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Env. Document Type: Solid Waste Correspondence

February 6, 2007

Mr. David Fugate, P.G.
Geologist
Knoxville Environmental Field Office
Division of Solid Waste Management
Tennessee Department of Environment
and Conservation
2700 Middlebrook Pike, Suite 220
Knoxville, Tennessee 37921-5602

TENNESSEE VALLEY AUTHORITY – KINGSTON FOSSIL PLANT – ASH DISPOSAL AREA – IDL 73-0094 – DECEMBER 2006 GROUNDWATER MONITORING REPORT

Dear Mr. Fugate:

Please find enclosed the groundwater monitoring report for samples collected December 12, 2006 at designated compliance wells surrounding the subject facility. Laboratory data from the analyses of groundwater samples collected during this monitoring event is summarized in Table 1.

Analytical results derived from this most recent event indicate that silver was detected in the sample recovered from monitoring well 6A at a level which slightly exceeded the applicable maximum contaminant level (MCL). However, there were no other primary MCL limits or statistical exceedences evident. As stated in a previous monitoring report, silver has been sporadically detected in monitoring well 6A in the past. We believe these detections are likely due to faulty well construction which results in the collection of turbid samples rather than being indicative of groundwater contamination from the facility. This was further explained in our resampling report dated March 2, 2006 which presented information concerning elevated levels of silver in the soils near the plant site.

Other supporting information with this submittal includes:

- A description of groundwater conditions at the time of sampling including a potentiometric surface map based on water-level measurements made on December 12, 2006 in wells located in vicinity of the facility (Figure 1).
- Field Data Sheets (Appendix A).
- Sample custody record (Appendix B).
- Laboratory Data Sheets (Appendix C).

Based upon this information, and the fact that there are no groundwater receptors downgradient from the site, we request that the facility groundwater protection standard for silver be reestablished to 180 ppb which is in accordance with the published USEPA region 9' Preliminary Remediation Goal for tap water. Since several of the current monitoring wells at the site are old and are now yielding turbid samples, we are also in the process of reevaluating the groundwater monitoring network for the facility and will be forwarding a request to install replacement wells at the site.

I certify this information was prepared by a system designed to ensure qualified personnel properly gathered and evaluated the information submitted. The information submitted is to the best of my knowledge and belief true, accurate, and complete.

If you have questions regarding the report, please contact Amos Smith at (423) 751-3522 or Linda Campbell at (865) 717-2157.

Gordon G. Park
Manager of Environmental Affairs
5D Lookout Place

ALS:SMF
Enclosures
cc (Enclosures):
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Prepared by J. Mark Boggs, reviewed by Amos L. Smith

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Tennessee Valley Authority, 1101 Market Street, Chattanooga, Tennessee 37402-2801

February 6, 2007

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Analytical results derived from this most recent event indicate that silver was detected in the sample recovered from monitoring well 6A at a level which slightly exceeded the applicable maximum contaminant level (MCL). However, there were no other primary MCL limits or statistical exceedences evident. As stated in a previous monitoring report, silver has been sporadically detected in monitoring well 6A in the past. We believe these detections are likely due to faulty well construction which results in the collection of turbid samples rather than being indicative of groundwater contamination from the facility. This was further explained in our resampling report dated March 2, 2006 which presented information concerning elevated levels of silver in the soils near the plant site.

Other supporting information with this submittal includes:

- A description of groundwater conditions at the time of sampling including a potentiometric surface map based on water-level measurements made on December 12, 2006 in wells located in vicinity of the facility (Figure 1).
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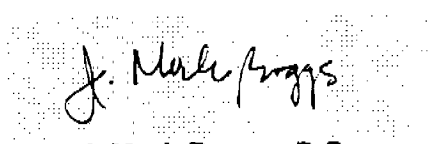
Gordon G. Park
Manager of Environmental Affairs
5D Lookout Place

Enclosures

Tennessee Valley Authority
Kingston Fossil Plant
Ash Disposal Area (IDL 73-0094)

GROUNDWATER MONITORING REPORT
DECEMBER 2006 SAMPLING EVENT

Prepared by



J. Mark Boggs, P.G.

Tennessee Valley Authority
Knoxville, Tennessee

February 1, 2007

TABLE OF CONTENTS

APPENDICES

LIST OF TABLES

LIST OF FIGURES

INTRODUCTION

This report contains groundwater compliance monitoring results for samples collected on December 12, 2006 from the four designated compliance wells surrounding the Kingston Fossil Plant (KIF) Ash Disposal Area. Groundwater samples were analyzed by the TVA Environmental Chemistry Laboratory, an EPA-certified laboratory. Sample collection and laboratory analyses were performed in accordance with Tennessee Department of Conservation and Environment (TDEC) Rule 1200-1-7-.04 and the facility groundwater monitoring plan approved by TDEC (August 1996).

GROUNDWATER SAMPLING

Groundwater sampling was performed by J.E. Stockburger and J.A. Overton at upgradient well 16A and downgradient wells 4B, 6A and 13B. Dedicated Grundfos Rediflow submersible pumps were used to purge and sample all wells. Duplicate samples were collected from well 16A, and an equipment blank was collected after well 6A. Field parameters (i.e., temperature, specific conductance, pH, dissolved oxygen, and oxidation-reduction potential) were monitored during well purging using a flow-through cell and calibrated instruments. Each well was considered properly evacuated when field parameters remained stable during purging of a minimum of two well volumes or the well was purged to dryness. Field data sheets are included in Appendix A.

Please note that no samples of leachate were collected from the disposal facility. As described in the Facility Operations Manual, engineering measures incorporated in the facility design should result in minimal ash leachate production. Therefore, leachate sampling is not included in the approved groundwater monitoring plan.

Immediately following collection, samples were transferred to new sample bottles provided by the laboratory with appropriate preservatives, where applicable. The samples were then sealed, labeled, recorded on a custody form, and placed in an iced cooler for transport. Samples were delivered to the TVA Environmental Chemistry Laboratory on December 14. A copy of the sample custody form is given in Appendix B.

ANALYTICAL RESULTS

Groundwater samples were analyzed for the 17 required inorganic constituents specified in Appendix I of TDEC Rule 1200-1-7. Laboratory results completed on January 23 are summarized in Table 1. The laboratory report presented in Appendix C includes analytical methods and detection limits for each constituent. Constituent concentrations reported for all samples were below drinking water maximum contaminant limits (MCL) except silver at well 6A. Sporadic silver exceedences have been observed at this well in the past but have never been confirmed on resampling. All analytical testing was performed within recommended sample holding times.

STATISTICAL EVALUATION

Statistical analysis of the sample analytical data was performed using non-parametric prediction intervals (NPI) applied on an intrawell basis. A description of the NPI method, the rationale for its selection, and specifics regarding application to the KIF facility groundwater detection monitoring program in the July 25, 2005 monitoring report. The analytical results presented in Table 1 indicate that none of the constituent concentrations for any of the groundwater samples exceed statistical upper prediction limits (UPL).

HYDROGEOLOGIC CONDITIONS

The Kingston plant site is located in the Valley and Ridge physiographic province of the Appalachian Highlands region. This region is characterized by a sequence of long narrow ridges and valleys trending northeast-southwest. In general, ridges are formed by relatively resistant sandstone, limestone, and dolomite units while the valleys are underlain by soluble limestone and easily weathered shale. The controlling structural feature of the site is a series of northeast-striking thrust faults which has forced older Cambrian and Ordovician rocks over younger units. Bedrock dips southeast at angles ranging from a few degrees to about 90 degrees.

