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Env. Document Type: Solid Waste Correspondence

July 30, 2007

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

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

Dear Mr. Fugate:

Please find enclosed the groundwater monitoring report for samples collected June 5, 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 exceedences.

Other supporting information with this submittal includes:

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

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.

CMA

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

JED

JED:SMF
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cc (Enclosures):
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J. M. Boggs, WT 9D-K
L. F. Campbell, KFP 1A-KST
B. B. Walton, WT 6A-K (w/o Enclosure)
EDM, WT CA-K
Prepared by J. Mark Boggs, reviewed by Amos L. Smith

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

July 30, 2007

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Acting Manager of Regulatory Programs
5D Lookout Place

Enclosures

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

GROUNDWATER MONITORING REPORT
JUNE 2007 SAMPLING EVENT

Prepared by

J. Mark Boggs, P.G.

Tennessee Valley Authority
Knoxville, Tennessee

July 25, 2007

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INTRODUCTION

This report contains groundwater compliance monitoring results for samples collected on June 5, 2007 from the four designated compliance 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 J.A. Overton at upgradient well 16A and downgradient wells 4B, 6A and 13B. Dedicated Grundfos Rediflow submersible pumps were used to purge and sample all wells. Duplicate samples were collected from well 13B, and an equipment blank was collected after well 13B. Field parameters (i.e., temperature, specific conductance, pH, dissolved oxygen, and oxidation-reduction potential) were monitored during well purging using a flow-through cell and calibrated instruments. Each well was considered properly evacuated when field parameters remained stable during purging of a minimum of two well volumes or the well was purged to dryness. Field data sheets are included in Appendix A.

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

Immediately following collection, samples were transferred to new sample bottles provided by the laboratory with appropriate preservatives, where applicable. The samples were then sealed, labeled, recorded on a custody form, and placed in an iced cooler for transport. Samples were delivered to the TVA Environmental Chemistry Laboratory on June 7. 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 July 23 are summarized in Table 1. The laboratory report presented in Appendix C includes analytical methods and detection limits for each constituent. Constituent concentrations reported for all samples were below drinking water maximum contaminant limits (MCL). All analytical testing was performed within recommended sample holding times.

STATISTICAL EVALUATION

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

HYDROGEOLOGIC CONDITIONS

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

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

Table 1. June 5, 2007 Groundwater Monitoring Results

Analytical Results for Appendix I Inorganic Constituents						Upper Prediction Limit (UPL)			MCL	Comparison to UPL[a]		
		Well No.				Well No.				Well No.		
Constituent	Units	4B downgradient	6A downgradient	13B[b] downgradient	16A upgradient	4B	6A	13B		4B	6A	13B
Antimony	µg/L	< 1	< 1	< 1	< 1	6	6	6	6	L	L	L
Arsenic	µg/L	1.6	6.4	1.15	1.1	10	14	10	50	L	L	L
Barium	µg/L	31	100	390	55	2000	2000	2000	2000	L	L	L
Beryllium	µg/L	< 1	< 1	< 1	< 1	4	4	4	4	L	L	L
Cadmium	µg/L	< 0.5	< 0.5	< 0.5	< 0.5	5	5	5	5	L	L	L
Chromium	µg/L	2.6	< 5	< 1	1.2	100	100	100	100	L	L	L
Cobalt	µg/L	1.6	< 5	< 1	< 1	23	17	6	--	L	L	L
Copper	µg/L	66	< 5	< 1	1	1000	1000	1000	1000	L	L	L
Fluoride	mg/L	0.12	< 0.1	0.305	< 0.1	4	4	4	4	L	L	L
Lead	µg/L	< 1	< 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	6	< 5	< 1	1.1	100	100	100	--	L	L	L
Selenium	µg/L	< 1	< 5	< 1	< 1	50	50	50	50	L	L	L
Silver	µg/L	< 0.5	< 0.5	< 0.5	0.57	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	< 10	< 10	< 10	10	150	10	--	L	L	L
Zinc	µg/L	34	< 50	12.5	< 10	5000	5000	5000	5000	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 reservoir. Groundwater originating on, or flowing beneath, the ash pond area ultimately discharges to the reservoir without traversing private property.

Groundwater levels measured in site monitoring wells on June 4 prior to sample collection are presented in Table 2. The groundwater potentiometric surface derived from these measurements is shown on Figure 1. Groundwater generally flows eastward across the ash disposal area toward the reservoir. An average hydraulic gradient of approximately 0.009 is estimated between the western and eastern boundaries of the disposal area. The shallow alluvial aquifer underlying the ash disposal area exhibits a mean horizontal hydraulic conductivity of 0.006 m/d. The local Darcy flux is therefore estimated to be approximately 5.5×10^{-5} m/d.

Table 2. Groundwater Levels Measured on June 4, 2007

Well No.	Top of Casing Elevation (m)	Depth to Water (m)	Water Elevation (m-msl)	Well Bottom Depth (m)
4B	230.72	4.26	226.46	12.72
6A	230.13	3.45	226.68	8.88
13B	234.85	2.60	232.25	25.68
16A	234.26	0.80	233.46	20.16

CONCLUSIONS

Groundwater analytical data for the June 5 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.

