 B	3.2 U	3.2 U	3.2 U
I	Sodium	ug/l	91800	17600	62300	46000	297 U	11200	20300
I	Thallium	ug/l	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U	2.6 U
I	Vanadium	ug/l	7.4 B	3.3 B	4.5 B	4.5 B	2.1 U	2.1 U	2.1 U
I	Zinc	ug/l	17.7 B	15.6 B	2.9 B	4.6 B	6.1 B	21.4	11.2 B
I	Cyanide	ug/l	10 U	10 U	10 U	10 U	10 U	10 U	10 U

Note:
(5) = Duplicate of MW-28
(6) = Rinsate for MW-28

OB GROUNDS FIRST QUARTER 1993 MONITORING
INORGANICS ANALYSIS RESULTS

OB1QMMET.WK3		MATRIX	WATER	WATER	WATER	WATER
35141.I1A		SITE	OB	OB	OB	OB
35182.I1A		DATE SAMP'D	01/19/93	01/18/93	01/13/93	01/19/93
		ES ID	MW-31	MW-32	MW-34	MW-35
		LAB ID	177506	177438	177272	177273
	ANALYTE	UNITS				
I	Aluminum	ug/l	27300	16300	4310	2420
I	Antimony	ug/l	53.6 U	53.8 U	53.9 U	54.1 U
I	Arsenic	ug/l	9.4 B	2.8 B	1.7 U	1.7 U
I	Barium	ug/l	328	212	359	137 B
I	Beryllium	ug/l	2.5 B	1.5 B	1 B	0.3 U
I	Cadmium	ug/l	3.1 U	3.1 U	3.1 U	3.1 U
I	Calcium	ug/l	269000	131000	457000	105000
I	Chromium	ug/l	49.9	27.8	5 B	4.1 B
I	Cobalt	ug/l	31.2 B	17 B	48.6 B	5.2 B
I	Copper	ug/l	64.5	33	7.7 B	7.8 B
I	Iron	ug/l	40700	26700	3100	3780
I	Lead	ug/l	81.6	24.3	3.5	3.4
I	Magnesium	ug/l	46700	30100	27700	15000
I	Manganese	ug/l	1140	587	2920	403
I	Mercury	ug/l	0.07 B	0.07 B	0.32	0.07 B
I	Nickel	ug/l	82.1	47.2	41.4	7.7 B
I	Potassium	ug/l	7910	5290	1830 B	1410 B
I	Selenium	ug/l	3.5 B	2.3 B	1.1 U	1.1 U
I	Silver	ug/l	3.2 U	3.2 U	3.2 U	3.2 U
I	Sodium	ug/l	36000	9730	5780	14900
I	Thallium	ug/l	2.6 U	2.6 U	2.6 U	2.6 U
I	Vanadium	ug/l	40.7 B	24.3 B	3.4 B	3.2 B
I	Zinc	ug/l	186	85.7	32.7	71.5
I	Cyanide	ug/l	10 U	10 U	10 U	10 U

Section 3.0
Indicator Parameters

OB GROUNDS FIRST QUARTER 1993 MONITORING
INDICATOR ANALYSIS RESULTS

OB1QMMSC.WK3

PARAMETER	UNITS	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/19/93	01/21/93	01/25/93	01/21/93	01/20/93	01/14/93	01/19/93
		ES ID	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
		LAB ID	177500	177577	177714	177578	177579	177366	177267
Chloride	mg/l		3.7	2.0	3.2	2.8	2.5	8.3	1.6
sulfate	mg/l		260	97	96	240	107	114	41
Nitrate/Nitrate Nitrogen	mg/l		1.33	0.03	0.03	0.04	5.00	0.96	0.08
Nitrite Nitrogen	mg/l		<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
Nitrate as N - Calculation	mg/l		1.33	0.03	0.03	0.04	5.00	0.96	0.08
Organic Halides, Total	mg/l		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Conductivity	umhos/cm		839	626	742	875	767	719	475
pH	std. units		6.98	7.29	7.27	7.17	7.23	7.30	7.22
Organic Carbon, Total	mg/l		3.9	2.2	3.0	3.4	1.7	1.0	1.4

OB GROUNDS FIRST QUARTER 1993 MONITORING
INDICATOR ANALYSIS RESULTS

OB1QMMSC.WK3

PARAMETER	UNITS	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/19/93	01/19/93	01/20/93	01/18/93	01/15/93	01/19/93	01/19/93
		ES ID	MW-8	MW-9	MW-10	MW-11	MW-12	MW-13	MW-13D(1)
		LAB ID	177501	177502	177580	177433	177367	177503	177504
Chloride	mg/l		18.0	3.8	11.1	38.0	8.7	10.7	10.9
sulfate	mg/l		990	250	280	329	84	230	240
Nitrate/Nitrate Nitrogen	mg/l		1.43	3.7	0.04	0.38	0.68	5.8	5.8
Nitrite Nitrogen	mg/l		<0.002	0.005	<0.002	<0.002	<0.002	0.018	0.014
Nitrate as N - Calculation	mg/l		1.43	3.7	0.04	0.38	0.68	5.8	5.8
Organic Halides, Total	mg/l		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Conductivity	umhos/cm		1760	829	906	1060	943	986	991
pH	std. units		6.99	7.17	7.20	7.08	7.30	6.99	7.00
Organic Carbon, Total	mg/l		1.3	1.0	1.1	1.4	1.3	1.4	1.4

