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

July 27, 2004

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 – JUNE 2004 BASELINE GROUNDWATER MONITORING REPORT

Dear Mr. Fugate:

Please find enclosed the quarterly baseline groundwater monitoring report for samples collected June 7, 2004 at designated compliance wells surrounding the subject facility. Statistical testing will begin following completion of two years of quarterly baseline monitoring, i.e., after the March 2005 sampling event.

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

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.

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

Enclosures

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Env. Document Type: Solid Waste Correspondence

July 27, 2004

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5D Lookout Place

ALS:SMF
Enclosures
cc (Enclosures):
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B. B. Walton, ET 11A-K (w/o Enclosure)
EDM, WT CA-K
Prepared by J. Mark Boggs, reviewed by Amos L. Smith

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

GROUNDWATER MONITORING REPORT
JUNE 2004 SAMPLING EVENT

Prepared by

J. Mark Boggs, P.G.
Hydrologist

July 26, 2004

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INTRODUCTION

This report contains quarterly baseline monitoring results for groundwater samples collected on June 7, 2004 from the four designated compliance monitoring wells surrounding the Kingston Fossil Plant (BRF) ash disposal area. These data represent the fifth set of quarterly baseline monitoring data for the facility which began in June 2003. 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). Since baseline data are collected for the purpose of establishing statistical testing limits, no statistical evaluation the current monitoring data was performed. Statistical testing will begin following completion of two years of quarterly baseline monitoring, i.e., after the March 2005 sampling event.

GROUNDWATER SAMPLING

Groundwater sampling was conducted by J.E. Stockburger and S.A. Grindstaff on June 7, 2004 at upgradient well 16A and downgradient wells 4B, 6A and 13B. A Grundfos Rediflow submersible pump was used for purging and sampling wells 13B and 16A, whereas wells 4B and 6A were purged until dry with the submersible pump and sampled with disposable bailers following recovery. Duplicate samples were collected from well 13B, and an equipment blank was collected between wells 13B and 16A. 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 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 June 9. A copy of the sample custody record 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 July 26, 2004 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).

All analytical testing was conducted within recommended sample holding times. There were no detections of the required 17 inorganic constituents in the equipment blank.

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 have forced older Cambrian and Ordovician rocks over younger

TVA-00026732

Table 1. June 7, 2004 Baseline Groundwater Monitoring Data

Analytical Results for Appendix I Inorganic Constituents						MCL	Comparison to MCL[b]			
		Well No.					Well No.			
Constituent	Units	4B downgradient	6A downgradient	13B[a] downgradient	16A upgradient		4B	6A	13B	16A
Antimony	µg/L	<3	<3	<3	<3	6	L	L	L	L
Arsenic	µg/L	4	11	1	2	50	L	L	L	L
Barium	µg/L	50	100	345	50	2,000	L	L	L	L
Beryllium	µg/L	<1	<1	<1	<1	4	L	L	L	L
Cadmium	µg/L	0.4	0.4	<0.1	<0.1	5	L	L	L	L
Chromium	µg/L	<1	<1	<1	<1	100	L	L	L	L
Cobalt	µg/L	<1	13	2	5	--	--	--	--	--
Copper	µg/L	<10	<10	<10	<10	1,000	L	L	L	L
Fluoride	µg/L	150	<100	185	450	4,000	L	L	L	L
Lead	µg/L	1	1	<1	<1	50	L	L	L	L
Mercury	µg/L	<0.1	<0.1	<0.1	<0.1	2	L	L	L	L
Nickel	µg/L	4	7	<1	<1	100	L	L	L	L
Selenium	µg/L	<1	<1	<1	<1	50	L	L	L	L
Silver	µg/L	<10	<10	<10	<10	100	L	L	L	L
Thallium	µg/L	<2	<2	<2	<2	2	L	L	L	L
Vanadium	µg/L	<10	<10	<10	<10	--	--	--	--	--
Zinc	µg/L	30	<10	<10	<10	5,000	L	L	L	L

[a] *reported concentrations are averages of duplicate samples.*

[b] *"L" = less than or equal to MCL, "G" = greater than MCL.*

TVA-00026733

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 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 limit of the site underlain by the Rome formation (lower Cambrian age). Specific geologic units within the Conasauga Group represented at the site include the Maynardville, 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 apparently represents an erosion surface associated with the ancestral Emory River.

Groundwater movement at the site is 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

TVA-00026734

ultimately discharges to the reservoir without traversing private property.

Groundwater levels measured in site monitoring wells prior to sample collection are given in Table 2. The groundwater potentiometric surface derived from these measurements is presented on Figure 1. Groundwater generally flows eastward across the ash disposal area toward the reservoir. An average hydraulic gradient of approximately 0.0085 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 5.1×10^{-5} m/d.

Table 2. Groundwater Levels Measured on June 7, 2004

Well No.	Well Depth (m)	Depth to Water (m)	Top of Casing Elevation (m)	Water Elevation (m)
4B	12.79	4.02	230.72	226.70
6A	8.89	3.70	230.13	226.43
13B	25.70	2.99	234.85	231.86
16A	20.20	0.90	234.26	233.36

CONCLUSIONS

Groundwater analytical data for the June 7, 2004 baseline sampling event show no evidence of groundwater contamination from the ash disposal area. Concentrations of the 17 Appendix I inorganic constituents are below MCLs in all samples.