The ash pond area is immediately underlain by Quaternary alluvium ranging in thickness from about 1.5 m along a portion of the northern perimeter of the site to maximum of

Table 1. December 12, 2006 Groundwater Monitoring Results

Analytical Results for Appendix 1 Inorganic Constituents						Upper Prediction Limit			MCL	Comparison to UPL[a]		
		Well No.										
Parameter	Units	4B downgradient	6A downgradient	13B downgradient	16A[b] upgradient	4B	6A	13B		4B	6A	13B
Antimony	µg/L	4	< 3	< 3	< 3	6	6	6	6	L	L	L
Arsenic	µg/L	1	4	<1	1	10	14	10	50	L	L	L
Barium	µg/L	50	100	420	50	2000	2000	2000	2,000	L	L	L
Beryllium	µg/L	< 1	< 1	< 1	< 1	4	4	4	4	L	L	L
Cadmium	µg/L	0.2	<0.1	< 0.1	< 0.1	5	5	5	5	L	L	L
Chromium	µg/L	4	<1	< 1	< 1	100	100	100	100	L	L	L
Cobalt	µg/L	2	< 1	< 1	< 1	23	17	6	--	L	L	L
Copper	µg/L	20	< 10	< 10	< 10	1000	1000	1000	1,000	L	L	L
Fluoride	µg/L	150	< 100	180	500	4000	4000	4000	4,000	L	L	L
Lead	µg/L	<1	< 1	< 1	< 1	15	15	15	50	L	L	L
Mercury	µg/L	< 0.1	< 0.1	< 0.1	< 0.1	2	2	2	2	L	L	L
Nickel	µg/L	4	< 1	< 1	< 1	100	100	100	--	L	L	L
Selenium	µg/L	< 1	< 1	< 1	< 1	50	50	50	50	L	L	L
Silver	µg/L	< 10	130	< 10	< 10	100	190	100	100	L	L	L
Thallium	µg/L	< 2	<2	< 2	< 2	2	2	2	2	L	L	L
Vanadium	µg/L	< 10	100	< 10	< 10	10	150	10	--	L	L	L
Zinc	µg/L	<10	< 10	< 10	10	5000	5000	5000	5,000	L	L	L

a - "L" = less than or equal to UPL, "G" = greater than UPL.

b - reported concentrations are averages of duplicate samples

c - assumed UPL equal to 90th percentile of TVA valley-wide groundwater measurements

20 m on the western boundary. The alluvial deposits are unconsolidated and lenticular, and consist of clay, silt, and sand with occasional gravel. A thin layer of residuum is occasionally present directly above bedrock. The residuum is typically composed of clay and silt with weathered fissile shale fragments.

Bedrock beneath the alluvial deposits at the disposal site is primarily represented by the Conasauga Group (middle to upper Cambrian age). The only exception is a small area along the northern margin of the site underlain by the Rome formation (lower Cambrian age). Specific geologic units within the Conasauga Group represented at the site include the Nolichucky, Maryville, Rogersville, Rutledge, and Pumpkin Valley formations. These formations are locally of low water-producing capacity, and predominantly consist of shale with interbedded siltstone, limestone, and conglomerate. Total thickness of the Conasauga Group beneath the site is unknown but is estimated to be approximately 450 meters. The Rome formation is generally composed of interbedded shale, sandstone, and siltstone. The elevation of the top of rock in the ash pond area is relatively uniform, varying from approximately 213 to 218 m-MSL. Outside this area the bedrock surface rises steeply to the west and southwest. The lower bedrock terrace corresponding to the disposal area represents an erosion surface associated with the ancestral Emory River.

Groundwater movement at the site generally follows topography with groundwater flowing eastward and southeastward from Pine Ridge toward the reservoir. Groundwater originating on, or flowing beneath, the ash pond area ultimately discharges to the reservoir without traversing private property.

Groundwater levels measured in site monitoring wells on December 12 prior to sample collection are presented in Table 2. The groundwater potentiometric surface derived from these measurements is shown on Figure 1. Groundwater generally flows eastward across the ash disposal area toward the reservoir. An average hydraulic gradient of approximately 0.011 is estimated between the western and eastern boundaries of the disposal area. The shallow alluvial aquifer underlying the ash disposal area exhibits a mean horizontal hydraulic conductivity of 0.006 m/d. The local Darcy flux is therefore estimated to be approximately 6.4×10^{-5} m/d.

Table 2. Groundwater Levels Measured on December 12, 2006

Well No.	Top of Casing Elevation (m)	Depth to Water (m)	Water Elevation (m-msl)	Well Bottom Depth (m)
4B	230.72	4.86	225.86	12.72
6A	230.13	4.22	225.91	8.88
13B	234.85	2.66	232.19	25.68
16A	234.26	0.10	234.16	20.16

CONCLUSIONS

Groundwater analytical data for the December 12 monitoring event showed no statistical evidence of groundwater contamination from the ash disposal area. Concentrations of the 17 Appendix I inorganic constituents were below MCLs in all samples with the exception of a single exceedence for silver at well 6A. Sporadic silver MCL exceedences have been observed at this well in the past but have not been confirmed on resampling.

