

April 27, 2004

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

TENNESSEE VALLEY AUTHORITY (TVA) - KINGSTON FOSSIL PLANT – ASH
DISPOSAL AREA – IDL 73-0094 – MARCH 2004 BASELINE GROUNDWATER
MONITORING REPORT

Dear Mr. Fugate:

Please find enclosed the quarterly baseline groundwater monitoring report for samples collected March 10, 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

ALS
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

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A handwritten signature in black ink that reads "Gordon G. Park".

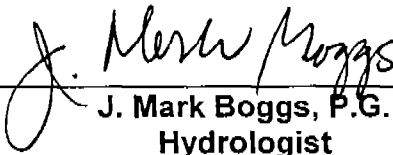
Gordon G. Park
Manager of Permitted Programs
Environmental Affairs
5D Lookout Place

Enclosures

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

**GROUNDWATER MONITORING REPORT
MARCH 2004 SAMPLING EVENT**

Prepared by



J. Mark Boggs, P.G.
Hydrologist

April 16, 2004

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INTRODUCTION

This report contains quarterly baseline monitoring results for groundwater samples collected on March 10, 2004 from the four designated compliance monitoring wells surrounding the Kingston Fossil Plant (BRF) ash disposal area. These data represent the fourth 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 March 10, 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 16A, 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 March 11. 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 April 23, 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) with the exception of silver at well 6A.

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

Table 1. March 10, 2004 Baseline Groundwater Monitoring Data

Analytical Results for Appendix I Inorganic Constituents						MCL	Comparison to MCL ^b			
Constituent	Units	Well No.					Well No.			
		4B downgradient	6A downgradient	13B ^a downgradient	16A upgradient		4B	6A	13B	16A
Antimony	µg/L	<0.6	<0.6	1.6	<0.6	6	L	L	L	L
Arsenic	µg/L	2	5.7	<0.1	0.5	50	L	L	L	L
Barium	µg/L	70	90	340	60	2,000	L	L	L	L
Beryllium	µg/L	<1	<1	<1	<1	4	L	L	L	L
Cadmium	µg/L	0.33	0.5	<0.05	<0.05	5	L	L	L	L
Chromium	µg/L	1.4	<0.1	<0.1	0.2	100	L	L	L	L
Cobalt	µg/L	4.2	3	1.8	1.7	--	--	--	--	--
Copper	µg/L	<10	<10	<10	<10	1,000	L	L	L	L
Fluoride	µg/L	110	<100	170	455	4,000	L	L	L	L
Lead	µg/L	1.7	2.8	<0.1	0.25	50	L	L	L	L
Mercury	µg/L	<0.1	<0.1	<0.1	<0.1	2	L	L	L	L
Nickel	µg/L	1.1	4.8	0.5	5.2	--	--	--	--	--
Selenium	µg/L	0.5	3.1	<0.2	<0.2	50	L	L	L	L
Silver	µg/L	<10	120	<10	<10	100	L	G	L	L
Thallium	µg/L	0.2	<0.1	<0.1	<0.1	2	L	L	L	L
Vanadium	µg/L	<10	80	<10	<10	--	--	--	--	--
Zinc	µg/L	<10	<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.

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

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 0.013 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 7.8×10^{-5} m/d.

Table 2. Groundwater Levels Measured on March 10, 2004

Well No.	Well Depth (m)	Depth to Water (m)	Top of Casing Elevation (m)	Water Elevation (m)
4B	12.79	4.19	230.72	226.53
6A	8.89	3.88	230.13	226.25
13B	25.70	2.91	234.85	231.94
16A	20.20	0.33	234.26	233.93

CONCLUSIONS

Groundwater analytical data for the March 10, 2004 baseline sampling event show a secondary MCL exceedence for silver at well 6A. Otherwise, concentrations of the other Appendix I inorganic constituents were below MCLs in all samples.

