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GROUNDWATER MONITORING
VALIDATED ANALYTICAL RESULTS FOR THE THIRD QUARTER 1998
OB/OD GROUNDS, SENECA ARMY DEPOT

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

PREPARED BY:

Parsons Engineering Science, Inc.
Canton, Massachusetts

October 1998

PARSONS ENGINEERING SCIENCE, INC.

30 Dan Road • Canton, Massachusetts 02021-2809 • (781) 401-3200 • Fax: (781) 401-3575

December 18, 1998

Mr. Stephen Absolom
FFA Program Manager
BRAC Environmental Coordinator
ATTN: SIOSE-BEC
Building 123
Seneca Army Depot Activity
Romulus, New York 14541-5001

SUBJECT: OB/OD Grounds Third Quarter 1998 Groundwater Monitoring
Seneca Army Depot Activity, Romulus, New York

Dear Mr. Absolom:

The attached report summarizes the groundwater monitoring results at the OB/OD Grounds for the Third Quarter 1998. The work for this quarter of groundwater monitoring was performed in accordance with the requirements of Delivery Order 0006, Optional Task 3 under Contract DACA87-95-D-0031.

Field Activities

A round of groundwater elevations were obtained from 34 monitoring wells at the OB/OD Grounds Groundwater samples were collected from five wells using EPA Region II low-flow sampling procedures for TAL Metals analysis. The samples were not filtered in the field prior to collection. Four replicates samples were also collected at each well for TOC, TOX, pH and Specific Conductivity analyses in accordance with the requirements of 40 CFR 265 Subpart F. Wells MW45-2 and MW45-4 were not sampled because of insufficient recovery. In addition, only one of the four replicate samples for TOX, TOC, pH and Specific Conductivity was collected at MW45-3 due to lack of recoverable water. Consequently, the Student's t-Test Statistical Analysis was not performed for the OD Grounds site.

Groundwater Elevation Data

Mean Sea Level (MSL) elevations were obtained from the 34 wells on September 22, 1998. **Table 1** summarizes the results of the groundwater elevation measurements. Groundwater isocontours developed for the OB Grounds indicates a flow direction to the northeast with a hydraulic gradient of approximately 0.008. Groundwater isocontours developed for the OD grounds indicates a flow direction to the northeast. **Figures 1** and **2** show the groundwater isocontours developed for each area.

Analytical Results

Four replicate samples from each of the five monitoring wells were analyzed for the standard indicator parameters of pH, Specific Conductivity, Total Organic Carbon, and Total Organic Halides (TOX). One sample from each monitoring well was also analyzed for TAL metals. **Tables 2** and **3** summarize the analytical results for the indicator compounds. The validated TAL Metals analytical results are presented in **Table 4.** The

analytical results were validated in accordance with the NYSDEC Data Validation SOPs. The validated analytical results indicate that all data is acceptable.

Student's t-Test Analysis

A statistical analysis was performed on the indicator parameter data from the OB Grounds using the Student's t-Test. The analysis was performed in accordance with 40 CFR 265 Subpart F and U.S. EPA SW-963, revised 1983. The analysis results are shown in **Table 7**.

The Student's t-Test results indicated that there were statistically significant increases at the OB Grounds for pH in MW-12, and MW-27, TOC in MW-12, and specific conductance in MW-12,. The Student's t-Test was not performed for the OD Grounds due to lack of data.

A review of the data shows that the actual values measured for TOX were non-detect (0.02U) in all wells including the background wells for this quarter of sampling as well as previous quarterly sampling. It is reasonable to conclude that there was no actual increase in concentrations as compared to background, as measured by TOX. Similarly, the variations in actual pH, conductivity and total organic carbon data were relatively small as compared to previous sampling rounds. The historical indicator parameter data shown in **Table 5** and **Table 6** shows that these "statistically significant" changes are most likely due to natural variations (seasonal) in the groundwater quality and not from any continuing releases to groundwater from either the OD or the OB Grounds. Also, the TAL metals data does not indicate any real increases in actual metals concentrations from previous sampling episodes. The close spatial distribution of the monitoring data around the mean (sample variance) and the associated errors in measurements (10-20%) may account for the statistical increases indicated by the Student's t-Test. Based upon professional judgment, these statistical increases do not indicate releases from the OB/OD Grounds.

In summary, the groundwater monitoring results for OB/OD Grounds for the Third Quarter 1998, continue to indicate no adverse impacts to groundwater in these areas.

If you have any questions, please call me at (617) 859-2492.

PARSONS ENGINEERING SCIENCE, INC.

RM Kane for

Michael Duchesneau, P.E.
Project Manager

Enclosures (3)
cc: Ms. Laura Percifield, CEMRD (1)
Ms. Patricia Allen, CEHNC (2)
Mr. Randall Battaglia, CENAN (1)
Mr. John Buck,AEC (1)
Mr. Keith Hoddinott, USACHPPM (1)
Ms. Carla Struble, USEPA Region II (4)
Mr. James Quinn, NYSDEC (1)
Mr. Daniel Geraghty, NYSDOH (1)

TABLES

Table 1

SENECA ARMY DEPOT ACTIVITY
GROUNDWATER MONITORING PROGRAM
GROUNDWATER ELEVATION DATA
THIRD QUARTER 1998
OB / OD GROUNDS

onitoring Well	Elevation at Top of Riser (MSL)	Second Quarter 1997 Date	Depth from Top of Riser (ft.)	Elevation of Water Level (ft.)	Second Quarter 1998 Date	Depth from Top of Riser (ft.)	Elevation of Water Level (ft.)	Third Quarter 1998 Date	Depth from Top of Riser (ft.)	Elevation of Water Level (ft.)	Well Condition
Grounds											
/-1	634.22	06/17/97	NA	634.22	06/21/98	7.36	626.86	09/22/98	10.84	623.38	A
/-4	NA	06/17/97	NA	NA	06/21/98	N/A	NA	09/22/98	N/A	Not Measured	H
/-5	637.99	06/17/97	4.61	633.38	06/21/98	3.80	634.19	09/22/98	8.62	629.37	A, D, F
/-6	630.31	06/17/97	5.38	624.93	06/21/98	4.77	625.54	09/22/98	N/A	Not Measured	H
/-7	622.94	06/17/97	Not Measured	Not Measured	06/21/98	N/A	Not Measured	09/22/98	N/A	Not Measured	H
/-8	638.78	06/17/97	5.16	633.62	06/21/98	3.84	634.94	09/22/98	8.18	630.6	G, needs pressure cap
/-9	634.95	06/17/97	4.12	630.83	06/21/98	2.93	632.02	09/22/98	6.77	628.18	C (1.0'), E
/-10	638.62	06/17/97	4.57	634.05	06/21/98	3.55	635.07	09/22/98	7.37	631.25	ok
/-11	630.65	06/17/97	3.47	627.18	06/21/98	3.43	627.22	09/22/98	8.38	622.27	C (0.3')
/-12	624.50	06/17/97	3.08	621.42	06/21/98	2.62	621.88	09/22/98	6.12	618.38	C (0.4')
/-13	627.09	06/17/97	3.37	623.72	06/21/98	3.60	623.49	09/22/98	7.31	619.78	C, E, G, pad tipped, pvc bent
/-14	624.51	06/17/97	5.16	619.35	06/21/98	3.98	620.53	09/22/98	8.13	616.38	C (0.8'), E, F,G, pad tipped, pvc b
/-15	621.99	06/17/97	3.84	618.15	06/21/98	3.16	618.83	09/22/98	6.44	615.55	C (0.3'), E, G
/-16	622.60	06/17/97	4.61	617.99	06/21/98	2.83	619.77	09/22/98	7.73	614.87	C (0.4'), F
/-17	624.53	06/17/97	3.00	621.53	06/21/98	2.41	622.12	09/22/98	6.26	618.27	F
/-18	623.95	06/17/97	3.26	620.69	06/21/98	2.76	621.19	09/22/98	6.16	617.79	B, C (0.4')
/-19	636.34	06/17/97	5.08	631.26	06/21/98	3.55	632.79	09/22/98	N/A	Not Measured	A, C, F
/-21	637.88	06/17/97	4.91	632.97	06/21/98	4.02	633.86	09/22/98	8.14	629.74	A
/-22	623.15	06/17/97	Not Measured	Not Measured	06/21/98	3.6	619.55	09/22/98	8.75	614.4	A, G
/-23	622.87	06/17/97	5.08	617.79	06/21/98	4.36	618.51	09/22/98	7.66	615.21	A, C, E, G
/-24	627.33	06/17/97	5.95	621.38	06/21/98	5.11	622.22	09/22/98	9.20	618.13	B, C (0.5'), pvc riser may of hea
/-25	623.80	06/17/97	7.65	616.15	06/21/98	7.19	616.61	09/22/98	11.03	612.77	A, D
/-26	624.31	06/17/97	6.32	617.99	06/21/98	5.06	619.25	09/22/98	7.34	616.97	B, D, G
/-27	625.94	06/17/97	4.43	621.51	06/21/98	3.86	622.08	09/22/98	7.50	618.44	ok
/-28	631.90	06/17/97	4.87	627.03	06/21/98	4.60	627.3	09/22/98	10.07	621.83	B, C (0.4')
/-29	632.07	06/17/97	5.10	626.97	06/21/98	4.82	627.25	09/22/98	10.27	621.8	B, C (0.8')
/-30	628.12	06/17/97	4.23	623.89	06/21/98	4.25	623.87	09/22/98	8.57	619.55	B, C (0.3')
/-31	634.57	06/17/97	5.06	629.51	06/21/98	3.27	631.3	09/22/98	7.33	627.24	F,C
/-32	634.81	06/17/97	4.35	630.46	06/21/98	3.50	631.31	09/22/98	9.50	625.31	A, F
/-36	640.55	06/17/97	7.18	633.37	06/21/98	6.62	633.93	09/22/98	9.52	631.03	No stamp
/-37	640.81	06/17/97	6.95	633.86	06/21/98	6.61	634.2	09/22/98	7.00	633.81	No stamp
/-38	620.67	06/17/97	5.17	615.5	06/21/98	N/A	Not Measured	09/22/98	7.94	612.73	F, lock frozen
/-39	620.14	06/17/97	6.25	613.89	06/21/98	5.02	615.12	09/22/98	7.94	612.2	A, C (0.4')
/-40	620.46	06/17/97	6.59	613.87	06/21/98	5.20	615.26	09/22/98	6.88	613.58	C (0.8')
Grounds - SEAD-45 wells											
45-1	625.08	06/17/97	7.96	617.12	06/21/98	7.99	617.09	09/22/98	7.99	617.09	ok - dry well
45-2	626.76	06/17/97	10.02	616.74	06/21/98	10.16	616.6	09/22/98	11.53	615.23	ok
45-3	626.45	06/17/97	7.48	618.97	06/21/98	7.76	618.69	09/22/98	10.49	615.96	D
45-4	633.04	06/17/97	7.21	625.83	06/21/98	6.48	626.56	09/22/98	9.07	623.97	C (0.3)

A - No pad or pad destroyed by frost
B - Pad damaged by frost
C - Pad & protective casing heaved by frost (ft. above G.S.)
D - Protective casing corroded - cannot read stamp
E - PVC riser heaved by frost - cannot lock protective casing
F - Lock badly corroded
G - No lock
H - Protective casing has settled, may not be able to open

TABLE 2

SENECA ARMY DEPOT ACTIVITY
OB GROUNDS THIRD QUARTER 1998 MONITORING PROGRAM
INDICATOR ANALYSIS RESULTS

	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	WA
	DATE SAMPLED	09/23/98	09/23/98	09/23/98	09/23/98	09/24/98	09/24/98	09/24/98	09/
	ES ID	OB158	OB159	OB160	OB161	OB166	OB167	OB168	OI
	WELL ID	MW12A	MW12B	MW12C	MW12D	MW13A	MW13B	MW13C	MW
	LAB ID	367314	367315	367316	367317	367361	367362	367363	36
METER	UNITS								
	standard units	7.27	7.31	7.3	7.29	7.05	7.01	7.01	6
ctivity	umhos/cm	792	793	799	792	866	863	864	8
Organic Carbon	mg/L	3.0	2.8	3.4	3.1	2.1	2.4	2	1
Organic Halides	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<

TABLE 2

SENECA ARMY DEPOT ACTIVITY
OB GROUNDS THIRD QUARTER 1998 MONITORING PROGRAM
INDICATOR ANALYSIS RESULTS

ETER	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	W
	DATE SAMPLED	09/23/98	09/23/98	09/23/98	09/23/98	09/24/98	09/24/98	09/24/98	09/
	ES ID	OB154	OB155	OB156	OB157	OB162	OB163	OB164	O
	WELL ID	MW14A	MW14B	MW14C	MW14D	MW27A	MW27B	MW27C	M
	LAB ID	367310	367311	367312	367313	367358	367359	367357	36
ETER	UNITS								
	standard units	7.07	7.19	7.16	7.16	7.22	7.25	7.20	7
vity	umhos/cm	1008	1016	1014	1019	812	803	812	8
ganic Carbon	mg/L	2.80	2.70	1.10	2.60	1.70	1.80	1.00	1
ganic Halides	mg/L	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<

TABLE 3

SENECA ARMY DEPOT ACTIVITY
OD GROUNDS THIRD QUARTER 1998 MONITORING PROGRAM
INDICATOR ANALYSIS RESULTS

	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER	
	DATE SAMPLED	09/23/98	na	na	na	na	na	na	
	ES ID	OB150	na	na	na	na	na	na	
	WELL ID	MW45-3A	MW45-3B	MW45-3C	MW45-3D	MW45-4A	MW45-4B	MW45-4C	
	LAB ID	367620							
ETER	UNITS								
	standard units	7.2	NS	NS	NS	NS	NS	NS	
ivity	umhos/cm	1483	NS	NS	NS	NS	NS	NS	
ganic Carbon	mg/L	2.6	NS	NS	NS	NS	NS	NS	
ganic Halides	mg/L	<0.02	NS	NS	NS	NS	NS	NS	