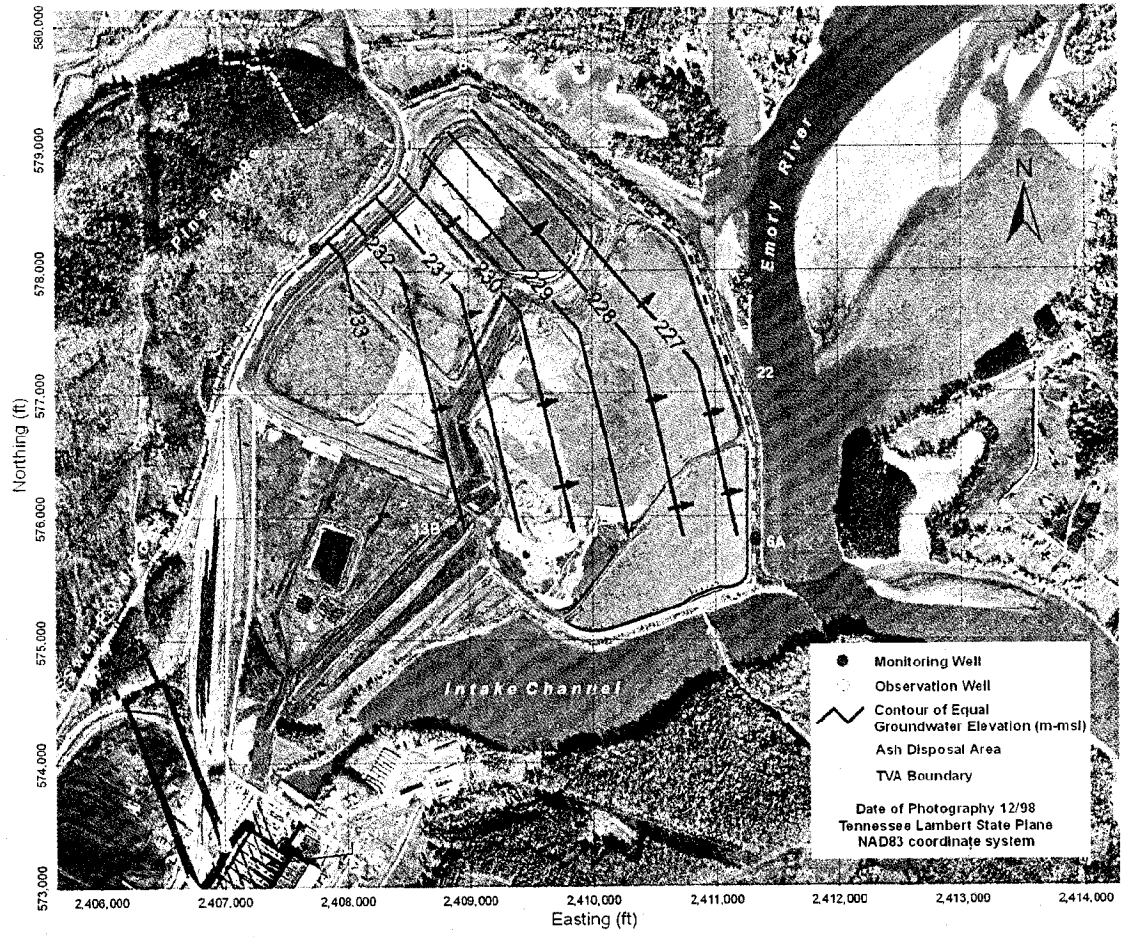

Figure 1. Groundwater Potentiometric Surface on June 4, 2007

APPENDIX A

FIELD DATA SHEETS

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	4B 84068		07	06	05

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
4.26 4195	12.72 4194	102 4188	JES	WJN

☑ Depth of Screen ☐ Open Bore Hole

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

[Bottom of Well	- Depth to Water]	x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(12.72)m	- (4.26)m]	x (8.107)L/m=	68.6 (L)	137.2 (L)	77.5 (L) 4186

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

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 →	8:28	9.0	4.26	12.5						
18	8:30	7.0	6.20	12.5	15.7	6.8	0.4	1301	348	—
32	8:32	5.5	8.66	12.5	15.9	6.8	0.3	1296	340	—
43	834	4.5	10.30	12.5	16	6.8	0.3	1289	331	—
52	836	3.75	—	12.5	16.1	6.8	0.3	1279	332	—
60	838	3	11.9	12.5	16.3	6.8	0.3	1271	331	—
66	840		12.5	12.5	- out of water -					
	Recharge									
~~125Hz~~ 130Hz	924	2.5	9.8	12.5	Resume pumping -					
	925			12.5	17.1	6.8	0.6	1095	455	—
	926		10.3	12.5	17.0	6.8	0.5	1088	445	—
7.5	927	2.0	—	12.5	17.1	6.8	0.4	1085	437	—
	928	2.0	10.75	12.5	17.2	6.8	0.4	1088	425	—
+11.5=77.5 ~~+9=75~~	929		11.0	12.5	17.3	6.8	0.4	1088	418	—

Remarks:

Reviewed By: James Stockburger (Survey Leader) 6-6-07 (Date) Matt D. W[illegible] (Project Leader) 06-11-07 (Date)

Sample Collector: JES

Sample Date Year	Month	Day	Time
07	06	05	929 (ET) CT

Pump Duration 17 min 72004

"999" = 2 days

Sample Readings

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
929	2.0	11.0	12.5	17.3	6.8	0.4	1088	418	—
	4193		4192	10	400	300	94	90	

