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January 22, 2008

Mr. David Fugate, P.G.
Geologist
Knoxville Environmental Field Office
Division of Solid Waste Management
Tennessee Department of Environment
and Conservation
3711 Middlebrook Pike
Knoxville, Tennessee 37921

TENNESSEE VALLEY AUTHORITY – KINGSTON FOSSIL PLANT – ASH DISPOSAL AREA – IDL 73-0094 – DECEMBER 2007 GROUNDWATER MONITORING REPORT

Dear Mr. Fugate:

Please find enclosed the groundwater monitoring report for samples collected December 3-4, 2007 at designated compliance wells surrounding the subject facility. Laboratory data from the analyses of groundwater samples collected during this monitoring event is summarized in Table 1. Analytical results indicated there were no MCL or statistical exceedances.

Other supporting information with this submittal includes:

- A description of groundwater conditions at the time of sampling including a potentiometric surface map based on water-level measurements made on December 3, 2007 in wells located in vicinity of the facility (Figure 1).
- Field Data Sheets (Appendix A).
- Sample custody record (Appendix B).
- Laboratory Data Sheets (Appendix C).

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

If you have questions regarding the report, please contact John Dizer at (423) 751-7636 or Linda Campbell at (865) 717-2157.

Cynthia M. Anderson
Acting Manager of Regulatory Programs
5D Lookout Place

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Enclosures
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Prepared by J. Mark Boggs, reviewed by John E. Dizer.
p:\media files\solid waste\Kif_GWM_for December 2007 dated 1-17, 2008 jed.doc

Jed Ltr 1-24-08

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

January 22, 2007

Mr. David Fugate, P.G.
Geologist
Knoxville Environmental Field Office
Division of Solid Waste Management
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5D Lookout Place

Enclosures

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

GROUNDWATER MONITORING REPORT
DECEMBER 2007

Prepared by

J. Mark Boggs, P.G.

Tennessee Valley Authority
Knoxville, Tennessee

January 11, 2008

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INTRODUCTION

This report contains groundwater detection monitoring results for samples collected on December 3-4, 2007 from the four designated monitoring wells surrounding the Kingston Fossil Plant (KIF) Ash Disposal Area. Groundwater samples were analyzed by Environmental Science Corporation. Sample collection and laboratory analyses were performed in accordance with Tennessee Department of Conservation and Environment (TDEC) Rule 1200-1-7-.04 and the facility groundwater monitoring plan approved by TDEC (August 1996).

GROUNDWATER SAMPLING

Groundwater sampling was performed by J.E. Stockburger and W.F. Nichols at upgradient well 16A and downgradient wells 4B, 6A and 13B. Dedicated centrifugal pumps were used to purge and sample all monitoring wells. Duplicate samples were collected from well 16A, and an equipment blank was collected after well 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 of a minimum of two well volumes or until the well was purged to dryness. Field data sheets are included in Appendix A.

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

Immediately following collection, samples were transferred to new sample bottles provided by the laboratory with appropriate preservatives, where applicable. The samples were then sealed, labeled, recorded on a custody form, and placed in an iced cooler for transport. Samples were delivered to the TVA Environmental Chemistry Laboratory on December 5. A copy of the sample custody form is given in Appendix B.

ANALYTICAL RESULTS

Groundwater samples were analyzed for the 17 required inorganic constituents specified in Appendix I of TDEC Rule 1200-1-7. Laboratory results completed on December 14 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). Note that analysis of the sample from well 6A required sample dilution due to matrix interferences resulting in higher detection limits for arsenic and 6 other constituents. All analytical testing was performed within recommended sample holding times.

STATISTICAL EVALUATION

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

HYDROGEOLOGIC CONDITIONS

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

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

Table 1. December 3-4, 2007 Groundwater Monitoring Results

Analytical Results for Appendix 1 Inorganic Constituents						Upper Prediction Limit			MCL	Comparison to UPL[a]		
		Well No.										
Parameter	Units	4B downgradient	6A downgradient	13B downgradient	16A[b] upgradient	4B	6A	13B		4B	6A	13B
Antimony	µg/L	< 1	< 1	< 1	< 1	6	6	6	6	L	L	L
Arsenic	µg/L	1.8	< 5	< 1	< 1	10	14	10	50	L	L	L
Barium	µg/L	61	170	430	56.5	2000	2000	2000	2,000	L	L	L
Beryllium	µg/L	< 2	< 2	< 2	< 2	4	4	4	4	L	L	L
Cadmium	µg/L	0.97	< 0.5	< 0.5	< 0.5	5	5	5	5	L	L	L
Chromium	µg/L	4.4	< 5	< 1	1.2	100	100	100	100	L	L	L
Cobalt	µg/L	4.7	< 5	< 1	< 1	23	17	6	--	L	L	L
Copper	µg/L	7	< 5	1.1	< 1	1000	1000	1000	1,000	L	L	L
Fluoride	µg/L	0.13	< 0.1	0.13	0.37	4000	4000	4000	4,000	L	L	L
Lead	µg/L	2.2	< 1	< 1	< 1	15	15	15	50	L	L	L
Mercury	µg/L	< 0.2	< 0.2	< 0.2	< 0.2	2	2	2	2	L	L	L
Nickel	µg/L	15	< 5	< 1	< 1	100	100	100	--	L	L	L
Selenium	µg/L	1.9	< 5	1.2	< 1	50	50	50	50	L	L	L
Silver	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	100	190	100	180[c]	L	L	L
Thallium	µg/L	< 1	< 1	< 1	< 1	2	2	2	2	L	L	L
Vanadium	µg/L	< 10	64	< 10	< 10	10	150	10	--	L	L	L
Zinc	µg/L	54	< 100	13	< 10	5000	5000	5000	5,000	L	L	L

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

b - reported concentrations are averages of duplicate samples

c - site specific groundwater protection standard approved 2/15/07.