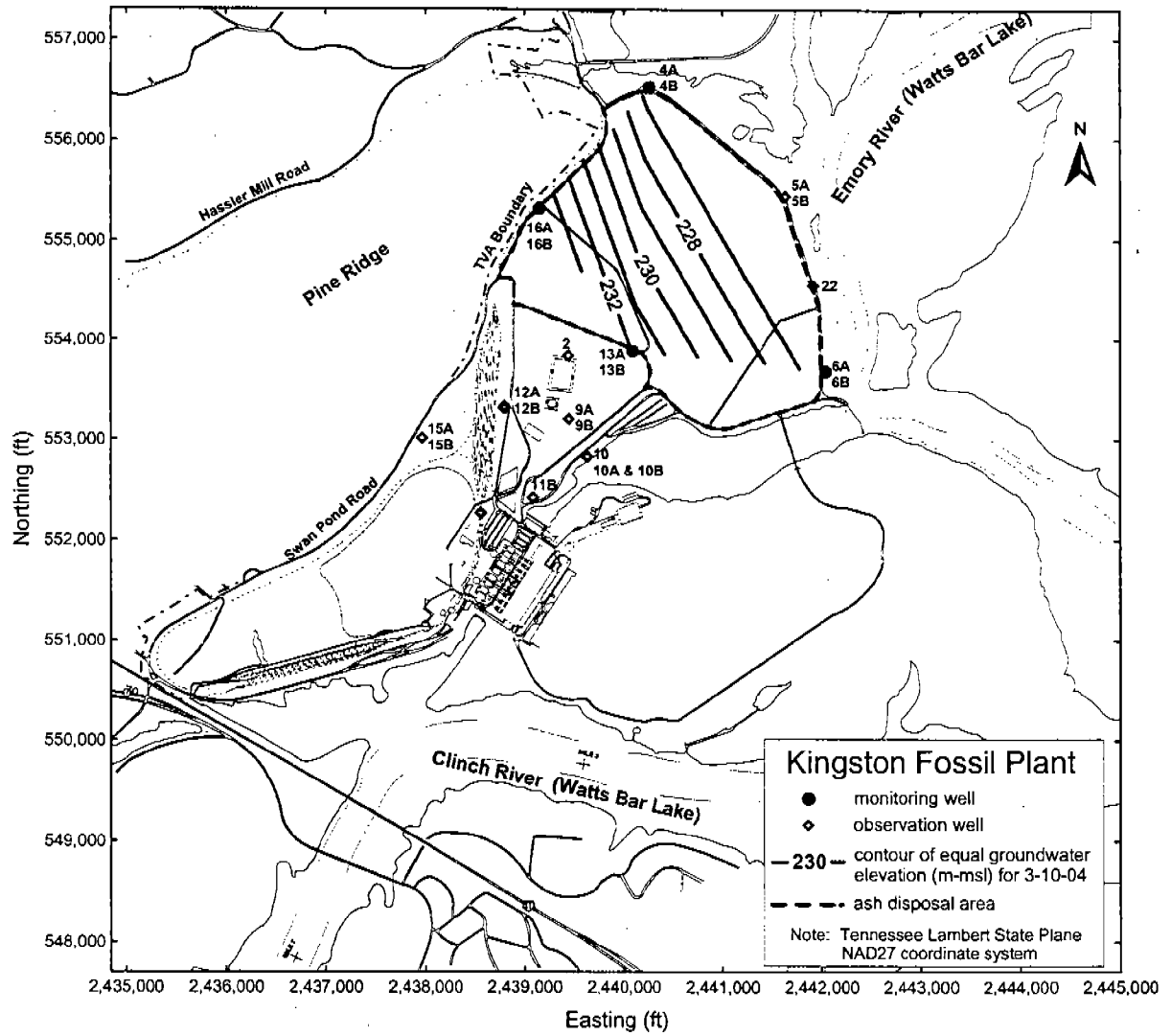


Figure 1. Groundwater Potentiometric Surface on March 10, 2004

APPENDIX A
FIELD DATA SHEETS

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site KINGSTON			Well Number 4B 84068	Purge Date Year 04 Month 03 Day 10
Depth to Water (m) 4.19 <small>4195</small>	Bottom of Well (m) 12.72 <small>4194</small>	Well Diameter (mm) 102 <small>4198</small>	Survey Leader JES	Field Crew SAG
<input checked="" type="checkbox"/> Depth of Screen <input type="checkbox"/> Open Bore Hole		Sample Label KSW-4B-031004	<input checked="" type="checkbox"/> Unfiltered <input type="checkbox"/> Filtered <input type="checkbox"/> Both Filter Type and Size:	
(m) 12.37 <small>4191</small>	To 12.82 <small>4190</small>			
[Bottom of Well - Depth to Water] x Volume Factor =		Well Volume	Target Purge Volume	Actual Purge Volume
[(12.72)m - (4.19)m] x (8.107)L/m =		69.4 <small>4193</small>	138.8 <small>4194</small>	76 <small>80.5</small> <small>4198</small>

Purge Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): **Red; 410**

Sample Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): **BAILED**

Notes and WG 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 HOLE	11:00	6.4	4.19	12.5						
6.4	11:01	6.2	5.27	12.5	15.0	6.5	7.1	1044	522	
18.8	11:03	6.0	6.85	12.5	14.9	6.5	7.0	1046	537	
30.8	11:05	5.8	8.52	12.5	14.8	6.5	6.9	1047	544	
42.4	11:07	4.5	9.64	12.5	14.4	6.5	6.7	1048	549	
51.4	11:10	3.8	10.50	12.5	14.2	6.5	6.5	1045	551	
59	11:12	2.9	11.33	12.5	14.3	6.5	6.2	1047	552	
64.8	11:14	2.8	11.71	12.5	14.5	6.5	5.9	1041	551	
70.4	11:16	2.8	12.2	12.5	14.9	6.5	5.6	1035	550	
76	11:18		12.4	12.5	14.7	6.5	5.3	1037	550	
		15:00	BAILED	4.30	BAILED	13.0	6.7	5.8	1043	344

Remarks:

Reviewed By: James S. Stuberger 03/10/04 Math D. Hill 03/11/04
 Survey Leader Date Project Leader Date

Sample Collector: SAG/JES	Sample Readings									
Sample Date: Year 04 Month 03 Day 10 Time 15:00 (ET) CT	15:00	BAILED	4:30	BAILED	13.0	6.7	5.8	1043	344	
Pump Duration: 18 min 72004	Analysis Time ET 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 300.1	COND (umhos/cm) EPA 120.1	(+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1

Additional Sample Data										
Analyst: SAG	Date Analyzed: Year 04 Month 03 Day 10		415	431	436	437	Well Diameter (mm)	Vol. Factor (L/m)		
Turbidity 1350 <input type="checkbox"/> Clear <input type="checkbox"/> Turbid <input checked="" type="checkbox"/> Slightly Turbid <input type="checkbox"/> Highly Turbid	Phenol Alkalinity (mg/L) (EPA 310.1)	Total Alk. (mg/L) (EPA 310.1)	Mineral Acidity (mg/L) (EPA 305.1)	CO ₂ Acidity (mg/L) (EPA 305.1)	12.7 (0.5 in)	0.127	51 (2 in)	2.027		
Color: Brown	Time: 09:27	Time: 09:28	Time: 09:28	Time: 09:28	78 (3 in)	4.560	102 (4 in)	8.107		
Odor: NO	Initial: SAG	Initial: SAG	Initial: SAG	Initial: SAG	127 (5 in)	12.868	153 (6 in)	18.228		
Bottles Required <input type="checkbox"/> Ferrous <input type="checkbox"/> Mineral <input type="checkbox"/> Phenol <input type="checkbox"/> Others (list):	<input type="checkbox"/> BOB <input type="checkbox"/> TOC <input checked="" type="checkbox"/> Metals <input type="checkbox"/> Dis. Mineral <input type="checkbox"/> Fil TIC F	<input type="checkbox"/> COD <input checked="" type="checkbox"/> TIC <input type="checkbox"/> Dis. Metals <input checked="" type="checkbox"/> Nutrient <input type="checkbox"/> TSS/TDS								

Distribution: (1) Original - Data Mgmt. (2) Pink - Survey Leader

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site KINGSTON			Well Number 6A 84088		Purge Date	Year 04	Month 03	Day 10
Depth to Water (m) 3.58 4195	Borehole of Well (m) 3.88 4194	Well Diameter (mm) 102 4188	Survey Leader JES		Field Crew SAG			
<input checked="" type="checkbox"/> Depth of Screen <input type="checkbox"/> Open Bore Hole			Sample Label KSN-6A-031004		<input checked="" type="checkbox"/> Unfiltered <input type="checkbox"/> Filtered <input type="checkbox"/> Both			Filter Type and Size:
(m) 8.17 To (m) 8.92 4191 4190		Bottom of Well - Depth to Water x Volume Factor =		Well Volume (L) 40.5	Target Purge Volume (L) 81	Actual Purge Volume (L) 36 4198		

Purge Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): Recirc

Sample Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): BAILED

Notes and WQ Observations	Time		Pump Rate (L/min)	Depth to Water (m)	Pump Depth (m)	Temp (°C)	pH (p.u.)	DO (mg/L)	COND (µmhos/cm)	(+/-) ORP (mV)	Turbidity (NTU)
	ET	CT									
Begin Purge	1020		6.0	5.88	3.6						
	1022		6.0	6.11	3.6	16.9	6.0	0.00	4165	132	
	1024		6.0	7.62	3.6	17.1	6.0	0.0	3930	191	
	1026		out	8.4	WATER						
	1445		BAILED	5.53	BAILED	16.9	5.9	1.7	2045	250	

Remarks: _____

Reviewed By: Chris Spillings 03/11/04 Math D. Bell 02/11/04
 Survey Leader Date Project Leader Date