NS - Not sampled, well recovery insufficient

TABLE 3

SENECA ARMY DEPOT ACTIVITY
OD GROUNDS THIRD QUARTER 1998 MONITORING PROGRAM
INDICATOR ANALYSIS RESULTS

	MATRIX	WATER	WATER	WATER	WATER
	DATE SAMPLED	na	na	na	na
	ES ID	na	na	na	na
	WELL ID	MW45-2A	MW45-2B	MW45-2C	MW45-2D
	LAB ID				
AMETER	UNITS				
	standard units	NS	NS	NS	NS
ductivity	umhos/cm	NS	NS	NS	NS
l Organic Carbon	mg/L	NS	NS	NS	NS
l Organic Halides	mg/L	NS	NS	NS	NS

Table 4

OB/OD 1998 Third Quarter Groundwater Monitoring
Validated TAL Metals Analytical Results

WELL ID		MW12	MW12(DU)	MW14(R)	MW13	MW14	MW27	MW45-3
ES ID		OB158	OB806	OB805	OB166	OB154	OB162	OB150
SITE		OB	OB	OB	OB	OB	OB	OD
MATRIX		WATER	WATER	WATER	WATER	WATER	WATER	WATER
DATA SAMPLED		09/23/98	09/23/98	09/23/98	09/24/98	09/23/98	09/24/98	09/23/98
LAB ID		367314	367319	367318	367361	367310	367358	367320
			Duplicate	Rinsate				
COMPOUND	UNITS							
Aluminimum	ug/l	146	89.4	33.1 U	45.3	385	33.1 U	557
Antimony	ug/l	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U	7.8 U
Arsenic	ug/l	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U	4.5 U
Barium	ug/l	101	99.1	4.9 U	85.3	53.8	93.9	22.6
Beryllium	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Cadmium	ug/l	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U	0.8 U
Calcium	ug/l	78900	78200	157	138000	163000	91100	225000
Chromium	ug/l	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U	2.2 U
Cobalt	ug/l	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U	1.4 U
Copper	ug/l	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	3.8
Iron	ug/l	38.9 U	38.9 U	38.9 U	56	260	38.9 U	614
Lead	ug/l	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U	2.7 U
Magnesium	ug/l	56100	55400	139 U	27200	32200	51600	82600
Manganese	ug/l	5.8	4.1	1.9 U	4.7	7.2	111	43.5
Mercury	ug/l	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
Nickel	ug/l	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	3.6 U	5.4
Potassium	ug/l	9420	9210	442 U	1770	1780	8010	7240
Selenium	ug/l	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U	3.7 U
Silver	ug/l	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U	2.8 U
Sodium	ug/l	13600	13700	1070 U	14500	24600	14800	23500
Thallium	ug/l	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U	6.6 U
Vanadium	ug/l	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U	3.5 U
Zinc	ug/l	7.2	3	55.1	9.7	9.2	4.9	12.1
Cyanide	ug/l	5 U	5 U	5 U	5 U	5 U	5 U	5 U

TABLE 5

SENECA ARMY DEPOT ACTIVITY
THIRD QUARTER 1998 GROUNDWATER MONITORING PROGRAM
HISTORICAL SUMMARY OF OB GROUNDS INDICATOR PARAMETER DATA

Well		Dec 1994	June 1995	January 1996	March 1996	June 1996	September 1996	December 1996	June 1997	June 1998	S
t Well:	MW-13	7 04	7.14	7.13	7.1	6.95	7	7.1	7.02	7.01	
ent Wells:	MW-12	7.37	7.4	7.18	7.39	7.33	7.4	7 5	7.4	7.32	
	MW-14	7.11	7.18	6.75	7.19	7.1	7.2	7.2	----	7.11	
	MW-27	7.34	7.4	7.26	7.32	7.28	7.2	7.4	7.3	7.17	
vity											
t Well:	MW-13	886	838	894	920	943	867	722	825	902	
ent Wells:	MW-12	911	892	869	844	854	879	850	783	740	
	MW-14	1082	1090	1025	1047	1070	1070	929	----	1015	
	MW-27	953	912	944	889	877	877	812	789	758	
anic Carbon											
t Well:	MW-13	1.2	1.2	1.2	1.1	1.7	1.9	1.0	1.6	1 6	
ent Wells:	MW-12	1.2	1.3	1.1	1.1	1.3	1.6	1.4	1.3	1.6	
	MW-14	1	1.1	1.0	0.95	1.6	2.1	0 8	----	1.3	
	MW-27	1	1.1	0.8	0.95	1.3	1.1	1.1	1.1	1.0	
anic Halides											
t Well:	MW-13	0.03	0.02U	0.02U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
ent Wells:	MW-12	0.04	0.02U	0.02U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
	MW-14	0.02U	0.02U	0.02U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	
	MW-27	0.03	0.02U	0.02U	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	

TABLE 6

SENECA ARMY DEPOT ACTIVITY
THIRD QUARTER 1998 GROUNDWATER MONITORING PROGRAM
HISTORICAL SUMMARY OF OD GROUNDS INDICATOR PARAMETER DATA

Well		Dec 1994	June 1995	January 1996	March 1996	June 1996	September 1996	December 1996	June 1997	June 1997	Se
Well:	MW45-4	7.1	7.24	7.16	7.18	7.2	7.2	7.26	7.24	7.24	
nt Wells:	MW45-1	-	-	-	-	-	-	-	-	-	
	MW45-2	-	-	-	-	-	-	7.15	7.17	7.07	
	MW45-3	7.19	7.38	7.18	7.28	7.13	7.3	7.28	7.43	7.31	
ty											
Well:	MW45-4	1030	829	891	836	793	892	679	670	701	
nt Wells:	MW45-1	-	-	-	-	-	-	-	-	-	
	MW45-2	-	-	-	-	-	-	1253	3876	1565	
	MW45-3	1430	1335	1325	1213	1350	1275	1275	1264	1517	
nic Carbon											
Well:	MW45-4	1	0.9	1.1	0.58	0.925	1.2	1	1.2	1.4	
nt Wells:	MW45-1	-	-	-	-	-	-	-	-	-	
	MW45-2	-	-	-	-	-	-	1.0	1.2	1.4	
	MW45-3	0.8	0.9	0.65	0.78	1.1	1.3	1.3	0.9	1.2	
nic Halides											
Well:	MW45-4	0.02U	0.02U	0.02U	<0.02	<0.02	<0.02	<0.02	<0.02	<0 02	
nt Wells:	MW45-1	-	-	-	-	-	-	-	-	-	
	MW45-2	-	-	-	-	-	-	<0 02	<0.02	<0 02	
	MW45-3	0.02U	0.02U	0.02U	<0.02	<0.02	<0.02	<0 02	<0.02	<0.02	

Table 7

OB Grounds Third Quarter 1998 Monitoring Program
Students t-Test Statistical Analysis Results

ckground Well MW-13

	TOC	pH	Specific Cond.	TOX
tal Mean =	1.19	7.02	909.50	0.01
ial Variance =	0.14	0.00	704.53	0.00
mple Size =	16.00	16.00	16.00	16.00

TAL ORGANIC CARBON (TOC)

mpliance Well MW -12	Background Well MW -13		Compliance Well MW -14	Compliance Well MW
12.13	t*=	3.89	t*= 2.70	t*=
3.85	tc=	4.16	tc= 4.44	tc=
Increase		No Change	No Change	No Ch

mpliance Well MW -12	Background Well MW -13		Compliance Well MW -14	Compliance Well MW
14.83	t*=	-0.21	t*= 4.09	t*=
3.57	tc=	3.01	tc= 5.02	tc=
Increase		No Change	No Change	Increa

ECIFIC CONDUCTANCE

mpliance Well MW -12	Background Well MW -13		Compliance Well MW -14	Compliance Well MW
-16.87	t*=	-6.33	t*= 14.90	t*=
2.72	tc=	2.73	tc= 2.81	tc=
No Change		No Change	Increase	No Ch

TAL ORGANIC HALIDES (TOX)

mpliance Well MW -12	Background Well MW -13		Compliance Well MW -14	Compliance Well MW
-1.00	t*=	-1.00	t*= -1.00	t*=
2.60	tc=	2.60	tc= 2.60	tc=
No Change		No Change	No Change	No Ch

= tc Indicates a statistically significant increase in the indicator parameter
= Indicates no statistically significant change in the indicator parameter

a\quartsmp\obod\3qtr98\STAT398.WK4

FIGURES

N

MW-4
630
W-19
625 FT
620 FT
615 FT
630 FT
613.58
MW-40
MW-39
612.20
620
MW-38
612.73
W-30
W-35
W-32
W-33
W-34
614.44
MW-22
W-16
W-17
MW-19/
GB-18
632.79
623.38
MW-1
W-15
MW-14
616.38
W-29
W-28
MW-15
615.55
MW-23
615.21
MW-16
614.87
MW-7
619.55
MW-30
GB-21
627.24
MW-31
GB-19
MW-13
619.78
MW-12
618.38
618.44
MW-27
W-27
W-26
W-4
W-5
617.79
MW-18
MW-21/GB-17
629.74
MW-9
628.18
W-20
W-22
W-38
W-23
MW-24
618.13
616.97
MW-26
MW-25
612.77
MW-8
630.60
618.27
MW-17
MW-5
629.37
W-14
W-13
MW-11
622.27
W-7
621.80
MW-29/
GB-20
625.54
MW-6
W-8
MW-28
621.83
W-12
W-11
W-10
APPROXIMATE GROUNDWATER DIVIDE
631.03
MW-36
633.81
MW-37
W-9
631.25
MW-10
MW-32
625.31
MW-41

LEGEND:

- BURNING PAD DESIGNATION
- PAD OR GRID BORING
- GROUND CONTOUR AND ELEVATION
- W-1 WETLAND & DESIGNATION
- UTILITY POLE
- TREE
- BRUSH
- MW-14 620.53 MONITORING WELL & DESIGNATION AND MSL ELEVATION DATUM
- 635 GROUNDWATER CONTOUR LINE (DASHED WHERE INFERRED) MSL DATUM
- ARROW INDICATES PREDOMINANT GROUNDWATER FLOW DIRECTION

100 0 100 200
(feet)

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

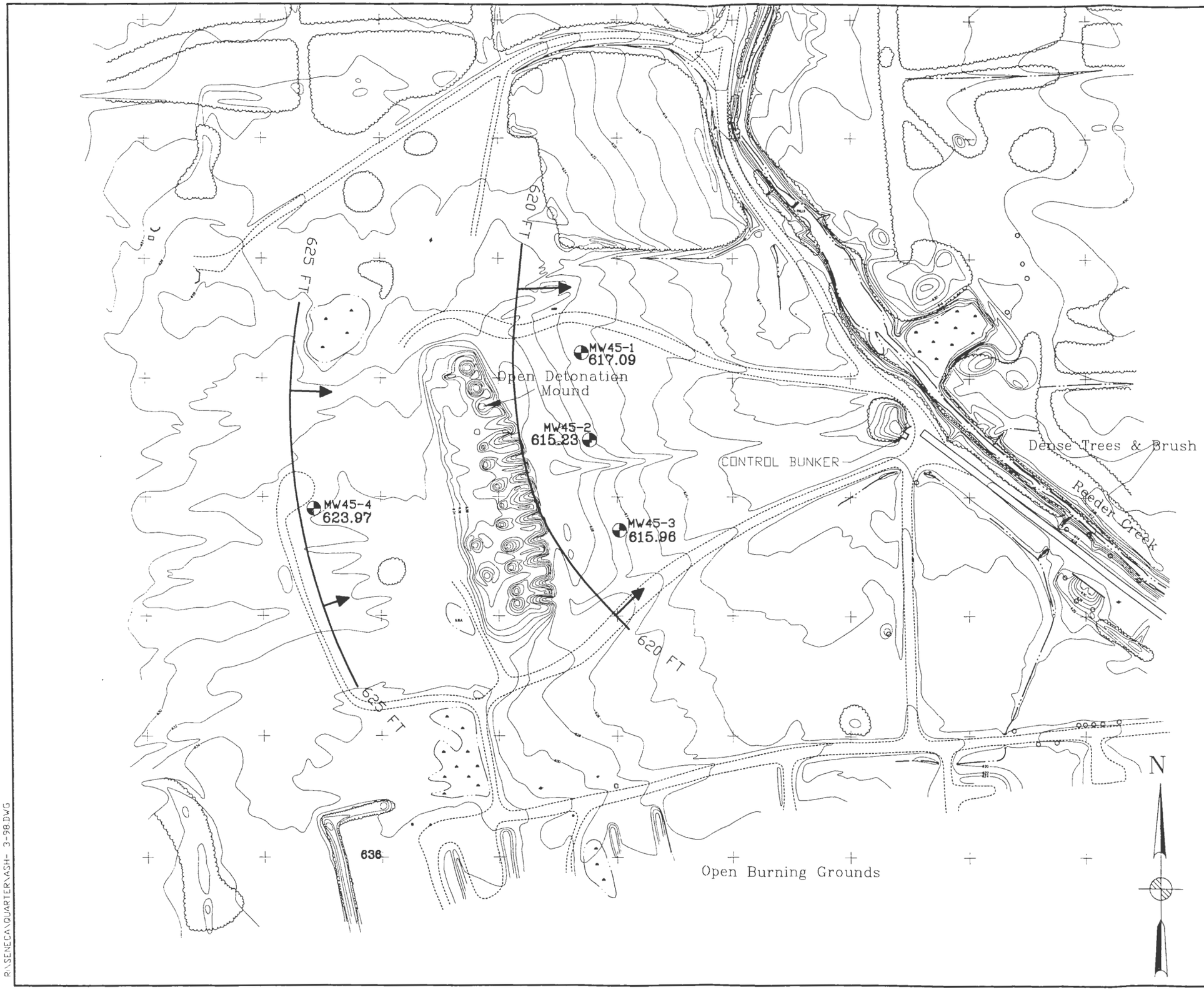
CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
GROUNDWATER MONITORING PROGRAM
OB GROUNDS - THIRD QUARTER 1998

DEPT	Dwg No.
ENVIRONMENTAL ENGINEERING	730789-01007

FIGURE 1
GROUNDWATER ELEVATION PLAN
SEPTEMBER 1998

SCALE	DATE	REV
1" = 200'	DECEMBER 1998	A



LEGEND

- MINOR WATERWAY
- MAJOR WATERWAY
- FENCE
- UNPAVED ROAD
- BRUSH LINE
- LANDFILL EXTENTS
- RAILROAD
- 760 GROUND SURFACE ELEVATION CONTOUR
- ROAD SIGN
- DECIDUOUS TREE
- GUIDE POST
- FIRE HYDRANT
- MANHOLE
- COORDINATE GRID (250' GRID)
- POLE
- UTILITY BOX
- MAILBOX/RR SIGNAL
- OVERHEAD UTILITY POLE
- SURVEY MONUMENT
- LOCATION OF DETONATION MOUND IN 1988
- MW45-1 617.09 MONITORING WELL & DESIGNATION AND MSL ELEVATION DATUM
- 625 GROUNDWATER CONTOUR LINE (DASHED WHERE INFERRED)
- ARROW INDICATES PREDOMINANT GROUNDWATER FLOW DIRECTION

100 0 100 200
(feet)

PARSONS

PARSONS ENGINEERING SCIENCE, INC.

CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
GROUNDWATER MONITORING PROGRAM
OB GROUNDS - THIRD QUARTER 1998

DEPT.	Dwg No.
ENVIRONMENTAL ENGINEERING	730769-01007

FIGURE 2
GROUNDWATER ELEVATION PLAN
SEPTEMBER 1998

SCALE	DATE	REV
1" = 200'	DECEMBER 1998	A

R:\SENECA\QUARTER\ASH- 3-98.DWG

APPENDIX A

FIELD DATA

OB/OD Second Quarter 1998 Groundwater Monitoring Program

1. Groundwater Sampling Field Notes

2. Chain-of-Custody Forms

1. Groundwater Sampling Field Notes

DRG/KKS

MW 56 Cont.

Time	WL	Rate	Cum vol	temp	Cond	pH	Eh	DO	turb
1201	~	100	0.56	17.53	800	6.77	311	1.01	4.34
1204	—	100	0.65	17.55	800	6.77	311	0.99	2.53
1207	—	100	0.72	17.55	801	6.77	310	0.98	2.02
1210	~	100	0.80	17.58	801	6.77	310	1.00	1.53

1215 Sampling MW56 AL217
VOC (524.2), M/E/E, Alk/Chlor/Sulf
nitrate/nitrite, DOC (field filtered)
Fe^{+2} (field) = 0.01 mg/l

1245 completed Sampling AL217 (mw56)

1300 drop off cooler at fed-ex (323)
- talk to M Burns about
QA/QC requirements for Seal-12
- M. Baker about TCDs

1405 MW 36 set up
Pocw 16.58 intake 11.0'
Static WL: 8.02'
Standing water volume =
(16.58 − 8.02) × 0.163 = 1.40 gallons

1410 Start pump

time	WL	Rate	Cum vol	temp	Cond	pH	Eh	DO	turb
1415	8.14	280	0.15	15.53	726	6.96	325	1.23	0.84
1418	8.16	280	0.25	15.36	720	6.94	328	1.05	0.81

DRG 9-22-98

MW 36 Continued

time	WL	Rate	Cum vol	temp	Cond	pH	Eh
1421	8.12	280	0.50	15.28	719	6.94	327
1424	8.18	280	0.65	15.19	718	6.93	326
1427	8.19	280	0.85	15.09	718	6.93	32[illegible]
1430	8.2[illegible]	240	0.98	15.09	716	6.93	322

1430 Sampling AL218 ms vo[illegible]
AL 818 Dup vo[illegible]
SA: Voc (524.2), M/[illegible]
Alk/Chlor/Sulf, Nitra[illegible]
DOC (field filtered)
Fe^{+2} (field) = ~~0.11 mg/l~~
Fe^{+2} Sample bottle had a lay[illegible]
film on it, clean bottle
re-test
Fe^{+2} test 2 = 0.00 mg/l

1455 complete Sampling MW[illegible]

1526 Waterlevels at OB [illegible]

time	well #	Water level	cond[illegible]
1541	mw 38	7.57'	heaved
1547	mw 39	7.94	heaved
1550	mw 40	6.88	heaved
1557	mw 45-3	10.49	OK
1601	mw 45-2	11.53	OK

DRG 9-22-98

Di[illegible]

3rd Yr 98 9-22-98
Ash/OB

Date

time	well	wl	Condition
1606	mw45-1	7.99	OK
1610	mw-2	Completion	Knocked

completely over, pvc riser broken off at Surface
water level ≈ 4.20 to ground surface
- eastern most ballard also knocked over

1620 Could not open mw-4 as 4" pvc riser is heaved up into completion.
1623 MW45-4 9.07' completion (B30) heaved up 7-8"
1640 mw-1 [illegible] OK
[illegible] mw30 8.57 complete [illegible] broken up
1721 mw-19 Completely dry
1750 Return to trailer
- icing Samples for night.
1810 off site

PES

9-23-98 3rd Yr 98
Ash/OB

DRG

0700 Sign in at [illegible]
0710 Arrive Main trailer
- packing samples for shipment.
0800 [illegible]
08005
0830 packing bottles for shipment
Shipping MEE to evergreen and MRO today
0950 calibrating Hydrolab

Parameter	Std	Reading	Set to	Reading
DO mg/L	(14.6°) 10.26	10.52	10.26	10.26
pH	pH 7	7.05	7.00	7.00
	pH 4	4.11	4.00	4.00
Cond (uS)	2060 (~~[illegible]~~)	2040	2060	2065
	700	705	—	—
Redox (mV)	(15.7°) 304	297	304	304
	(15.8°) 488	498		

Lamotte 2020

	Std	Reading		
turbidity	10.0 ntu	10.09	—	—
	1.0 ntu	1.01	—	—

1035 loading Van.
1130 MW45-3 set up
POW: 14.09 Intake: 13.5'
Static wL 10.54
DRG 9-23-98

3:1 Y4 98 9-23-98
03/Ash

DRL

MW45-3 Cont.

Standing water Volume
(14.09 - 10.54) × 0.163 = 0.58 gallons

1135 Starting pump - problem with controller again - skipped cycles - stopped completly for 10 min. -

1150 Continue purge - GW very turbid - pumping @ 80-100 ml/min, [illegible]

Time	WL	Rate (ml/L)	Vol (gal)	Temp (°C)	Cond (uS)	pH	eh (mV)	DO (mg/L)	Turb (NTU)
1208	11.37	130	0.5	17.54	1560	6.83	336	2.08	4.97
1213	BTOP	120	0.75	17.41	1560	6.83	335	1.54	
1219	BTOP	100	1.20	17.29	1570	6.82	331	1.10	5.46
1223	BTOP	100	1.25	17.19	1570	6.81	331	1.00	
1226	BTOP	90	1.27	17.22	1570	6.83	330	0.98	7.00

1230 Sample #OB150 Metal, CN, + Suite
#OB151 TOX, TOC, pH, Cond. (ie. Suite)
#OB152 "
#OB153 "

1330 Sampled Metals Cyanide and Suite [illegible] / pH sampled before well [illegible] dry.

1340 [illegible] test on MW 45-2
[illegible] well dry, No recovery over [illegible] minutes

DRL

9-23-98 3:1 Y4 98
OB/Ash

1345 **MW 14** Setup
POW: 10.58 Intake: [illegible]
Static WL: 8.17
Standing Water Volume =
(10.58 - 8.17) × 0.163 = 0.39 gal.

1355 starting pump

Time	WL	Rate	Vol	Temp	Cond	pH	eH	DO	Turb
[illegible]	BTOP	130	0.24	17.24	1016	6.93	327	1.31	114

Note: 4'x4' pad and protective casing has [illegible] heaved ~0.8' and tilted - [illegible] bending the riser to the point that a [illegible] or bladder pump will not enter. We were able to push on the attached protective post and corrected the tilt so a pump could be installed - in the process it [illegible] high turbidity.

Time	WL	Rate	Vol	Temp	Cond	pH	eH	DO	Turb
1404	BTOP	160	0.40	17.38	[illegible]	[illegible]	[illegible]	[illegible]	29.8
1420	BTOP		0.75	17.29	1016	6.72	330	1.61	[illegible]
1426	BTOP		1.25	17.31	1016	6.71	[illegible]	[illegible]	21.7
[illegible]	BTOP	140	1.50	17.27	1016	6.72	327	1.0	12.9
1433	BTOP	140	.65	17.28	1016	6.72	328	1.03	[illegible]

1440 Sample MW-14 #AL154 Metals, CN, Suite
AL155, Suite (TOX, TOC, pH, Cond)
AL156 Suite
AL157 Suite

Metals = 6.93 NTUs

DRL

90

3rd 1/4 98
Ash 08

ther Sunny, 70°F, 10-15 mph — DRG

Setup @ MW-12

Static = 6.71' POW = 9.17'

Intake = 85' Volume = 0.40 gal

Start Pumping

WL	Vol	Rate	Temp	Cond	pH	eh	DO	Turb
6.38	0.6	200-400	17.08	823	6.97	322	0.81	12.6
6.38	1.30	70	17.07	825	6.93	308	0.73	5.29
6.38	1.45	100	17.09	825	6.94	301	0.69	5.00
6.38	1.70	100	17.07	825	6.93	300	0.68	4.98

Sample MW-12 #'s

AL158 = Metals, CN, TOX, TOC, pH, Cond

AL158 includes: MS/MSD - Metals + CN Only
MRD - Metals, CN, TOX, TOC, pH + Cond

AL806 (DUP) Metals + CN Only

AL159 - TOX, TOC, pH, + Cond,

AL160 "

AL161 "

Complete Sampling MW-12

total volume removed ≈ 1.8 gal + Sample Volume.

leaving Hinmo

- Arrive trailer 1800 | off site

- packing samples

9-23-98 [signature]

9-24-98

3rd 1/4 98
Ash 08

DRG

0655 Sign in get-1

0710 Arrive trailer

- talk to M Burns about collection order for seed-12

- M. Baker about Becky Gregory planning to drive from Colorado and charge mileage, asked M. Baker to relay to M. Dickerson

0810 packing bottles for shipment

0840 Calibrate H2O

Parameter	Std	Read	set to	Read
DO	(13.5°) 10.46	10.63	10.4	10.34
pH	pH 7	7.13	7.00	6.99
	pH 4	4.01	—	—
Cond (us)	2060	2070	2060	2060
	700	694	700	700
Redox (mv) (14.5°)	306	~~330~~ 305 (NC)	306	306
Redox (mv) (15°)	478	471		

pH 7, pH 4

Lamotte 2020

turbidity	10.0 ntu	9.81	10.0	9.99
	1.0 ntu	1.05	—	—

1000 dropping off Compressor and Samples at 323

1125 Arrive at MW45-3

[signature] 9-24-98

9-24-98 Sunny ½ 98 [illegible]

[illegible]

1135 Continue Sampling MW95-3 OB150
TOX, TOC, Spec. Cond / pH

1200 get a flat tire on the way to MW 27
- change tire

1230 Arrive
- MW 27 setup
POW 15.46' intake 11.5'
Static WL 7.53
Standing water Volume:
(15.46' - 7.53) 0.163 = 1.2 gallons

1230 Start pump
Parameters

Time	WL	Vol	Rate	Temp	Cond	pH	eh	DO	Turb
1235	8.05	0.3	300	15.59	834	6.91	311	1.00	1.28
[illegible]	8.05	0.75	250	15.81	846	6.89	313	0.80	1.20
[illegible]	8.05	1.25	250	15.78	850	6.89	313	0.74	1.6
1245	8.05	1.40	250	15.74	851	6.89	313	0.70	1.9
1248	8.05	1.65	250	15.74	852	6.90	313	0.73	2.02

1250 Sample MW-27
# OB162 = Metals, CN, TOX, TOC, pH, Cond
OB163 = TOX, TOC, pH, Cond
OB165 = "
OB164 = "

[signature] 9-24-98

9-24-98 [illegible]

[illegible]

1315 Completed [illegible]
total Volume [illegible]
+ Sample Volume

[illegible] MW-13 [illegible]
[illegible] 15.14 intake 11.5
Static [illegible]
Standing water volume:
(15.14 - 7.70) x 0.163 =

1338 start pump
Parameters

Time	WL	Vol	Rate	Temp	Cond	pH	eh	DO	Turb
1350	7.70	0.4	240	17.70	913	6.58	251	0.82	3.86
1356	7.70	[illegible]	240	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1359	7.70	1.25	240	17.92	910	6.56	271	0.75	2.60
1402	7.70	1.50	240	17.72	912	6.56	275	0.74	1.75

1410 Sample MW-13
OB166 = Metals, CN, TOX, TOC, pH, Cond
OB167 = TOX, TOC, pH, Cond
OB168 = "
OB169 = "

1415 Complete Sampling MW13 (OB166 - OB169)
IDW - Purge water from all OB/OD wells were put in Drum OB-1
Start 6/30/94 - 90% Full Location Near MW-12

[signature] 9-24-98

56 3rd 1/4 98 OB/Ash 8-24-98

DRG

1505 picking up bubble wrap @ 323
1525 Return to trailer, packing Samples + instruments
1645 leaving for engineering building and post-1
1715 off site

RES 8-24-98

8-24-98 3rd Quarter 98 57

DRG

0700 Sign in post-1
0715 Arrive trailer
- power is out, packing coolers
0810 power back on
- moving equipment down to the OB/OD trailer
0830 Sign in at post-5
0845 Arrive at ~~post~~ (DRG) OB/OD
- unloading Van
- setting up computer
0950 leaving OB/OD trailer for post-5
1015 leaving post-5
1020 talk to John Warner (maxim)
- John Warner (Driller)
- Rodney Bush (helper)
- Walt Cotter (backhoe)
will arrive at post-1 around 9:AM, will call OB/OD
- fire dept. inspection before they post-1
1035 talk to M. Baker
- guy from Onsite will arrive monday Morning either to Hotel (8:00 Am) or post 1 (9:00 Am)

DRG

9/25/98 3.d Quarter 98

D26

- guy from NEUA will not Arrive until the 5th of Oct.

