OBG-01-003

00412

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GROUNDWATER MONITORING
VALIDATED ANALYTICAL RESULTS FOR THE THIRD QUARTER 1995
OB/OD GROUND, SENECA ARMY DEPOT

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

PREPARED BY:

Parsons Engineering Science, Inc.
Boston, Massachusetts

December 1995
D#14

PARSONS ENGINEERING SCIENCE, INC.

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December 6, 1995
725980-01007

Mr. Stephen Absolom
FFA Program Manager
Director of Engineering and Housing
ATTN: SDSSE-HE
Building 123
Seneca Army Depot Activity
Romulus, New York 14541-5001

SUBJECT: OB and OD Grounds Third Quarter 1995 Groundwater Monitoring Program, Seneca Army Depot Activity, Romulus, New York

Dear Mr. Absolom:

The attached report summarizes the groundwater monitoring results at the OB and OD Grounds for the third quarter 1995. The analytical results indicate that there were no significant releases of metals or cyanide to groundwater from the burning tray at the OB Grounds or from the open detonation mound at the OD Grounds.

The work for this quarter of groundwater monitoring was performed in accordance with Task No. 12 of Delivery Order 0029 of the Parsons ES Contract DACA87-92-D-0022.

Field Activities

A round of groundwater elevations were obtained from monitoring wells MW-12, MW-13, MW-14 and MW-27 at the OB Grounds, and MW45-3 at the OD Grounds. Wells MW45-1, MW45-2, and MW45-4 were found to be dry. Groundwater samples were obtained from the above wells using a peristaltic pump. The samples were not filtered in the field prior to collection. All wells showed good recovery after purging with the exception of MW45-3 which was slow to recover. Specific conductivities were in the range of 750-1200 umhos/cm and pH was neutral (7.0) with the exception of MW45-3 which showed slightly acidic conditions (6-6.5), yet still within the range of normal pH for groundwater.

Groundwater Elevation Data

Mean Sea Levels (MSL) elevations were obtained from the above-referenced wells on September 12, 1995. Groundwater contours developed for the OB Grounds indicate a flow direction generally to the northeast with a hydraulic gradient of approximately 0.013. Groundwater contours were not developed for the OD Grounds because of the dry conditions in three of the four wells in this area.

Analytical Results

The groundwater samples were shipped with chain-of-custody to Aquatec Laboratories on September 14, 1995 for TAL metals, mercury and cyanide analyses. The analytical results were validated by Parsons ES in accordance with the NYSDEC Data Validation Procedures. The validated analytical results indicate that there were not significant concentrations of metals or cyanide either in the actual groundwater samples or the rinsate blank. The one duplicate sample showed a good correlation.

In summary, the groundwater monitoring results for OB/OD Grounds for the third quarter 1995, continue to indicate no adverse impacts from metals or cyanide to groundwater in these areas of SEDA.

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

PARSONS ENGINEERING SCIENCE, INC.