Sample Collector: SAG/SES	Sample Readings										
Sample Date: Year 04 Month 03 Day 10 Time 1445	1445	BAILED	5.53	BAILED	16.9	5.9	1.7	2045	250		
Pump Rate: 6 min	Analysis Time	Pump Rate	Depth to Water	Pump Depth	Temp	pH	DO	COND	(+/-) ORP	Turbidity	
Duration: 6 min	ET CT	(L/min)	(m)	(m)	°C	(p.u.)	(mg/L)	(µmhos/cm)	(mV)	(NTU)	
"999" = 2 days					EPA 170.1	EPA 150.1	EPA 300.1	EPA 120.1	SM 2500B	EPA 180.1	

Additional Sample Data											
Analyst: SAG/SES	Date Analyzed: Year 04 Month 03 Day 11		415	431	435	437	Well Diameter (mm)		Vol. Factor (L/m)		
Turbidity 1350	Phenol	Alkalinity	Total Alk.	Mineral Acidity	CO ₂ Acidity	51	(0.5 in)	0.127	78	(2 in)	2.027
<input type="checkbox"/> Clear	(mg/L)	(EPA 310.1)	(EPA 310.1)	(EPA 305.1)	(EPA 305.1)	102	(4 in)	8.107	127	(5 in)	12.668
<input type="checkbox"/> Turbid	Time: 0939	Time: 0939	Time: 0939	Time: 0939	Time: 0939	153	(6 in)	18.228			
<input type="checkbox"/> Slightly Turbid	Initial: JES	Initial: JES	Initial: JES	Initial: JES	Initial: JES	Bottles Required					
<input type="checkbox"/> Highly Turbid	<input type="checkbox"/> BOD		<input type="checkbox"/> TOC		<input type="checkbox"/> Metals		<input type="checkbox"/> Ferrous		<input type="checkbox"/> Phenol		Others (list):
Color: Brown	<input type="checkbox"/> COD		<input type="checkbox"/> TIC		<input type="checkbox"/> Dis. Metals		<input type="checkbox"/> Dis. Mineral		<input type="checkbox"/> FR TIC		
Odor: NO	<input type="checkbox"/> DOC		<input type="checkbox"/> Dis. Metals		<input type="checkbox"/> Nutrient		<input type="checkbox"/> TSS/TDS				

Distribution: (1) Original - Data Mgmt. (2) Pink - Survey Leader

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site KINGSTON			Well Number 13B 84088		Purge Date Year 04 Month 03 Day 10		
Depth to Water (m) 2.91 4195	Bottom of Well (m) 25.68 4194	Well Diameter (m/r) 51 4188	Survey Leader JES		Field Crew SAG		
<input type="checkbox"/> Depth of Screen <input type="checkbox"/> Open Bore Hole			Sample Label KSW-13B-031004		<input checked="" type="checkbox"/> Unfiltered <input type="checkbox"/> Filtered <input type="checkbox"/> Both Filter Type and Size:		
(m) 22.29 4191		To (m) 25.34 4180		Volume Factor = 46.15 (L)			Actual Purge Volume 98 (L) 4196
(Bottom of Well) - (Depth to Water) x Volume Factor =				Well Volume		Target Purge Volume	Actual Purge Volume
$((25.68) \text{ m} - (2.91) \text{ m}) \times (2.027) \text{ L/m} =$				46.15 (L)		92.3 (L)	98 (L)

Purge Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): Redfield
 Sample Pump: Bladder Centrifugal Peristaltic Dedicated Other (list): Redfield

Notes and WG Observations	Time ED 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 14015	1304	6.0	29.1	10.0						
	1305	5.0	7.6	10.0	15.8	7.7	0.0	362	462	
	1310	4.5	8.88	10.0	16.5	7.7	0.0	365	434	
	1315	4.5	8.63	10.0	16.6	7.8	0.0	370	313	
	1320	4.5	8.68	10.0	16.6	7.8	0.0	370	226	
	1325	4.5	8.77	10.0	16.6	7.8	0.0	368	170	

Remarks:

Reviewed By: Jessie D. Ull Date: 03/11/04 Project Leader: Matt D. Ull Date: 03/11/04
 Survey Leader: Jessie D. Ull

Sample Collector: SAG			Sample Readings									
Sample Date			1325	4.5	8.77	10.0	16.6	7.8	0.0	368	170	
Year	Month	Day	4195	4193	4192	4192	400	300	84	90		
Time	min	CT	ED	Rate	Water	Pump	Temp	pH	DO	COND	(+/-) ORP	Turbidity
Duration	21	72004	CT	(L/min)	(m)	Depth	°C	(s.u.)	(mg/L)	(umhos/cm)	(mV)	(NTU)
"900" = 2 days			EPA 170.1	EPA 150.1	EPA 170.1	EPA 150.1	EPA 380.1	EPA 120.1	SM 2580B	EPA 180.1		

Additional Sample Data												
Analyst: JES/SAG			186				5				Well Diameter (mm)	Vol. Factor (L/m)
Date Analyzed			415	431	436	437	12.7	(0.5 in)	0.127			
Year	Month	Day	Phenol Acidity (EPA 310.1)	Total Alk. (EPA 310.1)	Mineral Acidity (EPA 305.1)	CO ₂ Acidity (EPA 305.1)	51	(2 in)	2.027			
Turbidity 1350	<input checked="" type="checkbox"/> Clear		Time:	Time: 0945	Time:	Time: 0945	76	(3 in)	4.590			
	<input type="checkbox"/> Turbid		Initial:	Initial: JES	Initial:	Initial: SAG	102	(4 in)	8.107			
	<input type="checkbox"/> Slightly Turbid		Bottles Required	<input type="checkbox"/> Ferrous	<input type="checkbox"/> Mineral	<input type="checkbox"/> Phenol	127	(5 in)	12.668			
	<input type="checkbox"/> Highly Turbid		<input type="checkbox"/> BOD	<input checked="" type="checkbox"/> TOC	<input checked="" type="checkbox"/> Metals	<input type="checkbox"/> Dis. Mineral	153	(6 in)	18.228			
Color:			<input type="checkbox"/> COD	<input checked="" type="checkbox"/> TIC	<input type="checkbox"/> Dis. Metals	<input type="checkbox"/> Nutrients						
Odor:						<input type="checkbox"/> Phenol						
						<input type="checkbox"/> Fil TIC						
						<input type="checkbox"/> TSS/TDS						
						Others (list):						
						F						

Distribution: (1) Original - Data Mgmt. (2) Pink - Survey Leader

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site KINGSTON			Well Number 16A 84088		Purge Date	Year 04	Month 03	Day 10
Depth to Water (m) 0.33 4195	Bottom of Well (m) 20.16 4184	Well Diameter (mm) 51 4188	Survey Leader JES		Field Crew SAG			
<input type="checkbox"/> Depth of Screen <input type="checkbox"/> Open Bore Hole (m) 16.98 To (m) 20.03			Sample Label KSW-16A-031004 KSW-16A-031004-Dup		<input checked="" type="checkbox"/> Unfiltered <input type="checkbox"/> Filtered <input type="checkbox"/> Both Filter Type and Size:			
[(Bottom of Well) - Depth to Water] x Volume Factor = Well Volume					Target Purge Volume	Actual Purge Volume		
[(20.16)m - (0.33)m] x (2.027)L/m =					40.2 (L)	80.4 (L)	83.8 (L)	