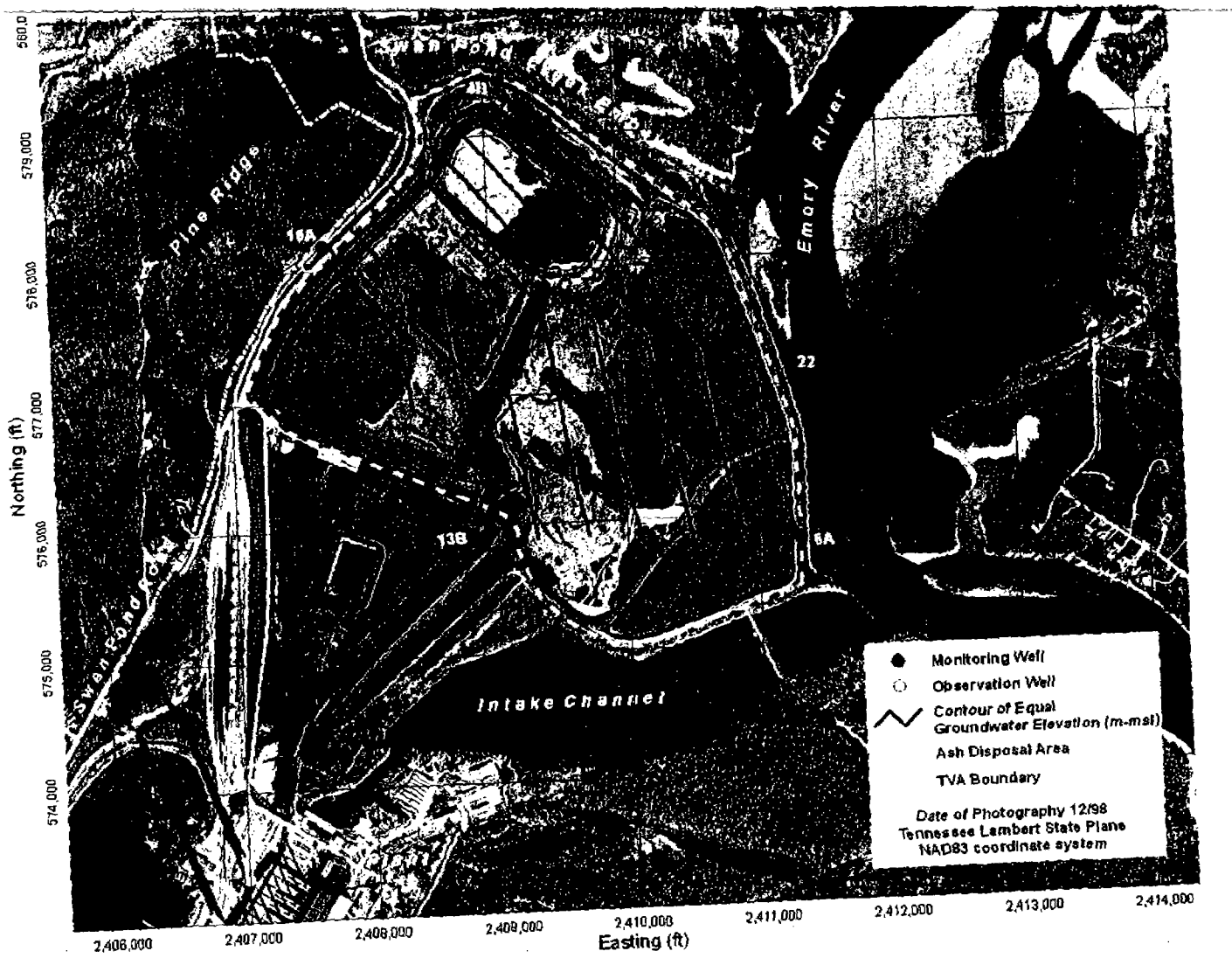


Figure 1. Groundwater Potentiometric Surface on December 12, 2006

APPENDIX A

FIELD DATA SHEETS

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	4B 84068		06	12	12

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
4.86 4185	12.72 4194	102 4188	JES	JAO

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
12.37 4191	To	12.82 4190	KIF-4B	☑ Unfiltered ☐ Filtered ☐ Both

(Bottom of Well − Depth to Water) x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(12.72)m − (4.86)m] x (8.107)L/m=	63.7 (L)	127.4 (L)	78.3 (L) 4186

Purge Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list): _____

Sample Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list): _____

Notes and WQ Observations	Time ET CT	Pump Rate (L/min)	Depth to Water (m)	Pump Depth (m)	Temp °C	pH (s.u.)	DO (mg/L)	COND (umhos/cm)	(+/-) ORP (mV)	Turbidity (NTU)
Begin Purge 1407	940	8.0	4.86	12.5						
	942			12.5	16.3	6.6	5.8	1650	380	—
	943		8.10	12.5						
330	944	6.5		12.5	16.8	6.6	6.2	1650	404	—
	946			12.5	17.2	6.6	6.4	1640	411	—
	948	4.5 JES	11.36	12.5	17.2	6.6	6.3	1640	406	—
	950		12.36	12.5	17.4	6.6	5.9	1640	391	—
	950:30		OUT OF WATER							
	1037	1.8	9.4	12.5						
	~~1039~~			~~12.5~~	~~15.8~~	~~6.7~~	~~7.9~~	~~1428~~	~~313~~	~~JES~~
	~~1039~~			~~12.5~~ JES						
	1040	1.8	~~4.8~~	12.5	16.6	6.6	1.9	1447	294	—
	1042		9.92	12.5	17.2	6.6	2.4	1446	292	—

Remarks: _____

Reviewed By: Survey Leader 12/18/06 Date — Project Leader 12/18/06 Date

Sample Collector: JES/JAO

Sample Date			Time
Year	Month	Day	
06	12	12	ET CT

Pump Duration 1.5 min 72004

"999" = 2 days

Sample Readings

Analysis Time ET CT	Pump Rate (L/min) 4193	Depth to Water (m)	Pump Depth (m) 4192	Temp °C 10 EPA 170.1	pH (s.u.) 400 EPA 150.1	DO (mg/L) 300 EPA 360.1	COND (umhos/cm) 94 EPA 120.1	(+/-) ORP (mV) 90 SM 2580B	Turbidity (NTU) EPA 180.1
1042	1.8	9.92	12.5	17.2	6.6	2.4	1446	292	—

Additional Sample Data

Analyst: JES

Date Analyzed: Year 06 Month 12 Day 12

Turbidity 1350 ☑ Clear ☐ Turbid ☐ Slightly Turbid ☐ Highly Turbid

Color: —

Odor: —

415 Phenol Alkalinity mg/L (EPA 310.1)	431 Total Alk. mg/L (EPA 310.1)	436 Mineral Acidity mg/L (EPA 305.1)	437 CO_2 Acidity mg/L (EPA 305.1)
	227		73
Time:	Time: 1058	Time:	Time: 1052
Initial:	Initial: JES	Initial:	Initial: JES

Well Diameter (mm)		Vol. Factor (L/m)
12.7	(0.5 in)	0.127
51	(2 in)	2.027
76	(3 in)	4.560
102	(4 in)	8.107
127	(5 in)	12.668
153	(6 in)	18.228

Bottles Required ☐ Ferrous ☐ Mineral ☐ Phenol Others (list): F

☐ BOD ☐ TOC ☑ Metals ☐ Dis. Mineral ☐ Filt TIC

☐ COD ☑ TIC ☐ Dis. Metals ☑ Nutrient ☐ TSS/TDS

Distribution: (1) Original - Data Mgmt. (2) Pink - Survey Leader (3) Blue - Project Manager (4) Green - Customer (5) Yellow - ERS Files

TVA 30098A (8-1999)

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date Year	Month	Day
KINGSTON	6A 84088	06	12	12

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
4.22 4195	8.88 4194	102 4188	JES	JAO

☑ Depth of Screen ☐ Open Bore Hole

(m) 8.47 4191 To (m) 8.92 4190

Sample Label: KIF-6A

☑ Unfiltered ☐ Filtered ☐ Both

Filter Type and Size:

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume (L)	Target Purge Volume (L)	Actual Purge Volume (L)
[(8.88)m - (4.22)m] x (8.107)L/m=	37.8	75.6	43 4186

Purge Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list):

Sample Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list):

Notes and WQ Observations	Time ET CT	Pump Rate (L/min)	Depth to Water (m)	Pump Depth (m)	Temp °C	pH (s.u.)	DO (mg/L)	COND (umhos/cm)	(+/-) ORP (mV)	Turbidity (NTU)
Begin Purge 120Hz →	8:49	6	4.22	8.6	→					
12	8:51	5	6.66	8.6	17.8	5.8	0.4	4870	122	—
	8:55		8.31	8.6	18.2	5.8	0.2	4200	88	—
33	8:56	OUT OF WATER			—					
110 Hz	1301	3	5.85	8.6	→					
	1302			8.6	17.5	5.7	0.5	4390	138	—
43 6 more	1303		6.98	8.6	17.8	5.7	0.3	4070	132	—

Remarks:

Reviewed By: [signature] 12/18/06 Survey Leader Date [signature] 12/18/06 Project Leader Date