1200 lunch

1235 end lunch

- message on machine from Becky Cropper
- for the air sampling filters should be 0.45 micron
- flow rate should be 2 ft^3/min = 56 l/min
- talking to M. Burns about buying out a bigger air sampling pump
- M. Mark Burns will discuss it with Art Schatz
- Mark will bring out 2 Vacuum pumps with him for monday.

9/21/98

1120 Instrument Calibrations

Hydrolab H_2O

Parameter	Std	Reading	Std	Reading
	24°C			
DO	8.53	8.52	—	—
pH	7.00	7.00	7.00	7.00
pH	4.00	4.06	4.00	4.00
Cond	700 uS	691	700	700
Cond	2060 uS	2100	—	—
Redox pH7	285 mV	279	285	285
Redox pH4	462 mV	471	—	—

Redox corrected to Hydrogen Electrode Std

9/22/98 Hydrolab Calibrations

	18.4°C			
DO	9.4	9.5	9.4	9.4
pH 7	7.00	7.01	7.00	7.00
pH 4	4.00	4.00	—	—
Cond	700 uS	700	—	—
Cond	2060 uS	2070	—	—
Redox pH7	20°C 295 mV	281	295	295
	470	490		
Turbidity - LaMotte				
NTU's	1.00	1.07	1.00	1.00
	10.00	10.06	—	—

9/22/98	Well #	WL	Comments
1537	MW-4	N/A	Protec. Casing settled - cannot open top
1545	MW-31	7.33	Pad heaved 1.0'
1546	MW-9	6.77	Pad heaved 0.8'
			Riser heaved 1.3'
	Cannot lock protective lid - pressure cap only		
1552	MW-8	8.18	no pressure cap
	Pad ok		new lock
1557	MW-21	8.14	Pad in pieces
1600	MW-5	8.62	OK
1602	MW-36	9.52	Pad in pieces
1605	MW-37	7.00	OK
1608	MW-10	7.31	OK
1612	MW-32	9.50	Pad in pieces
1619	MW-28	10.07	Pad in pieces
1621	MW-25	10.27	Pad heaved 0.8'
			Pad in pieces
1623	MW-6		Protective casing settled - cannot open lid
1625	MW-11	8.38	Pad heaved 0.4'
1630	MW-24	9.20	Pad heaved 0.8'
			Pad in pieces
1632	MW-27	7.50	OK
1635	MW-12	6.12	Pad heaved 0.4'

10/22/18

Time	Well #	WL	Comments
1637	MW-18	6.16	Well Heaved 0.8'
			Pad in pieces
1640	MW-17	6.26	Pad heaved 0.5'
1644	MW-25	11.03	Pad in pieces
			Riser heaved ~ 0.2'
1646	MW-26	7.34	Pad broken / new lock
1648	MW-7		Protective casing settled - can't open lid - no lock
1650	MW-22	8.75	Pad in pieces
			new lock / Pad is heaved 0.8'
1652	MW-23	7.66	Pad in pieces
			Pad + Riser heaved
			Riser is higher than protective casing
			Cannot lock
1656	MW-15	6.44	Pad heaved 0.4'
			Riser heaved 0.8'
			Cannot lock well
1700	MW-14	7.13	Pad heaved 1.0'
			Riser heaved over 1.0'
~~1701~~			Cannot use pressure cap
1705	MW-13	7.31	Pad heaved 0.6'
			Riser heaved 0.8'
			lock pressure cap only
1727	MW-16	7.73	ok

2. Chain-of-Custody Forms

CHAIN-OF-CUSTODY RECORD

PAGE 1 OF 1

ENGINEERING SCIENCE, INC.
Phone: 781-401-3200
02021 Fax: 781-401-2575

JOB NO. 730769-01007
PROJECT Seneca 3rd Qtr '98 OB/OD
CONTACT Mike Duchesneau

LABORATORY STL
ADDRESS Colchester VT
CONTACT Chris Ouellette

E NO.	LABORATORY SAMPLE NO.	SAMPLING DATE	SAMPLING TIME	SAMPLE DEPTH	SAMPLE MATRIX	ANALYSES VOA	SVOC	METALS	CN	TOX	TOC	p#/Cond	NO. OF CONTAINERS	COMMENTS (Special instructions, cau
64		9/24/98	1250		water					X	X	X	4	
62		9/24/98					X	X	X	X	X	X	6	
63		↓	↓				X			X	X	X	4	
65		↓	↓				X			X	X	X	4	
66		↓	1410					X	X	X	X	X	6	
67		↓	↓						X	X	X	X	4	
68		↓	↓						X	X	X	X	4	
69		↓	↓						X	X	X	X	4	
			KKS											

Relinquished by
Terry Smith
ES
5/98 Time 1500

Received by
Sign
Print
Firm
Date Time

by
Time

Received by
Sign
Print
Firm
Date Time

Samples tampered with? ☐ No ☐ Yes
Explain in remarks.

	VOA	SVOC	METALS	CN	TOX	TOC	p#/Cond
VOA Vial						X	
Glass Bottle					X		
Plastic Bottle			X	X			X
Preservative			A D	A F	A E	A D	A
Container Volume			1 L	1 L	250 ml	40 ml	500 ml

PRESERVATION KEY:
A - Ice
B - Filtered
C - Acidified with HCl
D - Acidified with HNO_3
E - Acidified with H_2SO_4
F - NaOH + Ascorbic
G - Other

REMARKS: (Sample nonstandard sample
Sampling Co

Cooler #: 027

OC0198 White - return with data Yellow - lab copy Pink - Sampler copy

LIMS # 530

CHAIN-OF-CUSTODY RECORD

PAGE 1 OF 1

NGINEERING SCIENCE, INC.
Phone: 781-401-3200
2021 Fax: 781-401-2575

JOB NO. 730765-01007
PROJECT Seneca 3rd Qtr '98 - OB/OD
CONTACT Mike Dickgrave

LABORATORY MRD
ADDRESS Omaha, NB
CONTACT Sample Custodian

NO.	LABORATORY SAMPLE NO.	SAMPLING DATE	SAMPLING TIME	SAMPLE DEPTH	SAMPLE MATRIX	VOA	SVOC	METALS	CN	TOX	TOC	pH/Cond	NO. OF CONTAINERS	COMMENTS (Special instructions, cau
05		9/23/98	0800		water			X	X	X	X		5	Rinse Blank
5B 06MS		9/23/98	1555		water			X	X	X	X	X	6	

KKS

KKS

KKS

Relinquished by
Kerry Smith
Parsons ES
9/24/98 Time 1000

Received by
Sign
Print
Firm
Date Time

by
Time

Received by
Sign
Print
Firm
Date Time

amples tampered with? ☐ No ☐ Yes
ain in remarks.

	VOA	SVOC	METALS	CN	TOX	TOC	pH/Cond
VOA Vial						X	
Glass Bottle					X		
Plastic Bottle			X	X			X
Preservative			A D	A F	A E	A E	A
Container Volume			1 L	1 L	250 ml	40 ml	500 ml

PRESERVATION KEY:
A - Ice
B - Filtered
C - Acidified with HCl
D - Acidified with HNO_3
E - Acidified with H_2SO_4
F - NaOH + Ascorbic
G - Other

REMARKS: (Sample nonstandard sample
LIMS # 53
Sampling Comp
Return Cooler t
Parsons Engine
c/o Seneca Army
Building 32
Romulus, NY 14

Cooler #: 18

OC0198 White - return with data Yellow - lab copy Pink - Sampler copy

CHAIN-OF-CUSTODY RECORD

ENGINEERING SCIENCE, INC.
...2021 Phone: 781-401-3200
Fax: 781-401-2575

JOB NO. 730769-01007
PROJECT Seneca 3rd Qtr '98 - OB/OD
CONTACT Mike Duchesneau

LABORATORY STL
ADDRESS Colchester, VT
CONTACT Chris Ouellette

NO.	LABORATORY SAMPLE NO.	SAMPLING DATE	SAMPLING TIME	SAMPLE DEPTH	SAMPLE MATRIX	VOA	SVOC	METALS	CN	TOX	TOC	pH/Cond				NO. OF CONTAINERS	COMMENTS (Special instructions, cau...
1		9/23/98	1440		water			x	x	x	x	x				6	
5		↓	↓		↓					x	x	x				4	
6		↓	↓		↓					x	x	x				4	
7		↓	↓		↓					x	x	x				4	
8		↓	1555		↓			x	x	x	x	x				9	Matrix Spike - Met/...
9		↓	↓		↓					x	x	x				4	
10		↓	↓		↓					x	x	x				4	
11		↓	↓		↓					x	x	x				4	

KES

	VOA	SVOC	METALS	CN	TOX	TOC	pH/Cond			
VOA Vial						x				
Glass Bottle					x					
Plastic Bottle			x	x			x			
Preservative			A D	A F	A E	A E	A			
Container Volume			1 L	1 L	250 ml	40 ml	500 ml			

...Relinquished by
...rry Smith
...ns ES
...4/98 Time 1000

Received by
Sign
Print
Firm
Date Time

...by
Time

Received by
Sign
Print
Firm
Date Time

...amples tampered with? ☐ No ☐ Yes
...ain in remarks.

PRESERVATION KEY:
A - Ice
B - Filtered
C - Acidified with HCl
D - Acidified with HNO_3
E - Acidified with H_2SO_4
F - NaOH + Ascorbic
G - Other

REMARKS: (Sample ... nonstandard sample ...

Cooler #: 014

CHAIN-OF-CUSTODY RECORD

PAGE 1 OF 1

NGINEERING SCIENCE, INC.
Phone: 781-401-3200
2021 Fax: 781-401-2575

JOB NO. 730769-01007
PROJECT Seneca 3rd Qtr '98 OB/OD
CONTACT Mike Duchesneau

LABORATORY STL
ADDRESS Colchester VT
CONTACT Chris Ouellette

NO.	LABORATORY SAMPLE NO.	SAMPLING DATE	SAMPLING TIME	SAMPLE DEPTH	SAMPLE MATRIX	VOA	SVOC	METALS	CN	TOX	TOC	pH/Cond	NO. OF CONTAINERS	COMMENTS (Special instructions, caut
5		9/23/98	0800		Water			X	X	X	X			Rinse Blank
6		9/23/98	1555		↓			X	X					
0		9/23/98	1230		↓			X	X	X	X	X		

	VOA	SVOC	METALS	CN	TOX	TOC	pH/Cond
VOA Vial						X	
Glass Bottle					X		
Plastic Bottle			X	X			X
Preservative			A D	A F	A E	A E	A
Container Volume			1 L	1 L	250 ml	40 ml	500 ml

PRESERVATION KEY:
A - Ice
B - Filtered
C - Acidified with HCl
D - Acidified with HNO_3
E - Acidified with H_2SO_4
F - NaOH + Ascorbic
G - Other

Relinquished by
Sign
Print
Firm
Date 9/25/98 Time 1600

Received by
Sign
Print
Firm
Date Time

Relinquished by
Sign
Print
Firm
Time

Received by
Sign
Print
Firm
Date Time

Samples tampered with? ☐ No ☐ Yes
Explain in remarks.

REMARKS: (Sample nonstandard sample

Cooler #: 48

OC0198 White - return with data Yellow - lab copy Pink - Sampler copy

APPENDIX B

Laboratory Analytical Packages with QA/QC Data

1. Sample Delivery Group No. 70813

   A. Indicator Analysis Results
   B. TAL Metals Analysis

1. Sample Delivery Group No. 70813

Committed To *Your* Success

SAMPLE DATA SUMMARY PACKAGE

CONTRACT: 98011
CASE NO: 98011
SDG NO: 70813

Committed To Your Success

Severn Trent Laboratories
55 South Park Drive
Colchester VT 05446
Tel: (802) 655-1203
Fax: (802) 655-1248

October 29, 1998

Mr. Mike Duchesneau
Parsons Engineering Science
30 Dan Road
Canton, MA 02021

Re: Laboratory Project No. 98011
Project Name: OB Quarterly Monitoring
Case No.: 98011; SDG 70813

Dear Mr. Duchesneau:

Enclosed are the analytical results of samples received by Severn Trent Laboratories on September 25, 26, and 28, 1998. Laboratory numbers have been assigned and designated as follows:

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 09/25/98 ETR No: 70813		
367310	OB154	09/23/98	Water
367311	OB155	09/23/98	Water
367312	OB156	09/23/98	Water
367313	OB157	09/23/98	Water
367314	OB158	09/23/98	Water
367314MS	OB158MS	09/23/98	Water
367314DP	OB158REP	09/23/98	Water
367315	OB159	09/23/98	Water
367316	OB160	09/23/98	Water
367317	OB161	09/23/98	Water

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 09/26/98 ETR No: 70814		
367318	OB805	09/23/98	Water

001

Lab ID	Client Sample ID	Sample Date	Sample Matrix
	Received: 09/26/98 ETR No: 70814		
367319	OB806	09/23/98	Water
367320	OB150	09/23/98	Water
	Received: 09/28/98 ETR No: 70825		
367357	OB164	09/24/98	Water
367358	OB162	09/24/98	Water
367359	OB163	09/24/98	Water
367360	OB165	09/24/98	Water
367361	OB166	09/24/98	Water
367362	OB167	09/24/98	Water
367363	OB168	09/24/98	Water
367364	OB169	09/24/98	Water

If there are any questions regarding this submittal, please contact Chris A. Ouellette at 802 655-1203.