Purge Pump:	<input type="checkbox"/> Bladder	<input type="checkbox"/> Centrifugal	<input type="checkbox"/> Peristaltic	<input type="checkbox"/> Dedicated	Other (list): Radiflo					
Sample Pump:	<input type="checkbox"/> Bladder	<input type="checkbox"/> Centrifugal	<input type="checkbox"/> Peristaltic	<input type="checkbox"/> Dedicated	Other (list): Radiflo					
Notes and WO 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 14015	1416	7.5	0.33	6.0						
	1418	7.3	2.1	6.0	14.9	7.0	0.1	335	498	
	1420	7.1	3.12	6.0	15.6	7.0	0.0	341	299	
	1422	6.8	3.72	6.0	15.9	7.0	0.0	344	189	
	1424	6.7	4.20	6.0	15.9	7.0	0.0	349	158	
	1426	6.5	4.64	6.0	16.0	7.0	0.0	352	152	
	1428	6.5	4.80	6.0	16.2	7.0	0.0	352	145	

Remarks: Duplicate Samples

Reviewed By: JES Survey Leader 03/11/04 Date MKL D WLL Project Leader 03/11/04 Date

Sample Collector: SAG	Sample Readings																		
Sample Date	Time	1428	6.5	4.8	6.0	16.2	7.0	0.0	352	145									
Year 04	Month 03	Day 10	ET	CT	Analysis Time 12	min	72004	'000' = 2 days	Analysis Rate 6.5	Pump Rate 4.8	Depth to Water 6.0	Pump Depth 16.2	Temp 7.0	pH 0.0	DO 300	COND 94	(+/-) ORP 90	Turbidity 145	

Additional Sample Data												
Analyst: JES/SAG	Date Analyzed		415		431		430		437		Well Diameter (mm)	Vol. Factor (L/m)
Year 04	Month 03	Day 11	Phenol Alkalinity (mg/L) (EPA 310.1)	Total Alk. (mg/L) (EPA 310.1)	Mineral Acidity (mg/L) (EPA 305.1)	CO ₂ Acidity (mg/L) (EPA 305.1)	12.7 (0.5 in)	51 (2 in)	78 (3 in)	102 (4 in)	0.127	2.027
Turbidity 1350	<input checked="" type="checkbox"/> Clear	<input type="checkbox"/> Turbid	<input type="checkbox"/> Slightly Turbid	<input type="checkbox"/> Highly Turbid	Time: 0955	Time: 1000	Time: 0954	Time: 0957	127 (5 in)	153 (6 in)	12.668	18.228
Color: —	Bottles Required		<input type="checkbox"/> BOD	<input type="checkbox"/> TOC	<input checked="" type="checkbox"/> Metals	<input type="checkbox"/> Ferrous	<input type="checkbox"/> Mineral	<input type="checkbox"/> Dis. Mineral	<input type="checkbox"/> Phenol	<input type="checkbox"/> FR TIC	Others (list): F	
Odor: —	<input type="checkbox"/> COD	<input checked="" type="checkbox"/> TIC	<input type="checkbox"/> Dis. Metals	<input checked="" type="checkbox"/> Nutrient	<input type="checkbox"/> TSS/TDS							

Distribution: (1) Original - Data Mgmt. (2) Pick - Survey Leader

APPENDIX B
SAMPLE CUSTODY RECORD

KIF
RCRA
100

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

FORM CONTROL # 17570

PROJECT ID KINGSTON GROUNDWATER

LAB USE ONLY

REFERENCE: WORKPLAN OTHER
ACCT NO. _____
DATE REQUIRED 04/01/04
RESULTS TO MARK BEGGS
LAB 2C-N
(865) 632-1894

TEST IDC'S
~~#ICPW1~~ #ICPW2 DIGICP DIGMS SBWMS ASWMS COWMS CRWMS COWMS
 PBWMS NIWMS SEWMS TLWMS K-W NAW CLW FLW HGW DIGCVA
 SPAN #TSS #TDS TICW #TRKW NO32NW
 DATE RECEIVED 3/11/04 (ICPW2: Scratch Si, Sn, Ti) DAYS DUE 3/30/04
 PROJECT LEADER RLB LIF-04030195 NO. LABELS 4

LAB USE ONLY LAB ID	FIELD ID	SAMPLE DESCRIPTION	SAMPLE MATRIX	DATE/TIME COLLECTED	NO. OF BOTTLES	ADDITIONAL IDC'S
AEO4523	KSW-4B-031004	GROUNDWATER	H ₂ O	03/10/04 15cc	1	
4524	KSW-6A-031004	"	"	" 1445	4	
4525	KSW-13B-031004	"	"	" 1325	4	
4526	KSW-16A-031004	"	"	" 1426	4	
4527	KSW-16A-031004-DUP	"	"	"	4	
4528	EQUIPMENT BLANK	Super 8 through sample tube	"	" 1330	4	
			WATER			

FIELD COMMENTS _____

ANALYSIS REQUESTED _____

SUBMITTED BY [Signature] DATE/TIME 03/11/04

LABORATORY COMMENTS [Signature] MAR 11 '04 13:16

RECEIVED BY _____ DATE/TIME _____

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

APPENDIX C
LABORATORY DATA SHEETS

Data Report Number: 040423-110150
Report of Results: STANDARD



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
Phone: 865-632-1894
Fax : Not Available
E-Mail: EDM

Location Code: KIF

Field ID: KSW-4B-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04523 LRF ID: 04030195

Matrix: WATER Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 15:00 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