TVA-00026735

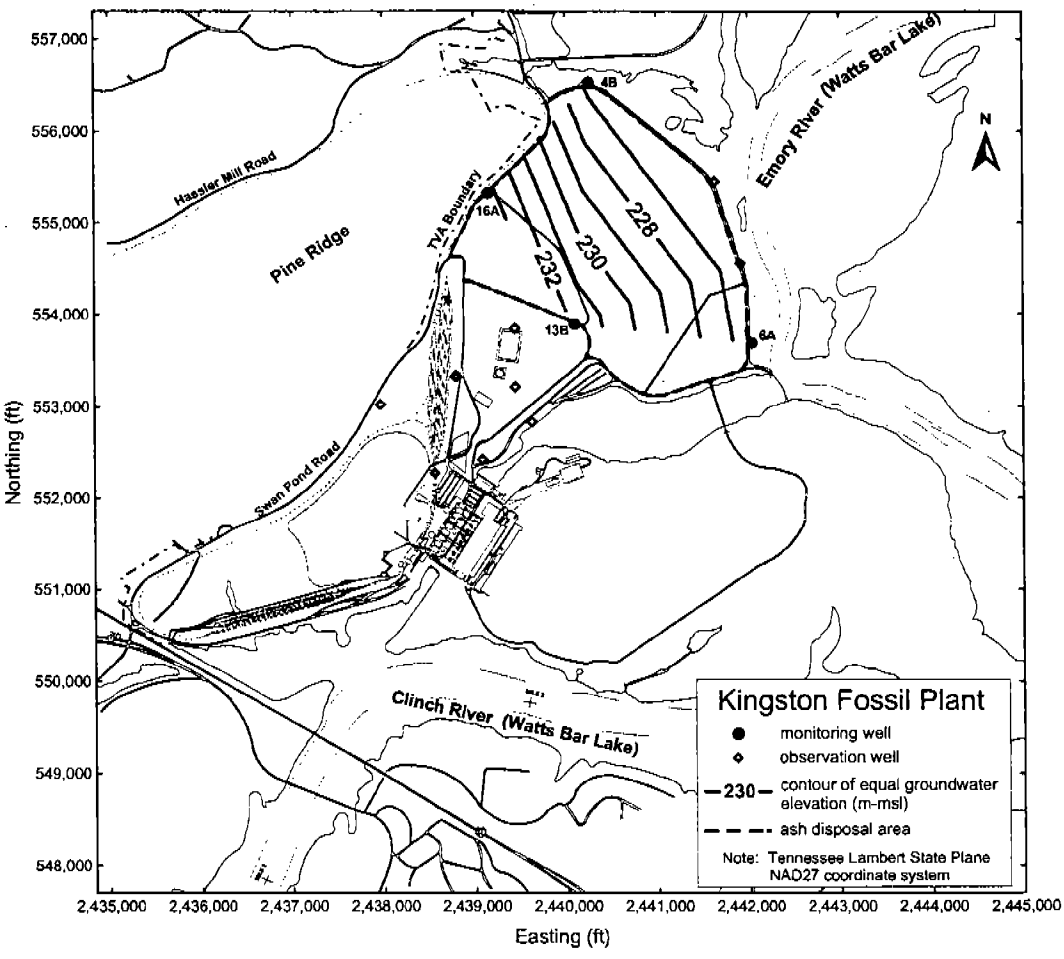

Figure 1. Groundwater Potentiometric Surface on June 7, 2004

APPENDIX A

FIELD DATA SHEETS

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	16A 84068		04	06	07

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
0.9 4195	20.1 4194	51 4188	JES	SAG

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	
16.98 4191	To	20.03 4190	KIF-16A-060704	☑ 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)
[(20.1)m − (0.9)m] x (2.027)L/m =	38.9	77.8	82 4186

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

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

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 140 mL	1348	7.5	0.9	6.0						
15	1350	7.0	2.60	6.0	17.1	7.0	0.2	337	174	
29	1352	6.8	3.66	6.0	17.2	7.0	0.2	341	123	
44 ~~Jes~~ 42.6	1354	6.6		6.0	17.3	7.1	0.3	344	91	
58	1356	6.5	4.54	6.0	17.3	7.1	0.3	349	84	
68.8	1358	6.5	5.1	6.0	17.3	7.1	0.3	353	86	
82	1400	6.5	5.38	6.0	17.3	7.1	0.3	353	87	

Remarks:

Reviewed By: Survey Leader / Date — Project Leader / Date

Sample Collector: JES/SAG

Sample Date			Time
Year	Month	Day	
04	06	07	(ET) CT

Pump Duration 12 min 72004

"999" = 2 days

Sample Readings

Analysis Time CT	Pump Rate (L/min) 4193	Depth to Water (m)	Pump Depth (m) 4192	Temp °C 10	pH (s.u.) 400	DO (mg/L) 300	COND (umhos/cm) 94	(+/-) ORP (mV) 90	Turbidity (NTU)
1400	6.5	5.38	6.0	17.3	7.1	0.3	353	87	–
Analysis Time CT	Pump Rate (L/min)	Depth to Water (m)	Pump Depth (m)	Temp °C EPA 170.1	pH (s.u.) EPA 150.1	DO (mg/L) EPA 360.1	COND (umhos/cm) EPA 120.1	(+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1