Sincerely,

Deborah A. Loring
Laboratory Director

DAL/smk
Enclosure

002

Severn Trent Laboratories
55 South Park Drive
Colchester VT 05446
Tel: (802) 655-1203
Fax: (802) 655-1248

Analytical Report

Parsons Engineering Science
Attn: Accounts Payable
30 Dan Road
Canton, MA 02021

Attention : Mike Duchesneau

Date : 10/29/98
ETR Number : 70813
Project No.: 98011
No. Samples: 10
Arrived : 09/25/98
P.O. Number: 73076930004

Case:98011 SDG:70813 Job:OB/OD

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater.
All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter	Result
367310	OB154:09/23/98 @1440(Water)	
9050	Conductivity (umhos/cm)	1008
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.07
9060	Total Organic Carbon	2.8
367311	OB155:09/23/98 @1440(Water)	
9050	Conductivity (umhos/cm)	1016
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.19
9060	Total Organic Carbon	2.7
367312	OB156:09/23/98 @1440(Water)	
9050	Conductivity (umhos/cm)	1014
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.16
9060	Total Organic Carbon	1.1
367313	OB157:09/23/98 @1440(Water)	
9050	Conductivity (umhos/cm)	1019
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.16
9060	Total Organic Carbon	2.6
367314	OB158:09/23/98 @1555(Water)	
9050	Conductivity (umhos/cm)	792
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.27
9060	Total Organic Carbon	3.0

< Cont. Next Page >

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Analytical Report

Parsons Engineering Science
Attn: Accounts Payable
30 Dan Road
Canton, MA 02021

Attention : Mike Duchesneau

Date : 10/29/98
ETR Number : 70813
Project No.: 98011
No. Samples: 10
Arrived : 09/25/98
P.O. Number: 73076930004

Case:98011 SDG:70813 Job:OB/OD

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater.
All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter	Result
367315	OB159:09/23/98 @1555(Water)	
9050	Conductivity (umhos/cm)	793
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.31
9060	Total Organic Carbon	2.8
367316	OB160:09/23/98 @1555(Water)	
9050	Conductivity (umhos/cm)	799
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.30
9060	Total Organic Carbon	3.4
367317	OB161:09/23/98 @1555(Water)	
9050	Conductivity (umhos/cm)	792
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.29
9060	Total Organic Carbon	3.1

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Analytical Report

Parsons Engineering Science
Attn: Accounts Payable
30 Dan Road
Canton, MA 02021

Attention : Mike Duchesneau

Date : 10/29/98
ETR Number : 70814
Project No.: 98011
No. Samples: 3
Arrived : 09/26/98
P.O. Number: 873076930004

Case:98011 SDG:70813 Job:OB/OD

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater.
All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter	Result
367318	OB805:09/23/98 @0800(Water)	
9020	Total Organic Halides	<0.02
9060	Total Organic Carbon	1.6
367320	OB150:09/23/98 @1230(Water)	
9050	Conductivity (umhos/cm)	1483
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.20
9060	Total Organic Carbon	2.6

 Submitted By : Aquatec Inc.

Severn Trent Laboratories
55 South Park Drive
Colchester VT 05446
Tel: (802) 655-1203
Fax: (802) 655-1248

Analytical Report

Parsons Engineering Science
Attn: Accounts Payable
30 Dan Road
Canton, MA 02021

Attention : Mike Duchesneau

Date : 10/29/98
ETR Number : 70825
Project No.: 98011
No. Samples: 8
Arrived : 09/28/98
P.O. Number: 73076930004

Case:98011 SDG:70813 Job:OB/OD

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4/79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater. All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter	Result
367357	OB164:09/24/98 @1250(Water)	
9050	Conductivity (umhos/cm)	812
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.20
9060	Total Organic Carbon	1.0
367358	OB162:09/24/98 @1250(Water)	
9050	Conductivity (umhos/cm)	812
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.22
9060	Total Organic Carbon	1.7
367359	OB163:09/24/98 @1250(Water)	
9050	Conductivity (umhos/cm)	803
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.25
9060	Total Organic Carbon	1.8
367360	OB165:09/24/98 @1250(Water)	
9050	Conductivity (umhos/cm)	813
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.25
9060	Total Organic Carbon	1.4
367361	OB166:09/24/98 @1410(Water)	
9050	Conductivity (umhos/cm)	866
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.05
9060	Total Organic Carbon	2.1

< Cont. Next Page >

Severn Trent Laboratories
55 South Park Drive
Colchester, VT 05446
Tel: 802-655-1203
Fax: 802-655-1248

Analytical Report

Parsons Engineering Science
Attn: Accounts Payable
30 Dan Road
Canton, MA 02021

Attention : Mike Duchesneau

Date : 10/29/98
ETR Number : 70825
Project No.: 98011
No. Samples: 8
Arrived : 09/28/98
P.O. Number: 73076930004

Case:98011 SDG:70813 Job:OB/OD

Standard analyses were performed in accordance with Methods for Analysis of Water and Wastes, EPA-600/4-79-020, Test Methods for Evaluating Solid Waste, SW-846, or Standard Methods for the Examination of Water and Wastewater.
All results are in mg/l unless otherwise noted.

Lab No./ Method No.	Sample Description/ Parameter	Result
367362	OB167:09/24/98 @1410(Water)	
9050	Conductivity (umhos/cm)	863
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.01
9060	Total Organic Carbon	2.4
367363	OB168:09/24/98 @1410(Water)	
9050	Conductivity (umhos/cm)	864
9020	Total Organic Halides	<0.02
9040	pH (std. units)	7.01
9060	Total Organic Carbon	2.0
367364	OB169:09/24/98 @1410(Water)	
9050	Conductivity (umhos/cm)	871
9020	Total Organic Halides	<0.02
9040	pH (std. units)	6.99
9060	Total Organic Carbon	1.5

Quality Control Summary

Project No: 98011
SDG No: 70813
Units: mg/L

Parameter	Date Analyzed	Method Preparation Blank	Laboratory Control Sample		
			Reported Value	True Value	Percent Recovery
Conductivity (umhos/cm)	10/15/98	NA	1002	1002	100.0
pH (Std Units)	09/26/98	NA	6.03	6.00	100.5
pH (Std Units)	09/28/98	NA	6.03	6.00	100.5
Total Organic Carbon	10/02/98	< 0.5	58.6	61.9	94.7
Total Organic Carbon	10/12/98	< 0.5	63.0	61.9	101.8
Total Organic Carbon	10/16/98	< 0.5	59.3	61.9	95.8
Total Organic Halides	10/07/98	< 0.02	0.099	0.100	99.0
Total Organic Halides	10/08/98	< 0.02	0.091	0.100	91.0

Reviewed By: JPD
Date: 10/28/98

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COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHYT Case No.: 98011 SAS No.: _____ SDG No.: 70813_

SOW No.: ILM03.0

EPA Sample No.	Lab Sample ID
_OB150_____	_367320_____
_OB154_____	_367310_____
_OB158_____	_367314_____
_OB158D_____	_367314DP_____
_OB158S_____	_367314MS_____
_OB162_____	_367358_____
_OB166_____	_367361_____
_OB805_____	_367318_____
_OB806_____	_367319_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

Were ICP interelement corrections applied ? Yes/No YES

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

Comments:

_____

_____

_____

_____

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

Signature: _____ Name: _____

Date: _____ Title: _____

U.S. EPA - CLP

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OB150

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70313_

Matrix (soil water): WATER Lab Sample ID: 367320

Level (low med): LOW__ Date Received: 09/26/98

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum	557			P
7440-36-0	Antimony	7.8	U		P
7440-38-2	Arsenic	4.5	U		P
7440-39-3	Barium	22.6	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium	0.80	U		P
7440-70-2	Calcium	225000			P
7440-47-3	Chromium	2.2	U		P
7440-48-4	Cobalt	1.4	U		P
7440-50-8	Copper	2.8	B		P
7439-89-6	Iron	614			P
7439-92-1	Lead	2.7	U		P
7439-95-4	Magnesium	82600			P
7439-96-5	Manganese	43.5			P
7439-97-6	Mercury	0.10	U		CV
7440-02-0	Nickel	5.4	B		P
7440-09-7	Potassium	7240			P
7782-49-2	Selenium	3.7	U		P
7440-22-4	Silver	2.8	U		P
7440-23-5	Sodium	23500			P
7440-28-0	Thallium	6.6	U		P
7440-62-2	Vanadium	3.5	U		P
7440-66-6	Zinc	12.1	B		P
	Cyanide	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

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INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OB154

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: T0813_

Matrix (soil water): WATER Lab Sample ID: 367310

Level (low med): LOW__ Date Received: 09/25/98

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	385	_		P_
7440-36-0	Antimony_	7.8	U		P_
7440-38-2	Arsenic__	4.5	U		P_
7440-39-3	Barium___	53.8	B		P_
7440-41-7	Beryllium	0.10	U		P_
7440-43-9	Cadmium__	0.80	U		P_
7440-70-2	Calcium__	163000	_		P_
7440-47-3	Chromium_	2.2	U		P_
7440-48-4	Cobalt___	1.4	U		P_
7440-50-8	Copper___	2.8	U		P_
7439-89-6	Iron_____	260	_		P_
7439-92-1	Lead_____	2.7	U		P_
7439-95-4	Magnesium	32200	_		P_
7439-96-5	Manganese	7.2	B		P_
7439-97-6	Mercury__	0.10	U		CV
7440-02-0	Nickel___	3.6	U		P_
7440-09-7	Potassium	1780	B		P_
7782-49-2	Selenium_	3.7	U		P_
7440-22-4	Silver___	2.8	U		P_
7440-23-5	Sodium___	24600	_		P_
7440-28-0	Thallium_	6.6	U		P_
7440-62-2	Vanadium_	3.5	U		P_
7440-66-6	Zinc_____	9.2	B		P_
_____	Cyanide__	5.0	U		AS
_____	_____	_____	_	_____	__

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_____

_____

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_____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DB158

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Matrix (soil/water): WATER Lab Sample ID: 367314

Level (low/med): LOW__ Date Received: 09/25/98

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	146	B		P_
7440-36-0	Antimony_	7.8	U		P_
7440-38-2	Arsenic__	4.5	U		P_
7440-39-3	Barium___	101	B		P_
7440-41-7	Beryllium	0.10	U		P_
7440-43-9	Cadmium__	0.80	U		P_
7440-70-2	Calcium__	78900			P_
7440-47-3	Chromium_	2.2	U		P_
7440-48-4	Cobalt___	1.4	U		P_
7440-50-8	Copper___	2.8	U		P_
7439-89-6	Iron_____	38.9	U		P_
7439-92-1	Lead_____	2.7	U		P_
7439-95-4	Magnesium	56100			P_
7439-96-5	Manganese	5.8	B		P_
7439-97-6	Mercury__	0.10	U		CV
7440-02-0	Nickel___	3.6	U		P_
7440-09-7	Potassium	9420			P_
7782-49-2	Selenium_	3.7	U		P_
7440-22-4	Silver___	2.8	U		P_
7440-23-5	Sodium___	13600			P_
7440-28-0	Thallium_	6.6	U		P_
7440-62-2	Vanadium_	3.5	U		P_
7440-66-6	Zinc_____	7.2	B		P_
_____	Cyanide__	5.0	U		AS
_____	_____	_____	_	_____	__

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

_____

_____

_____

_____

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OB162

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: T0813_

Matrix (soil/water): WATER Lab Sample ID: 367358

Level (low/med): LOW__ Date Received: 09/28/98

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	33.1	U		P_
7440-36-0	Antimony_	7.8	U		P_
7440-38-2	Arsenic__	4.5	U		P_
7440-39-3	Barium___	93.9	B		P_
7440-41-7	Beryllium	0.10	U		P_
7440-43-9	Cadmium__	0.80	U		P_
7440-70-2	Calcium__	91100			P_
7440-47-3	Chromium_	2.2	U		P_
7440-48-4	Cobalt___	1.4	B		P_
7440-50-8	Copper___	2.8	U		P_
7439-89-6	Iron_____	38.9	U		P_
7439-92-1	Lead_____	2.7	U		P_
7439-95-4	Magnesium	51600			P_
7439-96-5	Manganese	111			P_
7439-97-6	Mercury__	0.10	U		CV
7440-02-0	Nickel___	3.6	U		P_
7440-09-7	Potassium	8010			P_
7782-49-2	Selenium_	3.7	U		P_
7440-22-4	Silver___	2.8	U		P_
7440-23-5	Sodium___	14800			P_
7440-28-0	Thallium_	6.6	U		P_
7440-62-2	Vanadium_	3.5	U		P_
7440-66-6	Zinc_____	4.9	B		P_
_____	Cyanide__	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