Analyte	CAS Number ¹	Result	Units	MDL ²	Analysis			Method Reference
					Date	Time	Analyst	
Aluminum, Total	7429-90-5	1.6	mg/L	0.05	03/25/2004	12:03	LMJ	EPA 6010B
Antimony, Total Recoverable	7440-36-0	< MDL	mg/L	0.0006	03/24/2004	18:20	LRP	EPA 6020
Arsenic, Total Recoverable	7440-38-2	0.0020	mg/L	0.0001	03/24/2004	18:20	LRP	EPA 6020
Barium, Total	7440-39-3	0.07	mg/L	0.01	03/25/2004	12:03	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	03/25/2004	12:03	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	03/25/2004	12:03	LMJ	EPA 6010B
Cadmium, Total Recoverable	7440-43-9	0.00033	mg/L	0.00005	03/24/2004	18:20	LRP	EPA 6020
Calcium, Total	7440-70-2	200	mg/L	0.1	03/25/2004	12:03	LMJ	EPA 6010B
Chloride, Total	16887-00-6	5.3	mg/L	1.	03/16/2004	11:54	ADP	EPA 325.2
Chromium, Total Recoverable	7440-47-3	0.0014	mg/L	0.0001	03/24/2004	18:20	LRP	EPA 6020
Cobalt, Total Recoverable	7440-48-4	0.0042	mg/L	0.0001	03/24/2004	18:20	LRP	EPA 6020
Copper, Total	7440-50-8	< MDL	mg/L	0.01	03/25/2004	12:03	LMJ	EPA 6010B
Filterable Residue		740.	mg/L	10.	03/12/2004	12:43	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.11	mg/L	0.1	03/18/2004	10:00	GMP	EPA 340.2
Inorganic Carbon, Total		83	mg/L	1.	03/17/2004	18:32	ADP	ASTM477988
Iron, Total	7439-89-6	7.9	mg/L	0.01	03/25/2004	12:03	LMJ	EPA 6010B
Lead, Total Recoverable	7439-92-1	0.0017	mg/L	0.0001	03/24/2004	18:20	LRP	EPA 6020
Magnesium, Total	7439-95-4	17	mg/L	0.01	03/25/2004	12:03	LMJ	EPA 6010B
Manganese, Total	7439-96-5	2.7	mg/L	0.005	03/25/2004	12:03	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	03/30/2004	16:08	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	03/25/2004	12:03	LMJ	EPA 6010B
Nickel, Total Recoverable	7440-02-0	0.0011	mg/L	0.0001	03/24/2004	18:20	LRP	EPA 6020
Nitrate-Nitrite as N		< MDL	mg/L	0.01	03/23/2004	15:45	ADP	EPA 353.2
Non-Filterable Residue		32.	mg/L	1.	03/12/2004	13:45	AJH	EPA 160.2
Potassium, Total	7440-09-7	4.7	mg/L	0.1	03/22/2004	11:16	BRJ	EPA 7610
Selenium, Total Recoverable	7782-49-2	0.0005	mg/L	0.0002	03/24/2004	18:20	LRP	EPA 6020
Silver, Total	7440-22-4	< MDL	mg/L	0.01	03/25/2004	12:03	LMJ	EPA 6010B
Sodium, Total	7440-23-5	5.5	mg/L	0.1	03/22/2004	8:57	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.39	mg/L	0.05	03/25/2004	12:03	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	320	mg/L	1.	03/29/2004	10:30	GMP	EPA 375.4
Thallium, Total Recoverable	7440-28-0	0.0002	mg/L	0.0001	03/24/2004	18:20	LRP	EPA 6020
Total Kjeldahl Nitrogen		0.55	mg/L	0.02	03/22/2004	11:23	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	03/25/2004	12:03	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	03/25/2004	12:03	LMJ	EPA 6010B



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

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

Data Report Number: 040423-110150

Report of Results: STANDARD

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

Customer Address: MARK BOGGS

LAB 2C-N

Phone: 865-632-1894

Fax : Not Available

E-Mail: EDM

Location Code: KIF

Field ID: KSW-4B-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04523

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 15:00 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

Analyte	CAS Number ¹	Result	Units	MDL ²	Analysis Date	Analysis Time	Analyst	Method Reference
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Sample Comments: None

Data Report Number: 040423-110150

Report of Results: STANDARD



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
 Phone: 865-632-1894
 Fax : Not Available
 E-Mail: EDM

Location Code: KIF

Field ID: KSW-6A-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04524

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 14:45 EST

Date Received: 03/11/2004

Time Received: 13:16

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	0.25	mg/L	0.05	03/25/2004	12:08	LMJ	EPA 6010B
Antimony, Total Recoverable	7440-36-0	< MDL	mg/L	0.0006	03/24/2004	18:27	LRP	EPA 6020
Arsenic, Total Recoverable	7440-38-2	0.0057	mg/L	0.0001	03/24/2004	18:27	LRP	EPA 6020
Barium, Total	7440-39-3	0.09	mg/L	0.01	03/25/2004	12:08	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	03/25/2004	12:08	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	03/25/2004	12:08	LMJ	EPA 6010B
Cadmium, Total Recoverable	7440-43-9	0.00050	mg/L	0.00005	03/24/2004	18:27	LRP	EPA 6020
Calcium, Total	7440-70-2	220	mg/L	0.1	03/25/2004	12:08	LMJ	EPA 6010B
Chloride, Total	16887-00-6	7.5	mg/L	1.	03/16/2004	11:54	ADP	EPA 325.2
Chromium, Total Recoverable	7440-47-3	< MDL	mg/L	0.0001	03/24/2004	18:27	LRP	EPA 6020
Cobalt, Total Recoverable	7440-48-4	0.0030	mg/L	0.0001	03/24/2004	18:27	LRP	EPA 6020
Copper, Total	7440-50-8	< MDL	mg/L	0.01	03/25/2004	12:08	LMJ	EPA 6010B
Filterable Residue		4000.	mg/L	10.	03/12/2004	12:43	AJH	EPA 160.1
Fluoride, Total	16984-48-8	< MDL	mg/L	0.1	03/18/2004	10:00	GMP	EPA 340.2
Inorganic Carbon, Total		99	mg/L	1.	03/17/2004	18:39	ADP	ASTM477988
Iron, Total	7439-89-6	840	mg/L	0.1	03/25/2004	12:08	LMJ	EPA 6010B
Lead, Total Recoverable	7439-92-1	0.0028	mg/L	0.0001	03/24/2004	18:27	LRP	EPA 6020
Magnesium, Total	7439-95-4	66	mg/L	0.01	03/25/2004	12:08	LMJ	EPA 6010B
Manganese, Total	7439-96-5	120	mg/L	0.005	03/25/2004	12:08	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	03/29/2004	15:32	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	03/25/2004	12:08	LMJ	EPA 6010B
Nickel, Total Recoverable	7440-02-0	0.0048	mg/L	0.0001	03/24/2004	18:27	LRP	EPA 6020
Nitrate-Nitrite as N		< MDL	mg/L	0.01	03/23/2004	15:45	ADP	EPA 353.2
Non-Filterable Residue		64.	mg/L	1.	03/12/2004	13:45	AJH	EPA 160.2
Potassium, Total	7440-09-7	11.	mg/L	0.1	03/22/2004	11:18	BRJ	EPA 7610
Selenium, Total Recoverable	7782-49-2	0.0031	mg/L	0.0002	03/24/2004	18:27	LRP	EPA 6020
Silver, Total	7440-22-4	0.12	mg/L	0.01	03/25/2004	12:08	LMJ	EPA 6010B
Sodium, Total	7440-23-5	9.8	mg/L	0.1	03/22/2004	8:58	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.75	mg/L	0.05	03/25/2004	12:08	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	2400	mg/L	1.	03/29/2004	10:30	GMP	EPA 375.4
Thallium, Total Recoverable	7440-28-0	< MDL	mg/L	0.0001	03/24/2004	18:27	LRP	EPA 6020
Total Kjeldahl Nitrogen		17	mg/L	0.02	03/30/2004	16:40	ADP	EPA 351.2
Vanadium, Total	7440-62-2	0.08	mg/L	0.01	03/25/2004	12:08	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	03/25/2004	12:08	LMJ	EPA 6010B

04/23/2004

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¹ Chemical Abstracts Service Registry Number ² Method Detection Limit

TVA-00026806



**TENNESSEE VALLEY AUTHORITY
CENTRAL LABORATORIES SERVICES**

**1101 Market Street, PSC 1B-C
Chattanooga, Tennessee 37402-2801**

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

Data Report Number: 040423-110150

Report of Results: STANDARD

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

Customer Address: MARK BOGGS

LAB 2C-N

Phone: 865-632-1894

Fax : Not Available

E-Mail: EDM

Location Code: KIF

Field ID: KSW-6A-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04524

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 14:45 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

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

Sample Comments: Silver result confirmed by reanalysis.