Michael Duchesneau, P.E.
Project Manager

MD/cmf/D#14

Enclosure

cc: Ms. L. Percifield, CEMRD
Ms. D. Richards, USACOE
Mr. R. Battaglia, CENAN

TABLES

Table 1	Groundwater Elevation Data
Table 2	Validated Metals Results

TABLE 1

SENECA ARMY DEPOT ACTIVITY
1995 GROUNDWATER MONITORING PROGRAM
GROUNDWATER ELEVATION DATA

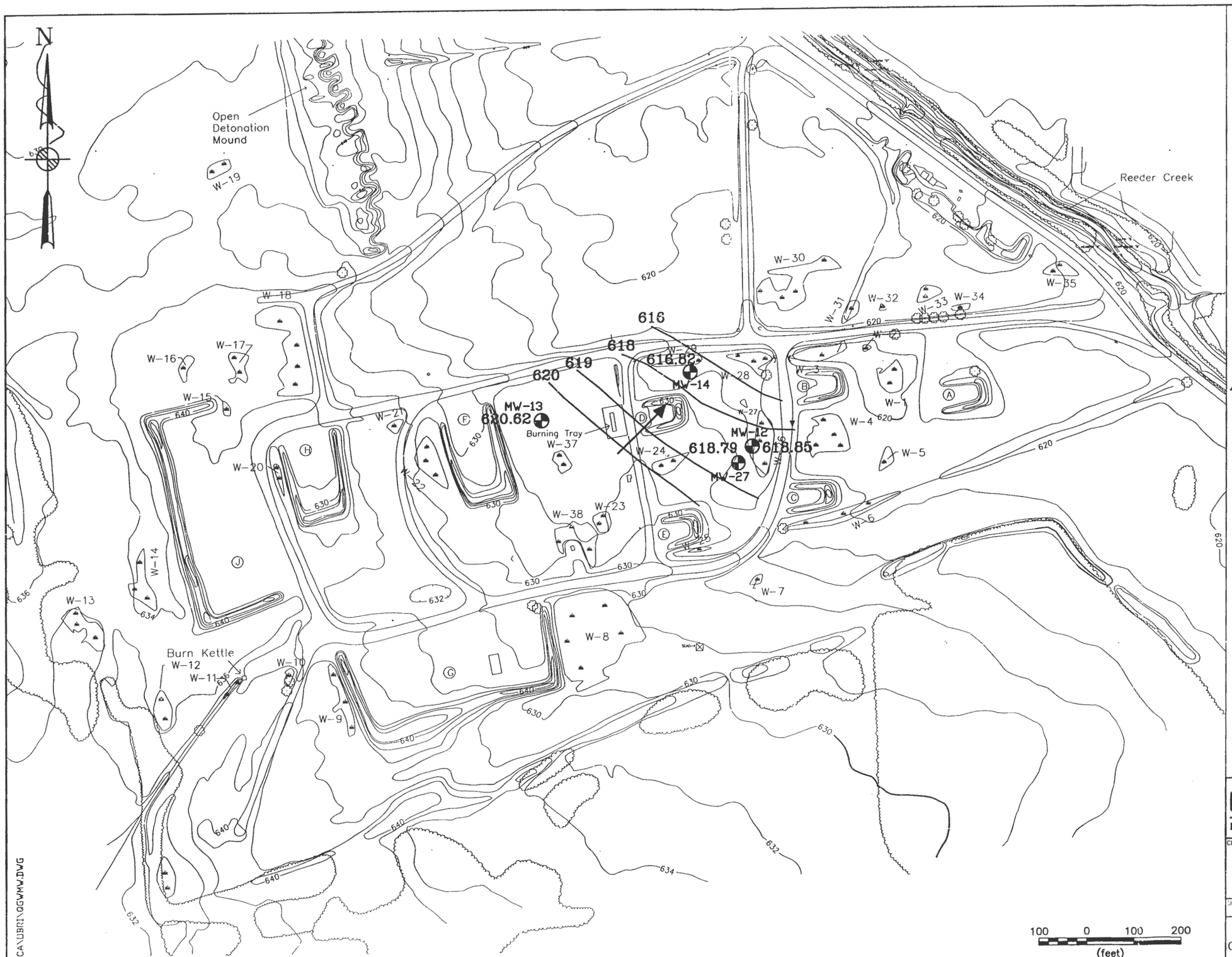
Monitoring Well	Elevation at Top of Riser (MSL)	First Quarter 1995			Second Quarter 1995			Third Quarter 1995		
		Date	Depth from Top of Riser (ft.)	Elevation of Water Level (ft.)	Date	Depth from Top of Riser (ft.)	Elevation of Water Level (ft.)	Date	Depth from Top of Riser (ft.)	Elevation of Water Level (ft.)
OB Grounds										
MW-12	624.5	03/15/95	Not sampled		06/08/95	4.36	620.14	09/13/95	5.65	618.85
MW-13	627.09	03/15/95	2.3	624.79	06/08/95	4.95	622.14	09/13/95	6.47	620.62
MW-14	624.51	03/15/95	Not sampled		06/08/95	6.4	618.11	09/13/95	7.69	616.82
MW-27	625.94	03/15/95	Not sampled		06/08/95	6.7	619.24	09/13/95	7.15	618.79
OD Grounds										
MW45-1	625.08	03/15/95	Not sampled		06/08/95	Dry		09/13/95	Dry	
MW45-2	626.76	03/15/95	Not sampled		06/08/95	Dry		09/13/95	Dry	
MW45-3	626.45	03/15/95	Not sampled		06/08/95	9.4	617.05	09/13/95	11.3	615.15
MW45-4	633.04	03/15/95	5.27	627.77	06/08/95	8.36	624.68	09/13/95	Dry	

Table 2
OB/OD 1995 Third Quarter Groundwater Monitoring
Validated Metals Analyses Results

	MATRIX	WATER	WATER	WATER	WATER	WATER	WATER	WATER
	SITE	OB/OD	OB/OD	OB/OD	OB/OD	OB/OD	OB/OD	OB/OD
	DATE SAMPLED	09/12/95	09/12/95	09/12/95	09/12/95	09/12/95	09/12/95	09/12/95
	ES ID	MW114	MW12	MW13	MW14	MW14R	MW27	MW45-3
	LAB ID	270985	270972	270973	270974	270975	271848	270980
TAL	UNITS	Duplicate MW14				Rinsate Blank		
minum	ug/L	105 U	211	10 U	405	11 U	9 U	53
mony	ug/L	2 U	3 U	2 U	2 U	2 U	2 U	2
enic	ug/L	2 U	2 U	2 U	2 U	2 U	2 U	2
um	ug/L	55 U	105 U	84 U	57 U	3 U	86 U	20
ylium	ug/L	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2
lmium	ug/L	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3 U	0.3
cium	ug/L	160000	81800	136000	160000	86 U	94500	189000
omium	ug/L	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5 U	0.5
balt	ug/L	1 U	1 U	0 U	0 U	1 U	1 U	1
pper	ug/L	0.7 U	0.7 U	0.7 U	1 U	0.7 U	0.7 U	0.8
	ug/L	134	247	18 U	481	18 U	18 U	151
d	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1
gnesium	ug/L	31600	60900	26300	31800	92 U	55800	72700
nganese	ug/L	6 U	6 U	1 U	10 U	0 U	63	166
cury	ug/L	0.03 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02 U	0.02
kel	ug/L	1 U	1 U	0 U	0 U	1 U	2 B	5
assium	ug/L	2050 U	11600	2010 U	2080 U	105 U	10200	11400
enium	ug/L	3 UJ	3 UJ	3 UJ	3 UJ	3 UJ	3 UJ	3
er	ug/L	0.8 U	0.8 U	0.8 U	0.8 U	3.7 U	0.8 U	0.8
ium	ug/L	31400	18200	16500	32200	345 U	18400	17600
llium	ug/L	3 U	3 U	3 U	3 U	3 U	3 U	3
adium	ug/L	1 U	1 U	1 U	1 U	1 U	1 U	1
	ug/L	31	8 U	1 B	15 U	2 U	1 U	17
nide	ug/L	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5 UJ	5