Additional Sample Data

Analyst: JES

Date Analyzed Year	Month	Day
07	06	05

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)
/	238	/	45
Time:	Time: 1631	Time:	Time: 1430
Initial:	Initial: JES	Initial:	Initial: JES

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

Bottles Required ☐ 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)

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Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	6A 84068		07	06	05

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
3.45 4195	8.88 4194	102 4188	JES	WJN

☑ Depth of Screen ☐ Open Bore Hole

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

[Bottom of Well - Depth to Water] x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(8.88)m - (3.45)m] x (8.107)L/m=	44 (L)	88 (L)	47.5 (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	Time 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 120 Hz →	732		6.5	3.45	8.6						
13	734		5.0	5.86	8.6	17.5	6.0	0.3	4264	175	—
23	736		5.0	6.97	8.6	17.8	6.0	0.3	4256	162	—
33	738		5.0	8.18	8.6	18.1	5.5	0.3	3992	234	—
38	739			8.88	8.6						
100 → 104 Hz	1038 ~~738~~		1.75	6.0	8.6	Resume	Pumping		—		
+ 3.5	1044 ~~744~~	0945	2.0	6.33	8.6	17.9	5.8	0.4	4803	164	—
+ 5.5	1048 ~~748~~	0949	2.0		8.6	18.3	5.8	0.4	4750	159	—
+ 7.5	1052 ~~752~~	0953	2.0	6.85	8.6	18.5	5.9	0.4	4655	156	—
+ 9.5	1056 ~~756~~	0957		7.13	8.6	18.5	5.9	0.4	4625	153	—

Remarks:

Reviewed By: James D. Stockburger (Survey Leader) 6/6/07 (Date) Mitch D. Ott (Project Leader) 06-11-07 (Date)

Sample Collector: JES/WJN

Sample Date			Time
Year	Month	Day	
07	06	05	943 ET / CT

Pump Duration 12 min 72004

"999" = 2 days

Sample Readings

1043									
~~943~~ 2	7.13	8.6	18.5	5.9	0.4	4625	153	—	
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		1750	~~1948~~	1948
Date Analyzed	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)
Year 07 Month 06 Day 05	Time:	Time: 1620	Time: ~~1448~~	Time: 1948
Turbidity 1350 ☐ Clear ☐ Turbid ☑ Slightly Turbid ☐ Highly Turbid	Initial:	Initial: JES	Initial: ~~JES~~	Initial: JES
Color: Brown	Bottles Required ☐ BOD ☐ COD ☐ TOC ☑ TIC	☐ Ferrous ☑ Metals ☐ Dis. Metals	☑ Mineral ☐ Dis. Mineral ☑ Nutrient	☐ Phenol ☐ Filt TIC ☐ TSS/TDS
Odor: —				Others (list): F

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

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

TVA 30066A (9-1999)

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Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date	Year	Month	Day
KINGSTON	13B 84068		07	06	05

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
2.6 4195	25.68 4194	51 4188	JES	WJN

☑ Depth of Screen ☐ Open Bore Hole

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

[Bottom of Well − Depth to Water] x Volume Factor =	Well Volume	Target Purge Volume	Actual Purge Volume
[(25.68)m − (2.6)m] x (2.027)L/m=	46.8 (L)	93.6 (L)	111 (L) 4186

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

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

Notes and WQ Observations	Time ET CT	Pump Rate (L/min)	Depth to Water (m)	Pump Depth (m)	Temp °C	pH (s.u.)	DO (mg/L)	COND (umhos/cm)	(+/-) ORP (mV)	Turbidity (NTU)
Begin Purge 1402 hrs	1000	7.5	2.6	10						—
35	1005	5.2	9.04	10	16.6	7.5	0.3	414	62	—
61	1010	5	9.52	10	16.7	7.8	0.3	405	48	—
86	1015	5	9.56	10	16.7	7.8	0.2	399	43	—
111	1020		9.57	10	16.7	7.8	0.2	396	38	—

Remarks: WASPS! — DUPLICATE SAMPLES —

Reviewed By: James Stockburger 6/6/07 (Survey Leader / Date) — 06-11-07 (Project Leader / Date)

Sample Collector: JES

Sample Date			Time
Year	Month	Day	
07	06	05	(ET) CT

Pump Duration 20 min 72004

"999" = 2 days

Sample Readings

1020	5	9.51	10	16.7	7.8	0.2	396	38	—
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 06 Day 05

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)
	210 | 209		5.0 JES | 4.0
Time:	Time: 1610 | 1604	Time:	Time: 1459 | 1504
Initial:	Initial: JES | JES	Initial:	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

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

Others (list): F

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

TVA 30066A (9-1999)

Preliminary Groundwater Data Field Worksheet

Sheet 1 of 1

Project/Site	Well Number	Purge Date Year	Month	Day
KINGSTON	16A 84068	07	06	05

Depth to Water (m)	Bottom of Well (m)	Well Diameter (mm)	Survey Leader	Field Crew
0.8 4195	20.16 4194	51 4188	JES	WJN

☑ Depth of Screen ☐ Open Bore Hole

(m)	To	(m)	Sample Label
16.98 4191	To	20.03 4190	KIF-16A

☑ Unfiltered ☐ Filtered ☐ 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 - (~~2.027~~ 0.8)m] x (2.027)L/m=	39.25 (L)	78.5 (L)	85 (L) 4186