Data Report Number: 040423-110150

Report of Results: STANDARD



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
 Phone: 865-632-1894
 Fax : Not Available
 E-Mail: EDM

Location Code: KIF

Field ID: KSW-13B-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04525

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 13:25 EST

Date Received: 03/11/2004

Time Received: 13:16

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	03/25/2004	12:14	LMJ	EPA 6010B
Antimony, Total Recoverable	7440-36-0	0.0016	mg/L	0.0006	03/24/2004	18:35	LRP	EPA 6020
Arsenic, Total Recoverable	7440-38-2	< MDL	mg/L	0.0001	03/24/2004	18:35	LRP	EPA 6020
Barium, Total	7440-39-3	0.34	mg/L	0.01	03/25/2004	12:14	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	03/25/2004	12:14	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	03/25/2004	12:14	LMJ	EPA 6010B
Cadmium, Total Recoverable	7440-43-9	< MDL	mg/L	0.00005	03/24/2004	18:35	LRP	EPA 6020
Calcium, Total	7440-70-2	14	mg/L	0.1	03/25/2004	12:14	LMJ	EPA 6010B
Chloride, Total	16887-00-6	2.2	mg/L	1.	03/16/2004	11:54	ADP	EPA 325.2
Chromium, Total Recoverable	7440-47-3	< MDL	mg/L	0.0001	03/24/2004	18:35	LRP	EPA 6020
Cobalt, Total Recoverable	7440-48-4	0.0018	mg/L	0.0001	03/24/2004	18:35	LRP	EPA 6020
Copper, Total	7440-50-8	< MDL	mg/L	0.01	03/25/2004	12:14	LMJ	EPA 6010B
Filterable Residue		220.	mg/L	10.	03/12/2004	12:44	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.17	mg/L	0.1	03/18/2004	10:00	GMP	EPA 340.2
Inorganic Carbon, Total		44	mg/L	1.	03/17/2004	18:45	ADP	ASTM477988
Iron, Total	7439-89-6	0.09	mg/L	0.01	03/25/2004	12:14	LMJ	EPA 6010B
Lead, Total Recoverable	7439-92-1	< MDL	mg/L	0.0001	03/24/2004	18:35	LRP	EPA 6020
Magnesium, Total	7439-95-4	1.8	mg/L	0.01	03/25/2004	12:14	LMJ	EPA 6010B
Manganese, Total	7439-96-5	0.076	mg/L	0.005	03/25/2004	12:14	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	03/29/2004	15:35	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	03/25/2004	12:14	LMJ	EPA 6010B
Nickel, Total Recoverable	7440-02-0	0.0005	mg/L	0.0001	03/24/2004	18:35	LRP	EPA 6020
Nitrate-Nitrite as N		< MDL	mg/L	0.01	03/23/2004	15:45	ADP	EPA 353.2
Non-Filterable Residue		2.	mg/L	1.	03/12/2004	13:45	AJH	EPA 160.2
Potassium, Total	7440-09-7	2.2	mg/L	0.1	03/22/2004	11:19	BRJ	EPA 7610
Selenium, Total Recoverable	7782-49-2	< MDL	mg/L	0.0002	03/24/2004	18:35	LRP	EPA 6020
Silver, Total	7440-22-4	< MDL	mg/L	0.01	03/25/2004	12:14	LMJ	EPA 6010B
Sodium, Total	7440-23-5	71.	mg/L	0.1	03/22/2004	9:00	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.27	mg/L	0.05	03/25/2004	12:14	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	2.8	mg/L	1.	03/29/2004	10:30	GMP	EPA 375.4
Thallium, Total Recoverable	7440-28-0	< MDL	mg/L	0.0001	03/24/2004	18:35	LRP	EPA 6020
Total Kjeldahl Nitrogen		0.21	mg/L	0.02	03/22/2004	11:23	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	03/25/2004	12:14	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	03/25/2004	12:14	LMJ	EPA 6010B

04/23/2004

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¹ Chemical Abstracts Service Registry Number ² Method Detection Limit

TVA-00026808



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

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

Data Report Number: 040423-110150
Report of Results: STANDARD

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

Customer Address: MARK BOGGS

LAB 2C-N
Phone: 865-632-1894
Fax : Not Available

E-Mail: EDM

Location Code: KIF

Field ID: KSW-13B-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04525

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 13:25 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

Analyte	CAS Number ¹	Result	Units	MDL ²	Analysis	Analysis	Method
					Date	Time	

Sample Comments: None

Data Report Number: 040423-110150

Report of Results: STANDARD



**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

Phone: 865-632-1894

Fax: Not Available

E-Mail: EDM

Location Code: KIF

Field ID: KSW-16A-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04526

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 14:28 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