FIGURES

Figure 1	OB Grounds Groundwater Elevation Plans
Figure 2	OD Grounds Groundwater Elevation Plans



LEGEND:

- BURNING PAD DESIGNATION
- PAD OR GRID BORING
- GROUND CONTOUR AND ELEVATION
- W-1 WETLAND & DESIGNATION
- 616.82 MW-14 MONITORING WELL & DESIGNATION AND MSL ELEVATION DATUM
- UTILITY POLE
- TREE
- BRUSH
- 744 GROUNDWATER ELEVATION CONTOUR MSL DATUM
- GENERAL GROUNDWATER FLOW DIRECTION

R:\SENECA\LIBR\OGWMW.DWG

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CLIENT/PROJECT TITLE

SENECA ARMY DEPOT ACTIVITY
OB GROUNDS
GROUNDWATER MONITORING PROGRAM

DEPT: ENVIRONMENTAL ENGINEERING | Dwg No: 725980-01007

FIGURE 1
GROUNDWATER ELEVATION CONTOUR PLAN
SEPTEMBER 12 1995

SCALE: 1" = 200' | DATE: JUNE 1995 | REV: A

N 1013500
N 1013250
N 1013000
N 1012750
N 1012500
N 1012250
N 1012000

E 737500
E 737750
E 738000
E 738250
E 738500
E 738750
E 739000
E 739250
E 739500

DRY
MW45-1
DRY
MW45-2
DRY
MW45-4
615.15
MW45-3
636

Open Detonation Mound
CONTROL BUNKER
Dense Trees & Brush
Reeder Creek
Open Burning Grounds

N

ACAD\SENECA\OBRI\SD45MSL.DWG

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 1968
- MW45-1 — MONITORING WELL AND DESIGNATION
- 617.1 — GROUNDWATER ELEVATION MSL DATUM

100 0 100 200
(feet)

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SENECA ARMY DEPOT ACTIVITY
OD GROUNDS
GROUNDWATER MONITORING PROGRAM

DEPT. ENVIRONMENTAL ENGINEERING
Dwg No. 725980-01007

FIGURE 2
GROUNDWATER ELEVATION PLAN
SEPTEMBER 12, 1995

SCALE 1" = 200'
DATE NOVEMBER 1995
REV A

APPENDIX A

FIELD DATA

OB/OD Third Quarter 1995 Groundwater Monitoring Program

1. Groundwater Sampling Forms
2. Chain-of-Custody Forms
3. pH Meter Calibration Forms

1. Groundwater Sampling Forms

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95		INSPECTOR: KKS/BH
LOCATION: OB		LABORATORY:
		CHAIN OF CUSTODY #:
WELL NUMBER: MW-12		MONITORING INSTRUMENT / DETECTOR
SCREENED INTERVAL (TOC):		

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 5.65
WELL DEPTH (TOC): 9.11
FEET OF WATER IN WELL: 3.46
STANDING WATER VOLUME IN WELL (gallons): .56
THREE WELL VOLUMES (gallons):
ONE: 4.125.6 TWO: 1.12 THREE: 1.7

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: 1314 TIME END PURGING: 1321

TIME:	1317	1318	1321			
DEPTH TO WATER (ft)	6.02	6.62	6.32			
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)	9.11	7.0	7.0			
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)	1L/min Heavy silt cleared fast	870 ml/min	870 ml/min			
VOLUME OF WATER REMOVED (gals)	.56	.56	.56			
TEMPERATURE (deg. C)	17.5	18	17.5			
SPEC. COND (umhos)	800	800	800			
PH	7.19	7.23	7.30			

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE	9-12-95					
TIME	1328					
DEPTH TO WATER (ft)	5.65					
"AFTER PURGE" WATER COLUMN (ft)						
"STATIC" WATER COLUMN (ft)						
% RECOVERY	100%					

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE: Peristaltic pump

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
Metals	1330	1L HDHP	clear	7.16
Mercury	1330	500ml HDHP	↓	
CN	1330	1L HDHP	↓	

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or (NO)

Duplicate Sample Name:

MRD Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or (NO)

INVESTIGATION DERIVED WASTE (IDW):

Date:	9-12-95			
Volume Transfered to Drum:	1.7			
Drum Number:	08-2			

COMMENTS:

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95		INSPECTOR: KICS/BH
LOCATION: OB		LABORATORY:
WELL NUMBER: MW-13.		CHAIN OF CUSTODY #:
SCREENED INTERVAL (TOC):		MONITORING INSTRUMENT / DETECTOR

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

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PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 6.47
WELL DEPTH (TOC): 10.14
FEET OF WATER IN WELL: 3.67
STANDING WATER VOLUME IN WELL (gallons): .6
THREE WELL VOLUMES (gallons):
ONE: .6 TWO: 1.2 THREE: 1.8

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: 0944 TIME END PURGING:

TIME:	0950	0953				
DEPTH TO WATER (ft)	7.0	7.25				
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)	10.00 Some silt - cleared fast	7.5				
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)	660 ml/min 870	870 ml/min				
VOLUME OF WATER REMOVED (gals)	.6	.6				
TEMPERATURE (deg. C)	18.0	18.0				
SPEC. COND (umhos)	750	750				
PH	6.93	7.03				