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

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

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

Groundwater levels measured in site monitoring wells on December 3 prior to sample collection are presented in Table 2. The shallow groundwater potentiometric surface derived from these measurements is shown on Figure 1. Groundwater generally flows eastward across the ash disposal area toward the reservoir. An average hydraulic gradient of approximately 0.0104 is estimated between the western and eastern boundaries of the disposal area. The alluvial aquifer underlying the ash disposal area exhibits a mean horizontal hydraulic conductivity of 0.006 m/d. The local Darcy flux is therefore estimated to be approximately 6.2×10^{-5} m/d.

Table 2. Groundwater Levels Measured on December 3, 2007

Well No.	Top of Casing Elevation (m)	Depth to Water (m)	Water Elevation (m-msl)	Well Bottom Depth (m)
4B	230.72	4.13	226.59	12.72
6A	230.13	3.87	226.26	8.88
13B	234.85	2.52	232.33	25.68
16A	234.26	0.00	234.26	20.16

CONCLUSIONS

Groundwater analytical data for the December 3-4 monitoring event showed no statistical evidence of groundwater contamination from the ash disposal area. Concentrations of the 17 Appendix I inorganic constituents were below MCLs in all samples.

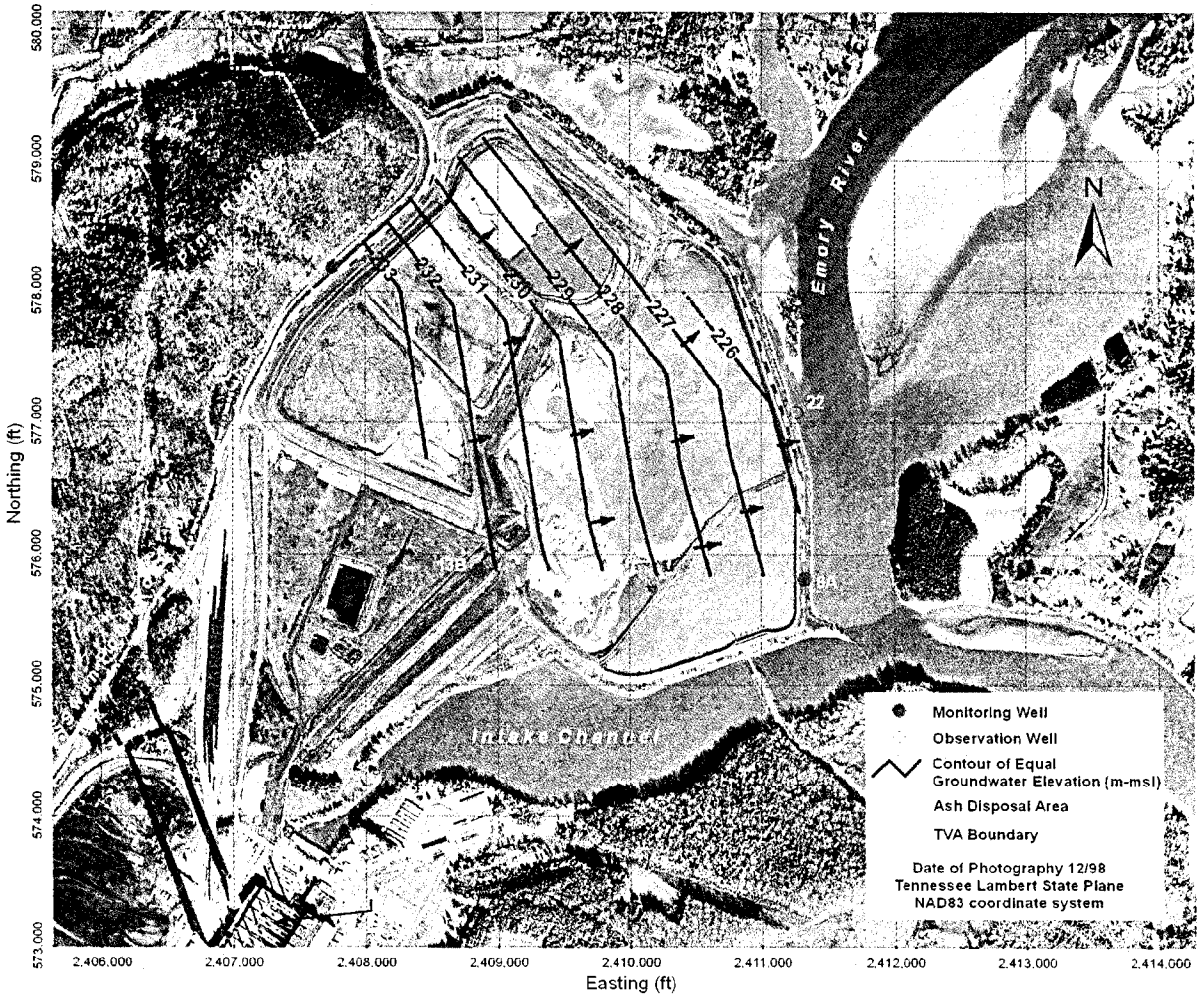

Figure 1. Groundwater Potentiometric Surface on December 3, 2007

APPENDIX A

FIELD DATA SHEETS

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Preliminary Groundwater Data Field Worksheet

Sheet 1 of 2

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	4B 84068		07	12	03

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
4.13 4195	12.72 4194	102 4188	JES	WFN

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	
12.37 4191	To	12.82 4190	KIF-4B-1207	☑ 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)
[(12.72)m - (4.13)m] x (8.107)L/m =	69.6	139.2	See page 2 → 4186