DB164

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: T3813_

Matrix (soil water): WATER Lab Sample ID: 367361

Level (low med): LOW__ Date Received: 09/28/98

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	45.3	B		P
7440-36-0	Antimony_	7.8	U		P
7440-38-2	Arsenic__	4.5	U		P
7440-39-3	Barium___	85.3	B		P
7440-41-7	Beryllium	0.10	U		P
7440-43-9	Cadmium__	0.80	U		P
7440-70-2	Calcium__	138000			P
7440-47-3	Chromium_	2.2	U		P
7440-48-4	Cobalt___	1.4	U		P
7440-50-8	Copper___	2.8	U		P
7439-89-6	Iron_____	56.0	B		P
7439-92-1	Lead_____	2.7	U		P
7439-95-4	Magnesium	27200			P
7439-96-5	Manganese	4.7	B		P
7439-97-6	Mercury__	0.10	U		CV
7440-02-0	Nickel___	3.6	U		P
7440-09-7	Potassium	1770	B		P
7782-49-2	Selenium_	3.7	U		P
7440-22-4	Silver___	2.8	U		P
7440-23-5	Sodium___	14500			P
7440-28-0	Thallium_	6.6	U		P
7440-62-2	Vanadium_	3.5	U		P
7440-66-6	Zinc_____	9.7	B		P
_____	Cyanide__	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

CB305

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: T0813_

Matrix (soil/water): WATER Lab Sample ID: 367318

Level (low med): LOW__ Date Received: 09 26 98

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	33.1	U		P_
7440-36-0	Antimony_	7.8	U		P_
7440-38-2	Arsenic__	4.5	U		P_
7440-39-3	Barium___	4.9	U		P_
7440-41-7	Beryllium	0.10	U		P_
7440-43-9	Cadmium__	0.30	U		P_
7440-70-2	Calcium__	157	B		P_
7440-47-3	Chromium_	2.2	U		P_
7440-48-4	Cobalt___	1.4	U		P_
7440-50-8	Copper___	2.8	U		P_
7439-89-6	Iron_____	38.9	U		P_
7439-92-1	Lead_____	2.7	U		P_
7439-95-4	Magnesium	139	U		P_
7439-96-5	Manganese	1.9	U		P_
7439-97-6	Mercury__	0.10	U		CV
7440-02-0	Nickel___	3.6	U		P_
7440-09-7	Potassium	442	U		P_
7782-49-2	Selenium_	3.7	U		P_
7440-22-4	Silver___	2.8	U		P_
7440-23-5	Sodium___	1070	U		P_
7440-28-0	Thallium_	6.6	U		P_
7440-62-2	Vanadium_	3.5	U		P_
7440-66-6	Zinc_____	55.1			P_
_____	Cyanide__	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

1

INORGANIC ANALYSES DATA SHEET

EPA SAMPLE NO.

OB306

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70313_

Matrix (soil/water): WATER Lab Sample ID: 367319

Level (low/med): LOW__ Date Received: 09/26/98

% Solids: __0.0

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

CAS No.	Analyte	Concentration	C	Q	M
7429-90-5	Aluminum_	89.4	B		P_
7440-36-0	Antimony_	7.8	U		P_
7440-38-2	Arsenic__	4.5	U		P_
7440-39-3	Barium___	99.1	B		P_
7440-41-7	Beryllium	0.10	U		P_
7440-43-9	Cadmium__	0.80	U		P_
7440-70-2	Calcium__	78200			P_
7440-47-3	Chromium_	2.2	U		P_
7440-48-4	Cobalt___	1.4	U		P_
7440-50-8	Copper___	2.8	U		P_
7439-89-6	Iron_____	38.9	U		P_
7439-92-1	Lead_____	2.7	U		P_
7439-95-4	Magnesium	55400			P_
7439-96-5	Manganese	4.1	B		P_
7439-97-6	Mercury__	0.10	U		CV
7440-02-0	Nickel___	3.6	U		P_
7440-09-7	Potassium	9210			P_
7782-49-2	Selenium_	3.7	U		P_
7440-22-4	Silver___	2.8	U		P_
7440-23-5	Sodium___	13700			P_
7440-28-0	Thallium_	6.6	U		P_
7440-62-2	Vanadium_	3.5	U		P_
7440-66-6	Zinc_____	3.0	B		P_
_____	Cyanide__	5.0	U		AS

Color Before: COLORLESS Clarity Before: CLEAR_ Texture: _____

Color After: COLORLESS Clarity After: CLEAR_ Artifacts: _____

Comments:

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U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Initial Calibration Source: VENTURES____

Continuing Calibration Source: SPEX_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R (1)	M
Aluminum	26000.0	26270.00	101.0	30200.0	30440.00	100.8	30710.00	101.7	P
Antimony	250.0	260.00	104.0	300.0	312.80	104.3	311.10	103.7	P
Arsenic	250.0	254.20	101.7	100.0	100.70	100.7	98.84	98.8	P
Barium	500.0	504.40	100.9	200.0	203.20	101.6	203.20	101.6	P
Beryllium	500.0	504.80	101.0	100.0	100.70	100.7	100.90	100.9	P
Cadmium	500.0	498.40	99.7	100.0	99.37	99.4	99.26	99.3	P
Calcium	25000.0	25490.00	102.0	30200.0	30510.00	101.0	30500.00	101.0	P
Chromium	500.0	506.70	101.3	200.0	202.60	101.3	203.00	101.5	P
Cobalt	500.0	496.50	99.3	200.0	198.40	99.2	199.60	99.8	P
Copper	500.0	517.40	103.5	200.0	208.30	104.2	209.60	104.8	P
Iron	25500.0	26010.00	102.0	30200.0	30660.00	101.5	30850.00	102.2	P
Lead	1000.0	1019.00	101.9	400.0	408.50	102.1	404.80	101.2	P
Magnesium	25000.0	25390.00	101.6	30200.0	30590.00	101.3	30640.00	101.5	P
Manganese	500.0	496.10	99.2	200.0	202.40	101.2	201.20	100.6	P
Mercury	3.0	3.11	103.7	5.0	5.16	103.2	5.36	107.2	CV
Nickel	500.0	500.50	100.1	200.0	199.40	99.7	198.90	99.4	P
Potassium	25000.0	24420.00	97.7	30200.0	29450.00	97.5	29750.00	98.5	P
Selenium	250.0	254.28	101.7	100.0	94.66	94.7	95.20	95.2	P
Silver	500.0	510.20	102.0	100.0	101.10	101.1	101.20	101.2	P
Sodium	25000.0	23710.00	94.8	30200.0	29290.00	97.0	29480.00	97.6	P
Thallium	250.0	243.30	97.3	100.0	101.50	101.5	99.75	99.8	P
Vanadium	500.0	504.20	100.8	200.0	202.50	101.2	203.30	101.6	P
Zinc	500.0	500.50	100.1	200.0	205.10	102.6	205.00	102.5	P
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Initial Calibration Source: VENTURES____

Continuing Calibration Source: SPEX_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum				30200.0	30370.00	100.6			P
Antimony				300.0	312.70	104.2			P
Arsenic				100.0	99.82	99.8			P
Barium				200.0	201.00	100.5			P
Beryllium				100.0	100.10	100.1			P
Cadmium				100.0	98.97	99.0			P
Calcium				30200.0	30070.00	99.6			P
Chromium				200.0	201.70	100.8			P
Cobalt				200.0	197.30	98.6			P
Copper				200.0	206.90	103.4			P
Iron				30200.0	30530.00	101.1			P
Lead				400.0	400.90	100.2			P
Magnesium				30200.0	30280.00	100.3			P
Manganese				200.0	199.40	99.7			P
Mercury				5.0	5.17	103.4	5.26	105.2	CV
Nickel				200.0	196.50	98.2			P
Potassium				30200.0	29060.00	96.2			P
Selenium				100.0	94.58	94.6			P
Silver				100.0	100.90	100.9			P
Sodium				30200.0	28870.00	95.6			P
Thallium				100.0	101.40	101.4			P
Vanadium				200.0	201.50	100.8			P
Zinc				200.0	203.40	101.7			P
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Initial Calibration Source: VENTURES____

Continuing Calibration Source: SPEX_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury				5.0	5.25	105.0			CV
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide									NR

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: T0813_

Initial Calibration Source: FISHER_____

Continuing Calibration Source: FISHER_____

Concentration Units: ug/L

Analyte	Initial Calibration			Continuing Calibration					M
	True	Found	%R(1)	True	Found	%R(1)	Found	%R(1)	
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide	120.0	123.50	102.9	150.0	146.00	97.3	153.00	102.0	AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A
INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Initial Calibration Source: FISHER_____

Continuing Calibration Source: FISHER_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R(1)	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide				150.0	157.00	104.7			AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2A

INITIAL AND CONTINUING CALIBRATION VERIFICATION

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70213_

Initial Calibration Source: FISHER_____

Continuing Calibration Source: FISHER_____

Concentration Units: ug/L

Analyte	Initial Calibration True	Found	%R(1)	Continuing Calibration True	Found	%R(1)	Found	%R 1	M
Aluminum									NR
Antimony									NR
Arsenic									NR
Barium									NR
Beryllium									NR
Cadmium									NR
Calcium									NR
Chromium									NR
Cobalt									NR
Copper									NR
Iron									NR
Lead									NR
Magnesium									NR
Manganese									NR
Mercury									NR
Nickel									NR
Potassium									NR
Selenium									NR
Silver									NR
Sodium									NR
Thallium									NR
Vanadium									NR
Zinc									NR
Cyanide	120.0	131.00	109.2	150.0	152.00	101.3	153.00	102.0	AS

(1) Control Limits: Mercury 80-120; Other Metals 90-110; Cyanide 85-115

U.S. EPA - CLP

2B
CRDL STANDARD FOR AA AND ICP

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

AA CRDL Standard Source: VENTURES____

ICP CRDL Standard Source: VENTURES____

Concentration Units: ug/L

Analyte	CRDL Standard for AA			CRDL Standard for ICP				
	True	Found	%R	True	Initial Found	%R	Final Found	%R
Aluminum				400.0	493.30	123.3	490.70	122.7
Antimony				120.0	124.90	104.1	120.50	100.4
Arsenic				20.0	23.37	116.8	18.89	94.4
Barium				400.0	398.40	99.6	383.60	95.9
Beryllium				10.0	9.98	99.8	9.79	97.9
Cadmium				10.0	10.33	103.3	10.06	100.6
Calcium				10000.0	10280.00	102.8	9851.00	98.5
Chromium				20.0	20.38	101.9	19.75	98.8
Cobalt				100.0	98.36	98.4	94.32	94.3
Copper				50.0	51.35	102.7	49.09	98.2
Iron				200.0	235.30	117.6	202.50	101.2
Lead				6.0	4.24	70.7	6.46	107.7
Magnesium				10000.0	10150.00	101.5	9763.00	97.6
Manganese				30.0	29.06	96.9	27.42	91.4
Mercury	0.2	0.16	80.0					
Nickel				80.0	78.68	98.4	75.47	94.3
Potassium				10000.0	9341.00	93.4	8889.00	88.9
Selenium				10.0	9.48	94.8	9.37	93.7
Silver				20.0	19.36	96.8	19.78	98.9
Sodium				10000.0	9175.00	91.8	8433.00	84.3
Thallium				20.0	18.71	93.6	17.48	87.4
Vanadium				100.0	102.80	102.8	99.35	99.4
Zinc				40.0	41.16	102.9	39.38	98.4

3
BLANKS

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Preparation Blank Matrix (soil/water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L): 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum	33.1	U	33.1	U	33.1	U	33.1	U	33.100	U	P
Antimony	7.8	U	7.8	U	7.8	U	7.8	U	7.800	U	P
Arsenic	4.5	U	4.5	U	4.5	U	4.5	U	4.500	U	P
Barium	4.9	U	4.9	U	4.9	U	4.9	U	4.900	U	P
Beryllium	0.1	U	0.1	U	0.1	U	0.1	U	0.100	U	P
Cadmium	0.8	U	0.8	U	0.8	U	0.8	U	0.800	U	P
Calcium	146.0	U	146.0	U	146.0	U	146.0	U	146.000	U	P
Chromium	2.2	U	2.2	U	2.2	U	2.2	U	2.200	U	P
Cobalt	1.4	U	1.4	U	1.4	U	1.4	U	1.400	U	P
Copper	2.8	U	2.8	U	2.8	U	2.8	U	2.800	U	P
Iron	38.9	U	38.9	U	38.9	U	38.9	U	74.090	B	P
Lead	2.7	U	2.7	U	2.7	U	2.7	U	2.700	U	P
Magnesium	139.0	U	139.0	U	139.0	U	139.0	U	139.000	U	P
Manganese	1.9	U	-1.9	B	1.9	U	1.9	U	1.900	U	P
Mercury	0.1	U	0.1	U	0.1	U	-0.1	B	0.100	U	CV
Nickel	3.6	U	3.6	U	3.6	U	3.6	U	3.600	U	P
Potassium	442.0	U	442.0	U	442.0	U	442.0	U	442.000	U	P
Selenium	3.7	U	3.7	U	3.7	U	3.7	U	3.700	U	P
Silver	2.8	U	2.8	U	2.8	U	2.8	U	2.800	U	P
Sodium	1070.0	U	1070.0	U	1070.0	U	1070.0	U	1070.000	U	P
Thallium	6.6	U	6.6	U	6.6	U	6.6	U	6.600	U	P
Vanadium	3.5	U	3.5	U	3.5	U	3.5	U	3.500	U	P
Zinc	2.4	U	2.5	B	2.7	B	2.5	B	2.400	U	P
Cyanide	10.0	U	10.0	U	10.0	U	10.0	U	5.000	U	AS