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE	9-12-95					
TIME	0958					
DEPTH TO WATER (ft)	6.47					
"AFTER PURGE" WATER COLUMN (ft)						
"STATIC" WATER COLUMN (ft)						
% RECOVERY	100%					

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
TAL Metals	1000	1L HDPE	clear	1.27
Cyanide	1000	1L HDPE	↓	
Mercury	1000	500ml HDPE	↓	

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or (NO)

Duplicate Sample Name:

MRD Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or (NO)

INVESTIGATION DERIVED WASTE (IDW):

Date:	5-12-95			
Volume Transfered to Drum:	1.8 gal			
Drum Number:	06-2			

COMMENTS: Pictures taken of well condition

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95		INSPECTOR: KCS
LOCATION: ~~MW-14~~ OB		LABORATORY:
		CHAIN OF CUSTODY #:
WELL NUMBER: MW-14		MONITORING INSTRUMENT / DETECTOR
SCREENED INTERVAL (TOC):		

9.1

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 7.69
WELL DEPTH (TOC): 10.58
FEET OF WATER IN WELL: 2.89
STANDING WATER VOLUME IN WELL (gallons): .5
THREE WELL VOLUMES (gallons):
ONE: .5 TWO: 1.0 THREE: 1.5

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: 1044 TIME END PURGING:

TIME:	1047	1050	1055			
DEPTH TO WATER (ft)	8.00	8.4	8.58			
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)	10.58 some silt cleared fast	9.0	9.0			
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)	870	870	870			
VOLUME OF WATER REMOVED (gals)	.5	1.0	1.5			
TEMPERATURE (deg. C)	17.5 ~~17.05~~ ICKS	18.0	18.0			
SPEC. COND (umhos)	1000	1000	1000			
PH	7.05	7.10	7.15			

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE	9-12-95					
TIME	1058					
DEPTH TO WATER (ft)	7.85					
"AFTER PURGE" WATER COLUMN (ft)						
"STATIC" WATER COLUMN (ft)	2.89					
% RECOVERY	95%					

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
TAL Metals	1100	1L HDPE	clear	5.05 NTU
Mercury	1100	500ml HDPE	"	5
CN	1100	1L HDPE	"	

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: (YES) or NO
Duplicate Sample Name: MW-114
MRD Sample Name: MW-14MRD + MW-14MRD-R (Seperate mercury sample not taken)

QA\QC RINSATE SAMPLE NAME: MW-14-R

MATRIX SPIKE SAMPLE COLLECTED: YES or (NO)

INVESTIGATION DERIVED WASTE (IDW):

Date:	9-12-95			
Volume Transfered to Drum:	1.5 gal			
Drum Number:	OB-2			

COMMENTS:

Pictures taken of Well Condition

"Tops" Distilled Water / NYSHD Cert. #197
Bottled at- 1540 Seneca Creek Rd
West Seneca NY 14224
#1053195
Tops Market - Buffalo, NY 14206

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95 LOCATION: OB	INSPECTOR: ICKS / BH Aquatec LABORATORY: CHAIN OF CUSTODY #:	
WELL NUMBER: MW-27 SCREENED INTERVAL (TOC):	MONITORING INSTRUMENT: DETECTOR:	

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.167	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 7.15
WELL DEPTH (TOC): 15.46
FEET OF WATER IN WELL: 8.31
STANDING WATER VOLUME IN WELL (gallons): 1.35
THREE WELL VOLUMES (gallons):
ONE: 1.35 TWO: 2.7 THREE: 4

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: 1340 TIME END PURGING: 1348

TIME	1342	1345	1348			
DEPTH TO WATER (ft)	9.10	9.38	9.46			
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)	15.46	13.00	13.00			
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)	318	318	318			
VOLUME OF WATER REMOVED (gals)	1.3	2.7	4			
TEMPERATURE (deg. C)	16	16	16			
SPEC. COND (umhos)	800	800	800			
PH	7.24	7.27	7.28			

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE	9-12-95					
TIME	1358					
DEPTH TO WATER (ft)	15.46					
"AFTER PURGE" WATER COLUMN (ft)						
"STATIC" WATER COLUMN (ft)						
% RECOVERY	100%					

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
Metals	1400	1L HDPE	clear	.71
Mercury	1400	500mL HDPE	↓	
CN	1400	1L HDPE		

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or (NO)

Duplicate Sample Name:

MRD Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or (NO)

INVESTIGATION DERIVED WASTE (IDW):

Date:	9-12-95			
Volume Transfered to Drum:	4 gal			
Drum Number:	OB-2			

COMMENTS:

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95		INSPECTOR: KKS/BH
LOCATION: OD		LABORATORY:
		CHAIN OF CUSTODY #:
WELL NUMBER: MW45-1		MONITORING INSTRUMENT / DETECTOR
SCREENED INTERVAL (TOC):		

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.167	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 7.65
WELL DEPTH (TOC): 8.63 Dry Well
FEET OF WATER IN WELL: 7.98

STANDING WATER VOLUME IN WELL (gallons):
THREE WELL VOLUMES (gallons):
ONE: TWO: THREE:

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: TIME END PURGING:

TIME						
DEPTH TO WATER (ft)						
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)						
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)						
VOLUME OF WATER REMOVED (gals)						
TEMPERATURE (deg. C)						
SPEC. COND (umhos)						
PH						

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE						
TIME						
DEPTH TO WATER (ft)						
"AFTER PURGE" WATER COLUMN (ft)						
"STATIC" WATER COLUMN (ft)						
% RECOVERY						