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

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

	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 130 Hz →	0921	7	4.13	12.5	—					
+10	14	0923	6.2	6.44	12.5	16.4	6.7	1.8	1827	251	—
+10	~~26~~	0924		—	12.5	16.8	6.7	1	1455	295	—
	26	0925	5.2	7.94	12.5	17.1	6.8	7.2	1338	366	—
+10	ʻ	0927		9.44	12.5	17.2	6.8	7.8	1344	407	—
	47	0929	3.8	—	12.5	17.4	6.8	7.7	1354	426	—
+10	55	0931	2.3	10.67	12.5	17.6	6.8	7.4	1371	440	—
		0933		11.20	12.5	17.8	6.8	6.8	1396	446	—
		0935		11.42	12.5	18.1	6.8	6	1434	444	—
~~49~~ 50	135 Hz 69	0937	2.0	11.53	12.5	18.5	6.8	5.3	1479	442	—
		0940		12.01	12.5	18.3	6.8	5.6	1433	464	—
	79	0942	1.25	12.27	12.5	18.3	6.8	5.7	1443	463	—
59	82	0944		12.45	12.5	18.5	6.8	5	1478	466	—
				OUT OF WATER - SEE PAGE 2 FOR RESUMPTION							

Remarks:

Reviewed By: [signature] Survey Leader 12-05-07 Date [signature] Project Leader 12-06-07 Date

Sample Collector: JES/WFN

Sample Date Year	Month	Day	Time
07	12	03	(ET) CT

Pump Duration ~ min 72004

"999" = 2 days

Sample Readings

Analysis Time (ET) CT	4193 Pump Rate (L/min)	Depth to Water (m)	4192 Pump Depth (m)	10 Temp °C EPA 170.1	400 pH (s.u.) EPA 150.1	300 DO (mg/L) EPA 360.1	94 COND (umhos/cm) EPA 120.1	90 (+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1
	See page 2 →								—

Additional Sample Data

Analyst: JES

Date Analyzed Year	Month	Day
07	12	03

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:	Time:	Time:
Initial:	Initial:	Initial:	Initial:

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

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

TVA 30088A (9-1999)

TVA-00025087

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Preliminary Groundwater Data Field Worksheet

Sheet 2 of 2

Project/Site	KINGSTON	Well Number 4B 84068	Purge Date	Year 07	Month 12	Day 03

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
4.13 4195	12.72 4194	102 4188	JES	WFN

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	☑ Unfiltered ☐ Filtered ☐ Both Filter Type and Size:
12.37 4191	To	12.82 4190	KIF-4B-1207	

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume (L)	Target Purge Volume (L)	Actual Purge Volume (L)
[(12.72)m − (4.13)m] x (8.107)L/m=	69.6	139.2	~~90~~ 68 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)
60 Begin Purge 1304Hz →	10:16	2	10.38	12.5	Resume pumping after recharge period-					
	1018	↓	10.97	12.5	16.2	6.8	0.8	1478	419	—
	1019		—	12.5	16.8	6.8	0.5	1478	399	—
8	1020		11.27	12.5	16.8	6.8	0.4	1479	386	—

Remarks:

Reviewed By: [signature] Survey Leader 12-05-07 Date [signature] Project Leader 12-06-07 Date

Sample Collector: JES/WFN

Sample Date: Year 07 Month 12 Day 03 Time (ET) CT

Pump Duration 27 min 72004

"999" = 2 days

Sample Readings

1020	2	11.27	12.5	16.8	6.8	0.4	1479	386	—
	4193		4192	10	400	300	94	90	
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 360.1	COND (umhos/cm) EPA 120.1	(+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1

Additional Sample Data

Analyst: JES/WFN

Date Analyzed: Year 07 Month 12 Day 03

	415 Phenol Alkalinity mg/L (EPA 310.1)	431 Total Alk. mg/L (EPA 310.1)	436 Mineral Acidity mg/L (EPA 305.1)	437 CO_2 Acidity mg/L (EPA 305.1)
Value	/	116	/	25
Time:		1648		1542
Initial:		JES		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

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

Color: —

Odor: —

Bottles Required: ☐ BOD ☐ COD ☐ TOC ☑ TIC ☐ Ferrous ☑ Metals ☐ Dis. Metals ☑ Mineral ☐ Dis. Mineral ☑ Nutrient ☐ Phenol ☐ Filt TIC ☐ 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-00025088

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	6A 84068		07	12	03

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
3.87 4185	8.88 4184	102 4188	JES	WFN

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
8.47 4191		8.92 4190	KIF-6A-1207	☑ Unfiltered ☐ Filtered ☐ Both

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(8.88)m - (3.87)m] x (8.107)L/m=	40.5 (L)	81 (L)	42 (L) 4186

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

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

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 110Hz	0830	5.0	3.87	8.6						
10	0832	5.0	5.70	8.6	17.8	5.9	0.5	4988	182	-
20	0834	2.0	6.80	8.6	18.4	5.9	0.3	4970	161	-
24	0836	2.5	7.73	8.6	18.6	5.9	0.2	4099	164	-
29	0838		8.16	8.6	18.8	5.9	0.2	3478	164	-
30	0839				18.6	OUT	OF	WATER		
110HZ	1231	3.0	5.76	8.6	Resume	Pumping				
	1232	"		8.6	17.5	6	0.9	4630	206	-
	1233	"		8.6	17.7	6	0.7	4475	196	-
	1234	"	7.10	8.6	17.9	6	0.4	4188	191	-
+12	1235	2.5	7.60	8.6	18.1	6	0.4	4014	185	-

Remarks:

Reviewed By: [signature] Survey Leader 12-05-07 Date [signature] Project Leader 12-06-07 Date