Additional Sample Data

Analyst: JES

Date Analyzed: Year 04 Month 06 Day 08

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)	430 Mineral Acidity mg/L (EPA 305.1)	437 CO_2 Acidity mg/L (EPA 305.1)
Time:	Time: 1034	Time:	Time: 1032
Initial:	Initial: JES	Initial:	Initial: JES

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

Others (list): F

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)	18.229

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

TVA 30066A (9-1999)

TVA-00026738

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date Year	Month	Day
KINGSTON	13B 84068	04	06	07

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
12.99 4195	25.68 4194	51 4188	JES	SAG

☒ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
22.29 4191		25.34 4190	KIF-13B-060704 KIF-13B-060704-DUP	☒ Unfiltered ☐ Filtered ☐ Both

Bottom of Well	- Depth to Water	x Volume Factor	= Well Volume	Target Purge Volume	Actual Purge Volume
(25.68)m	- (12.99)m	x (2.027)L/m=	46 (L)	92 (L)	93 (L) 4188

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

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

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 →	1414	6.3	2.99	10.0						
	1416	–	6.70	10.0	16.6	8.0	0.4	369	145	
25	1418	5.0	8.00	10.0	17.1	8.0	0.3	368	77	
35	1420	4.8	8.44	10.0	17.3	8.0	0.2	372	40	
	1422				17.3	8.0	0.2	376	32	
	1423	4.8	8.60	10.0						
	1424				17.3	8.0	0.1	372	23	
64	1426		8.68	10.0	17.4	8.0	0.1	372	19	
	1428	4.8	8.72	10.0	17.3	8.0	0.1	372	16	
	1430		8.70	10.0	17.4	8.1	0.1	370	14	
93	1432	4.8	8.72	10.0	17.3	8.1	0.1	370	12	

Remarks: Duplicate Samples

Reviewed By: James E. Scheckelhoff Jr. 6/8/04 Survey Leader Date — Mitchell D. Hill 6/10/04 Project Leader Date

Sample Collector: SAG JES

Sample Date			Time
Year	Month	Day	
04	06	07	(ET) CT

Pump Duration 18 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
1432	4.8	8.72	10.0	17.3	8.1	0.1	370	12	–

Additional Sample Data

Analyst: JES

Date Analyzed: Year 04 Month 06 Day 08

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)
Time:	Time: 1020 1026	Time:	Time: 1015 1025
Initial:	Initial: JES JES	Initial:	Initial: JES JES

186 187 6 6

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

Others (list): F

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

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

TVA 30066A (9-1999)

TVA-00026739

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date: Year	Month	Day
KINGSTON	GA 84068	04	06	07

Depth to Water (m) 4195	Bottom of Well (m) 4194	Well Diameter (mm) 4188	Survey Leader	Field Crew
3.7	8.88	102	JES	SAG

☐ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size
8.47 4191		8.92 4190	KIF-6A-060704	☑ Unfiltered ☐ Filtered ☐ Both

[Bottom of Well − Depth to Water]	x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(8.88)m − (3.7)m] x (8.107)L/m =		42 (L)	84 (L)	46 (L) 4186

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

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

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 →	1231	6.0	3.7	8.6						
13.6 140HZ	1232	6.5	"	8.6	18.0	5.8	0.2	4626	156	
26.6	1234	"	5.96	8.6	17.6	5.8	0.1	4625	148	
39.6	1236	"	7.94	8.6	17.9	5.7	0.0	4287	162	
46	1237	↓	8.6	8.6	OUT OF WATER					
	1532	BAIL	5.81	BAIL	18.4	5.8	2.3	3495	172	

Remarks: ANTS

Reviewed By: [signature] (Survey Leader) 06/28/04 (Date) [signature] (Project Leader) 06/29/04 (Date)

Sample Collector: SAG-JES

Sample Date			Time
Year	Month	Day	1532 ET CT
04	06	07	

Pump Duration: 6 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
1532	BAIL	5.81	BAIL	18.4	5.8	2.3	3495	172	

Additional Sample Data

Analyst: JES

Date Analyzed: Year 04 Month 06 Day 08

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)
Time:	Time: 1000	Time:	Time: 1010
Initial:	Initial: JES	Initial:	Initial: JES

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

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

TVA 30056A (9-1999)

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

TVA-00026740

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date: Year	Month	Day
KINGSTON	4B 84068	04	06	07

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
4.02 4195	12.72 4194	102 4188	FS	SAG

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
12.37 4191		12.82 4190	KIF-4B-060704	☑ Unfiltered ☐ Filtered ☐ Both

Bottom of Well	- Depth to Water	x Volume Factor	= Well Volume	Target Purge Volume	Actual Purge Volume
(12.72)m	- (4.02)m] x (8.107)L/m =		70.53 (L)	141. (L)	84 (L) 4186

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

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

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 140 mL	1153	6.8	4.02	12.5						
14 140 mL	1155	6.0	5.40	12.5	15.9	6.4	0.5	1014	436	
26	1157	5.2	7.60	12.5	15.8	6.5	0.3	1035	403	
36.5	1159	~~5.2~~ 4.8	8.67	12.5	15.8	6.5	0.3	1031	375	
46	1201	4.5	~~9.27~~ 9.47	12.5	15.9	6.5	0.3	1026	356	
56.5	1202	---	9.97							
55	1203	3.8			16.1	6.5	0.4	1020	322	
64	1205	3.4	11.15		16.2	6.5	0.5	1005	307	
~~70~~ 70	1207	2.9	11.75		16.4	6.5	0.4	1002	286	
76	1209	2.9	12.3		16.6	6.5	0.4	1009	281	
81	1211	11	12.4		16.7	6.5	0.4	1003	276	
84	1212	OUT	OF WATER							
	1454	BAILED	4.35	BAILED	16.5	6.6	3.6	991	361	