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO
Duplicate Sample Name:
MRD Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:				
Volume Transfered to Drum:				
Drum Number:				

COMMENTS:

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95 LOCATION: OD		INSPECTOR: ICICJ / BH LABORATORY: CHAIN OF CUSTODY #:
WELL NUMBER: MW45-2 SCREENED INTERVAL (TOC):		MONITORING INSTRUMENT / DETECTOR

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.167	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 12.42
WELL DEPTH (TOC): 12.42
FEET OF WATER IN WELL: Dry Well

STANDING WATER VOLUME IN WELL (gallons):
THREE WELL VOLUMES (gallons):
ONE: TWO: THREE:

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: TIME END PURGING:

TIME:						
DEPTH TO WATER (ft)						
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)						
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)						
VOLUME OF WATER REMOVED (gals)						
TEMPERATURE (deg. C)						
SPEC. COND (umhos)						
PH						

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE						
TIME						
DEPTH TO WATER (ft)						
"AFTER PURGE" WATER COLUMN (ft)						
"STATIC" WATER COLUMN (ft)						
% RECOVERY						

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO
Duplicate Sample Name:
MRD Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:				
Volume Transfered to Drum:				
Drum Number:				

COMMENTS:

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95 LOCATION: OD	INSPECTOR: ICKS / BH LABORATORY: Aquatec CHAIN OF CUSTODY #:	
WELL NUMBER: MW45-3 SCREENED INTERVAL (TOC):	MONITORING INSTRUMENT: N/A DETECTOR:	

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

2.7

PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 11.30
WELL DEPTH (TOC): 14.09
FEET OF WATER IN WELL: 2.79
STANDING WATER VOLUME IN WELL (gallons): .45
THREE WELL VOLUMES (gallons):
ONE: .45 TWO: .9 THREE: 1.35

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: 0836 TIME END PURGING: 0900

TIME:	0843	0855	0900			
DEPTH TO WATER (ft)	12.2	12.70	12.75			
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)	14.09	12.80	12.8			
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)	~~380 ml~~ 180 ml/min	180 ml/min	100 ml/min	Slow well Condition		
VOLUME OF WATER REMOVED (gals)	.45	.45	.10			
TEMPERATURE (deg. C)	16	17	16			
SPEC. COND (umhos)	1200	1200	1200			
PH	5.94	6.47	6.75			

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE	9-12-95	9-13-95				
TIME	1251	0940				
DEPTH TO WATER (ft)	12.74	12.34				
"AFTER PURGE" WATER COLUMN (ft)	1.35	1.75				
"STATIC" WATER COLUMN (ft)	2.79	2.79				
% RECOVERY	48%	62%				

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE: Peristaltic Pump

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)
Metals	1400	1L HDPE	clear	71
Mercury	1400	500L HDPE	↓	KKS
CN	1400	1L HDPE		
Metals	1000	1L HDPE		
Mercury	1000	500ml HDPE		
CN	1000	1L HDPE		

9-13-95

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or (NO)

Duplicate Sample Name:

MRD Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or (NO)

INVESTIGATION DERIVED WASTE (IDW):

	KKS			
Date:	~~9-12-95~~	9-12-95		
Volume Transfered to Drum:	~~5~~	1 gal		
Drum Number:	~~08-2~~	08-2		

COMMENTS:

SAMPLING RECORD – GROUNDWATER

ENGINEERING–SCIENCE, INC.	CLIENT: USACOE	DATE: 9-12-95
PROJECT: SEAD - 3rd Quarterly Monitoring '95		INSPECTOR: KKS/BH
LOCATION: OD		LABORATORY:
		CHAIN OF CUSTODY #:
WELL NUMBER: MW45-4		MONITORING INSTRUMENT / DETECTOR
SCREENED INTERVAL (TOC):		

WELL DIAMETER FACTORS

DIAMETER (INCHES):	1	1.5	2	3	4	5	6	7	8	9	10
GALLONS/FOOT:	0.041	0.092	0.163	0.367	0.654	1.02	1.47	2.00	2.61	3.30	5.87

PURGE INFORMATION:

STATIC DEPTH TO WATER (TOC): 9.10 Dry Well — STANDING WATER VOLUME IN WELL (gallons):

WELL DEPTH (TOC): 9.75 — THREE WELL VOLUMES (gallons):

FEET OF WATER IN WELL: 0.65 — ONE: TWO: THREE:

PURGING WITH A PERISTALTIC PUMP OR BAILER

(measure indicator parameters at one, two and three well volumes)

TIME BEGIN PURGING: TIME END PURGING:

TIME:						
DEPTH TO WATER (ft)						
DEPTH TO BOTTOM OPENING OF TEFLON TUBE (TOC)						
FLOW RATE (ml/min.) or VOL. OF BAILER (gal.)						
VOLUME OF WATER REMOVED (gals)						
TEMPERATURE (deg. C)						
SPEC. COND (umhos)						
PH						

DEPTH TO WATER MEASUREMENTS AFTER PURGING

DATE						
TIME						
DEPTH TO WATER (ft)						
"AFTER PURGE" WATER COLUMN (ft)						
"STATIC" WATER COLUMN (ft)						
% RECOVERY						

Notes:

(1) Determine water column in the well (for both "after purge" and "static" conditions) by subtracting the measured water level from the well point.

(2) Divide the "after purge" water column by the "static" water column and multiply by 100 to determine the percent of recovery for the well.