Sample Collector: JES/JAO

Sample Date Year	Month	Day	Time
06	12	12	1303 ET CT

Pump Duration 9 min 72004 "999" = 2 days

Sample Readings

Analysis Time ET CT	Pump Rate (L/min) 4193	Depth to Water (m)	Pump Depth (m) 4192	Temp °C 10 EPA 170.1	pH (s.u.) 400 EPA 150.1	DO (mg/L) 300 EPA 360.1	COND (umhos/cm) 94 EPA 120.1	(+/-) ORP (mV) 90 SM 2580B	Turbidity (NTU) EPA 180.1
1303	3	6.98 (5.85 struck)	8.6	17.8	5.7	0.3	4070	132	—

Additional Sample Data

Analyst: JES

	415 Phenol Alkalinity mg/L (EPA 310.1)	431 Total Alk. mg/L (EPA 310.1)	436 Mineral Acidity mg/L (EPA 305.1)	437 CO_2 Acidity mg/L (EPA 305.1)
Value	/	210	/	1920
Time:		1414		1345
Initial:		JES		JES

Date Analyzed: Year 06 Month 12 Day 12

Turbidity 1350 ☑ ~~Clear~~ JES ☐ Turbid ☑ Slightly Turbid ☐ Highly Turbid

Color: TAN

Odor: —

Well Diameter (mm)		Vol. Factor (L/m)
12.7	(0.5 in)	0.127
51	(2 in)	2.027
76	(3 in)	4.560
102	(4 in)	8.107
127	(5 in)	12.668
153	(6 in)	18.228

Bottles Required ☐ Ferrous ☑ Mineral ☐ Phenol Others (list): F

☐ BOD ☐ TOC ☑ Metals ☐ Dis. Mineral ☐ Filt TIC

☐ COD ☑ TIC ☐ Dis. Metals ☑ Nutrient ☐ TSS/TDS

Distribution: (1) Original - Data Mgmt. (2) Pink - Survey Leader (3) Blue - Project Manager (4) Green - Customer (5) Yellow - ERS Files

TVA 30088A (9-1999)

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date: Year	Month	Day
KINGSTON	13 B 84088	06	12	12

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
2.66 4195	25.68 4194	51 4188	JES	JAO

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
22.29 4191	To	25.34 4190	KIF-13B	☑ Unfiltered ☐ Filtered ☐ Both

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume (L)	Target Purge Volume (L)	Actual Purge Volume (L)
[(25.68)m - (2.66)m] x (2.027)L/m =	46.7	93.4	106.5 4186

Purge Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list): _____

Sample Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list): _____

Notes and WQ Observations	Time ET CT	Pump Rate (L/min)	Depth to Water (m)	Pump Depth (m)	Temp °C	pH (s.u.)	DO (mg/L)	COND (umhos/cm)	(+/-) ORP (mV)	Turbidity (NTU)
Begin Purge 150 HZ	1224	9	2.66	10						
	1225		—	10	16.7	7.1	0.4	417	58	—
54 140 HZ	1230	5.5	9.93	10	16.6	7.6	0.2	426	22	—
81.5	1235	5	9.56	10	16.6	8	0.1	426	-8	—
106.5	1240		9.64	10	16.6	8	0.1	421	-12	—

Remarks: _____

Reviewed By: _____ Survey Leader 12/18/06 Date _____ Project Leader 12/18/06 Date

Sample Collector: JES/JAO

Sample Date			Time
Year	Month	Day	
06	12	12	ET CT

Pump Duration 16 min 72004

"999" = 2 days

Sample Readings

1240	5	9.64	10	16.6	8	0.1	421	-12	—
Analysis Time ET CT	4193 Pump Rate (L/min)	Depth to Water (m)	4192 Pump Depth (m)	10 Temp °C EPA 170.1	400 pH (s.u.) EPA 150.1	300 DO (mg/L) EPA 360.1	94 COND (umhos/cm) EPA 120.1	90 (+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1

Additional Sample Data

Analyst: JES

Date Analyzed: Year 06 Month 12 Day 12

Turbidity 1350: ☑ Clear ☐ Turbid ☐ Slightly Turbid ☐ Highly Turbid

Color: —

Odor: —

415 Phenol Alkalinity mg/L (EPA 310.1)	431 Total Alk. mg/L (EPA 310.1)	436 Mineral Acidity mg/L (EPA 305.1)	437 CO_2 Acidity mg/L (EPA 305.1)
	204		14
Time:	Time: 1407	Time:	Time: 1326
Initial:	Initial: JES	Initial:	Initial: JES

Well Diameter (mm)		Vol. Factor (L/m)
12.7	(0.5 in)	0.127
51	(2 in)	2.027
76	(3 in)	4.560
102	(4 in)	8.107
127	(5 in)	12.668
153	(6 in)	18.228

Bottles Required: ☐ Ferrous ☑ Mineral ☐ Phenol ☐ BOD ☐ TOC ☑ Metals ☐ Dis. Mineral ☐ Filt TIC ☐ COD ☑ TIC ☐ Dis. Metals ☑ Nutrient ☐ TSS/TDS

Others (list): F

Distribution: (1) Original - Data Mgmt. (2) Pink - Survey Leader (3) Blue - Project Manager (4) Green - Customer (5) Yellow - ERS Files

TVA 30968A (9-1999)

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	16A 84068		06	12	12

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
0.1 4195	20.16 4194	51 4188	JES	JAO

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
16.98 4191	To	20.03 4190	KIF-16A KIF-16A-DUP	☑ Unfiltered ☐ Filtered ☐ Both

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(20.16)m - (0.1)m] x (2.027)L/m=	40.7 (L)	81.4 (L)	88.8 (L) 4186

Purge Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list):

Sample Pump: ☐ Bladder ☑ Centrifugal ☐ Peristaltic ☑ Dedicated Other (list):

Notes and WQ Observations	Time ET CT	Pump Rate (L/min)	Depth to Water (m)	Pump Depth (m)	Temp °C	pH (s.u.)	DO (mg/L)	COND (umhos/cm)	(+/-) ORP (mV)	Turbidity (NTU)
Begin Purge 40Hz	1155	9	0.1	6.7						
45	1200		4.26	6.7	16.2	7.2	0.4	366	24	—
72	1203	8.4		6.7	16.2	7.2	0.2	371	28	—
88.8	1205		5.34	6.7	16.2	7.2	0.2	372	29	—

Remarks: DUPLICATE SAMPLES

Reviewed By: James Stockdale 12/18/06 Survey Leader Date — Matt D. Hill 12/19/06 Project Leader Date

Sample Collector: JES/JAO

Sample Date			Time
Year	Month	Day	
06	12	12	1205 (ET) CT

Pump Duration 10 min 72004

"999" = 2 days

Sample Readings

1205	8.4	5.34	6.7	16.2	7.2	0.2	372	29	—
Analysis Time (ET) CT	4193 Pump Rate (L/min)	Depth to Water (m)	4192 Pump Depth (m)	10 Temp °C EPA 170.1	400 pH (s.u.) EPA 150.1	300 DO (mg/L) EPA 360.1	94 COND (umhos/cm) EPA 120.1	90 (+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1

Additional Sample Data

Analyst: JES

Date Analyzed		
Year	Month	Day
06	12	12

Turbidity 1350: ☑ Clear ☐ Turbid ☐ Slightly Turbid ☐ Highly Turbid

Color: —

Odor: —

	146 / 146		25 / 25	Well Diameter (mm)	Vol. Factor (L/m)
415 Phenol Alkalinity mg/L (EPA 310.1)	431 Total Alk. mg/L (EPA 310.1)	436 Mineral Acidity mg/L (EPA 305.1)	437 CO_2 Acidity mg/L (EPA 305.1)	12.7 (0.5 in)	0.127
				51 (2 in)	2.027
				76 (3 in)	4.560
				102 (4 in)	8.107
				127 (5 in)	12.668
				153 (6 in)	18.228
Time:	Time: 1366 / 1358	Time:	Time: 1316 / 1319		
Initial:	Initial: JES / JES	Initial:	Initial: JES / JES		