Remarks: _____

Reviewed By: _____ Survey Leader 6/8/04 Date _____ Project Leader 6/8/04 Date

Sample Collector: SAG/JES

Sample Date			Time
Year	Month	Day	ET CT
04	06	07	

Pump Duration: 19 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
1454	BAILED	4.35	BAILER	16.5	6.6	3.6	991	361	---

Additional Sample Data

Analyst: JES

Date Analyzed: Year 04 Month 06 Day 08

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)
	277		92
Time:	Time: 0947	Time:	Time: 0944
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 30066A (9-1999)

TVA-00026741

APPENDIX B

SAMPLE CUSTODY RECORD

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

FORM CONTROL # 17596

PROJECT ID KINGSTON GROUND WATER

REFERENCE: ☑ WORKPLAN ☐ OTHER
ACCT NO.

DATE REQUIRED 06-29-04

RESULTS TO MARK BOGGS
LAB 2C-N
PHONE: (865) 632-1894
FAX: (865) 632-1840

LAB USE ONLY

TEST IDC'S #ICPW1 #ICPW2 DIGICP DIGMS ASWMS CDWMS SBWMS CRWMS
COWMS PBWMS NIWMS SEWMS TLWMS K_W NAW
DIGCVA HGW #TSS #TDS CLW FLW SO4W #TKN
TICW NO32NW NH3NW

note:
$1CPW2 - scratch
Si, Sn, Ti

DATE RECEIVED 6/9/04

PROJECT LEADER Russ

DAYS DUE 6/25/04

NO. LABELS See below

LIF=0406015I

LAB USE ONLY LAB ID	FIELD ID	SAMPLE DESCRIPTION	SAMPLE MATRIX	DATE/TIME COLLECTED	NO. OF BOTTLES	ADDITIONAL IDC'S
AE09682	KIF-4B-060704	GROUNDWATER M, MIN, N, TIC KIF-4B	H2O	6/9/04 1454	4	
09683	KIF-6A-060704	" " " " " KIF-6A	"	" 1532	4	
09684	KIF-13B-060704	" " " " " KIF-13B	"	" 1432	4	
09685	KIF-16A-060704	" " " " " KIF-16A	"	" 1400	4	
09686	KIF-22-060704	" (NUTRIENT ONLY) KIF-22	"	" 1529	1	NH3NW NO32NW #TKN
09687	EQUIPMENT BLANK	" M, MIN, N, TIC	"	" 1415	4	
09688	KIF-13B-060704-DUP	" " " " " KIF-13B	"	" 1432	4	

FIELD COMMENTS

ANALYSIS REQUESTED Per WORK PLAN

SUBMITTED BY James E. Fellmayer DATE/TIME 6/8/04

LABORATORY COMMENTS LW
JUN 9'04 10:11

RECEIVED BY _____ DATE/TIME _____

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

TVA 30488 (RG-WM 3-94)

PAGE 1 OF 1

TVA-00026743

APPENDIX C

LABORATORY DATA SHEETS

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF-4B
Field ID: KIF-4B-060704
Sample Description: GROUNDWATER

Sample ID: AE09682 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:54 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	0.64	mg/L	0.05	06/18/2004	14:37	LMJ	EPA 6010B
Ammonia as N	7664-41-7	0.28	mg/L	0.01	06/10/2004	11:58	ADP	EPA 350.1
Antimony,Total	7440-36-0	< MDL	mg/L	0.003	07/14/2004	14:12	BRJ	EPA 7041A
Arsenic, Total	7440-38-2	0.004	mg/L	0.001	07/13/2004	17:46	BRJ	EPA 7060A
Barium, Total	7440-39-3	0.05	mg/L	0.01	06/18/2004	14:37	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	06/18/2004	14:37	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	06/18/2004	14:37	LMJ	EPA 6010B
Cadmium, Total	7440-43-9	0.0004	mg/L	0.0001	07/15/2004	17:46	BRJ	EPA 7131A
Calcium, Total	7440-70-2	190	mg/L	0.1	06/18/2004	14:37	LMJ	EPA 6010B
Chloride, Total	16887-00-6	3.9	mg/L	1.	06/16/2004	11:54	GMP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	07/17/2004	16:28	BRJ	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	07/17/2004	16:48	BRJ	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	06/18/2004	14:37	LMJ	EPA 6010B
Filterable Residue		770.	mg/L	10.	06/10/2004	9:03	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.15	mg/L	0.1	06/22/2004	15:00	GMP	EPA 340.2
Inorganic Carbon, Total		90	mg/L	1.	06/10/2004	11:38	ADP	ASTM477988
Iron, Total	7439-89-6	1.9	mg/L	0.01	06/18/2004	14:37	LMJ	EPA 6010B
Lead , Total	7439-92-1	0.001	mg/L	0.001	07/17/2004	11:14	BRJ	EPA 7421
Magnesium, Total	7439-95-4	16	mg/L	0.01	06/18/2004	14:37	LMJ	EPA 6010B
Manganese, Total	7439-96-5	1.8	mg/L	0.005	06/18/2004	14:37	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	07/08/2004	11:46	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	06/18/2004	14:37	LMJ	EPA 6010B
Nickel, Total	7440-02-0	0.004	mg/L	0.001	07/15/2004	12:25	BRJ	EPA 7521
Nitrate-Nitrite as N		0.09	mg/L	0.01	06/10/2004	11:58	ADP	EPA 353.2
Non-Filterable Residue		26.	mg/L	1.	06/10/2004	8:15	AJH	EPA 160.2
Potassium, Total	7440-09-7	3.6	mg/L	0.1	07/19/2004	11:25	BRJ	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	07/16/2004	15:40	BRJ	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	06/18/2004	14:37	LMJ	EPA 6010B
Sodium, Total	7440-23-5	6.8	mg/L	0.1	07/19/2004	9:12	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.36	mg/L	0.05	06/18/2004	14:37	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	280	mg/L	1.	06/29/2004	14:30	GMP	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	07/16/2004	15:18	BRJ	EPA 7841
Total Kjeldahl Nitrogen		0.74	mg/L	0.02	06/14/2004	14:22	GMP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	06/18/2004	14:37	LMJ	EPA 6010B
Zinc, Total	7440-66-6	0.03	mg/L	0.01	06/18/2004	14:37	LMJ	EPA 6010B