SAMPLING INFORMATION

SAMPLING DEVICE:

SAMPLE PARAMETER	TIME	CONTAINER	COLOR	TURBIDITY SAMPLE TAKEN AFTER (CHECK ONE)

QA\QC:

QA/QC DUPLICATE SAMPLE COLLECTED: YES or NO
Duplicate Sample Name:
MRD Sample Name:

QA\QC RINSATE SAMPLE NAME:

MATRIX SPIKE SAMPLE COLLECTED: YES or NO

INVESTIGATION DERIVED WASTE (IDW):

Date:				
Volume Transfered to Drum:				
Drum Number:				

COMMENTS:

2. Chain-of-Custody Forms

CHAIN-OF-CUSTODY RECORD

PAGE 1 OF

ASONS
RING-SCIENCE, INC.
ter Phone: 617-859-2000
2199 Fax: 617-659-2043

JOB NO. 725980-01007
PROJECT SEAD - 3rd Quarterly Monitoring '95
CONTACT M. Duchesneau

LABORATORY Aquatec
ADDRESS Colchester, VT
CONTACT Lori Arnold

NO.	LABORATORY SAMPLE NO.	SAMPLING DATE	SAMPLING TIME	SAMPLE DEPTH	SAMPLE MATRIX	VOA	SVOC	METALS	PEST/PCB	CN	HERB	TPH		Mercury	NO. OF CONTAINERS	COMMENTS (Special instructions
2		9-12-95	1330	N/A	water			1		1				1	3	
3		9-12-95	1000	N/A	water			1		1				1	3	
27		9-12-95	1400	N/A	water			1		1				1	3	
-3		9-13-95	1000	N/A	water			1		1				1	3	

KKS KKS KKS KKS

Relinquished by
Smith
son Engineering Science
-95 Time 1100

Received by
Sign M. Duchesneau
Print M. Ferry
Firm Aquatec, Inc.
Date 9/15/95 Time 0936

by

Received by
Sign
Print
Firm

Time

Date Time

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

	VOA	SVOC	METALS	PEST/PCB	CN	HERB	TPH		Mercury	NO. OF CONTAINERS
VOA Vial	X									
Glass Bottle										
Plastic Bottle			X		X				X	
Preservative	A C		A KKS		A F				A	
Container Volume	40 ml		1 L		1 L				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: (Sa
nonstandard sa
Metals and
samples req
HNO_3 to b

Cooler #:

OC1 White - return with data Yellow - lab copy Pink - Sampler copy

CHAIN-OF-CUSTODY RECORD

PAGE 1 OF

ASONS
RING-SCIENCE, INC.
er Phone: 617-859-2000
2199 Fax: 617-859-2043

JOB NO. 725980-01007
PROJECT SEAD - 3rd Quarterly Monitoring '95
CONTACT Mike Dalessio

LABORATORY Aquatec
ADDRESS Colchester, VT
CONTACT Lori Arnold

NO.	LABORATORY SAMPLE NO.	SAMPLING DATE	SAMPLING TIME	SAMPLE DEPTH	SAMPLE MATRIX	ANALYSES VOA 524.2	SVOC	METALS	PESTPCB	CN	HERB	TPH		Mercury	NO. OF CONTAINERS	COMMENTS (Special Instructions)
-R		9-12-95	1040	N/A	water			1		1				1	3	Rinsate Ri
4		9-12-95	1100					1		1				1	3	
7		9-12-95	1100					1		1				1	3	
		9-14-95	0840													
27		9-14-95	0830													
i		9-13-95	1725			3									3	
10		9-13-95	1610			3	KS		KS				KS		3	
15		9-13-95	1430			6									6	Matrix Spi
48		9-13-95	1055			3									3	
448		9-13-95	1055			3									3	
13-R		9-13-95	1045			3									3	Rinsate
13		9-13-95	1000			3									3	Trip Blank

Relinquished by
Sign
Print
Firm Engineering Science
Date 9-95 Time 1100

Received by
Sign M. Henry
Print M. Henry
Firm Aquatec, ITS
Date 9/15/95 Time 0930

Relinquished by
Sign
Print
Firm
Time

Received by
Sign
Print
Firm
Date Time

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

VOA Vial	X														
Glass Bottle															
Plastic Bottle			X												
Preservative	A C		A D		A F								A		
Container Volume	40 ml		1 L		1 L								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: (Sa
nonstandard sa
Note: Met
listed Do
require HN
preservative
added.
Mercury samp
HNO_3 to be

Cooler #: 89

OC1 White - return with data Yellow - lab copy Pink - Sampler copy

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CHAIN-OF-CUSTODY RECORD

PAGE 1 OF

SONS
RING-SCIENCE, INC.
Phone: 617-859-2000
Fax: 617-859-2043

JOB NO. 725980-01007
PROJECT 3rd Quarterly Monitoring 1995
CONTACT Mike Duchesneau

LABORATORY Aquatec Laboratori
ADDRESS 55 South Park
CONTACT Lori Arnold

NO.	LABORATORY SAMPLE NO.	SAMPLING DATE	SAMPLING TIME	SAMPLE DEPTH	SAMPLE MATRIX	ANALYSES VOA 524.2	SVOC	METALS	PEST/PCB	CN	HERB	TPH	NO. OF CONTAINERS	COMMENTS (Special Instructions)
7 OB		9-19-95	1230	NA	water			3		3			6	
9 ASH		9-19-95	1300	NA	water	3							3	
0 ASH		9-19-95	1310	NA	water	3							3	