Analyte	CAS Number ¹	Result	Units	MDL ²	Analysis	Analysis	Analyst	Method
					Date	Time		Reference
Aluminum, Total	7429-90-5	0.51	mg/L	0.05	03/25/2004	12:30	LMJ	EPA 6010B
Antimony, Total Recoverable	7440-36-0	< MDL	mg/L	0.0006	03/24/2004	18:42	LRP	EPA 6020
Arsenic, Total Recoverable	7440-38-2	0.0005	mg/L	0.0001	03/24/2004	18:42	LRP	EPA 6020
Barium, Total	7440-39-3	0.06	mg/L	0.01	03/25/2004	12:30	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	03/25/2004	12:30	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	03/25/2004	12:30	LMJ	EPA 6010B
Cadmium, Total Recoverable	7440-43-9	< MDL	mg/L	0.00005	03/24/2004	18:42	LRP	EPA 6020
Calcium, Total	7440-70-2	44	mg/L	0.1	03/25/2004	12:30	LMJ	EPA 6010B
Chloride, Total	16887-00-6	< MDL	mg/L	1.	03/16/2004	11:54	ADP	EPA 325.2
Chromium, Total Recoverable	7440-47-3	0.0002	mg/L	0.0001	03/24/2004	18:42	LRP	EPA 6020
Cobalt, Total Recoverable	7440-48-4	0.0017	mg/L	0.0001	03/24/2004	18:42	LRP	EPA 6020
Copper, Total	7440-50-8	< MDL	mg/L	0.01	03/25/2004	12:30	LMJ	EPA 6010B
Filterable Residue		220.	mg/L	10.	03/12/2004	12:44	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.44	mg/L	0.1	03/18/2004	10:00	GMP	EPA 340.2
Inorganic Carbon, Total		35	mg/L	1.	03/17/2004	18:51	ADP	ASTM477988
Iron, Total	7439-89-6	1.2	mg/L	0.01	03/25/2004	12:30	LMJ	EPA 6010B
Lead, Total Recoverable	7439-92-1	0.0003	mg/L	0.0001	03/24/2004	18:42	LRP	EPA 6020
Magnesium, Total	7439-95-4	9.3	mg/L	0.01	03/25/2004	12:30	LMJ	EPA 6010B
Manganese, Total	7439-96-5	1.3	mg/L	0.005	03/25/2004	12:30	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	03/29/2004	15:38	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	03/25/2004	12:30	LMJ	EPA 6010B
Nickel, Total Recoverable	7440-02-0	0.0012	mg/L	0.0001	03/24/2004	18:42	LRP	EPA 6020
Nitrate-Nitrite as N		0.03	mg/L	0.01	03/23/2004	15:45	ADP	EPA 353.2
Non-Filterable Residue		< MDL	mg/L	1.	03/12/2004	13:45	AJH	EPA 160.2
Potassium, Total	7440-09-7	2.0	mg/L	0.1	03/22/2004	11:21	BRJ	EPA 7610
Selenium, Total Recoverable	7782-49-2	< MDL	mg/L	0.0002	03/24/2004	18:42	LRP	EPA 6020
Silver, Total	7440-22-4	< MDL	mg/L	0.01	03/25/2004	12:30	LMJ	EPA 6010B
Sodium, Total	7440-23-5	15.	mg/L	0.1	03/22/2004	9:01	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.28	mg/L	0.05	03/25/2004	12:30	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	35	mg/L	1.	03/29/2004	10:30	GMP	EPA 375.4
Thallium, Total Recoverable	7440-28-0	< MDL	mg/L	0.0001	03/24/2004	18:42	LRP	EPA 6020
Total Kjeldahl Nitrogen		0.52	mg/L	0.02	03/22/2004	11:23	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	03/25/2004	12:30	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	03/25/2004	12:30	LMJ	EPA 6010B

04/23/2004

Page 7 of 13

¹ Chemical Abstracts Service Registry Number² Method Detection Limit

TVA-00026810



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

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

Data Report Number: 040423-110150
Report of Results: STANDARD

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

Customer Address: MARK BOGGS
LAB 2C-N
Phone: 865-632-1894
Fax : Not Available
E-Mail: EDM

Location Code: KIF

Field ID: KSW-16A-031004

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04526

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 14:28 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

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

Sample Comments: None



**TENNESSEE VALLEY AUTHORITY
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Chattanooga, Tennessee 37402-2801**

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

Data Report Number: 040423-110150

Report of Results: STANDARD

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

Customer Address: MARK BOGGS
LAB 2C-N
Phone: 865-632-1894
Fax: Not Available
E-Mail: EDM

Location Code: KIF

Field ID: KSW-16A-031004-DUP

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04527 LRF ID: 04030195

Matrix: WATER Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 14:28 EST

Date Received: 03/11/2004

Time Received: 13:16

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	0.43	mg/L	0.05	03/25/2004	12:36	LMJ	EPA 6010B
Antimony, Total Recoverable	7440-36-0	< MDL	mg/L	0.0006	03/24/2004	18:49	LRP	EPA 6020
Arsenic, Total Recoverable	7440-38-2	0.0005	mg/L	0.0001	03/24/2004	18:49	LRP	EPA 6020
Barium, Total	7440-39-3	0.06	mg/L	0.01	03/25/2004	12:36	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	03/25/2004	12:36	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	03/25/2004	12:36	LMJ	EPA 6010B
Cadmium, Total Recoverable	7440-43-9	< MDL	mg/L	0.00005	03/24/2004	18:49	LRP	EPA 6020
Calcium, Total	7440-70-2	44	mg/L	0.1	03/25/2004	12:36	LMJ	EPA 6010B
Chloride, Total	16887-00-6	1.0	mg/L	1.	03/16/2004	11:54	ADP	EPA 325.2
Chromium, Total Recoverable	7440-47-3	0.0002	mg/L	0.0001	03/24/2004	18:49	LRP	EPA 6020
Cobalt, Total Recoverable	7440-48-4	0.0017	mg/L	0.0001	03/24/2004	18:49	LRP	EPA 6020
Copper, Total	7440-50-8	< MDL	mg/L	0.01	03/25/2004	12:36	LMJ	EPA 6010B
Filterable Residue		220.	mg/L	10.	03/12/2004	12:44	AJH	EPA 160.1
Fluoride, Total	16984-48-8	0.47	mg/L	0.1	03/18/2004	10:00	GMP	EPA 340.2
Inorganic Carbon, Total		36	mg/L	1.	03/17/2004	18:57	ADP	ASTM477988
Iron, Total	7439-89-6	1.2	mg/L	0.01	03/25/2004	12:36	LMJ	EPA 6010B
Lead, Total Recoverable	7439-92-1	0.0002	mg/L	0.0001	03/24/2004	18:49	LRP	EPA 6020
Magnesium, Total	7439-95-4	9.2	mg/L	0.01	03/25/2004	12:36	LMJ	EPA 6010B
Manganese, Total	7439-96-5	1.3	mg/L	0.005	03/25/2004	12:36	LMJ	EPA 6010B
Mercury, Total	7439-97-6	<MDL	mg/L	0.0001	03/29/2004	15:38	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	03/25/2004	12:36	LMJ	EPA 6010B
Nickel, Total Recoverable	7440-02-0	0.0092	mg/L	0.0001	03/24/2004	18:49	LRP	EPA 6020
Nitrate-Nitrite as N		0.03	mg/L	0.01	03/23/2004	15:45	ADP	EPA 353.2
Non-Filterable Residue		10.	mg/L	1.	03/12/2004	13:45	AJH	EPA 160.2
Potassium, Total	7440-09-7	1.9	mg/L	0.1	03/22/2004	11:22	BRJ	EPA 7610
Selenium, Total Recoverable	7782-49-2	< MDL	mg/L	0.0002	03/24/2004	18:49	LRP	EPA 6020
Silver, Total	7440-22-4	< MDL	mg/L	0.01	03/25/2004	12:36	LMJ	EPA 6010B
Sodium, Total	7440-23-5	15.	mg/L	0.1	03/22/2004	9:03	BRJ	EPA 7770
Strontium, Total	7440-24-6	0.28	mg/L	0.05	03/25/2004	12:36	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	34	mg/L	1.	03/29/2004	10:30	GMP	EPA 375.4
Thallium, Total Recoverable	7440-28-0	< MDL	mg/L	0.0001	03/24/2004	18:49	LRP	EPA 6020
Total Kjeldahl Nitrogen		0.60	mg/L	0.02	03/22/2004	11:23	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	03/25/2004	12:36	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	03/25/2004	12:36	LMJ	EPA 6010B