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

TVA-00026745

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF-4B
Field ID: KIF-4B-060704
Sample Description: GROUNDWATER

Sample ID: AE09682 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:54 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

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

Sample Comments: None

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

TVA-00026746

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-6A
Field ID: KIF-6A-060704
Sample Description: GROUNDWATER

Sample ID: AE09683 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 15:32 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	0.28	mg/L	0.05	06/18/2004	14:42	LMJ	EPA 6010B
Ammonia as N	7664-41-7	15	mg/L	0.01	06/23/2004	11:19	ADP	EPA 350.1
Antimony,Total	7440-36-0	< MDL	mg/L	0.003	07/14/2004	14:20	BRJ	EPA 7041A
Arsenic, Total	7440-38-2	0.011	mg/L	0.001	07/13/2004	17:53	BRJ	EPA 7060A
Barium, Total	7440-39-3	0.10	mg/L	0.01	06/18/2004	14:42	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	06/18/2004	14:42	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	06/18/2004	14:42	LMJ	EPA 6010B
Cadmium, Total	7440-43-9	0.0004	mg/L	0.0001	07/15/2004	17:52	BRJ	EPA 7131A
Calcium, Total	7440-70-2	240	mg/L	0.1	06/18/2004	14:42	LMJ	EPA 6010B
Chloride, Total	16887-00-6	6.6	mg/L	1.	06/16/2004	11:54	GMP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	07/17/2004	16:35	BRJ	EPA 7191
Cobalt, Total	7440-48-4	0.013	mg/L	0.001	07/17/2004	16:54	BRJ	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	06/18/2004	14:42	LMJ	EPA 6010B
Filterable Residue		4500.	mg/L	10.	06/10/2004	9:03	AJH	EPA 160.1
Fluoride, Total	16984-48-8	< MDL	mg/L	0.1	06/22/2004	15:00	GMP	EPA 340.2
Inorganic Carbon, Total		97	mg/L	1.	06/10/2004	14:24	ADP	ASTM477988
Iron, Total	7439-89-6	940	mg/L	0.1	06/18/2004	14:42	LMJ	EPA 6010B
Lead , Total	7439-92-1	0.001	mg/L	0.001	07/17/2004	11:20	BRJ	EPA 7421
Magnesium, Total	7439-95-4	79	mg/L	0.01	06/18/2004	14:42	LMJ	EPA 6010B
Manganese, Total	7439-96-5	170	mg/L	0.05	06/18/2004	14:42	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	07/08/2004	11:48	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	06/18/2004	14:42	LMJ	EPA 6010B
Nickel, Total	7440-02-0	0.007	mg/L	0.001	07/15/2004	12:46	BRJ	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	06/10/2004	11:58	ADP	EPA 353.2
Non-Filterable Residue		67.	mg/L	1.	06/10/2004	8:15	AJH	EPA 160.2
Potassium, Total	7440-09-7	6.9	mg/L	0.1	07/19/2004	11:29	BRJ	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	07/16/2004	15:46	BRJ	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	06/18/2004	14:42	LMJ	EPA 6010B
Sodium, Total	7440-23-5	8.9	mg/L	0.1	07/19/2004	9:23	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.70	mg/L	0.05	06/18/2004	14:42	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	2700	mg/L	1.	06/29/2004	14:30	GMP	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	07/16/2004	15:38	BRJ	EPA 7841
Total Kjeldahl Nitrogen		3.1	mg/L	0.02	06/25/2004	9:22	MKD	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	06/18/2004	14:42	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	06/18/2004	14:42	LMJ	EPA 6010B

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

TVA-00026747

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-6A
Field ID: KIF-6A-060704
Sample Description: GROUNDWATER

Sample ID: AE09683 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 15:32 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

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

Sample Comments: Mn confirmed by reanalysis.