Sample Collector: ~~JES~~/WFN

Sample Date			Time
Year	Month	Day	
07	12	03	(ET) CT

Pump Duration 13 min 72004

"999" = 2 days

Sample Readings

Analysis Time (ET) CT	1235	Pump Rate (L/min)	2.5 4193	Depth to Water (m)	7.6	Pump Depth (m)	8.6 4192	Temp °C EPA 170.1	18.1 10	pH (s.u.) EPA 150.1	6 400	DO (mg/L) EPA 360.1	0.4 300	COND (umhos/cm) EPA 120.1	4014 94	(+/-) ORP (mV) SM 2580B	185 90	Turbidity (NTU) EPA 180.1	-

Additional Sample Data

Analyst: ~~JES~~/WFN

Date Analyzed: Year 07 Month 12 Day ~~03~~

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

Color: TAN

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)
	182		1512 1828 MGW
Time:	Time: 1638	Time:	Time: 1555
Initial:	Initial: WFN	Initial:	Initial: ~~JES~~

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

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

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

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

TVA 30066A (9-1999)

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

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	13B 84068		07	12	03 JES 04

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
2.52 4195	25.68 4194	51 4188	JES	WFN

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
22.29 4191	To	25.34 4190	KIF-13B-1207	☑ Unfiltered ☐ Filtered ☐ Both

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(25.68)m - (2.52)m] x (2.027)L/m=	46.9 (L)	93.9 (L)	94 (L) 4186

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

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

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 1401 hz →	0826	8.5	2.52	10						
34	0830	5.6	8.66	10	16.7	7.1	0.5	409	163	—
62 1354z	0835	4.6	9.35	10	16.6	7.6	0.2	417	109	—
85	0840	4.7	9.10	10	16.6	7.7	0.2	410	86	—
94	0842		9.10	10	16.6	7.7	0.1	407	83	—

Remarks:

Reviewed By: _____ Survey Leader 12-04-07 Date _____ Project Leader 12-06-07 Date

Sample Collector: JES/WFN	Sample Date			Time
	Year	Month	Day	(ET) CT
	07	12	03	
Pump Duration 16 min 72004				

"999" = 2 days

Sample Readings

0842	4.7	9.1	10	16.6	7.7	0.1	407	83	—
Analysis Time (ET) CT	4193 Pump Rate (L/min)	Depth to Water (m)	4192 Pump Depth (m)	10 Temp °C EPA 170.1	400 pH (s.u.) EPA 150.1	300 DO (mg/L) EPA 360.1	94 COND (umhos/cm) EPA 120.1	90 (+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1

Additional Sample Data

Analyst: JES/WFN		209		5
Date Analyzed: Year 07 Month 12 Day 03	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: 1340	Time:	Time: 1414
	Initial:	Initial: WFN	Initial:	Initial: WFN

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

Color: -

Odor: -

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

Bottles Required

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

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

Others (list): F

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

TVA 30086A (9-1999)

TVA-00025090

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	16A 84068		07	12	03

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
0 4195	20.16 4194	51 4188	JES	WFN

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label	Filter Type and Size:
16.98 4191		20.03 4190	KIF-16A-1207 KIF-16A-1207-DUP	☑ Unfiltered ☐ Filtered ☐ Both

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(20.16)m - (0)m] x (2.027)L/m=	40.86 (L)	81.7 (L)	83 (L) 4186

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

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

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 →	0901	10.4	0	6.7						
31	0904	-	3	6.7	16.4	6.9	0.3	344	125	—
51	0906	8	4.07	6.7	16.3	6.9	0.2	349	124	—
67	0908	-	-	6.7	16.3	7	0.2	351	125	—
83	0910	7.8	4.95	6.7	16.3	7	0.2	352	125	—

Remarks: DUPLICATE SAMPLES

Reviewed By: James Stockburger Survey Leader 12-04-07 Date — Matt D. Wills Project Leader 12-06-07 Date

Sample Collector: JES/WFN

Sample Date			Time
Year	Month	Day	
07	12	03	(ET) CT

Pump Duration 9 min 72004

"999" = 2 days

Sample Readings

0910	7.8	4.95	6.7	16.3	7	0.2	352	125	—
Analysis Time (ET) CT	4193 Pump Rate (L/min)	Depth to Water (m)	4192 Pump Depth (m)	10 Temp °C EPA 170.1	400 pH (s.u.) EPA 150.1	300 DO (mg/L) EPA 360.1	94 COND (umhos/cm) EPA 120.1	90 (+/-) ORP (mV) SM 2580B	Turbidity (NTU) EPA 180.1

Additional Sample Data

Analyst: JES

Date Analyzed: Year 07 Month 12 Day 03

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

Color: —

Odor: —

	149	150		20	20
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: WFN	WFN	Time:	Time: 1409	1403
Initial:	Initial: 1349	1355	Initial:	Initial: WFN	WFN

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

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

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

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

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

TVA 30066A (9-1999)

APPENDIX B

SAMPLE CUSTODY RECORD

TVA - ENVAFF

Alternate billing information:
Cynthia Anderson
cmanders@tva.gov

Report to: Mark Boggs
Email to: jmboggs@tva.gov

Project Description: KIF Groundwater
City/State Collected: Kingston, TN
Phone: (865) 632-6941
FAX: (865) 632-8212
Client Project #: Kingston
ESC Key:
Collected by: Jim Stockburger
Site/Facility ID#: 0014D0M
P.O.#:
Collected by (signature):
Packed on Ice N Y

Rush? (Lab MUST Be Notified)
____ Same Day.....200%
____ Next Day.....100%
____ Two Day.....50%