Bottles Required: ☐ Ferrous ☑ Mineral ☐ Phenol Others (list): F

☐ BOD ☐ TOC ☑ Metals ☐ Dis. Mineral ☐ Filt TIC

☐ COD ☑ TIC ☐ Dis. Metals ☑ Nutrient ☐ TSS/TDS

Distribution: (1) Original - Data Mgmt. (2) Pink - Survey Leader (3) Blue - Project Manager (4) Green - Customer (5) Yellow - ERS Files

APPENDIX B

SAMPLE CUSTODY RECORD

KCKA
100%

TENNESSEE VALLEY AUTHORITY WATER MANAGEMENT
ENVIRONMENTAL CHEMISTRY ANALYSIS REQUEST AND CUSTODY RECORD

FORM CONTROL # 24719

PROJECT ID KINGSTON GROUNDWATER

REFERENCE: ☒ WORKPLAN ☐ OTHER

ACCT NO.

DATE REQUIRED 01-04-07 thru 01-05-07

RESULTS TO MARK BOGGS

LAB USE ONLY

TEST IDC'S
① $ICPGW, NH3SBW, ASW, CDW, CLW, CRW, COW, #TDS, FLW, TICW, PBW, HGW, NIW, #TSS, KJW, SEW, NAW, SO4W, TLW, DIGICP, DIGHGA, DIGCVA
② NH3NW, NO32NW, #TKNW,

DATE RECEIVED 12-14-06

DAYS DUE 10 1-2-07

PROJECT LEADER BPS LIF-06120226

NO. LABELS

LAB USE ONLY LAB ID	FIELD ID	SAMPLE DESCRIPTION	SAMPLE MATRIX	DATE/TIME COLLECTED	NO. OF BOTTLES	Location Codes ADDITIONAL IDC'S
AC58733	KIF-4B	GROUNDWATER	WQ	12/12 1042	4	① ② KIF-4B
58734	KIF-6A			1303	4	① ② KIF-6A
58735	KIF-13B			1240	4	① ② KIF-13B
58736	KIF-16A			1205	4	① ② KIF-16A
58737	KIF-16A-DUP			1205	4	① ② KIF-16A
58738	KIF-22			0921	1	② KIF-22
58739	KIF-EQ BLANK	SUPER Q THROUGH SAMPLING EQUIPMENT	↓	↓ 0900	4	① ② KIF-EQBlank

FIELD COMMENTS

ANALYSIS REQUESTED per workplan - TABLE 10.1 KIF Parameter List and 8.0 LABORATORY ANALYTICAL METHODS (ATTACHED)

SUBMITTED BY [signature] DATE/TIME

LABORATORY COMMENTS

RECEIVED BY [signature] DATE/TIME 12/14/06 11:14

DEC 14'06 11:14

DISTRIBUTION OF COPIES
1 - LABORATORY 2 - RETURN TO REQUESTOR 3 - RETAINED BY REQUESTOR

TVA 30488 (RG-WM 3-94)

PAGE 1 OF 1

TVA-00026985

APPENDIX C

LABORATORY DATA SHEETS

Data Report Number: 070123-111432
Report of Results: Environmental

TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES
1101 Market Street, PSC 1B-C
Chattanooga, Tennessee 37402-2801

Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF-4B

Field ID: KIF-4B

Sample Description: GOUNDWATER

Sample ID: AG58733 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/12/2006
Time Collected: 10:42 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	0.4	mg/L	0.2	12/26/2006	13:34	LMJ	EPA 6010
Ammonia as N	7664-41-7	0.02	mg/L	0.01	12/18/2006	9:47	ADP	EPA 350.1
Antimony, Total	7440-36-0	0.004	mg/L	0.003	01/12/2007	16:26	JBR	EPA 7041
Arsenic, Total	7440-38-2	0.001	mg/L	0.001	01/18/2007	13:47	JBR	EPA 7060A
Barium, Total	7440-39-3	0.05	mg/L	0.01	12/26/2006	13:34	LMJ	EPA 6010
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	12/26/2006	13:34	LMJ	EPA 6010
Boron, Total	7440-42-8	< MDL	mg/L	0.2	12/26/2006	13:34	LMJ	EPA 6010
Cadmium, Total	7440-43-9	0.0002	mg/L	0.0001	01/10/2007	11:15	JBR	EPA 7131
Calcium, Total	7440-70-2	290	mg/L	0.3	12/26/2006	13:34	LMJ	EPA 6010
Chloride, Total	16887-00-6	4.7	mg/L	1.	12/20/2006	16:26	ADP	EPA 325.2
Chromium, Total	7440-47-3	0.004	mg/L	0.001	12/23/2006	15:55	JBR	EPA 7191
Cobalt, Total	7440-48-4	0.002	mg/L	0.001	01/09/2007	10:33	JBR	EPA 7201
Copper, Total	7440-50-8	0.02	mg/L	0.01	12/26/2006	13:34	LMJ	EPA 6010
Filterable Residue		1100.	mg/L	10.	12/18/2006	15:18	WMG	EPA 160.1
Fluoride, Total	16984-48-8	0.15	mg/L	0.1	01/06/2007	9:30	ADP	EPA 340.2
Inorganic Carbon, Total		71	mg/L	1.	12/19/2006	15:19	ADP	ASTM477988
Iron, Total	7439-89-6	1.3	mg/L	0.03	12/26/2006	13:34	LMJ	EPA 6010
Lead, Total	7439-92-1	< MDL	mg/L	0.001	01/05/2007	20:58	JBR	EPA 7421
Magnesium, Total	7439-95-4	24	mg/L	0.03	12/26/2006	13:34	LMJ	EPA 6010
Manganese, Total	7439-96-5	2.1	mg/L	0.005	12/26/2006	13:34	LMJ	EPA 6010
Mercury, Total	7439-97-6	< MDL	mg/L	0.0001	12/22/2006	12:06	WMG	EPA 7470
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	12/26/2006	13:34	LMJ	EPA 6010
Nickel, Total	7440-02-0	0.004	mg/L	0.001	12/22/2006	22:13	JBR	EPA 7521
Nitrate-Nitrite as N		0.02	mg/L	0.01	12/18/2006	15:16	ADP	EPA 353.2
Non-Filterable Residue		10.	mg/L	1.	12/18/2006	15:14	WMG	EPA 160.2
Potassium, Total	7440-09-7	8.4	mg/L	0.1	01/11/2007	14:26	JBR	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	01/05/2007	17:37	JBR	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	12/26/2006	13:34	LMJ	EPA 6010
Sodium, Total	7440-23-5	9.5	mg/L	0.1	01/11/2007	13:28	JBR	EPA 7770
Strontium, Total	7440-24-6	0.55	mg/L	0.05	12/26/2006	13:34	LMJ	EPA 6010
Sulfate, Total	14808-79-8	614	mg/L	1.	12/28/2006	9:35	CLS	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	01/12/2007	13:27	JBR	EPA 7841
Total Kjeldahl Nitrogen		0.19	mg/L	0.02	01/04/2007	14:00	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	12/26/2006	13:34	LMJ	EPA 6010
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	12/26/2006	13:34	LMJ	EPA 6010

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
Report of Results: Environmental

TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES
1101 Market Street, PSC 1B-C
Chattanooga, Tennessee 37402-2801
Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-4B
Field ID: KIF-4B
Sample Description: GOUNDWATER

Sample ID: AG58733 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/12/2006
Time Collected: 10:42 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference

Sample Comments: Latitude:
Longitude:
Sulfate analysis ran by Ion Chromatography.
Na confirmed by historical data.