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

TVA-00026748

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-13B
Field ID: KIF-13B-060704
Sample Description: GROUNDWATER

Sample ID: AE09684 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:32 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	< MDL	mg/L	0.05	06/18/2004	14:47	LMJ	EPA 6010B
Ammonia as N	7664-41-7	0.11	mg/L	0.01	06/10/2004	14:46	ADP	EPA 350.1
Antimony,Total	7440-36-0	< MDL	mg/L	0.003	07/14/2004	14:44	BRJ	EPA 7041A
Arsenic, Total	7440-38-2	0.001	mg/L	0.001	07/13/2004	17:59	BRJ	EPA 7060A
Barium, Total	7440-39-3	0.34	mg/L	0.01	06/18/2004	14:47	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	06/18/2004	14:47	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	06/18/2004	14:47	LMJ	EPA 6010B
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	07/15/2004	17:59	BRJ	EPA 7131A
Calcium, Total	7440-70-2	14	mg/L	0.1	06/18/2004	14:47	LMJ	EPA 6010B
Chloride, Total	16887-00-6	2.2	mg/L	1.	06/16/2004	11:54	GMP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	07/17/2004	16:43	BRJ	EPA 7191
Cobalt, Total	7440-48-4	0.003	mg/L	0.001	07/17/2004	18:52	BRJ	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	06/18/2004	14:47	LMJ	EPA 6010B
Filterable Residue		250.	mg/L	10.	06/10/2004	9:03	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.19	mg/L	0.1	06/22/2004	15:00	GMP	EPA 340.2
Inorganic Carbon, Total		45	mg/L	1.	06/10/2004	11:50	ADP	ASTM477988
Iron, Total	7439-89-6	0.14	mg/L	0.01	06/18/2004	14:47	LMJ	EPA 6010B
Lead , Total	7439-92-1	< MDL	mg/L	0.001	07/17/2004	11:26	BRJ	EPA 7421
Magnesium, Total	7439-95-4	1.9	mg/L	0.01	06/18/2004	14:47	LMJ	EPA 6010B
Manganese, Total	7439-96-5	0.082	mg/L	0.005	06/18/2004	14:47	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	07/08/2004	11:50	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	06/18/2004	14:47	LMJ	EPA 6010B
Nickel, Total	7440-02-0	0.001	mg/L	0.001	07/15/2004	14:48	BRJ	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	06/10/2004	14:46	ADP	EPA 353.2
Non-Filterable Residue		< MDL	mg/L	1.	06/10/2004	8:15	AJH	EPA 160.2
Potassium, Total	7440-09-7	0.27	mg/L	0.1	07/19/2004	11:31	BRJ	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	07/16/2004	15:59	BRJ	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	06/18/2004	14:47	LMJ	EPA 6010B
Sodium, Total	7440-23-5	65.	mg/L	0.1	07/19/2004	9:24	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.27	mg/L	0.05	06/18/2004	14:47	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	2.1	mg/L	1.	06/29/2004	14:30	GMP	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	07/16/2004	15:44	BRJ	EPA 7841
Total Kjeldahl Nitrogen		0.16	mg/L	0.02	06/14/2004	14:22	GMP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	06/18/2004	14:47	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	06/18/2004	14:47	LMJ	EPA 6010B

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

TVA-00026749

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-13B
Field ID: KIF-13B-060704
Sample Description: GROUNDWATER

Sample ID: AE09684 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:32 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

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

Sample Comments: Ca data is confirmed by reanalysis.
Chloride data is confirmed by reanalysis.

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

TVA-00026750

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-16A
Field ID: KIF-16A-060704
Sample Description: GROUNDWATER

Sample ID: AE09685 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:00 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	0.41	mg/L	0.05	06/18/2004	14:52	LMJ	EPA 6010B
Ammonia as N	7664-41-7	0.46	mg/L	0.01	06/10/2004	11:58	ADP	EPA 350.1
Antimony,Total	7440-36-0	< MDL	mg/L	0.003	07/14/2004	14:52	BRJ	EPA 7041A
Arsenic, Total	7440-38-2	0.002	mg/L	0.001	07/13/2004	18:06	BRJ	EPA 7060A
Barium, Total	7440-39-3	0.05	mg/L	0.01	06/18/2004	14:52	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	06/18/2004	14:52	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	06/18/2004	14:52	LMJ	EPA 6010B
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	07/15/2004	18:05	BRJ	EPA 7131A
Calcium, Total	7440-70-2	41	mg/L	0.1	06/18/2004	14:52	LMJ	EPA 6010B
Chloride, Total	16887-00-6	< MDL	mg/L	1.	06/16/2004	11:54	GMP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	07/17/2004	16:50	BRJ	EPA 7191
Cobalt, Total	7440-48-4	0.005	mg/L	0.001	07/17/2004	17:06	BRJ	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	06/18/2004	14:52	LMJ	EPA 6010B
Filterable Residue		220.	mg/L	10.	06/10/2004	9:04	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.45	mg/L	0.1	06/22/2004	15:00	GMP	EPA 340.2
Inorganic Carbon, Total		38	mg/L	1.	06/10/2004	11:56	ADP	ASTM477988
Iron, Total	7439-89-6	1.2	mg/L	0.01	06/18/2004	14:52	LMJ	EPA 6010B
Lead , Total	7439-92-1	< MDL	mg/L	0.001	07/17/2004	11:33	BRJ	EPA 7421
Magnesium, Total	7439-95-4	8.8	mg/L	0.01	06/18/2004	14:52	LMJ	EPA 6010B
Manganese, Total	7439-96-5	1.2	mg/L	0.005	06/18/2004	14:52	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	07/08/2004	11:52	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	06/18/2004	14:52	LMJ	EPA 6010B
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	07/15/2004	13:12	BRJ	EPA 7521
Nitrate-Nitrite as N		0.04	mg/L	0.01	06/10/2004	11:58	ADP	EPA 353.2
Non-Filterable Residue		9.	mg/L	1.	06/10/2004	8:15	AJH	EPA 160.2
Potassium, Total	7440-09-7	< MDL	mg/L	0.1	07/19/2004	11:32	BRJ	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	07/16/2004	16:05	BRJ	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	06/18/2004	14:52	LMJ	EPA 6010B
Sodium, Total	7440-23-5	13.	mg/L	0.1	07/19/2004	9:26	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.26	mg/L	0.05	06/18/2004	14:52	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	38	mg/L	1.	06/29/2004	14:30	GMP	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	07/16/2004	15:51	BRJ	EPA 7841
Total Kjeldahl Nitrogen		0.55	mg/L	0.02	06/14/2004	14:22	GMP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	06/18/2004	14:52	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	06/18/2004	14:52	LMJ	EPA 6010B