Date Results Needed: STANDARD
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	TKN (See attached)	Metals (See attached)	Minerals (See attached)	Nutrients (See attached)	Remarks/Contaminant	Sample # (lab only)
KIF-4B-1207	Grab	GW	1	12/03/07	1020	4	1	1	1	1	EDD	578494001
KIF-6A-1207	Grab	GW	1	12/03/07	1235	4	1	1	1	1	EDD	02
KIF-13B-1207	Grab	GW	1	12/04/07	0842	4	1	1	1	1	EDD	03
KIF-16A-1207	Grab	GW	1	12/04/07	0910	4	1	1	1	1	EDD	04
KIF-16A-1207-DUP	Grab	GW	1	12/04/07	0910	4	1	1	1	1	EDD	05
KIF-22-1207	Grab	GW	1	12/03/07	0902	1/2				1	EDD	06
KIF-EQ BLANK	Grab	WATER	1	12/03/07	0915	4	1	1	1	1	EDD	07

*Matrix: SS - Soil/Solid GW - Groundwater WW - WasteWater DW - Drinking Water OT - Other_____

pH _____ Temp _____
Flow _____ Other _____

Remarks:

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
James Stockburger	12/04/07	12:00	
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)
	12/5/07	910	Wayne Shull
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)
Wayne Shull	12/5/07	1200	

Samples returned via: ☐ UPS ☐ FedEx ☐ Courier ☐ _____
Temp: 3.2°C
Bottles Received: 26
Date: 12-5-07
Time: 1200
Condition: (lab use only) OK
pH Checked: 12
NCF:

Chain of Custody Page 1 of 1

Prepared by:

ENVIRONMENTAL SCIENCE CORP.
12065 Lebanon Road
Mt. Juliet, TN 37122
Phone (615) 758-5858
Phone (800) 767-5859
FAX (615) 758-5859

CoCode: (lab use only)
Template/Prelogin
Shipped Via:

APPENDIX C

LABORATORY DATA SHEETS

ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT 9D-K

Knoxville, TN 37902

Report Summary

Friday December 14, 2007

Report Number: L322442
Samples Received: 12/05/07
Client Project: Kingston

Description: KIF Groundwater

The analytical results in this report are based upon information supplied by you, the client, and are for your exclusive use. If you have any questions regarding this data package, please do not hesitate to call.

Entire Report Reviewed By:

Roberto Celia, ESC Representative

Laboratory Certification Numbers

A2LA - 1461-01, AIHA - 09227, AL - 40660, CA - I-2327, CT - PH-0197, FL - E87487
GA - 923, IN - C-TN-01, KY - 90010, KYUST - 0016, NC - ENV375,DW21704, ND - R-140
NJ - TN002, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ - 0612, MN - 047-999-395, NY - 11742, WI - 998093910

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Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-4B

Collected By : Jim Stockburger
Collection Date : 12/03/07 10:20

ESC Sample # : L322442-01

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Chloride	3.0	1.0	mg/l	9056	12/06/07 0735	159	12/07/07 0351	MCH
Fluoride	0.13	0.10	mg/l	9056	12/06/07 0735	159	12/07/07 0351	MCH
Sulfate	660	50.	mg/l	9056	12/06/07 1615	159	12/08/07 0201	MCH
Ammonia Nitrogen	0.16	0.10	mg/l	350.1	12/10/07 1002	234	12/11/07 0945	LEM
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	12/10/07 0805	165	12/12/07 0840	LEM
Sulfide	BDL	0.050	mg/l	4500-S2 D	12/07/07 0752	352	12/08/07 0947	KPB
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	12/10/07 1039	234	12/12/07 1352	
Total Inorganic Carbon	31.	1.0	mg/l	9060A	12/10/07 1607	162	12/12/07 1549	ADH
Dissolved Solids	1200	10.	mg/l	2540C	12/06/07 1525	193	12/08/07 1041	AMS
Suspended Solids	15.	1.0	mg/l	2540D	12/06/07 1523	193	12/07/07 1153	AMS
Antimony	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Arsenic	0.0018	0.0010	mg/l	6020	12/05/07 1200	117	12/07/07 1429	LAT
Cadmium	0.00097	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Chromium	0.0044	0.0010	mg/l	6020	12/05/07 1200	117	12/07/07 1429	LAT
Copper	0.0070	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Cobalt	0.0047	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Lead	0.0022	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Nickel	0.015	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Selenium	0.0019	0.0010	mg/l	6020	12/05/07 1200	117	12/07/07 1429	LAT
Silver	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Thallium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1716	LAT
Zinc	0.054	0.010	mg/l	6020	12/05/07 1200	117	12/07/07 1429	LAT
Mercury	BDL	0.00020	mg/l	7470A	12/05/07 1351	253	12/06/07 1154	KBW
Aluminum	0.62	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Barium	0.061	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Beryllium	BDL	0.0020	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Boron	BDL	0.20	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Calcium	300	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Iron	2.1	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Magnesium	27.	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Manganese	5.0	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
The reported analytical results relate only to the sample submitted

ENVIRONMENTAL
SCIENCE CORP.

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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-4B

Collected By : Jim Stockburger
Collection Date : 12/03/07 10:20

ESC Sample # : L322442-01

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Molybdenum	BDL	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Potassium	7.2	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT
Sodium	8.4	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1637	LAT
Strontium	0.54	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1637	LAT
Vanadium	BDL	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1053	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
The reported analytical results relate only to the sample submitted

Reported: 12/14/07 15:52 Printed: 12/14/07 16:44

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REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-6A