Relinquished by
nika Wells
ika Willis
sons Engineering Sci.
9-95 Time 1800

Received by
Sign Janine L. Banks
Print Janine L. Banks
Firm ACTS
Date 9/21/95 Time 0930

by

Time

Received by
Sign
Print
Firm
Date Time

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

VOA Vial	X			
Glass Bottle			X	
Plastic Bottle			X	X
Preservative	A C		A D	A F
Container Volume	40 mL		1 L	1 L

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: (Sar
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Cooler #: 3

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APPENDIX B

Quality Assurance/Quality Control Data

1. Sample Delivery Group No. 53766

A. Metals Analysis

U.S. EPA - CLP

COVER PAGE - INORGANIC ANALYSES DATA PACKAGE

Lab Name: ITS_AQUATEC_LABORATORIES_ Contract: 93206_____

Lab Code: INCHVT Case No.: 93206 SAS No.: _____ SDG No.: 53766_

SOW No.: ILM02.1

EPA Sample No.	Lab Sample ID
_MW114_____	_270985_____
_MW12_____	_270972_____
_MW13_____	_270973_____
_MW14_____	_270974_____
_MW14R_____	_270975_____
_MW27_____	_271848_____
_MW27D_____	_271848DP_____
_MW27S_____	_271848MS_____
_MW453_____	_270980_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

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: Karen R Chirgwin Name: Karen R Chirgwin

Date: 10/16/95 Title: Laboratory Operations Director

U.S. EPA - CLP

3
BLANKS

Lab Name: ITS_AQUATEC_LABORATORIES_ Contract: 93206_____

Lab Code: INCHVT Case No.: 93206_ SAS No.: _____ SDG No.: 53766_

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	Prep-aration Blank	C	M
Aluminum	9.9	U	9.9	U	9.9	U	9.9	U	9.856	U	P
Antimony	2.2	U	2.2	U	2.2	U	2.2	U	2.190	U	P
Arsenic	2.1	U	2.1	U	2.1	U	2.1	U	2.091	U	P
Barium	3.4	U	3.4	U	3.4	U	3.4	U	3.385	U	P
Beryllium	0.2	U	0.2	U	0.2	U	0.2	U	0.199	U	P
Cadmium	0.3	U	0.3	U	0.3	U	0.3	U	0.299	U	P
Calcium	87.0	U	87.0	U	87.0	U	87.0	U	86.610	U	P
Chromium	0.5	U	0.5	U	0.5	U	0.5	U	0.498	U	P
Cobalt	1.0	U	1.0	U	1.0	U	1.0	U	0.996	U	P
Copper	0.7	U	0.7	U	0.7	U	0.7	U	0.697	U	P
Iron	18.5	U	18.5	U	18.5	U	18.5	U	18.417	U	P
Lead	1.5	U	1.5	U	1.5	U	1.5	U	1.493	U	P
Magnesium	92.5	U	92.5	U	92.5	U	92.5	U	92.086	U	P
Manganese	0.4	U	0.4	U	0.4	U	0.4	U	0.398	U	P
Mercury	0.0	U	0.0	U	0.0	U	0.0	U	0.110	B	CV
Nickel	1.0	U	1.0	U	-1.2	B	-1.2	B	0.996	U	P
Potassium	105.2	U	105.2	U	105.2	U	105.2	U	104.729	U	P
Selenium	3.7	U	3.7	U	3.7	U	3.7	U	3.683	U	P
Silver	0.8	U	0.8	U	-0.9	B	0.8	U	0.796	U	P
Sodium	200.2	U	200.2	U	200.2	U	200.2	U	199.303	U	P
Thallium	3.0	U	3.0	U	3.0	U	3.0	U	2.987	U	P
Vanadium	1.1	U	1.1	U	1.1	U	1.1	U	1.095	U	P
Zinc	0.4	U	0.4	U	-0.4	B	0.4	U	0.398	U	P
Cyanide	10.0	U	10.0	U	10.0	U			5.000	U	AS

3
BLANKS

Lab Name: ITS_AQUATEC_LABORATORIES_ Contract: 93206_____

Lab Code: INCHVT Case No.: 93206_ SAS No.: _____ SDG No.: 53766_

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											NR
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

U.S. EPA - CLP

5A
SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MW27S

Lab Name: ITS_AQUATEC_LABORATORIES_ Contract: 93206_____

Lab Code: INCHVT Case No.: 93206_ SAS No.: _____ SDG No.: 53766_

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	2075.5471		9.9000	U	1998.60	103.9		P
Antimony	75-125	505.5461		2.2000	U	499.65	101.2		P
Arsenic	75-125	42.3603		2.1000	U	39.97	106.0		P
Barium	75-125	2021.5849		86.2100	B	1998.60	96.8		P
Beryllium	75-125	51.1942		0.2000	U	49.97	102.4		P
Cadmium	75-125	49.3654		0.3000	U	49.97	98.8		P
Calcium									NR
Chromium	75-125	197.4618		0.5000	U	199.86	98.8		P
Cobalt	75-125	488.4581		1.0000	U	499.65	97.8		P
Copper	75-125	247.5267		0.7000	U	249.83	99.1		P
Iron	75-125	1068.2522		18.5000	U	999.30	106.9		P
Lead	75-125	16.6983		1.5000	U	19.99	83.5		P
Magnesium									NR
Manganese	75-125	559.0087		63.2600		499.65	99.2		P
Mercury	75-125	1.1800		0.0200	U	0.99	119.2		CV
Nickel	75-125	474.8676		2.1630	B	499.65	94.6		P
Potassium									NR
Selenium	75-125	13.4906		3.7000	U	9.99	135.0	N	P
Silver	75-125	47.9165		0.8000	U	49.97	95.9		P
Sodium									NR
Thallium	75-125	50.5846		3.0000	U	49.97	101.2		P
Vanadium	75-125	492.4553		1.1000	U	499.65	98.6		P
Zinc	75-125	491.1562		1.6230	B	499.65	98.0		P
Cyanide	75-125	78.0000		5.0000	U	200.00	39.0	N	AS

Comments:

U.S. EPA - CLP

5B

POST DIGEST SPIKE SAMPLE RECOVERY

EPA SAMPLE NO.