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

TVA-00026751

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-16A
Field ID: KIF-16A-060704
Sample Description: GROUNDWATER

Sample ID: AE09685 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:00 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

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

Sample Comments: None

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

TVA-00026752

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF-22
Field ID: KIF-22-060704
Sample Description: GROUNDWATER

Sample ID: AE09686 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 15:24 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Ammonia as N	7664-41-7	0.73	mg/L	0.01	06/10/2004	11:58	ADP	EPA 350.1
Nitrate-Nitrite as N		< MDL	mg/L	0.01	06/10/2004	11:58	ADP	EPA 353.2
Total Kjeldahl Nitrogen		0.77	mg/L	0.02	06/14/2004	14:22	GMP	EPA 351.2

Sample Comments: None

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

TVA-00026753

Data Report Number: 040727-120111
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:
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North Side Chickamauga Reservation
Chattanooga, Tennessee 37415

Customer Address: Mark Boggs, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF

Field ID: EQUIPMENT BLANK

Sample Description: GROUNDWATER

Sample ID: AE09687 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:15 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	< MDL	mg/L	0.05	06/18/2004	15:05	LMJ	EPA 6010B
Ammonia as N	7664-41-7	< MDL	mg/L	0.01	06/10/2004	11:58	ADP	EPA 350.1
Antimony,Total	7440-36-0	< MDL	mg/L	0.003	07/14/2004	15:00	BRJ	EPA 7041A
Arsenic, Total	7440-38-2	< MDL	mg/L	0.001	07/13/2004	18:12	BRJ	EPA 7060A
Barium, Total	7440-39-3	< MDL	mg/L	0.01	06/18/2004	15:05	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	06/18/2004	15:05	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	06/18/2004	15:05	LMJ	EPA 6010B
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	07/15/2004	18:24	BRJ	EPA 7131A
Calcium, Total	7440-70-2	< MDL	mg/L	0.1	06/18/2004	15:05	LMJ	EPA 6010B
Chloride, Total	16887-00-6	< MDL	mg/L	1.	06/16/2004	11:54	GMP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	07/17/2004	16:57	BRJ	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	07/17/2004	18:32	BRJ	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	06/18/2004	15:05	LMJ	EPA 6010B
Filterable Residue		< MDL	mg/L	10.	07/26/2004	9:00	AJH	EPA 160.1
Fluoride, Total	16984-48-8	< MDL	mg/L	0.1	06/22/2004	15:00	GMP	EPA 340.2
Inorganic Carbon, Total		< MDL	mg/L	1.	06/10/2004	12:02	ADP	ASTM477988
Iron, Total	7439-89-6	< MDL	mg/L	0.01	06/18/2004	15:05	LMJ	EPA 6010B
Lead , Total	7439-92-1	< MDL	mg/L	0.001	07/17/2004	11:39	BRJ	EPA 7421
Magnesium, Total	7439-95-4	< MDL	mg/L	0.01	06/18/2004	15:05	LMJ	EPA 6010B
Manganese, Total	7439-96-5	< MDL	mg/L	0.005	06/18/2004	15:05	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	07/08/2004	11:54	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	06/18/2004	15:05	LMJ	EPA 6010B
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	07/15/2004	13:18	BRJ	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	06/10/2004	11:58	ADP	EPA 353.2
Non-Filterable Residue		< MDL	mg/L	1.	06/10/2004	8:15	AJH	EPA 160.2
Potassium, Total	7440-09-7	< MDL	mg/L	0.1	07/19/2004	11:34	BRJ	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	07/16/2004	16:25	BRJ	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	06/18/2004	15:05	LMJ	EPA 6010B
Sodium, Total	7440-23-5	< MDL	mg/L	0.1	07/19/2004	9:27	BRJ	EPA 7770
Strontium, Total	7440-24-6	< MDL	mg/L	0.05	06/18/2004	15:05	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	< MDL	mg/L	1.	06/29/2004	14:30	GMP	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	07/16/2004	15:58	BRJ	EPA 7841
Total Kjeldahl Nitrogen		< MDL	mg/L	0.02	06/25/2004	11:46	GMP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	06/18/2004	15:05	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	06/18/2004	15:05	LMJ	EPA 6010B

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

TVA-00026754

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM
Location Code: KIF
Field ID: EQUIPMENT BLANK
Sample Description: GROUNDWATER

Sample ID: AE09687 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:15 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