Note:
(1) = Duplicate of MW-13

OB GROUNDS FIRST QUARTER 1993 MONITORING
INDICATOR ANALYSIS RESULTS

OB1QMMSC.WK3

PARAMETER	UNITS	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/19/93	01/14/93	01/15/93	01/15/93	01/14/93	01/18/93	01/21/93
		ES ID	MW-13R(2)	MW-14	MW-15	MW-16	MW-17	MW-18	MW-19
		LAB ID	177505	177368	177268	177269	177369	177370	177581
Chloride	mg/l		<0.5	20.0	7.7	1.7	2.0	8.8	11.9
sulfate	mg/l		<2	354	435	173	49	143	580
Nitrate/Nitrate Nitrogen	mg/l		0.03	12.2	2.6	0.08	0.16	0.13	2.2
Nitrite Nitrogen	mg/l		<0.002	0.004	0.015	<0.002	<0.002	0.002	0.002
Nitrate as N - Calculation	mg/l		0.03	12.2	2.58	0.08	0.16	0.128	2.2
Organic Halides, Total	mg/l		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Conductivity	umhos/cm		2.8	1110	1390	736	501	786	1400
pH	std. units		6.53	7.15	7.02	7.23	7.34	7.25	7.25
Organic Carbon, Total	mg/l		<0.5	1.0	2.0	1.3	0.9	0.8	1.8

Note:
(2) = Rinsate of MW-13

OB GROUNDS FIRST QUARTER 1993 MONITORING
INDICATOR ANALYSIS RESULTS

OB1QMMSC.WK3

PARAMETER	UNITS	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/20/93	01/14/93	01/14/93	01/18/93	01/18/93	01/18/93	01/15/93
		ES ID	MW-21	MW-22	MW-23	MW-24	MW-24D(3)	MW-24R(4)	MW-25
		LAB ID	177582	177371	177372	177434	177435	177436	177270
Chloride	mg/l		2.0	2.4	10.1	33.0	34.0	<0.5	1.9
sulfate	mg/l		107	134	250	165	165	<2	38
Nitrate/Nitrate Nitrogen	mg/l		0.65	0.08	0.03	11.2	12.7	0.03	<0.01
Nitrite Nitrogen	mg/l		0.014	0.007	0.006	<0.002	<0.002	<0.002	<0.002
Nitrate as N - Calculation	mg/l		0.64	0.073	0.024	11.2	12.7	0.03	<0.01
Organic Halides, Total	mg/l		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Conductivity	umhos/cm		636	560	837	1150	1160	3.3	583
pH	std. units		7.49	7.36	7.30	7.20	7.15	6.81	7.19
Organic Carbon, Total	mg/l		0.7	1.0	0.8	1.7	1.7	<0.5	1.1

Note:
(3) = Duplicate of MW-24
(4) = Rinsate of MW-24

OB GROUNDS FIRST QUARTER 1993 MONITORING
INDICATOR ANALYSIS RESULTS

OB1QMMSC.WK3

PARAMETER	UNITS	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
		SITE	OB	OB	OB	OB	OB	OB	OB
		DATE SAMP'D	01/13/93	01/15/93	01/14/93	01/14/93	01/15/93	01/14/93	01/18/93
		ES ID	MW-26	MW-27	MW-28	MW-28D	MW-28R	MW-29	MW-30
		LAB ID	177271	177373	177374	177375	177376	177377	177437
Chloride	mg/l		2.2	9.6	4.8	4.2	<0.5	3.9	19.9
sulfate	mg/l		20	98	94	113	<2	103	305
Nitrate/Nitrate Nitrogen	mg/l		0.06	0.28	1.93	1.88	0.01	2.2	0.64
Nitrite Nitrogen	mg/l		0.060	0.004	0.014	0.014	<0.002	<0.002	0.003
Nitrate as N - Calculation	mg/l		<0.01	0.267	1.92	1.87	0.01	2.2	0.64
Organic Halides, Total	mg/l		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Conductivity	umhos/cm		2190	969	811	548	3.1	674	926
pH	std. units		12.29	7.37	11.62	11.66	7.64	7.66	6.93
Organic Carbon, Total	mg/l		9.1	1.2	1.9	2.1	<0.5	1.0	1.2

OB GROUNDS FIRST QUARTER 1993 MONITORING
INDICATOR ANALYSIS RESULTS

OB1QMMSC.WK3

PARAMETER	UNITS				
MATRIX		WATER	WATER	WATER	WATER
SITE		OB	OB	OB	OB
DATE SAMP'D		01/19/93	01/18/93	01/13/93	01/19/93
ES ID		MW-31	MW-32	MW-34	MW-35
LAB ID		177506	177438	177272	177273
Chloride	mg/l	4.1	3.2	4.6	2.3
sulfate	mg/l	290	81	41	44
Nitrate/Nitrate Nitrogen	mg/l	4.2	0.05	0.16	0.24
Nitrite Nitrogen	mg/l	0.019	<0.002	<0.002	<0.002
Nitrate as N - Calculation	mg/l	4.2	0.05	0.16	0.24
Organic Halides, Total	mg/l	<0.02	<0.02	<0.02	<0.02
Conductivity	umhos/cm	928	621	499	549
pH	std. units	7.26	7.25	7.79	7.82
Organic Carbon, Total	mg/l	1.2	1.1	2.2	1.5