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
Report of Results: Environmental

TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES
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Chattanooga, Tennessee 37402-2801
Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-6A
Field ID: KIF-6A
Sample Description: GOUNDWATER

Sample ID: AG58734 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 13:03 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	< MDL	mg/L	0.2	12/21/2006	14:42	LMJ	EPA 6010
Ammonia as N	7664-41-7	15	mg/L	0.01	12/18/2006	10:32	ADP	EPA 350.1
Antimony, Total	7440-36-0	< MDL	mg/L	0.003	01/22/2007	16:43	BRJ	EPA 7041
Arsenic, Total	7440-38-2	0.004	mg/L	0.001	01/18/2007	13:58	JBR	EPA 7060A
Barium, Total	7440-39-3	0.10	mg/L	0.01	12/21/2006	14:42	LMJ	EPA 6010
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	12/21/2006	14:42	LMJ	EPA 6010
Boron, Total	7440-42-8	0.8	mg/L	0.2	12/21/2006	14:42	LMJ	EPA 6010
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	01/10/2007	11:25	JBR	EPA 7131
Calcium, Total	7440-70-2	230	mg/L	0.3	12/21/2006	14:42	LMJ	EPA 6010
Chloride, Total	16887-00-6	8.1	mg/L	1.	12/20/2006	16:26	ADP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	12/23/2006	16:07	JBR	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	01/09/2007	10:43	JBR	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	12/21/2006	14:42	LMJ	EPA 6010
Filterable Residue		4500.	mg/L	10.	12/18/2006	15:18	WMG	EPA 160.1
Fluoride, Total	16984-48-8	< MDL	mg/L	0.1	01/06/2007	9:30	ADP	EPA 340.2
Inorganic Carbon, Total		130	mg/L	1.	12/19/2006	15:25	ADP	ASTM477988
Iron, Total	7439-89-6	1100	mg/L	0.03	12/21/2006	14:42	LMJ	EPA 6010
Lead, Total	7439-92-1	< MDL	mg/L	0.001	01/05/2007	21:09	JBR	EPA 7421
Magnesium, Total	7439-95-4	80	mg/L	0.03	12/21/2006	14:42	LMJ	EPA 6010
Manganese, Total	7439-96-5	170	mg/L	0.005	12/21/2006	14:42	LMJ	EPA 6010
Mercury, Total	7439-97-6	< MDL	mg/L	0.0001	12/22/2006	12:08	WMG	EPA 7470
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	12/21/2006	14:42	LMJ	EPA 6010
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	12/22/2006	22:24	JBR	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	12/18/2006	16:35	ADP	EPA 353.2
Non-Filterable Residue		100.	mg/L	1.	12/18/2006	15:15	WMG	EPA 160.2
Potassium, Total	7440-09-7	8.8	mg/L	0.1	01/11/2007	14:31	JBR	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	01/05/2007	17:48	JBR	EPA 7740
Silver, Total	7440-22-4	0.13	mg/L	0.01	12/21/2006	14:42	LMJ	EPA 6010
Sodium, Total	7440-23-5	10	mg/L	0.1	01/11/2007	13:33	JBR	EPA 7770
Strontium, Total	7440-24-6	0.77	mg/L	0.05	12/21/2006	14:42	LMJ	EPA 6010
Sulfate, Total	14808-79-8	2794	mg/L	1.	12/28/2006	9:46	CLS	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	01/12/2007	13:38	JBR	EPA 7841
Total Kjeldahl Nitrogen		13	mg/L	0.02	01/04/2007	14:00	ADP	EPA 351.2
Vanadium, Total	7440-62-2	0.10	mg/L	0.01	12/21/2006	14:42	LMJ	EPA 6010
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	12/21/2006	14:42	LMJ	EPA 6010

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
Report of Results: Environmental

TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES
1101 Market Street, PSC 1B-C
Chattanooga, Tennessee 37402-2801
Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-6A
Field ID: KIF-6A
Sample Description: GOUNDWATER

Sample ID: AG58734 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 13:03 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference

Sample Comments: Latitude:
Longitude:
Sulfate analysis ran by Ion Chromatography.

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
Report of Results: Environmental

TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES
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Chattanooga, Tennessee 37402-2801
Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF-13B

Field ID: KIF-13B

Sample Description: GOUNDWATER

Sample ID: AG58735 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 12:40 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	< MDL	mg/L	0.2	12/26/2006	13:38	LMJ	EPA 6010
Ammonia as N	7664-41-7	0.16	mg/L	0.01	12/18/2006	10:32	ADP	EPA 350.1
Antimony, Total	7440-36-0	< MDL	mg/L	0.003	01/12/2007	16:49	JBR	EPA 7041
Arsenic, Total	7440-38-2	< MDL	mg/L	0.001	01/18/2007	14:04	JBR	EPA 7060A
Barium, Total	7440-39-3	0.42	mg/L	0.01	12/26/2006	13:38	LMJ	EPA 6010
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	12/26/2006	13:38	LMJ	EPA 6010
Boron, Total	7440-42-8	< MDL	mg/L	0.2	12/26/2006	13:38	LMJ	EPA 6010
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	01/10/2007	11:31	JBR	EPA 7131
Calcium, Total	7440-70-2	17	mg/L	0.3	12/26/2006	13:38	LMJ	EPA 6010
Chloride, Total	16887-00-6	3.3	mg/L	1.	12/20/2006	16:26	ADP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	12/23/2006	16:14	JBR	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	01/09/2007	10:49	JBR	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	12/26/2006	13:38	LMJ	EPA 6010
Filterable Residue		240.	mg/L	10.	12/18/2006	15:18	WMG	EPA 160.1
Fluoride, Total	16984-48-8	0.18	mg/L	0.1	01/06/2007	9:30	ADP	EPA 340.2
Inorganic Carbon, Total		48	mg/L	1.	12/19/2006	15:32	ADP	ASTM477988
Iron, Total	7439-89-6	0.09	mg/L	0.03	12/26/2006	13:38	LMJ	EPA 6010
Lead, Total	7439-92-1	< MDL	mg/L	0.001	01/05/2007	21:15	JBR	EPA 7421
Magnesium, Total	7439-95-4	2.2	mg/L	0.03	12/26/2006	13:38	LMJ	EPA 6010
Manganese, Total	7439-96-5	0.085	mg/L	0.005	12/26/2006	13:38	LMJ	EPA 6010
Mercury, Total	7439-97-6	< MDL	mg/L	0.0001	12/22/2006	12:10	WMG	EPA 7470
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	12/26/2006	13:38	LMJ	EPA 6010
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	12/22/2006	22:30	JBR	EPA 7521
Nitrate-Nitrite as N		0.01	mg/L	0.01	12/18/2006	16:35	ADP	EPA 353.2
Non-Filterable Residue		< MDL	mg/L	1.	12/18/2006	15:15	WMG	EPA 160.2
Potassium, Total	7440-09-7	3.0	mg/L	0.1	01/11/2007	14:32	JBR	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	01/05/2007	17:54	JBR	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	12/26/2006	13:38	LMJ	EPA 6010
Sodium, Total	7440-23-5	77	mg/L	0.1	01/11/2007	13:34	JBR	EPA 7770
Strontium, Total	7440-24-6	0.31	mg/L	0.05	12/26/2006	13:38	LMJ	EPA 6010
Sulfate, Total	14808-79-8	1.0	mg/L	1.	12/28/2006	9:58	CLS	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	01/12/2007	13:43	JBR	EPA 7841
Total Kjeldahl Nitrogen		0.19	mg/L	0.02	01/04/2007	14:00	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	12/26/2006	13:38	LMJ	EPA 6010
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	12/26/2006	13:38	LMJ	EPA 6010