Collected By : Jim Stockburger
Collection Date : 12/03/07 12:35

ESC Sample # : L322442-02

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Chloride	10.	1.0	mg/l	9056	12/06/07 0735	159	12/07/07 0407	MCH
Fluoride	BDL	0.10	mg/l	9056	12/06/07 0735	159	12/07/07 0407	MCH
Sulfate	3300	100	mg/l	9056	12/08/07 1038	159	12/08/07 1812	MCH
Ammonia Nitrogen	6.4	0.10	mg/l	350.1	12/10/07 1002	234	12/11/07 0946	LEM
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	12/10/07 0805	165	12/12/07 0841	LEM
Sulfide	BDL	0.050	mg/l	4500-S2 D	12/07/07 0752	352	12/08/07 0947	KPB
Kjeldahl Nitrogen, TKN	14.	0.50	mg/l	351.2	12/10/07 1039	234	12/12/07 1353	
Total Inorganic Carbon	8.6	1.0	mg/l	9060A	12/10/07 1607	162	12/12/07 1606	ADH
Dissolved Solids	4400	10.	mg/l	2540C	12/06/07 1525	193	12/08/07 1041	AMS
Suspended Solids	160	1.0	mg/l	2540D	12/06/07 1523	193	12/07/07 1153	AMS
Antimony	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1719	LAT
Arsenic	BDL	0.0050	mg/l	6020	12/05/07 1200	117	12/07/07 0014	LAT
Cadmium	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1719	LAT
Chromium	BDL	0.0050	mg/l	6020	12/05/07 1200	117	12/07/07 0014	LAT
Copper	BDL	0.0050	mg/l	6020	12/05/07 1200	117	12/07/07 0014	LAT
Cobalt	BDL	0.0050	mg/l	6020	12/05/07 1200	117	12/07/07 0014	LAT
Lead	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1719	LAT
Nickel	BDL	0.0050	mg/l	6020	12/05/07 1200	117	12/07/07 0014	LAT
Selenium	BDL	0.0050	mg/l	6020	12/05/07 1200	117	12/07/07 0014	LAT
Silver	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1719	LAT
Thallium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1719	LAT
Zinc	BDL	0.10	mg/l	6020	12/05/07 1200	117	12/08/07 1914	LAT
Mercury	BDL	0.00020	mg/l	7470A	12/05/07 1351	253	12/06/07 1202	KBW
Aluminum	BDL	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Barium	0.17	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Beryllium	BDL	0.0020	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Boron	5.2	0.20	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Calcium	240	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Iron	930	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Magnesium	93.	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Manganese	180	0.10	mg/l	6010B	12/05/07 1644	249	12/10/07 1907	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
The reported analytical results relate only to the sample submitted

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-6A

Collected By : Jim Stockburger
Collection Date : 12/03/07 12:35

ESC Sample # : L322442-02

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Molybdenum	BDL	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Potassium	8.4	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT
Sodium	11.	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1640	LAT
Strontium	0.66	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1640	LAT
Vanadium	0.064	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1056	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
The reported analytical results relate only to the sample submitted

Reported: 12/14/07 15:52 Printed: 12/14/07 16:44

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-13B

Collected By : Jim Stockburger
Collection Date : 12/04/07 08:42

ESC Sample # : L322442-03

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Chloride	3.6	1.0	mg/l	9056	12/06/07 0735	159	12/07/07 0424	MCH
Fluoride	0.13	0.10	mg/l	9056	12/06/07 0735	159	12/07/07 0424	MCH
Sulfate	BDL	5.0	mg/l	9056	12/06/07 0735	159	12/07/07 0424	MCH
Ammonia Nitrogen	0.26	0.10	mg/l	350.1	12/10/07 1002	234	12/11/07 0947	LEM
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	12/10/07 0805	165	12/12/07 0842	LEM
Sulfide	BDL	0.050	mg/l	4500-S2 D	12/07/07 0752	352	12/08/07 0947	KPB
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	12/10/07 1039	234	12/12/07 1354	
Total Inorganic Carbon	58.	1.0	mg/l	9060A	12/10/07 1607	162	12/12/07 1622	ADH
Dissolved Solids	280	10.	mg/l	2540C	12/07/07 1338	245	12/10/07 1103	RBS
Suspended Solids	BDL	1.0	mg/l	2540D	12/06/07 1523	193	12/07/07 1153	AMS
Antimony	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Arsenic	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/07/07 1436	LAT
Cadmium	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Chromium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/07/07 1436	LAT
Copper	0.0011	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Cobalt	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Lead	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Nickel	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Selenium	0.0012	0.0010	mg/l	6020	12/05/07 1200	117	12/07/07 1436	LAT
Silver	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Thallium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1722	LAT
Zinc	0.013	0.010	mg/l	6020	12/05/07 1200	117	12/07/07 1436	LAT
Mercury	BDL	0.00020	mg/l	7470A	12/05/07 1351	253	12/06/07 1204	KBW
Aluminum	BDL	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Barium	0.43	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Beryllium	BDL	0.0020	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Boron	BDL	0.20	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Calcium	18.	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Iron	0.35	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Magnesium	2.4	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Manganese	0.12	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
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ENVIRONMENTAL
SCIENCE CORP.

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Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-13B

Collected By : Jim Stockburger
Collection Date : 12/04/07 08:42

ESC Sample # : L322442-03

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Molybdenum	BDL	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Potassium	2.2	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT
Sodium	75.	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1645	LAT
Strontium	0.34	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1645	LAT
Vanadium	BDL	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1101	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
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Reported: 12/14/07 15:52 Printed: 12/14/07 16:44

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Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-16A