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

Sample Comments: None

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

TVA-00026755

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF-13B
Field ID: KIF-13B-060704-DUP
Sample Description: GROUNDWATER

Sample ID: AE09688 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:32 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

Analyte	CAS Number[1]	Result	Units	MDL[2]	Analysis Date	Analysis Time	Analyst	Method Reference
Aluminum, Total	7429-90-5	< MDL	mg/L	0.05	06/18/2004	15:10	LMJ	EPA 6010B
Ammonia as N	7664-41-7	0.11	mg/L	0.01	06/10/2004	11:58	ADP	EPA 350.1
Antimony,Total	7440-36-0	< MDL	mg/L	0.003	07/14/2004	15:25	BRJ	EPA 7041A
Arsenic, Total	7440-38-2	0.001	mg/L	0.001	07/13/2004	18:32	BRJ	EPA 7060A
Barium, Total	7440-39-3	0.35	mg/L	0.01	06/18/2004	15:10	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	06/18/2004	15:10	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	06/18/2004	15:10	LMJ	EPA 6010B
Cadmium, Total	7440-43-9	< MDL	mg/L	0.0001	07/15/2004	18:51	BRJ	EPA 7131A
Calcium, Total	7440-70-2	14	mg/L	0.1	06/18/2004	15:10	LMJ	EPA 6010B
Chloride, Total	16887-00-6	2.2	mg/L	1.	06/16/2004	11:54	GMP	EPA 325.2
Chromium, Total	7440-47-3	< MDL	mg/L	0.001	07/17/2004	17:20	BRJ	EPA 7191
Cobalt, Total	7440-48-4	< MDL	mg/L	0.001	07/17/2004	18:38	BRJ	EPA 7201
Copper, Total	7440-50-8	< MDL	mg/L	0.01	06/18/2004	15:10	LMJ	EPA 6010B
Filterable Residue		250.	mg/L	10.	06/10/2004	9:04	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.18	mg/L	0.1	06/22/2004	15:00	GMP	EPA 340.2
Inorganic Carbon, Total		45	mg/L	1.	06/10/2004	12:21	ADP	ASTM477988
Iron, Total	7439-89-6	0.09	mg/L	0.01	06/18/2004	15:10	LMJ	EPA 6010B
Lead , Total	7439-92-1	< MDL	mg/L	0.001	07/17/2004	11:58	BRJ	EPA 7421
Magnesium, Total	7439-95-4	1.9	mg/L	0.01	06/18/2004	15:10	LMJ	EPA 6010B
Manganese, Total	7439-96-5	0.076	mg/L	0.005	06/18/2004	15:10	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	07/08/2004	11:56	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	06/18/2004	15:10	LMJ	EPA 6010B
Nickel, Total	7440-02-0	< MDL	mg/L	0.001	07/15/2004	13:58	BRJ	EPA 7521
Nitrate-Nitrite as N		< MDL	mg/L	0.01	06/10/2004	11:58	ADP	EPA 353.2
Non-Filterable Residue		4.	mg/L	1.	06/10/2004	8:15	AJH	EPA 160.2
Potassium, Total	7440-09-7	0.31	mg/L	0.1	07/19/2004	11:35	BRJ	EPA 7610
Selenium, Total	7782-49-2	< MDL	mg/L	0.001	07/16/2004	16:44	BRJ	EPA 7740
Silver, Total	7440-22-4	< MDL	mg/L	0.01	06/18/2004	15:10	LMJ	EPA 6010B
Sodium, Total	7440-23-5	64.	mg/L	0.1	07/19/2004	9:32	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.28	mg/L	0.05	06/18/2004	15:10	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	2.2	mg/L	1.	06/29/2004	14:30	GMP	EPA 375.4
Thallium, Total	7440-28-0	< MDL	mg/L	0.002	07/16/2004	16:31	BRJ	EPA 7841
Total Kjeldahl Nitrogen		0.16	mg/L	0.02	06/14/2004	14:22	GMP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	06/18/2004	15:10	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	06/18/2004	15:10	LMJ	EPA 6010B

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

TVA-00026756

Data Report Number: 040727-120111
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, LAB 2C-N
Jack Milligan, CST17B-C
Phone: Debbie Nunn, HB 2A-C
Fax : Not Available
E-Mail: GroundwaterWells; EDM

Location Code: KIF-13B
Field ID: KIF-13B-060704-DUP
Sample Description: GROUNDWATER

Sample ID: AE09688 **LRF ID:** 04060151
Matrix: Water **Reg:** RCRA
Date Collected: 06/07/2004
Time Collected: 14:32 EST
Date Received: 06/09/2004
Time Received: 10:11
Project Manager: Randall L. Howell

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

Sample Comments: Ca and Sr data confirmed by reanalysis.
Chloride data is confirmed by reanalysis.

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

TVA-00026757

Central Laboratories Services data report number 040727-120111 was electronically approved using Labworks Enterprise Version 5.7, Build 255 on **07/26/2004 at 3:15:00 PM by Randall L. Howell**

Vanessa L. Ramey, Lab Director
Lisa D. Ortiz, Department Manager
Randall L. Howell, Product Manager
Ricardo I. Gilbert, Senior Analytical Chemist

This report contains sample results for the following samples, Login Reference File number: 04060151

AE09682
AE09683
AE09684
AE09685
AE09686
AE09687
AE09688

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

TVA-00026758