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

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 →	1112	9.7	0.8	6.7						
29	1115	9.0	3.09	6.7	16.6	7.1	0.5	333	59	—
69	1120	8.1	4.74	6.7	16.6	7.2	0.3	345	51	—
85	1122		5.29	6.7	16.6	7.1	0.3	347	53	—

Remarks:

Reviewed By: James Stockburger (Survey Leader) 6/6/07 (Date) [signature] (Project Leader) 06-11-07 (Date)

Sample Collector: JES

Sample Date Year	Month	Day	Time
07	06	05	(ET) CT

Pump Duration 10 min 72004
"999" = 2 days

Sample Readings

Analysis Time (ET) CT	Pump Rate (L/min) 4193	Depth to Water (m)	Pump Depth (m) 4192	Temp °C 10 EPA 170.1	pH (s.u.) 400 EPA 150.1	DO (mg/L) 300 EPA 360.1	COND (umhos/cm) 94 EPA 120.1	(+/-) ORP (mV) 90 SM 2580B	Turbidity (NTU) EPA 180.1
1122	8.1	5.29	6.7	16.6	7.1	0.3	347	53	—

Additional Sample Data

Analyst: JES

Date Analyzed Year	Month	Day
07	06	05

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)
Value	/	147	/	18
Time:		1555		1512
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

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

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

TVA 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/Sate 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: STD
Email? __No__Yes
FAX? __No__Yes

Analysis/Container/Preservative (See attached)

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:

Sample ID	Comp/Grab	Matrix*	Depth	Date	Time	No. of Cntrs	(See attached)	Remarks/Contaminant	Sample # (lab only)
KIF-4B	Grab	GW		6/5/07	0929	4	4	L297267	~~L297268-01~~ (1) -02
KIF-6A	Grab	GW		6/5/07	1043	4	4		-03
KIF-13B	Grab	GW		6/5/07	1020	4	4		-04
KIF-13B-DUP	Grab	GW		6/5/07	1020	4	4		-05
KIF-16A	Grab	GW		6/5/07	1122	4	4		06
KIF-22	Grab	GW		6/5/07	0808	1	1		07
KIF-EQBLANK	Grab	GW		6/5/07	1025	4	4		

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

pH _____ Temp _____

Remarks: 8565 0850 9578

Flow _____ Other _____

Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Samples returned via: ☐ UPS ☑ FedEx ☐ Courier ☐	Condition: (lab use only)
Jim Stockburger	6/6/07	1200			
Relinquished by: (Signature)	Date:	Time:	Received by: (Signature)	Temp: 3.5°C / Bottles Received: 25	6(5I-2
Relinquished by: (Signature)	Date:	Time:	Received for lab by: (Signature)	Date: 6.7.07 / Time: 0900	pH Checked: 22 / NCF: ✓

APPENDIX C

LABORATORY DATA SHEETS

ENVIRONMENTAL
SCIENCE CORP.

12065 Lebanon Rd.
Mt. Juliet, TN 37122
(615) 758-5858
1-800-767-5859
Fax (615) 758-5859

Tax I.D. 62-0814289

Est. 1970

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C

Chattanooga, TN 37402

Report Summary

Saturday June 30, 2007

Report Number: L297267
Samples Received: 06/07/07
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: John Hawkins
John Hawkins, 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

7 Samples Reported: 06/30/07 10:05 Printed: 06/30/07 12:17

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Est. 1970

REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

June 30, 2007

Date Received : June 07, 2007
Description : KIF Groundwater

Sample ID : KIF-4B

Collected By : Jim Stockburger
Collection Date : 06/05/07 09:29

ESC Sample # : L297267-01

Site ID : 0014DOM

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	3.6	1.0	mg/l	9056	06/12/07	1
Fluoride	0.12	0.10	mg/l	9056	06/12/07	1
Sulfate	310	50.	mg/l	9056	06/13/07	10
Ammonia Nitrogen	BDL	0.10	mg/l	350.1	06/13/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	06/13/07	1
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	06/14/07	1
Total Inorganic Carbon	56.	1.0	mg/l	9060	06/21/07	1
Dissolved Solids	820	1.0	mg/l	160.1	06/13/07	1
Suspended Solids	12.	1.0	mg/l	160.2	06/12/07	1
Antimony	BDL	0.0010	mg/l	6020	06/14/07	1
Arsenic	0.0016	0.0010	mg/l	6020	06/14/07	1
Beryllium	BDL	0.0010	mg/l	6020	06/23/07	1
Cadmium	BDL	0.00050	mg/l	6020	06/19/07	1
Chromium	0.0026	0.0010	mg/l	6020	06/23/07	1
Copper	0.066	0.0010	mg/l	6020	06/14/07	1
Cobalt	0.0016	0.0010	mg/l	6020	06/19/07	1
Lead	BDL	0.0010	mg/l	6020	06/14/07	1
Nickel	0.0060	0.0010	mg/l	6020	06/19/07	1
Selenium	BDL	0.0010	mg/l	6020	06/19/07	1
Silver	BDL	0.00050	mg/l	6020	06/23/07	1
Thallium	BDL	0.0010	mg/l	6020	06/14/07	1
Zinc	0.034	0.010	mg/l	6020	06/19/07	1
Mercury	BDL	0.00020	mg/l	7470A	06/14/07	1
Aluminum	0.54	0.10	mg/l	6010B	06/13/07	1
Barium	0.031	0.0050	mg/l	6010B	06/12/07	1
Boron	BDL	0.20	mg/l	6010B	06/13/07	1
Calcium	210	0.50	mg/l	6010B	06/12/07	1
Iron	1.0	0.10	mg/l	6010B	06/12/07	1
Magnesium	19.	0.10	mg/l	6010B	06/12/07	1
Manganese	1.1	0.010	mg/l	6010B	06/12/07	1
Molybdenum	BDL	0.0050	mg/l	6010B	06/12/07	1
Potassium	7.6	0.50	mg/l	6010B	06/12/07	1
Sodium	7.1	0.50	mg/l	6010B	06/12/07	1
Strontium	0.39	0.010	mg/l	6010B	06/12/07	1
Vanadium	BDL	0.010	mg/l	6010B	06/12/07	1