Collected By : Jim Stockburger
Collection Date : 12/04/07 09:10

ESC Sample # : L322442-04

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Chloride	1.5	1.0	mg/l	9056	12/06/07 0735	159	12/07/07 0440	MCH
Fluoride	0.37	0.10	mg/l	9056	12/06/07 0735	159	12/07/07 0440	MCH
Sulfate	26.	5.0	mg/l	9056	12/06/07 0735	159	12/07/07 0440	MCH
Ammonia Nitrogen	0.46	0.10	mg/l	350.1	12/10/07 1154	234	12/11/07 1113	LEM
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	12/10/07 0805	165	12/12/07 0844	LEM
Sulfide	BDL	0.050	mg/l	4500-S2 D	12/07/07 0752	352	12/08/07 0948	KPB
Kjeldahl Nitrogen, TKN	0.70	0.50	mg/l	351.2	12/10/07 1039	234	12/12/07 1355	
Total Inorganic Carbon	41.	1.0	mg/l	9060A	12/10/07 1607	162	12/12/07 1639	ADH
Dissolved Solids	230	10.	mg/l	2540C	12/07/07 1338	245	12/10/07 1105	RBS
Suspended Solids	15.	1.0	mg/l	2540D	12/06/07 1605	245	12/07/07 1333	RBS
Antimony	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Arsenic	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Cadmium	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Chromium	0.0011	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Copper	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Cobalt	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Lead	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Nickel	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Selenium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Silver	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Thallium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Zinc	BDL	0.010	mg/l	6020	12/05/07 1200	117	12/06/07 2010	LAT
Mercury	BDL	0.00020	mg/l	7470A	12/05/07 1351	253	12/06/07 1207	KBW
Aluminum	0.62	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Barium	0.056	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Beryllium	BDL	0.0020	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Boron	BDL	0.20	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Calcium	42.	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Iron	1.4	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Magnesium	9.5	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Manganese	1.3	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
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Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-16A

Collected By : Jim Stockburger
Collection Date : 12/04/07 09:10

ESC Sample # : L322442-04

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Molybdenum	BDL	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Potassium	1.9	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT
Sodium	16.	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1649	LAT
Strontium	0.27	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1649	LAT
Vanadium	BDL	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1104	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
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Reported: 12/14/07 15:52 Printed: 12/14/07 16:44

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REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14, 2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-16A

Collected By : Jim Stockburger
Collection Date : 12/04/07 09:10

ESC Sample # : L322442-05

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Chloride	1.5	1.0	mg/l	9056	12/06/07 0735	159	12/07/07 0457	MCH
Fluoride	0.37	0.10	mg/l	9056	12/06/07 0735	159	12/07/07 0457	MCH
Sulfate	26.	5.0	mg/l	9056	12/06/07 0735	159	12/07/07 0457	MCH
Ammonia Nitrogen	0.61	0.10	mg/l	350.1	12/10/07 1154	234	12/11/07 1114	LEM
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	12/10/07 0805	165	12/12/07 0847	LEM
Sulfide	BDL	0.050	mg/l	4500-S2 D	12/07/07 0752	352	12/08/07 0948	KPB
Kjeldahl Nitrogen, TKN	0.84	0.50	mg/l	351.2	12/10/07 1039	234	12/12/07 1356	
Total Inorganic Carbon	41.	1.0	mg/l	9060A	12/10/07 1607	162	12/12/07 1652	ADH
Dissolved Solids	210	10.	mg/l	2540C	12/07/07 1338	245	12/10/07 1101	RBS
Suspended Solids	9.6	1.0	mg/l	2540D	12/06/07 1605	245	12/07/07 1333	RBS
Antimony	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Arsenic	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Cadmium	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Chromium	0.0013	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Copper	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Cobalt	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Lead	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Nickel	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Selenium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Silver	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Thallium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Zinc	BDL	0.010	mg/l	6020	12/05/07 1200	117	12/06/07 1928	LAT
Mercury	BDL	0.00020	mg/l	7470A	12/05/07 1351	253	12/06/07 1209	KBW
Aluminum	0.79	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Barium	0.057	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Beryllium	BDL	0.0020	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Boron	BDL	0.20	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Calcium	43.	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Iron	1.5	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Magnesium	9.5	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Manganese	1.3	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
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Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-EQ BLANK

Collected By : Jim Stockburger
Collection Date : 12/03/07 09:15

ESC Sample # : L322442-07

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Chloride	BDL	1.0	mg/l	9056	12/06/07 0735	159	12/07/07 0513	MCH
Fluoride	BDL	0.10	mg/l	9056	12/06/07 0735	159	12/07/07 0513	MCH
Sulfate	BDL	5.0	mg/l	9056	12/06/07 0735	159	12/07/07 0513	MCH
Ammonia Nitrogen	BDL	0.10	mg/l	350.1	12/10/07 1154	234	12/11/07 1116	LEM
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	12/10/07 0805	165	12/12/07 0850	LEM
Sulfide	BDL	0.050	mg/l	4500-S2 D	12/07/07 0752	352	12/08/07 0948	KPB
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	12/10/07 1039	234	12/12/07 1357	
Total Inorganic Carbon	BDL	1.0	mg/l	9060A	12/10/07 1607	162	12/12/07 1815	ADH
Dissolved Solids	BDL	10.	mg/l	2540C	12/06/07 1525	193	12/08/07 1042	AMS
Suspended Solids	BDL	1.0	mg/l	2540D	12/06/07 1523	193	12/07/07 1153	AMS
Antimony	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Arsenic	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Cadmium	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Chromium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Copper	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Cobalt	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Lead	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Nickel	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Selenium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Silver	BDL	0.00050	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Thallium	BDL	0.0010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Zinc	BDL	0.010	mg/l	6020	12/05/07 1200	117	12/06/07 1931	LAT
Mercury	BDL	0.00020	mg/l	7470A	12/05/07 1351	253	12/06/07 1211	KBW
Aluminum	BDL	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Barium	BDL	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Beryllium	BDL	0.0020	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Boron	BDL	0.20	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Calcium	BDL	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Iron	BDL	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Magnesium	BDL	0.10	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Manganese	BDL	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
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Notes:
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Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14, 2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-16A

Collected By : Jim Stockburger
Collection Date : 12/04/07 09:10

ESC Sample # : L322442-05

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Molybdenum	BDL	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Potassium	2.2	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT
Sodium	16.	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1652	LAT
Strontium	0.26	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1652	LAT
Vanadium	BDL	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1107	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
The reported analytical results relate only to the sample submitted

Reported: 12/14/07 15:52 Printed: 12/14/07 16:44

ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Rd.
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1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : December 05, 2007
Description : KIF Groundwater

Sample ID : KIF-22

Collected By : Jim Stockburger
Collection Date : 12/03/07 09:02

ESC Sample # : L322442-06

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Ammonia Nitrogen	0.90	0.10	mg/l	350.1	12/11/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	12/12/07	1
Kjeldahl Nitrogen, TKN	1.1	0.50	mg/l	351.2	12/12/07	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
The reported analytical results relate only to the sample submitted.