3
BLANKS

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: T0813_

Preparation Blank Matrix (soil water): WATER

Preparation Blank Concentration Units (ug/L or mg/kg): UG/L_

Analyte	Initial Calib. Blank (ug/L)	C	Continuing Calibration Blank (ug/L) 1	C	2	C	3	C	Prepa-ration Blank	C	M
Aluminum											NR
Antimony											NR
Arsenic											NR
Barium											NR
Beryllium											NR
Cadmium											NR
Calcium											NR
Chromium											NR
Cobalt											NR
Copper											NR
Iron											NR
Lead											NR
Magnesium											NR
Manganese											NR
Mercury			0.1	U	0.1	U					CV
Nickel											NR
Potassium											NR
Selenium											NR
Silver											NR
Sodium											NR
Thallium											NR
Vanadium											NR
Zinc											NR
Cyanide	10.0	U	10.0	U	10.0	U			5.000	U	AS

4
ICP INTERFERENCE CHECK SAMPLE

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No: _____ SDG No.: 70813_

ICP ID Number: ICP5 TJA 61E ICS Source: VENTURES____

Concentration Units: ug/L

Analyte	True Sol. A	True Sol. AB	Initial Found Sol. A	Initial Found Sol. AB	Initial %R	Final Found Sol. A	Final Found Sol. AB	Final %R
Aluminum	500000	493400	514300	503100.0	102.0	519400	509400.0	103.2
Antimony	0	591	-5	617.6	104.5	-4	612.5	103.6
Arsenic	0	89	-3	91.6	102.9	-4	91.4	102.7
Barium	0	526	4	534.6	101.6	4	535.9	101.9
Beryllium	0	491	0	495.5	100.9	0	498.4	101.5
Cadmium	0	934	0	939.9	100.6	0	942.5	100.9
Calcium	500000	481380	486800	487600.0	101.3	485700	486900.0	101.1
Chromium	0	489	3	493.5	100.9	4	498.2	101.9
Cobalt	0	459	2	461.6	100.6	2	464.0	101.1
Copper	0	541	8	550.7	101.8	9	555.5	102.7
Iron	200000	192580	196800	195900.0	101.7	197900	197500.0	102.6
Lead	0	48	3	53.4	111.2	3	49.9	104.0
Magnesium	500000	497700	512100	509600.0	102.4	512700	511400.0	102.8
Manganese	0	492	11	497.1	101.0	10	498.2	101.3
Mercury								
Nickel	0	903	-1	904.4	100.2	-1	908.0	100.6
Potassium	0	0	107	1.7		224	92.5	
Selenium	0	52	-4	47.9	92.1	-5	45.8	88.1
Silver	0	206	-2	210.5	102.2	-2	211.8	102.8
Sodium	0	0	-72	204.1		81	-42.1	
Thallium	0	92	0	91.7	99.7	-3	90.5	98.4
Vanadium	0	509	2	519.4	102.0	1	521.7	102.5
Zinc	0	971	17	982.2	101.2	17	982.9	101.2

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5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

CB153S

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 70813

Matrix (soil water): WATER Level (low med): LOW

% Solids for Sample: 0.0

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

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Spike Added (SA)	%R	Q	M
Aluminum	75-125	2225.0000		146.1000	B	2000.00	103.9		P
Antimony	75-125	534.8000		7.8000	U	500.00	107.0		P
Arsenic	75-125	41.2700		4.5000	U	40.00	103.2		P
Barium	75-125	2112.0000		100.9000	B	2000.00	100.6		P
Beryllium	75-125	48.7700		0.1000	U	50.00	97.5		P
Cadmium	75-125	49.6300		0.8000	U	50.00	99.3		P
Calcium									NR
Chromium	75-125	202.9000		2.2000	U	200.00	101.4		P
Cobalt	75-125	489.5000		1.4000	U	500.00	97.9		P
Copper	75-125	257.6000		2.8000	U	250.00	103.0		P
Iron	75-125	1103.0000		38.9000	U	1000.00	110.3		P
Lead	75-125	17.0600		2.7000	U	20.00	85.3		P
Magnesium									NR
Manganese	75-125	502.2000		5.8020	B	500.00	99.3		P
Mercury	75-125	1.0200		0.1000	U	1.00	102.0		CV
Nickel	75-125	487.2000		3.6000	U	500.00	97.4		P
Potassium									NR
Selenium	75-125	9.4480		3.7000	U	10.00	94.5		P
Silver	75-125	50.4100		2.8000	U	50.00	100.8		P
Sodium									NR
Thallium	75-125	49.9000		6.6000	U	50.00	99.8		P
Vanadium	75-125	508.0000		3.5000	U	500.00	101.6		P
Zinc	75-125	498.8000		7.2470	B	500.00	98.3		P
Cyanide	75-125	53.0000		5.0000	U	50.00	106.0		AS

Comments:

6
DUPLICATES

EPA SAMPLE NO.
OB158D

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Matrix (soil water): WATER Level (low med): _LOW__

% Solids for Sample: __0.0 % Solids for Duplicate: ___0.0

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

Analyte	Control Limit	Sample (S)	C	Duplicate (D)	C	RPD	Q	M
Aluminum		146.1000	B	156.0000	B	6.6		P
Antimony		7.8000	U	7.8000	U			P
Arsenic		4.5000	U	4.5000	U			P
Barium		100.9000	B	101.8000	B	0.9		P
Beryllium		0.1000	U	0.1000	U			P
Cadmium		0.8000	U	0.8000	U			P
Calcium		78910.0000		79730.0000		1.0		P
Chromium		2.2000	U	2.2000	U			P
Cobalt		1.4000	U	1.4000	U			P
Copper		2.8000	U	2.8000	U			P
Iron		38.9000	U	38.9000	U			P
Lead		2.7000	U	2.7000	U			P
Magnesium		56140.0000		56760.0000		1.1		P
Manganese		5.8020	B	6.4590	B	10.7		P
Mercury		0.1000	U	0.1000	U			CV
Nickel		3.6000	U	3.6000	U			P
Potassium	5000.0	9422.0000		9608.0000		2.0		P
Selenium		3.7000	U	3.7000	U			P
Silver		2.8000	U	2.8000	U			P
Sodium	5000.0	13570.0000		14060.0000		3.5		P
Thallium		6.6000	U	6.6000	U			P
Vanadium		3.5000	U	3.5000	U			P
Zinc		7.2470	B	3.1370	B	79.2		P
Cyanide		5.0000	U	5.0000	U			AS

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LABORATORY CONTROL SAMPLE

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Solid LCS Source: _____

Aqueous LCS Source: VENTURES____

Analyte	Aqueous (ug/L) True	Found	%R	Solid (mg/kg) True	Found	C	Limits		%R
Aluminum	51000.0	48620.00	95.3						
Antimony	2000.0	1964.00	98.2						
Arsenic	1050.0	1012.00	96.4						
Barium	500.0	475.60	95.1						
Beryllium	500.0	473.60	94.7						
Cadmium	525.0	487.60	92.9						
Calcium	50000.0	47590.00	95.2						
Chromium	500.0	474.10	94.8						
Cobalt	500.0	462.00	92.4						
Copper	500.0	495.20	99.0						
Iron	50500.0	48120.00	95.3						
Lead	1015.0	968.00	95.4						
Magnesium	50000.0	47700.00	95.4						
Manganese	500.0	467.00	93.4						
Mercury	1.0	1.01	101.0						
Nickel	500.0	464.80	93.0						
Potassium	50000.0	45390.00	90.8						
Selenium	525.0	492.41	93.8						
Silver	500.0	482.00	96.4						
Sodium	50000.0	46880.00	93.8						
Thallium	550.0	505.00	91.8						
Vanadium	500.0	472.00	94.4						
Zinc	500.0	465.40	93.1						
Cyanide									

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STANDARD ADDITION RESULTS

Lab Name: SEVERN_TRENT_LABORATORIES Contract:98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.:_______ SDG No.:70813_

Concentration Units: ug/L

EPA Sample No.	An	0 ADD ABS	1 ADD CON	1 ADD ABS	2 ADD CON	2 ADD ABS	3 ADD CON	3 ADD ABS	Final Conc.	r	Q

9

ICP SERIAL DILUTION

EPA SAMPLE NO.

OB158L

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011

Lab Code: INCHVT Case No.: 98011 SAS No.: SDG No.: 70813

Matrix (soil/water): WATER Level (low/med): LOW

Concentration Units: ug/L

Analyte	Initial Sample Result (I)	C	Serial Dilution Result (S)	C	% Difference	Q	M
Aluminum	146.10	B	165.50	U	100.0		P
Antimony	7.80	U	39.00	U			P
Arsenic	4.50	U	22.50	U			P
Barium	100.90	B	100.40	B	0.5		P
Beryllium	0.10	U	0.50	U			P
Cadmium	0.80	U	4.00	U			P
Calcium	78910.00		79450.00		0.7		P
Chromium	2.20	U	11.00	U			P
Cobalt	1.40	U	7.00	U			P
Copper	2.80	U	14.00	U			P
Iron	38.90	U	194.50	U			P
Lead	2.70	U	13.50	U			P
Magnesium	56140.00		56330.00		0.3		P
Manganese	5.80	B	9.50	U	100.0		P
Mercury							NR
Nickel	3.60	U	18.00	U			P
Potassium	9422.00		9241.00	B	1.9		P
Selenium	3.70	U	18.50	U			P
Silver	2.80	U	14.00	U			P
Sodium	13570.00		9540.00	B	29.7		P
Thallium	6.60	U	33.00	U			P
Vanadium	3.50	U	17.50	U			P
Zinc	7.25	B	15.97	B	120.3		P

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Instrument Detection Limits (Quarterly)

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70313_

ICP ID Number: ICP5_TJA_61E Date: 10/16/98

Flame AA ID Number : _____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum	237.31		200	33.1	P
Antimony	206.84		60	7.8	P
Arsenic	189.04		10	4.5	P
Barium	493.41		200	4.9	P
Beryllium	313.04		5	0.1	P
Cadmium	226.50		5	0.8	P
Calcium	317.93		5000	146.0	P
Chromium	267.72		10	2.2	P
Cobalt	228.61		50	1.4	P
Copper	324.75		25	2.8	P
Iron	271.44		100	38.9	P
Lead	220.35		3	2.7	P
Magnesium	279.08		5000	139.0	P
Manganese	294.92		15	1.9	P
Mercury			0.2		NR
Nickel	231.60		40	3.6	P
Potassium	766.49		5000	442.0	P
Selenium	196.03		5	3.7	P
Silver	328.07		10	2.8	P
Sodium	330.23		5000	1070.0	P
Thallium	190.86		10	6.6	P
Vanadium	292.40		50	3.5	P
Zinc	213.85		20	2.4	P

Comments:

10
Instrument Detection Limits (Quarterly)

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70313_

ICP ID Number: _____ Date: 07/16/89

Flame AA ID Number : CV2_PS200___

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury	253.70		0.2	0.1	CV
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR

Comments:

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Instrument Detection Limits (Quarterly)

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

ICP ID Number: _____ Date: 07/16/98

Flame AA ID Number : PS1214_____

Furnace AA ID Number : _____

Analyte	Wave-length (nm)	Back-ground	CRDL (ug/L)	IDL (ug/L)	M
Aluminum			200		NR
Antimony			60		NR
Arsenic			10		NR
Barium			200		NR
Beryllium			5		NR
Cadmium			5		NR
Calcium			5000		NR
Chromium			10		NR
Cobalt			50		NR
Copper			25		NR
Iron			100		NR
Lead			3		NR
Magnesium			5000		NR
Manganese			15		NR
Mercury			0.2		NR
Nickel			40		NR
Potassium			5000		NR
Selenium			5		NR
Silver			10		NR
Sodium			5000		NR
Thallium			10		NR
Vanadium			50		NR
Zinc			20		NR

Comments:

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11A
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

ICP ID Number: ICP5 TJA 61E Date: 01/16/98

Analyte	Wave-length (nm)	Interelement Correction Factors for : Al	Ca	Fe	Mg	CD_
Aluminum	237.31	0.0000000	0.0000000	-0.0007060	0.0000000	0.0000000
Antimony	206.84	0.0000000	0.0000000	0.0000310	0.0000000	0.0000000
Arsenic	189.04	0.0000030	0.0000000	-0.0000190	0.0000000	0.0000000
Barium	493.41	0.0000000	0.0000000	0.0000040	0.0000000	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Cadmium	226.50	-0.0000020	0.0000000	0.0000720	0.0000000	0.0000000
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000000	0.0000000	-0.0002050
Cobalt	228.61	0.0000000	0.0000000	0.0000000	0.0000000	0.0002010
Copper	324.75	0.0000000	0.0000000	-0.0001110	0.0000000	0.0000000
Iron	271.44	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Lead	220.35	0.0009400	0.0000000	0.0000580	0.0000000	0.0000000
Magnesium	279.08	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Manganese	294.92	0.0000000	0.0000000	0.0006600	0.0000170	0.0000000
Mercury						
Nickel	231.60	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	-0.0000610	0.0000000	0.0001100	0.0000020	0.0000000
Silver	328.07	0.0000000	0.0000000	-0.0000020	0.0000010	0.0000000
Sodium	330.23	0.0000000	0.0000000	-0.0001390	0.0000000	0.0000000
Thallium	190.86	-0.0000080	0.0000000	-0.0000300	0.0000000	0.0000000
Vanadium	292.40	0.0000000	0.0000000	0.0000230	0.0000000	0.0000000
Zinc	213.85	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

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11B
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