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

Reported: 06/30/07 10:05 Printed: 06/30/07 12:19

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Tax I.D. 62-0814289

Est. 1970

REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

June 30, 2007

Date Received : June 07, 2007
Description : KIF Groundwater

Sample ID : KIF-6A

Collected By : Jim Stockburger
Collection Date : 06/05/07 10:43

ESC Sample # : L297267-02

Site ID : 0014DOM

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	4.7	1.0	mg/l	9056	06/14/07	1
Fluoride	BDL	0.10	mg/l	9056	06/14/07	1
Sulfate	4300	250	mg/l	9056	06/14/07	50
Ammonia Nitrogen	16.	0.10	mg/l	350.1	06/13/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	06/13/07	1
Kjeldahl Nitrogen, TKN	18.	0.50	mg/l	351.2	06/14/07	1
Total Inorganic Carbon	29.	1.0	mg/l	9060	06/21/07	1
Dissolved Solids	5500	1.0	mg/l	160.1	06/13/07	1
Suspended Solids	190	1.0	mg/l	160.2	06/12/07	1
Antimony	BDL	0.0010	mg/l	6020	06/14/07	1
Arsenic	BDL	0.050	mg/l	6020	06/29/07	50
Beryllium	BDL	0.0010	mg/l	6020	06/24/07	1
Cadmium	BDL	0.00050	mg/l	6020	06/19/07	1
Chromium	BDL	0.050	mg/l	6020	06/29/07	50
Copper	BDL	0.050	mg/l	6020	06/29/07	50
Cobalt	BDL	0.050	mg/l	6020	06/29/07	50
Lead	BDL	0.0010	mg/l	6020	06/14/07	1
Nickel	BDL	0.050	mg/l	6020	06/29/07	50
Selenium	BDL	0.050	mg/l	6020	06/29/07	50
Silver	BDL	0.00050	mg/l	6020	06/23/07	1
Thallium	BDL	0.0010	mg/l	6020	06/14/07	1
Zinc	BDL	0.50	mg/l	6020	06/29/07	50
Mercury	BDL	0.00020	mg/l	7470A	06/14/07	1
Aluminum	0.22	0.10	mg/l	6010B	06/13/07	1
Barium	0.10	0.0050	mg/l	6010B	06/12/07	1
Boron	BDL	1.0	mg/l	6010B	06/13/07	5
Calcium	250	0.50	mg/l	6010B	06/12/07	1
Iron	1000	0.10	mg/l	6010B	06/12/07	1
Magnesium	94.	0.10	mg/l	6010B	06/12/07	1
Manganese	220	0.050	mg/l	6010B	06/14/07	5
Molybdenum	BDL	0.0050	mg/l	6010B	06/12/07	1
Potassium	7.2	0.50	mg/l	6010B	06/12/07	1
Sodium	10.	0.50	mg/l	6010B	06/12/07	1
Strontium	0.68	0.010	mg/l	6010B	06/12/07	1
Vanadium	BDL	0.010	mg/l	6010B	06/12/07	1