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
Report of Results: Environmental

TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES
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Chattanooga, Tennessee 37402-2801
Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-13B
Field ID: KIF-13B
Sample Description: GOUNDWATER

Sample ID: AG58735 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 12:40 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference

Sample Comments: Latitude:
Longitude:
Sulfate analysis ran by Ion Chromatography.
K confirmed by historical data.

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
Report of Results: Environmental

TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES
1101 Market Street, PSC 1B-C
Chattanooga, Tennessee 37402-2801
Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-16A
Field ID: KIF-16A
Sample Description: GOUNDWATER

Sample ID: AG58736 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 12:05 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	0.9	mg/L	0.2	12/26/2006	13:43	LMJ	EPA 6010
Ammonia as N	7664-41-7	0.48	mg/L	0.01	12/18/2006	9:47	ADP	EPA 350.1
Antimony, Total	7440-36-0	< MDL	mg/L	0.003	01/12/2007	16:55	JBR	EPA 7041
Arsenic, Total	7440-38-2	0.001	mg/L	0.001	01/18/2007	14:09	JBR	EPA 7060A
Barium, Total	7440-39-3	0.05	mg/L	0.01	12/26/2006	13:43	LMJ	EPA 6010
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	12/26/2006	13:43	LMJ	EPA 6010
Boron, Total	7440-42-8	< MDL	mg/L	0.2	12/26/2006	13:43	LMJ	EPA 6010
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	01/10/2007	11:36	JBR	EPA 7131
Calcium, Total	7440-70-2	42	mg/L	0.3	12/26/2006	13:43	LMJ	EPA 6010
Chloride, Total	16887-00-6	1.0	mg/L	1.	12/20/2006	16:26	ADP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	12/23/2006	16:34	JBR	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	01/09/2007	10:54	JBR	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	12/26/2006	13:43	LMJ	EPA 6010
Filterable Residue		200.	mg/L	10.	12/18/2006	15:18	WMG	EPA 160.1
Fluoride, Total	16984-48-8	0.5	mg/L	0.1	01/06/2007	9:30	ADP	EPA 340.2
Inorganic Carbon, Total		38	mg/L	1.	12/19/2006	15:38	ADP	ASTM477988
Iron, Total	7439-89-6	1.7	mg/L	0.03	12/26/2006	13:43	LMJ	EPA 6010
Lead, Total	7439-92-1	< MDL	mg/L	0.001	01/05/2007	21:20	JBR	EPA 7421
Magnesium, Total	7439-95-4	9.0	mg/L	0.03	12/26/2006	13:43	LMJ	EPA 6010
Manganese, Total	7439-96-5	1.2	mg/L	0.005	12/26/2006	13:43	LMJ	EPA 6010
Mercury, Total	7439-97-6	< MDL	mg/L	0.0001	12/22/2006	12:16	WMG	EPA 7470
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	12/26/2006	13:43	LMJ	EPA 6010
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	12/22/2006	22:35	JBR	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	12/18/2006	16:35	ADP	EPA 353.2
Non-Filterable Residue		17.	mg/L	1.	12/18/2006	15:15	WMG	EPA 160.2
Potassium, Total	7440-09-7	2.3	mg/L	0.1	01/11/2007	14:34	JBR	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	01/05/2007	18:00	JBR	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	12/26/2006	13:43	LMJ	EPA 6010
Sodium, Total	7440-23-5	17	mg/L	0.1	01/11/2007	13:36	JBR	EPA 7770
Strontium, Total	7440-24-6	0.27	mg/L	0.05	12/26/2006	13:43	LMJ	EPA 6010
Sulfate, Total	14808-79-8	29	mg/L	1.	12/28/2006	10:09	CLS	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	01/12/2007	13:49	JBR	EPA 7841
Total Kjeldahl Nitrogen		0.56	mg/L	0.02	01/04/2007	14:00	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	12/26/2006	13:43	LMJ	EPA 6010
Zinc, Total	7440-66-6	0.01	mg/L	0.01	12/26/2006	13:43	LMJ	EPA 6010

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
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Phone: (423) 876 - 4318 • Fax: (423) 876 - 4137

Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-16A
Field ID: KIF-16A
Sample Description: GOUNDWATER

Sample ID: AG58736 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 12:05 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference

Sample Comments: Latitude:
Longitude:
Sulfate analysis ran by Ion Chromatography.

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
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Shipping Address:
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North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-16A
Field ID: KIF-16A DUP
Sample Description: GOUNDWATER

Sample ID: AG58737 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 12:05 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	1.0	mg/L	0.2	12/26/2006	13:47	LMJ	EPA 6010
Ammonia as N	7664-41-7	0.45	mg/L	0.01	12/18/2006	9:47	ADP	EPA 350.1
Antimony, Total	7440-36-0	< MDL	mg/L	0.003	01/12/2007	17:20	JBR	EPA 7041
Arsenic, Total	7440-38-2	< MDL	mg/L	0.001	01/18/2007	14:15	JBR	EPA 7060A
Barium, Total	7440-39-3	0.05	mg/L	0.01	12/26/2006	13:47	LMJ	EPA 6010
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	12/26/2006	13:47	LMJ	EPA 6010
Boron, Total	7440-42-8	< MDL	mg/L	0.2	12/26/2006	13:47	LMJ	EPA 6010
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	01/10/2007	11:55	JBR	EPA 7131
Calcium, Total	7440-70-2	43	mg/L	0.3	12/26/2006	13:47	LMJ	EPA 6010
Chloride, Total	16887-00-6	1.0	mg/L	1.	12/20/2006	16:26	ADP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	12/23/2006	16:40	JBR	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	01/09/2007	11:00	JBR	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	12/26/2006	13:47	LMJ	EPA 6010
Filterable Residue		200.	mg/L	10.	12/18/2006	15:18	WMG	EPA 160.1
Fluoride, Total	16984-48-8	0.5	mg/L	0.1	01/06/2007	9:30	ADP	EPA 340.2
Inorganic Carbon, Total		41	mg/L	1.	12/19/2006	15:45	ADP	ASTM477988
Iron, Total	7439-89-6	1.8	mg/L	0.03	12/26/2006	13:47	LMJ	EPA 6010
Lead, Total	7439-92-1	< MDL	mg/L	0.001	01/05/2007	21:25	JBR	EPA 7421
Magnesium, Total	7439-95-4	9.1	mg/L	0.03	12/26/2006	13:47	LMJ	EPA 6010
Manganese, Total	7439-96-5	1.2	mg/L	0.005	12/26/2006	13:47	LMJ	EPA 6010
Mercury, Total	7439-97-6	< MDL	mg/L	0.0001	12/22/2006	12:18	WMG	EPA 7470
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	12/26/2006	13:47	LMJ	EPA 6010
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	12/22/2006	22:41	JBR	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	12/18/2006	16:35	ADP	EPA 353.2
Non-Filterable Residue		18.	mg/L	1.	12/18/2006	15:15	WMG	EPA 160.2
Potassium, Total	7440-09-7	2.3	mg/L	0.1	01/11/2007	14:35	JBR	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	01/05/2007	18:05	JBR	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	12/26/2006	13:47	LMJ	EPA 6010
Sodium, Total	7440-23-5	18	mg/L	0.1	01/11/2007	13:37	JBR	EPA 7770
Strontium, Total	7440-24-6	0.26	mg/L	0.05	12/26/2006	13:47	LMJ	EPA 6010
Sulfate, Total	14808-79-8	30	mg/L	1.	12/28/2006	10:53	CLS	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	01/12/2007	13:54	JBR	EPA 7841
Total Kjeldahl Nitrogen		0.56	mg/L	0.02	01/04/2007	14:00	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	12/26/2006	13:47	LMJ	EPA 6010
Zinc, Total	7440-66-6	0.01	mg/L	0.01	12/26/2006	13:47	LMJ	EPA 6010