ICP ID Number: ICP5 TJA 61E Date: 01/16/98

Analyte	Wave-length (nm)	Interelement Correction Factors for :				
		CO_	CR_	MN_	NI_	TI_
Aluminum	237.31	0.0010260	-0.0001500	0.0004560	0.0000000	0.0000000
Antimony	206.84	0.0000000	0.0106760	0.0000000	-0.0010930	0.0009800
Arsenic	189.04	0.0000000	0.0000130	-0.0000260	0.0000000	0.0000000
Barium	493.41	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Beryllium	313.04	0.0000000	0.0000000	0.0000000	0.0000000	0.0006000
Cadmium	226.50	0.0000190	0.0000000	0.0000000	-0.0001420	0.0001100
Calcium	317.93	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Chromium	267.72	0.0000000	0.0000000	0.0000200	0.0000000	0.0000000
Cobalt	228.61	0.0000000	0.0000760	0.0000000	0.0001550	0.0021800
Copper	324.75	-0.0006200	0.0000000	0.0000000	0.0000000	0.0000000
Iron	271.44	0.0834400	0.0000000	-0.0010430	-0.0005400	0.0000000
Lead	220.35	-0.0032100	0.0000200	0.0000000	0.0001830	0.0002200
Magnesium	279.08	0.0000000	0.0000000	0.0083200	0.0000000	0.0000000
Manganese	294.92	0.0000000	-0.0001100	0.0000000	0.0000000	0.0000000
Mercury						
Nickel	231.60	0.0005300	0.0000000	-0.0000770	0.0000000	0.0000000
Potassium	766.49	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Selenium	196.03	0.0003320	0.0000000	0.0003360	0.0000000	0.0000000
Silver	328.07	0.0000000	0.0000450	0.0001060	0.0000000	0.0004400
Sodium	330.23	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000
Thallium	190.86	0.0031500	0.0003050	-0.0053100	0.0000000	0.0003200
Vanadium	292.40	0.0000000	-0.0014900	-0.0000760	0.0000000	0.0005480
Zinc	213.85	0.0000000	0.0000000	0.0000000	0.0000000	0.0000000

Comments:

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11B
ICP INTERELEMENT CORRECTION FACTORS (ANNUALLY)

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: T0813_

ICP ID Number: ICP5 TJA 61E Date: 01/16/98

Analyte	Wave-length (nm)	Interelement Correction Factors for : V	ZN			
Aluminum	237.31	-0.0041100	0.0000000			
Antimony	206.84	-0.0107300	0.0002410			
Arsenic	189.04	-0.0010590	0.0000000			
Barium	493.41	0.0000420	0.0000000			
Beryllium	313.04	0.0015700	0.0000000			
Cadmium	226.50	0.0000000	0.0000000			
Calcium	317.93	0.0000000	0.0000000			
Chromium	267.72	0.0000000	0.0000000			
Cobalt	228.61	0.0000000	0.0000000			
Copper	324.75	-0.0001320	0.0000000			
Iron	271.44	0.0076000	0.0000000			
Lead	220.35	0.0000000	0.0000000			
Magnesium	279.08	0.0000000	0.0000000			
Manganese	294.92	0.0048700	0.0000000			
Mercury						
Nickel	231.60	-0.0001520	0.0000000			
Potassium	766.49	0.0000000	0.0000000			
Selenium	196.03	0.0001120	0.0000000			
Silver	328.07	0.0004460	0.0000000			
Sodium	330.23	0.0000000	0.9394000			
Thallium	190.86	0.0018800	0.0000000			
Vanadium	292.40	0.0000000	0.0000000			
Zinc	213.85	-0.0054500	0.0000000			

Comments:

12
ICP LINEAR RANGES (QUARTERLY)

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

ICP ID Number: ICP5 TJA 61E Date: 10/16/98

Analyte	Integ. Time (sec.)	Concentration (ug L)	M
Aluminum	10.00	1000000.0	P
Antimony	10.00	100000.0	P
Arsenic	10.00	5000.0	P
Barium	10.00	20000.0	P
Beryllium	10.00	10000.0	P
Cadmium	10.00	25000.0	P
Calcium	10.00	600000.0	P
Chromium	10.00	100000.0	P
Cobalt	10.00	100000.0	P
Copper	10.00	100000.0	P
Iron	10.00	1000000.0	P
Lead	10.00	100000.0	P
Magnesium	10.00	1000000.0	P
Manganese	10.00	100000.0	P
Mercury			NR
Nickel	10.00	100000.0	P
Potassium	10.00	100000.0	P
Selenium	10.00	5000.0	P
Silver	10.00	2000.0	P
Sodium	10.00	100000.0	P
Thallium	10.00	5000.0	P
Vanadium	10.00	100000.0	P
Zinc	10.00	10000.0	P

Comments:

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PREPARATION LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.:_98011_ SAS No.: _____ SDG No.:70813_

Method: P_

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSW11	10/14/98		100
OB150	10/14/98		100
OB154	10/14/98		100
OB158	10/14/98		100
OB158D	10/14/98		100
OB158S	10/14/98		100
OB162	10/14/98		100
OB166	10/14/98		100
OB805	10/14/98		100
OB806	10/14/98		100
PBW11	10/14/98		100

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PREPARATION LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.:_98011_ SAS No.: _____ SDG No.:[illegible]

Method: CV

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
LCSW11	10/07/98		100
OB150	10/07/98		100
OB154	10/07/98		100
OB158	10/07/98		100
OB158D	10/07/98		100
OB158S	10/07/98		100
OB162	10/07/98		100
OB166	10/07/98		100
OB805	10/07/98		100
OB806	10/07/98		100
PBW11	10/07/98		100

13
PREPARATION LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011 SAS No.: _____ SDG No.: 70813

Method: AS

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
ICV	10/03/98		250
OB150	10/03/98		250
OB154	10/03/98		250
OB158	10/03/98		250
OB158D	10/03/98		250
OB158S	10/03/98		250
OB805	10/03/98		250
OB806	10/03/98		250
PBW11	10/03/98		250

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PREPARATION LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.:_98011_ SAS No.: _____ SDG No.:70813_

Method: AS

EPA Sample No.	Preparation Date	Weight (gram)	Volume (mL)
ICV	10/06/98		250
OB162	10/06/98		250
OB166	10/06/98		250
PBW22	10/06/98		250

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ANALYSIS RUN LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.: 70813_

Instrument ID Number: ICP5 TJA 61E_ Method: P_

Start Date: 10/22/98 End Date: 10/22/98

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN			
S0	1.00	1156		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
S	1.00	1200		X						X				X		X				X		X				_			
S	1.00	1205			X	X	_	_	_		_	_	_		X		_	_	_		X	_		X	_	_	_			
S	1.00	1209		_			X	X	X	_	X	X	X	_		_	X	_	X	_		X	_		X	X	_			
ICV	1.00	1215		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
ICB	1.00	1219		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
ICSA	1.00	1224		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
ICSAB	1.00	1229		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CRI	1.00	1233		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CCV	1.00	1238		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CCB	1.00	1243		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
PBW11	1.00	1248		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
LCSW11	1.00	1252		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB154	1.00	1257		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB158	1.00	1301		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB158L	5.00	1306		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB158A	1.00	1311																												
OB158S	1.00	1315		X	X	X	X	X	X	_	X	X	X	X	X	_	X	_	X	_	X	X	_	X	X	X	_			
OB158D	1.00	1320		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB805	1.00	1324		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB806	1.00	1329		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CCV	1.00	1334		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CCB	1.00	1338		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB150	1.00	1343		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB162	1.00	1348		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
OB166	1.00	1352		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
ICSA	1.00	1357		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
ICSAB	1.00	1402		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CRI	1.00	1406		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CCV	1.00	1411		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
CCB	1.00	1416		X	X	X	X	X	X	X	X	X	X	X	X	X	X	_	X	X	X	X	X	X	X	X	_			
				_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_			
				_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_	_			

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ANALYSIS RUN LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.:70813_

Instrument ID Number: CV2 PS200____ Method: CV

Start Date: 10/08/98 End Date: 10/08/98

EPA Sample No.	D/F	Time	% R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1006																X								
S0.2	1.00	1010																X								
S0.5	1.00	1013																X								
S1	1.00	1016																X								
S5	1.00	1019																X								
S10	1.00	1023																X								
ICV	1.00	1026																X								
ICB	1.00	1029																X								
CRA	1.00	1032																X								
CCV	1.00	1035																X								
CCB	1.00	1038																X								
ZZZZZZ	1.00	1042																								
ZZZZZZ	1.00	1045																								
ZZZZZZ	1.00	1048																								
ZZZZZZ	1.00	1051																								
ZZZZZZ	1.00	1054																								
ZZZZZZ	1.00	1057																								
ZZZZZZ	1.00	1101																								
ZZZZZZ	1.00	1104																								
ZZZZZZ	1.00	1107																								
CCV	1.00	1110																X								
CCB	1.00	1113																X								
ZZZZZZ	1.00	1117																								
ZZZZZZ	1.00	1120																								
ZZZZZZ	1.00	1123																								
ZZZZZZ	1.00	1126																								
ZZZZZZ	1.00	1129																								
ZZZZZZ	1.00	1132																								
ZZZZZZ	1.00	1135																								
ZZZZZZ	1.00	1139																								
ZZZZZZ	1.00	1142																								
CCV	1.00	1145																X								

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ANALYSIS RUN LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.:70813_

Instrument ID Number: CV2 PS200____ Method: CV

Start Date: 10/08/98 End Date: 10/08/98

EPA Sample No.	D/F	Time	% R	Analytes																							
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCB	1.00	1148																X								
ZZZZZZ	1.00	1151																								
ZZZZZZ	1.00	1154																								
ZZZZZZ	1.00	1158																								
ZZZZZZ	1.00	1201																								
PBW11	1.00	1204																X								
LCSW11	1.00	1207																X								
ZZZZZZ	1.00	1210																								
ZZZZZZ	1.00	1213																								
OB154	1.00	1217																X								
CCV	1.00	1220																X								
CCB	1.00	1223																X								
OB158	1.00	1226																X								
OB158S	1.00	1229																X								
OB158D	1.00	1233																X								
OB805	1.00	1236																X								
OB806	1.00	1239																X								
OB150	1.00	1242																X								
OB162	1.00	1246																X								
OB166	1.00	1249																X								
CCV	1.00	1252																X								
CCB	1.00	1255																X								

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ANALYSIS RUN LOG

Lab Name: SEVERN_TRENT_LABORATORIES Contract: 98011_____

Lab Code: INCHVT Case No.: 98011_ SAS No.: _____ SDG No.:70813_

Instrument ID Number: PS1214_____ Method: AS

Start Date: 10/03/98 End Date: 10/03/98

EPA Sample No.	D/F	Time	%R	Analytes																										
				AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1251																								X
S10	1.00	1254																								X
S50	1.00	1256																								X
S100	1.00	1258																								X
S200	1.00	1300																								X
S300	1.00	1302																								X
ICV	1.00	1305																								X
ICB	1.00	1307																								X
CCV	1.00	1309																								X
CCB	1.00	1311																								X
ZZZZZZ	1.00	1313																								
ZZZZZZ	1.00	1315																								
PBW11	1.00	1317																								X
ZZZZZZ	1.00	1320																								
ZZZZZZ	1.00	1322																								
ZZZZZZ	1.00	1324																								
ZZZZZZ	1.00	1326																								
ZZZZZZ	1.00	1328																								
OB805	1.00	1330																								X
OB806	1.00	1332																								X
CCV	1.00	1334																								X
CCB	1.00	1336																								X
OB150	1.00	1338																								X
ZZZZZZ	1.00	1340																								
ZZZZZZ	1.00	1342																								
ZZZZZZ	1.00	1344																								
ZZZZZZ	1.00	1347																								
OB154	1.00	1349																								X
OB158	1.00	1351																								X
OB158S	1.00	1353																								X
OB158D	1.00	1355																								X
ZZZZZZ	1.00	1357																								

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ANALYSIS RUN LOG

Lab Name: SEVERN_TRENT_LABORATORIES   Contract: 98011_____

Lab Code: INCHVT   Case No.: 98011_   SAS No.: ______   SDG No.: 70813_

Instrument ID Number: PS1214_______   Method: AS

Start Date: 10/03/98   End Date: 10/03/98

EPA Sample No.	D/F	Time	% R	AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
CCV	1.00	1359																									X
CCB	1.00	1401																									X

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ANALYSIS RUN LOG

Lab Name: SEVERN_TRENT_LABORATORIES　　Contract: 98011_____

Lab Code: INCHVT　　Case No.: 98011_　　SAS No.: ______　　SDG No.: 70813_

Instrument ID Number: PS1214_______　　Method: AS

Start Date: 10/06/98　　End Date: 10/06/98

EPA Sample No.	D/F	Time	% R	AL	SB	AS	BA	BE	CD	CA	CR	CO	CU	FE	PB	MG	MN	HG	NI	K	SE	AG	NA	TL	V	ZN	CN
S0	1.00	1429																									X
S10	1.00	1431																									X
S50	1.00	1433																									X
S100	1.00	1435																									X
S200	1.00	1438																									X
S300	1.00	1440																									X
ICV	1.00	1442																									X
ICB	1.00	1444																									X
CCV	1.00	1446																									X
CCB	1.00	1449																									X
ZZZZZZ	1.00	1451																									
PBW22	1.00	1453																									X
ZZZZZZ	1.00	1455																									
ZZZZZZ	1.00	1457																									
ZZZZZZ	1.00	1459																									
ZZZZZZ	1.00	1501																									
ZZZZZZ	1.00	1503																									
ZZZZZZ	1.00	1505																									
OB162	1.00	1507																									X
OB166	1.00	1510																									X
CCV	1.00	1512																									X
CCB	1.00	1514																									X