MW27A

Lab Name: ITS_AQUATEC_LABORATORIES_ Contract: 93206_____

Lab Code: INCHVT Case No.: 93206_ SAS No.: _____ SDG No.: 53766_

Matrix (soil/water) : WATER_ Level (low/med): LOW___

Concentration Units: ug/L

Analyte	Control Limit %R	Spiked Sample Result (SSR)	C	Sample Result (SR)	C	Added (SA)	%R	Q	M
Aluminum		1978.00		9.90	U	2000.0	98.9		P
Antimony		481.20		2.20	U	500.0	96.2		P
Arsenic		39.86		2.10	U	40.0	99.6		P
Barium		1914.00		86.21	B	2000.0	91.4		P
Beryllium		47.98		0.20	U	50.0	96.0		P
Cadmium		46.45		0.30	U	50.0	92.9		P
Calcium									NR
Chromium		184.50		0.50	U	200.0	92.2		P
Cobalt		462.70		1.00	U	500.0	92.5		P
Copper		233.60		0.70	U	250.0	93.4		P
Iron		1014.00		18.50	U	1000.0	101.4		P
Lead		16.09		1.50	U	20.0	80.4		P
Magnesium									NR
Manganese		532.90		63.26		500.0	93.9		P
Mercury									NR
Nickel		455.10		2.16	B	500.0	90.6		P
Potassium									NR
Selenium		14.45		3.70	U	10.0	144.5		P
Silver		3.45	B	0.80	U	50.0	6.9		P
Sodium									NR
Thallium		45.08		3.00	U	50.0	90.2		P
Vanadium		466.00		1.10	U	500.0	93.2		P
Zinc		472.20		1.62	B	500.0	94.1		P
Cyanide									NR

Comments:

U.S. EPA - CLP

6
DUPLICATES

EPA SAMPLE NO.

MW27D

Lab Name: ITS_AQUATEC_LABORATORIES_ Contract: 93206_____

Lab Code: INCHVT Case No.: 93206_ SAS No.: _____ SDG No.: 53766_

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		9.9000	U	9.8960	U			P
Antimony		2.2000	U	3.1058	B	200.0		P
Arsenic		2.1000	U	2.0992	U			P
Barium		86.2100	B	87.3551	B	1.3		P
Beryllium		0.2000	U	0.1999	U			P
Cadmium		0.3000	U	0.2999	U			P
Calcium		94530.0000		95761.6953		1.3		P
Chromium		0.5000	U	0.4998	U			P
Cobalt		1.0000	U	0.9996	U			P
Copper		0.7000	U	0.6997	U			P
Iron		18.5000	U	18.4926	U			P
Lead		1.5000	U	1.4994	U			P
Magnesium		55770.0000		56607.3571		1.5		P
Manganese	15.0	63.2600		64.1044		1.3		P
Mercury		0.0200	U	0.0200	U			CV
Nickel		2.1630	B	1.6513	B	26.8		P
Potassium	5000.0	10240.0000		10425.8297		1.8		P
Selenium		3.7000	U	3.6985	U			P
Silver		0.8000	U	0.7997	U			P
Sodium	5000.0	18410.0000		18632.5470		1.2		P
Thallium		3.0000	U	2.9988	U			P
Vanadium		1.1000	U	1.0996	U			P
Zinc		1.6230	B	1.6323	B	0.6		P
Cyanide		5.0000	U	10.0000	U			AS

U.S. EPA - CLP

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LABORATORY CONTROL SAMPLE

Lab Name: ITS_AQUATEC_LABORATORIES_ Contract: 93206_____

Lab Code: INCHVT Case No.: 93206_ SAS No.: _____ SDG No.: 53766_

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	49300.00	96.7						
Antimony	2000.0	1958.00	97.9						
Arsenic	1050.0	1060.00	101.0						
Barium	500.0	465.40	93.1						
Beryllium	500.0	478.90	95.8						
Cadmium	525.0	486.20	92.6						
Calcium	50000.0	48510.00	97.0						
Chromium	500.0	470.20	94.0						
Cobalt	500.0	463.40	92.7						
Copper	500.0	474.50	94.9						
Iron	50500.0	48070.00	95.2						
Lead	1015.0	950.30	93.6						
Magnesium	50000.0	47170.00	94.3						
Manganese	500.0	472.00	94.4						
Mercury									
Nickel	500.0	459.00	91.8						
Potassium	50000.0	49430.00	98.9						
Selenium	25.0	28.19	112.8						
Silver	500.0	472.80	94.6						
Sodium	50000.0	48180.00	96.4						
Thallium	50.0	50.94	101.9						
Vanadium	500.0	469.50	93.9						
Zinc	500.0	477.00	95.4						
Cyanide									