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
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Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-16A
Field ID: KIF-16A DUP
Sample Description: GOUNDWATER

Sample ID: AG58737 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 12:05 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference

Sample Comments: Latitude:
Longitude:
Sulfate analysis ran by Ion Chromatography.

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
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Shipping Address:
Chickamauga Power Service Center
North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-EQBLANK
Field ID: KIF-EQ BLANK
Sample Description: SUPER Q THROUGH SAMPLING EQUIP.

Sample ID: AG58739 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 9:00 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	< MDL	mg/L	0.2	12/26/2006	13:59	LMJ	EPA 6010
Ammonia as N	7664-41-7	< MDL	mg/L	0.01	12/18/2006	9:47	ADP	EPA 350.1
Antimony, Total	7440-36-0	< MDL	mg/L	0.003	01/12/2007	17:26	JBR	EPA 7041
Arsenic, Total	7440-38-2	< MDL	mg/L	0.001	01/18/2007	14:20	JBR	EPA 7060A
Barium, Total	7440-39-3	< MDL	mg/L	0.01	12/26/2006	13:59	LMJ	EPA 6010
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	12/26/2006	13:59	LMJ	EPA 6010
Boron, Total	7440-42-8	< MDL	mg/L	0.2	12/26/2006	13:59	LMJ	EPA 6010
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	01/10/2007	12:00	JBR	EPA 7131
Calcium, Total	7440-70-2	< MDL	mg/L	0.3	12/26/2006	13:59	LMJ	EPA 6010
Chloride, Total	16887-00-6	< MDL	mg/L	1.	12/20/2006	16:26	ADP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	12/23/2006	16:47	JBR	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	01/09/2007	11:05	JBR	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	12/26/2006	13:59	LMJ	EPA 6010
Filterable Residue		< MDL	mg/L	10.	12/18/2006	15:18	WMG	EPA 160.1
Fluoride, Total	16984-48-8	< MDL	mg/L	0.1	01/06/2007	9:30	ADP	EPA 340.2
Inorganic Carbon, Total		< MDL	mg/L	1.	12/19/2006	15:51	ADP	ASTM477988
Iron, Total	7439-89-6	< MDL	mg/L	0.03	12/26/2006	13:59	LMJ	EPA 6010
Lead, Total	7439-92-1	< MDL	mg/L	0.001	01/05/2007	21:31	JBR	EPA 7421
Magnesium, Total	7439-95-4	< MDL	mg/L	0.03	12/26/2006	13:59	LMJ	EPA 6010
Manganese, Total	7439-96-5	< MDL	mg/L	0.005	12/26/2006	13:59	LMJ	EPA 6010
Mercury, Total	7439-97-6	< MDL	mg/L	0.0001	12/22/2006	12:20	WMG	EPA 7470
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	12/26/2006	13:59	LMJ	EPA 6010
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	12/22/2006	22:46	JBR	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	12/18/2006	16:35	ADP	EPA 353.2
Non-Filterable Residue		< MDL	mg/L	1.	12/18/2006	15:15	WMG	EPA 160.2
Potassium, Total	7440-09-7	< MDL	mg/L	0.1	01/11/2007	14:37	JBR	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	01/05/2007	18:11	JBR	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	12/26/2006	13:59	LMJ	EPA 6010
Sodium, Total	7440-23-5	0.2	mg/L	0.1	01/11/2007	13:38	JBR	EPA 7770
Strontium, Total	7440-24-6	< MDL	mg/L	0.05	12/26/2006	13:59	LMJ	EPA 6010
Sulfate, Total	14808-79-8	<MDL	mg/L	1.	12/28/2006	11:04	CLS	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	01/12/2007	14:00	JBR	EPA 7841
Total Kjeldahl Nitrogen		< MDL	mg/L	0.02	01/04/2007	14:00	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	12/26/2006	13:59	LMJ	EPA 6010
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	12/26/2006	13:59	LMJ	EPA 6010

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Data Report Number: 070123-111432
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North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF-22

Field ID: KIF-22

Sample Description: GOUNDWATER

Sample ID: AG58738 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 9:21 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Ammonia as N	7664-41-7	0.84	mg/L	0.01	12/18/2006	9:47	ADP	EPA 350.1
Nitrate-Nitrite as N		< MDL	mg/L	0.01	12/18/2006	16:35	ADP	EPA 353.2
Total Kjeldahl Nitrogen		0.85	mg/L	0.02	01/04/2007	14:00	ADP	EPA 351.2

Sample Comments: Latitude:
Longitude:

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

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Chattanooga, Tennessee 37415

Customer Address: Mark Boggs
WT 9C-K
Phone: 865-632-6941
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-EQBLANK
Field ID: KIF-EQ BLANK
Sample Description: SUPER Q THROUGH SAMPLING EQUIP.

Sample ID: AG58739 **LRF ID:** 06120226
Matrix: Water **Reg:** RCRA
Date Collected: 12/15/2006
Time Collected: 9:00 EST
Date Received: 12/14/2006
Time Received: 11:14
Project Manager: Ricardo I. Gilbert

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference

Sample Comments: Latitude:
Longitude:
Sulfate analysis ran by Ion Chromatography.

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit

Central Laboratories Services data report number 070123-111432 was electronically approved using Labworks Enterprise Version 5.7, Build 255 on **01/22/2007 at 5:33:00 PM by Ricardo I. Gilbert**

Vanessa L. Ramey, Lab Director
Lisa D. Ortiz, Department Manager
James W. Dillard, Product Manager
Ricardo I. Gilbert, Senior Analytical Chemist

This report contains sample results for the following samples, Login Reference File number: 06120226

Sample ID	Field ID
AG58733	KIF-4B
AG58734	KIF-6A
AG58735	KIF-13B
AG58736	KIF-16A
AG58737	KIF-16A DUP
AG58738	KIF-22
AG58739	KIF-EQ BLANK

[1] Chemical Abstracts Service Registry Number [2] Method Detection Limit