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

Reported: 06/30/07 10:05 Printed: 06/30/07 12:19

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Est. 1970

REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

June 30, 2007

Date Received : June 07, 2007
Description : KIF Groundwater

Sample ID : KIF-13B

Collected By : Jim Stockburger
Collection Date : 06/05/07 10:20

ESC Sample # : L297267-03

Site ID : 0014DOM

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	2.4	1.0	mg/l	9056	06/12/07	1
Fluoride	0.17	0.10	mg/l	9056	06/12/07	1
Sulfate	BDL	5.0	mg/l	9056	06/12/07	1
Ammonia Nitrogen	0.17	0.10	mg/l	350.1	06/13/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	06/13/07	1
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	06/14/07	1
Total Inorganic Carbon	50.	1.0	mg/l	9060	06/21/07	1
Dissolved Solids	230	1.0	mg/l	160.1	06/13/07	1
Suspended Solids	BDL	1.0	mg/l	160.2	06/12/07	1
Antimony	BDL	0.0010	mg/l	6020	06/14/07	1
Arsenic	0.0013	0.0010	mg/l	6020	06/14/07	1
Beryllium	BDL	0.0010	mg/l	6020	06/23/07	1
Cadmium	BDL	0.00050	mg/l	6020	06/19/07	1
Chromium	BDL	0.0010	mg/l	6020	06/23/07	1
Copper	BDL	0.0010	mg/l	6020	06/14/07	1
Cobalt	BDL	0.0010	mg/l	6020	06/19/07	1
Lead	BDL	0.0010	mg/l	6020	06/14/07	1
Nickel	BDL	0.0010	mg/l	6020	06/19/07	1
Selenium	BDL	0.0010	mg/l	6020	06/19/07	1
Silver	BDL	0.00050	mg/l	6020	06/23/07	1
Thallium	BDL	0.0010	mg/l	6020	06/14/07	1
Zinc	0.012	0.010	mg/l	6020	06/19/07	1
Mercury	BDL	0.00020	mg/l	7470A	06/14/07	1
Aluminum	BDL	0.10	mg/l	6010B	06/13/07	1
Barium	0.39	0.0050	mg/l	6010B	06/12/07	1
Boron	BDL	0.20	mg/l	6010B	06/13/07	1
Calcium	16.	0.50	mg/l	6010B	06/12/07	1
Iron	0.11	0.10	mg/l	6010B	06/12/07	1
Magnesium	2.2	0.10	mg/l	6010B	06/12/07	1
Manganese	0.080	0.010	mg/l	6010B	06/12/07	1
Molybdenum	BDL	0.0050	mg/l	6010B	06/12/07	1
Potassium	2.6	0.50	mg/l	6010B	06/12/07	1
Sodium	69.	0.50	mg/l	6010B	06/12/07	1
Strontium	0.32	0.010	mg/l	6010B	06/12/07	1
Vanadium	BDL	0.010	mg/l	6010B	06/12/07	1

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

Reported: 06/30/07 10:05 Printed: 06/30/07 12:19

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Est. 1970

REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

June 30, 2007

ESC Sample # : L297267-04

Date Received : June 07, 2007
Description : KIF Groundwater

Site ID : 0014DOM

Sample ID : KIF-13B-DUP

Project # : Kingston

Collected By :
Collection Date : 06/05/07 10:20

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	BDL	1.0	mg/l	9056	06/12/07	1
Fluoride	0.44	0.10	mg/l	9056	06/12/07	1
Sulfate	27.	5.0	mg/l	9056	06/12/07	1
Ammonia Nitrogen	8.9	0.10	mg/l	350.1	06/13/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	06/13/07	1
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	06/14/07	1
Total Inorganic Carbon	47.	1.0	mg/l	9060	06/21/07	1
Dissolved Solids	230	1.0	mg/l	160.1	06/13/07	1
Suspended Solids	BDL	1.0	mg/l	160.2	06/12/07	1
Antimony	BDL	0.0010	mg/l	6020	06/14/07	1
Arsenic	0.0010	0.0010	mg/l	6020	06/14/07	1
Beryllium	BDL	0.0010	mg/l	6020	06/23/07	1
Cadmium	BDL	0.00050	mg/l	6020	06/19/07	1
Chromium	BDL	0.0010	mg/l	6020	06/23/07	1
Copper	BDL	0.0010	mg/l	6020	06/14/07	1
Cobalt	BDL	0.0010	mg/l	6020	06/19/07	1
Lead	BDL	0.0010	mg/l	6020	06/14/07	1
Nickel	BDL	0.0010	mg/l	6020	06/19/07	1
Selenium	BDL	0.0010	mg/l	6020	06/19/07	1
Silver	BDL	0.00050	mg/l	6020	06/23/07	1
Thallium	BDL	0.0010	mg/l	6020	06/14/07	1
Zinc	0.013	0.010	mg/l	6020	06/19/07	1
Mercury	BDL	0.00020	mg/l	7470A	06/14/07	1
Aluminum	BDL	0.10	mg/l	6010B	06/13/07	1
Barium	0.39	0.0050	mg/l	6010B	06/12/07	1
Boron	BDL	0.20	mg/l	6010B	06/13/07	1
Calcium	16.	0.50	mg/l	6010B	06/12/07	1
Iron	BDL	0.10	mg/l	6010B	06/12/07	1
Magnesium	2.2	0.10	mg/l	6010B	06/12/07	1
Manganese	0.078	0.010	mg/l	6010B	06/12/07	1
Molybdenum	BDL	0.0050	mg/l	6010B	06/12/07	1
Potassium	2.5	0.50	mg/l	6010B	06/12/07	1
Sodium	69.	0.50	mg/l	6010B	06/12/07	1
Strontium	0.32	0.010	mg/l	6010B	06/12/07	1
Vanadium	BDL	0.010	mg/l	6010B	06/12/07	1

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

Reported: 06/30/07 10:05 Printed: 06/30/07 12:19

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REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