Reported: 12/14/07 15:52 Printed: 12/14/07 16:44

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REPORT OF ANALYSIS

Mr. J. Mark Boggs
TVA-Environmental Affairs
400 W. Summit Hill Mailstop TVA WT
Knoxville, TN 37902

December 14,2007

Date Received : 12/05/07 12:00
Description : KIF Groundwater

Sample ID : KIF-EQ BLANK

Collected By : Jim Stockburger
Collection Date : 12/03/07 09:15

ESC Sample # : L322442-07

Site ID : 0014D0M

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Molybdenum	BDL	0.0050	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Potassium	BDL	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT
Sodium	BDL	0.50	mg/l	6010B	12/05/07 1644	249	12/06/07 1655	LAT
Strontium	BDL	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1655	LAT
Vanadium	BDL	0.010	mg/l	6010B	12/05/07 1644	249	12/06/07 1110	LAT

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)

Laboratory Certification Numbers:
AIHA - 09227, AL - 40660, CA - I-2327, CT- PH-0197, FL - E87487, GA - 923, IN - C-TN-01
KY - 90010, NC - ENV375,DW21704, ND - R-140, SC - 84004, TN - 2006, VA - 00109, WV - 233
AZ -0612, MN - 047-999-395, NY - 11742, NJ - TN002, WI - 998093910

Notes:
The reported analytical results relate only to the sample submitted

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Attachment A
List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L322442-02	Arsenic	O
	Chromium	O
	Copper	O
	Cobalt	O
	Nickel	O
	Selenium	O
	Zinc	O
L322442-03	Suspended Solids	T4
L322442-07	Suspended Solids	T4

Attachment B
Explanation of QC Qualifier Codes

Qualifier	Meaning
O	(ESC) Sample diluted due to matrix interferences that impaired the ability to make an accurate analytical determination. The detection limit is elevated in order to reflect the necessary dilution.
T4	(ESC) - Additional method/sample information: QNS - Quantity Not Sufficient

Qualifier Report Information

ESC utilizes sample and result qualifiers as set forth by the EPA Contract Laboratory Program and as required by most certifying bodies including NELAC. In addition to the EPA qualifiers adopted by ESC, we have implemented ESC qualifiers to provide more information pertaining to our analytical results. Each qualifier is designated in the qualifier explanation as either EPA or ESC. Data qualifiers are intended to provide the ESC client with more detailed information concerning the potential bias of reported data. Because of the wide range of constituents and variety of matrices incorporated by most EPA methods,it is common for some compounds to fall outside of established ranges. These exceptions are evaluated and all reported data is valid and useable unless qualified as 'R' (Rejected).

Definitions

Accuracy - The relationship of the observed value of a known sample to the true value of a known sample. Represented by percent recovery and relevant to samples such as: control samples, matrix spike recoveries, surrogate recoveries, etc.

Precision - The agreement between a set of samples or between duplicate samples. Relates to how close together the results are and is represented by Relative Percent Differrence.

Surrogate - Organic compounds that are similar in chemical composition, extraction, and chromotography to analytes of interest. The surrogates are used to determine the probable response of the group of analytes that are chemically related to the surrogate compound. Surrogates are added to the sample and carried through all stages of preparation and analyses.

TIC - Tentatively Identified Compound: Compounds detected in samples that are not target compounds, internal standards, system monitoring compounds, or surrogates.

Summary of Remarks For Samples Printed
12/14/07 at 16:44:25

TSR Signing Reports: 400
RX - Priority Rush

Please add EDD to all samples from TVAENVAFF. RC 09/04/07

Sample: L322442-01 Account: TVAENVAFF Received: 12/05/07 12:00 Due Date: 12/14/07 00:00 RPT Date: 12/14/07 15:52
Changed BEG to BEICP per RC. Placed into WG333789. AV 12/6
Sample: L322442-02 Account: TVAENVAFF Received: 12/05/07 12:00 Due Date: 12/14/07 00:00 RPT Date: 12/14/07 15:52
Changed BEG to BEICP per RC. Placed into WG333789. AV 12/6
Sample: L322442-03 Account: TVAENVAFF Received: 12/05/07 12:00 Due Date: 12/14/07 00:00 RPT Date: 12/14/07 15:52
Changed BEG to BEICP per RC. Placed into WG333789. AV 12/6
Sample: L322442-04 Account: TVAENVAFF Received: 12/05/07 12:00 Due Date: 12/14/07 00:00 RPT Date: 12/14/07 15:52
Changed BEG to BEICP per RC. Placed into WG333789. AV 12/6
Sample: L322442-05 Account: TVAENVAFF Received: 12/05/07 12:00 Due Date: 12/14/07 00:00 RPT Date: 12/14/07 15:52
Changed BEG to BEICP per RC. Placed into WG333789. AV 12/6
Sample: L322442-06 Account: TVAENVAFF Received: 12/05/07 12:00 Due Date: 12/14/07 00:00 RPT Date: 12/14/07 15:52
Changed BEG to BEICP per RC. Placed into WG333789. AV 12/6
Sample: L322442-07 Account: TVAENVAFF Received: 12/05/07 12:00 Due Date: 12/14/07 00:00 RPT Date: 12/14/07 15:52
Changed BEG to BEICP per RC. Placed into WG333789. AV 12/6