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Chattanooga, Tennessee 37402-2801**

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

Data Report Number: 040423-110150
Report of Results: STANDARD

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

Customer Address: MARK BOGGS
LAB 2C-N
Phone: 865-632-1894
Fax : Not Available
E-Mail: EDM

Location Code: KIF

Field ID: KSW-16A-031004-DUP

Sample Description: KINGSTON GROUNDWATER

Sample ID: AE04527

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 14:28 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

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

Sample Comments: None

Data Report Number: 040423-110150
Report of Results: STANDARD



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

Customer Address: MARK BOGGS
LAB 2C-N
Phone: 865-632-1894
Fax: Not Available
E-Mail: EDM

Location Code: KIF

Field ID: EQUIPMENT BLANK

Sample Description: SUPER Q THROUGH SAMPLE TUBE

Sample ID: AE04528

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 13:30 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

Analyte	CAS Number ¹	Result	Units	MDL ²	Analysis		Analyst	Method Reference
					Date	Time		
Aluminum, Total	7429-90-5	< MDL	mg/L	0.05	03/25/2004	12:41	LMJ	EPA 6010B
Antimony, Total Recoverable	7440-36-0	< MDL	mg/L	0.0006	03/24/2004	18:57	LRP	EPA 6020
Arsenic, Total Recoverable	7440-38-2	< MDL	mg/L	0.0001	03/24/2004	18:57	LRP	EPA 6020
Barium, Total	7440-39-3	< MDL	mg/L	0.01	03/25/2004	12:41	LMJ	EPA 6010B
Beryllium, Total	7440-41-7	< MDL	mg/L	0.001	03/25/2004	12:41	LMJ	EPA 6010B
Boron, Total	7440-42-8	< MDL	mg/L	0.2	03/25/2004	12:41	LMJ	EPA 6010B
Cadmium, Total Recoverable	7440-43-9	< MDL	mg/L	0.00005	03/24/2004	18:57	LRP	EPA 6020
Calcium, Total	7440-70-2	< MDL	mg/L	0.1	03/25/2004	12:41	LMJ	EPA 6010B
Chloride, Total	16887-00-6	< MDL	mg/L	1.	03/16/2004	11:54	ADP	EPA 325.2
Chromium, Total Recoverable	7440-47-3	< MDL	mg/L	0.0001	03/24/2004	18:57	LRP	EPA 6020
Cobalt, Total Recoverable	7440-48-4	< MDL	mg/L	0.0001	03/24/2004	18:57	LRP	EPA 6020
Copper, Total	7440-50-8	< MDL	mg/L	0.01	03/25/2004	12:41	LMJ	EPA 6010B
Filterable Residue		< MDL	mg/L	10.	03/12/2004	12:45	AJH	EPA 160.1
Fluoride, Total	16984-48-8	< MDL	mg/L	0.1	03/18/2004	10:00	GMP	EPA 340.2
Inorganic Carbon, Total		< MDL	mg/L	1.	03/17/2004	19:04	ADP	ASTM477988
Iron, Total	7439-89-6	< MDL	mg/L	0.01	03/25/2004	12:41	LMJ	EPA 6010B
Lead, Total Recoverable	7439-92-1	< MDL	mg/L	0.0001	03/24/2004	18:57	LRP	EPA 6020
Magnesium, Total	7439-95-4	< MDL	mg/L	0.01	03/25/2004	12:41	LMJ	EPA 6010B
Manganese, Total	7439-96-5	< MDL	mg/L	0.005	03/25/2004	12:41	LMJ	EPA 6010B
Mercury, Total	7439-97-6	< MDL	mg/L	0.0001	03/29/2004	15:40	CLS	EPA 7470A
Molybdenum, Total	7439-98-7	< MDL	mg/L	0.02	03/25/2004	12:41	LMJ	EPA 6010B
Nickel, Total Recoverable	7440-02-0	< MDL	mg/L	0.0001	03/24/2004	18:57	LRP	EPA 6020
Nitrate-Nitrite as N		< MDL	mg/L	0.01	03/23/2004	15:45	ADP	EPA 353.2
Non-Filterable Residue		< MDL	mg/L	1.	03/12/2004	13:45	AJH	EPA 160.2
Potassium, Total	7440-09-7	< MDL	mg/L	0.1	03/22/2004	11:30	BRJ	EPA 7610
Selenium, Total Recoverable	7782-49-2	< MDL	mg/L	0.0002	03/24/2004	18:57	LRP	EPA 6020
Silver, Total	7440-22-4	< MDL	mg/L	0.01	03/25/2004	12:41	LMJ	EPA 6010B
Sodium, Total	7440-23-5	< MDL	mg/L	0.1	03/22/2004	9:10	BRJ	EPA 7770
Strontium, Total	7440-24-6	< MDL	mg/L	0.05	03/25/2004	12:41	LMJ	EPA 6010B
Sulfate, Total	14808-79-8	< MDL	mg/L	1.	03/29/2004	10:30	GMP	EPA 375.4
Thallium, Total Recoverable	7440-28-0	< MDL	mg/L	0.0001	03/24/2004	18:57	LRP	EPA 6020
Total Kjeldahl Nitrogen		< MDL	mg/L	0.02	03/22/2004	11:23	ADP	EPA 351.2
Vanadium, Total	7440-62-2	< MDL	mg/L	0.01	03/25/2004	12:41	LMJ	EPA 6010B
Zinc, Total	7440-66-6	< MDL	mg/L	0.01	03/25/2004	12:41	LMJ	EPA 6010B



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Data Report Number: 040423-110150

Report of Results: STANDARD

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

Customer Address: MARK BOGGS

LAB 2C-N

Phone: 865-632-1894

Fax : Not Available

E-Mail: EDM

Location Code: KIF

Field ID: EQUIPMENT BLANK

Sample Description: SUPER Q THROUGH SAMPLE TUBE

Sample ID: AE04528

LRF ID: 04030195

Matrix: WATER

Reg: RCRA

Date Collected: 03/10/2004

Time Collected: 13:30 EST

Date Received: 03/11/2004

Time Received: 13:16

Project Manager: Randall L. Howell

Analyte	CAS Number ¹	Result	Units	MDL ²	Analysis		Method
					Date	Time	

Sample Comments: None

Data Report Number: 040423-110150

Report of Results: STANDARD

Central Laboratories Services data report number 040423-110150 was electronically approved using Labworks

Enterprise Version 5.7, Build 255 on **04/09/2004 at 8:51:00 AM by Randall L. Howell**

Vanessa L. Ramey, Lab Director
Lisa D. Ortiz, Product 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: 04030195

AE04523
AE04524
AE04525
AE04526
AE04527
AE04528