June 30, 2007

ESC Sample # : L297267-05

Date Received : June 07, 2007
Description : KIF Groundwater

Site ID : 0014DOM

Sample ID : KIF-16A

Project # : Kingston

Collected By :
Collection Date : 06/05/07 11:22

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	BDL	1.0	mg/l	9056	06/12/07	1
Fluoride	BDL	0.10	mg/l	9056	06/12/07	1
Sulfate	BDL	5.0	mg/l	9056	06/12/07	1
Ammonia Nitrogen	0.33	0.10	mg/l	350.1	06/13/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	06/13/07	1
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	06/14/07	1
Total Inorganic Carbon	33.	1.0	mg/l	9060	06/21/07	1
Dissolved Solids	190	1.0	mg/l	160.1	06/13/07	1
Suspended Solids	16.	1.0	mg/l	160.2	06/12/07	1
Antimony	BDL	0.0010	mg/l	6020	06/14/07	1
Arsenic	0.0011	0.0010	mg/l	6020	06/14/07	1
Beryllium	BDL	0.010	mg/l	6020	06/29/07	10
Cadmium	BDL	0.00050	mg/l	6020	06/19/07	1
Chromium	0.0012	0.0010	mg/l	6020	06/23/07	1
Copper	0.0010	0.0010	mg/l	6020	06/14/07	1
Cobalt	BDL	0.0010	mg/l	6020	06/19/07	1
Lead	BDL	0.0010	mg/l	6020	06/14/07	1
Nickel	0.0011	0.0010	mg/l	6020	06/19/07	1
Selenium	BDL	0.0010	mg/l	6020	06/19/07	1
Silver	0.00057	0.00050	mg/l	6020	06/23/07	1
Thallium	BDL	0.0010	mg/l	6020	06/14/07	1
Zinc	BDL	0.010	mg/l	6020	06/19/07	1
Mercury	BDL	0.00020	mg/l	7470A	06/14/07	1
Aluminum	0.68	0.10	mg/l	6010B	06/13/07	1
Barium	0.055	0.0050	mg/l	6010B	06/13/07	1
Boron	BDL	0.20	mg/l	6010B	06/13/07	1
Calcium	40.	0.50	mg/l	6010B	06/13/07	1
Iron	1.6	0.10	mg/l	6010B	06/13/07	1
Magnesium	9.1	0.10	mg/l	6010B	06/13/07	1
Manganese	1.2	0.010	mg/l	6010B	06/13/07	1
Molybdenum	BDL	0.0050	mg/l	6010B	06/13/07	1
Potassium	2.3	0.50	mg/l	6010B	06/13/07	1
Sodium	14.	0.50	mg/l	6010B	06/13/07	1
Strontium	0.26	0.010	mg/l	6010B	06/13/07	1
Vanadium	BDL	0.010	mg/l	6010B	06/13/07	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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Reported: 06/30/07 10:05 Printed: 06/30/07 12:19

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Est. 1970

REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

June 30, 2007

ESC Sample # : L297267-06

Date Received : June 07, 2007
Description : KIF Groundwater

Site ID : 0014DOM

Sample ID : KIF-22

Project # : Kingston

Collected By :
Collection Date : 06/05/07 08:08

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Ammonia Nitrogen	0.88	0.10	mg/l	350.1	06/13/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	06/13/07	1
Kjeldahl Nitrogen, TKN	0.68	0.50	mg/l	351.2	06/14/07	1

BDL - Below Detection Limit
Det. Limit - Practical Quantitation Limit(PQL)
Note:
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Reported: 06/30/07 10:05 Printed: 06/30/07 12:19

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REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

June 30, 2007

ESC Sample # : L297267-07

Site ID : 0014DOM

Project # : Kingston

Date Received : June 07, 2007
Description : KIF Groundwater

Sample ID : KIF-EQBLANK

Collected By :
Collection Date : 06/05/07 10:25

Parameter	Result	Det. Limit	Units	Method	Date	Dil.
Chloride	BDL	1.0	mg/l	9056	06/12/07	1
Fluoride	BDL	0.10	mg/l	9056	06/14/07	1
Sulfate	33.	5.0	mg/l	9056	06/12/07	1
Ammonia Nitrogen	BDL	0.10	mg/l	350.1	06/13/07	1
Nitrate-Nitrite	BDL	0.10	mg/l	353.2	06/13/07	1
Kjeldahl Nitrogen, TKN	BDL	0.50	mg/l	351.2	06/14/07	1
Total Inorganic Carbon	BDL	1.0	mg/l	9060	06/21/07	1
Dissolved Solids	1.3	1.0	mg/l	160.1	06/13/07	1
Suspended Solids	BDL	1.0	mg/l	160.2	06/12/07	1
Antimony	BDL	0.0010	mg/l	6020	06/13/07	1
Arsenic	BDL	0.0010	mg/l	6020	06/13/07	1
Beryllium	BDL	0.010	mg/l	6020	06/29/07	10
Cadmium	BDL	0.00050	mg/l	6020	06/19/07	1
Chromium	BDL	0.0010	mg/l	6020	06/23/07	1
Copper	BDL	0.0010	mg/l	6020	06/14/07	1
Cobalt	BDL	0.0010	mg/l	6020	06/19/07	1
Lead	BDL	0.0010	mg/l	6020	06/13/07	1
Nickel	BDL	0.0010	mg/l	6020	06/19/07	1
Selenium	BDL	0.0010	mg/l	6020	06/19/07	1
Silver	0.00050	0.00050	mg/l	6020	06/23/07	1
Thallium	BDL	0.0010	mg/l	6020	06/13/07	1
Zinc	BDL	0.010	mg/l	6020	06/19/07	1
Mercury	BDL	0.00020	mg/l	7470A	06/14/07	1
Aluminum	BDL	0.10	mg/l	6010B	06/13/07	1
Barium	BDL	0.0050	mg/l	6010B	06/13/07	1
Boron	BDL	0.20	mg/l	6010B	06/13/07	1
Calcium	BDL	0.50	mg/l	6010B	06/13/07	1
Iron	BDL	0.10	mg/l	6010B	06/13/07	1
Magnesium	BDL	0.10	mg/l	6010B	06/13/07	1
Manganese	BDL	0.010	mg/l	6010B	06/13/07	1
Molybdenum	BDL	0.0050	mg/l	6010B	06/13/07	1
Potassium	BDL	0.50	mg/l	6010B	06/13/07	1
Sodium	BDL	0.50	mg/l	6010B	06/13/07	1
Strontium	BDL	0.010	mg/l	6010B	06/13/07	1
Vanadium	BDL	0.010	mg/l	6010B	06/13/07	1

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

Reported: 06/30/07 10:05 Printed: 06/30/07 12:19

Attachment A
List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L297267-02	Arsenic	O
	Chromium	O
	Copper	O
	Cobalt	O
	Nickel	O
	Selenium	O
	Zinc	O
	Boron	O
L297267-05	Beryllium	O
L297267-07	Beryllium	O

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.

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.

	Control Limits				(AQ)	(SS)
2-Fluorophenol	31-119	Nitrobenzene-d5	43-118	Dibromfluoromethane	68-128	64-125
Phenol-d5	12-134	2-Fluorobiphenyl	45-128	Toluene-d8	76-115	69-118
2,4,6-Tribromophenol	51-141	Terphenyl-d14	43-137	4-Bromofluorobenzene	79-127	61-134

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
06/30/07 at 12:19:11

TSR Signing Reports: 400
RX - Priority Rush

Sample: L297267-01 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 06/20/07 00:00 RPT Date: 06/30/07 10:05
changed due date-LC 6/18
Sample: L297267-02 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 06/20/07 00:00 RPT Date: 06/30/07 10:05

Sample: L297267-03 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 06/20/07 00:00 RPT Date: 06/30/07 10:05

Sample: L297267-04 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 06/20/07 00:00 RPT Date: 06/30/07 10:05

Sample: L297267-05 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 06/20/07 00:00 RPT Date: 06/30/07 10:05

Sample: L297267-06 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 06/20/07 00:00 RPT Date: 06/30/07 10:05

Sample: L297267-07 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 06/20/07 00:00 RPT Date: 06/30/07 10:05

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Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C

Chattanooga, TN 37402

Report Summary

Monday July 23, 2007

Report Number: L302434
Samples Received: 06/07/07
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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REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

July 23,2007

Date Received : 06/07/07 09:00
Description : KIF Groundwater

Sample ID : KIF-6A

Collected By : Jim Stockburger
Collection Date : 06/05/07 10:43

ESC Sample # : L302434-01

Site ID : 0014DOM

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Arsenic	0.0064	0.0050	mg/l	6020	07/18/07 0736	356	07/19/07 0914	LAT
Chromium	BDL	0.0050	mg/l	6020	07/18/07 0736	356	07/19/07 0914	LAT
Copper	BDL	0.0050	mg/l	6020	07/18/07 0736	356	07/19/07 0914	LAT
Cobalt	BDL	0.0050	mg/l	6020	07/18/07 0736	356	07/19/07 0914	LAT
Nickel	BDL	0.0050	mg/l	6020	07/18/07 0736	356	07/19/07 0914	LAT
Selenium	BDL	0.0050	mg/l	6020	07/18/07 0736	356	07/19/07 0914	LAT
Zinc	BDL	0.050	mg/l	6020	07/18/07 0736	356	07/19/07 0914	LAT
Boron	BDL	0.20	mg/l	6010B	07/18/07 0735	356	07/19/07 1152	WBD

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: 07/21/07 09:20 Revised: 07/23/07 14:18

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REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

July 23,2007

Date Received : 06/07/07 09:00
Description : KIF Groundwater

Sample ID : KIF-16A

Collected By : Jim Stockburger
Collection Date : 06/05/07 11:22

ESC Sample # : L302434-02

Site ID : 0014DOM

Project # : Kingston

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Beryllium	BDL	0.0010	mg/l	6020	07/18/07 0736	356	07/19/07 0528	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
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Reported: 07/21/07 09:20 Revised: 07/23/07 14:18

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REPORT OF ANALYSIS

Mr. Mark Boggs
TVA-Environmental Affairs
1101 Market Street MR2U-C
Chattanooga, TN 37402

July 23,2007

ESC Sample # : L302434-03

Date Received : 06/07/07 09:00
Description : KIF Groundwater

Site ID : 0014DOM

Sample ID : KIF-EQBLANK

Project # : Kingston

Collected By :
Collection Date : 06/05/07 10:25

Parameter	Result	Det. Limit	Units	Method	Prep	PID	Analyzed	AID
Beryllium	BDL	0.0010	mg/l	6020	07/19/07 0744	356	07/19/07 1806	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: 07/21/07 09:20 Revised: 07/23/07 14:18

Attachment A
List of Analytes with QC Qualifiers

Sample #	Analyte	Qualifier
L302434-01	Chromium	O
	Copper	O
	Cobalt	O
	Nickel	O
	Selenium	O
	Zinc	O

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.

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2,4,6-Tribromophenol	51-141	Terphenyl-d14	43-137	4-Bromofluorobenzene	79-127	61-134

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Summary of Remarks For Samples Printed
07/23/07 at 14:18:49

TSR Signing Reports: 400
RX - Priority Rush

Sample: L302434-01 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 07/23/07 00:00 RPT Date: 07/21/07 09:20
Relogged from L297267-02
Sample: L302434-02 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 07/23/07 00:00 RPT Date: 07/21/07 09:20
Relogged from L297267-05
Sample: L302434-03 Account: TVAENVAFF Received: 06/07/07 09:00 Due Date: 07/23/07 00:00 RPT Date: 07/21/07 09:20
Relogged from L297267-07