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**Kingston Ash Recovery Project
Non-Time-Critical Removal Action**

**River System Sampling and Analysis Plan
Task Completion Technical Memorandum
Benthic Invertebrate Sampling**

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for the Tennessee Valley Authority

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List of Acronyms

CRM	Clinch River Mile
DQO	data quality objective
EDD	electronic data deliverable
EE/CA	Engineering Evaluation/Cost Analysis
EPA	U.S. Environmental Protection Agency
ERM	Emory River Mile
Jacobs	Jacobs Engineering Group Inc.
KIF	Kingston Fossil Plant
LERM	Little Emery River Mile
MDL	method detection limit
mg/kg	milligram per kilogram
ND	not detected
OM	organic matter
ORNL	Oak Ridge National Laboratory
Pace Analytical	Pace Analytical Services, Inc.
QAPP	Quality Assurance Project Plan
QC	quality control
SAP	Sampling and Analysis Plan
SOP	Standard Operating Procedure
TM	technical memorandum
TRM	Tennessee River Mile
TVA	Tennessee Valley Authority

1. PURPOSE

The purpose of this Technical Memorandum (TM) is to summarize the completion of the 2009 and 2010 benthic invertebrate sampling described in the approved *Kingston Ash Recovery Project Non-Time-Critical Removal Action for the River System Sampling and Analysis Plan (SAP)*, Rev. 3, May 24, 2010, Document No. EPA-AO-021. This TM is one of a series being prepared to summarize the field work and data collection activities as SAP tasks are completed. The TM series is intended to provide interim presentations of data that will become the basis for the nature and extent of contamination section of the River System Engineering Evaluation/Cost Analysis (EE/CA) Report. No data evaluation or conclusions are presented. Those on the distribution list for these memoranda are anticipated to be principal reviewers of the EE/CA Report, so this provides the opportunity to review data summaries in advance of the complete report.

2. BACKGROUND

The data quality objective (DQO) problem statement for benthic invertebrate sampling is:

Naturally-occurring metals (e.g., arsenic, selenium) and radionuclides (e.g., radium-226, thorium-228) in ash may accumulate in invertebrates inhabiting the river system to concentrations that pose unacceptable risks to ecological receptors who regularly consume these organisms or their emergent life stages.

Section 2.2.7 of the SAP discusses the design of the benthic invertebrate sampling studies. Benthic invertebrates refer to the organisms without backbones that live on or in the substrate in the river. These benthic invertebrates include crustaceans, mussels, clams, snails, aquatic worms, and immature forms of aquatic insects such as mayfly nymphs and non-biting midges. Constituents detected in benthic invertebrate tissues are commonly used as biomarkers of exposure to these constituents. Concentrations of ash-related constituents may bioaccumulate in benthic invertebrates over time. In addition, because they are at the base of the food chain, benthic invertebrates and their emergent adult life stages are prey for other ecological receptors, including a variety of birds, mammals, and fish. To estimate the potential ingestion of ash-related constituents in those ecological receptors that feed primarily on invertebrates, the concentrations of those constituents in benthic invertebrate tissues must be determined.

Snails and both life stages of mayflies were analyzed for whole body metals. Benthic invertebrate samples were not tested for polycyclic aromatic hydrocarbons, polychlorinated biphenyls, pesticides, radionuclides, or chemical speciation due to practical limitations of collecting sufficient sample volumes and because bulk sediment and/or surface water analyses can be used to estimate concentrations of these constituents in the food web.

Two widespread and abundant aquatic invertebrate species present throughout the affected watershed were chosen for study: the silty horn snail, *Pleurocera canaliculatum*, and the burrowing mayfly, *Hexagenia bilineata* (nymphs and adults). The silty horn snail is a relatively large snail that lives in the shallow littoral zone where it feeds on algae and detritus. The burrowing mayfly spends most of its one to two year life span as a nymph in a burrow dug in the bottom sediments of the reservoir and feeds on deposited and suspended organic materials. Each year, typically late June through August, they emerge sporadically in large numbers as non-feeding adults. To assess contaminant (i.e., metals) exposures, composite samples each of snails and mayfly nymphs were analyzed with and without depuration (i.e., evacuation of their digestive systems). Emergent mayflies were composited by sex and adult stage (i.e., imago and subimago) before analysis.

TVA and the Oak Ridge National Laboratory (ORNL) began mayfly and snail sampling efforts in May 2009, approximately five months after the spill, in order to provide concentrations for future site comparisons. These sampling efforts were continued in 2010, but included additional sites and added analysis (i.e., samples analyzed with and without depuration) to better understand the spatial variability of contaminant uptake and provide clarification on the influence of sex and presence of undigested food on estimates of contaminant burdens. The sampling conducted in 2009 and 2010 is described in more detail in Section 3 Sampling and Analysis Activities.

3. SAMPLING AND ANALYSIS ACTIVITIES

Field activities occurred in the summer of 2009 and 2010 in accordance with Standard Operating Procedure (SOP) TVA-KIF-SOP-29 *Mayfly Sampling* (issued March 2010), TVA-KIF-SOP-30 *Aquatic Snail Sampling* (issued March 2010), and TVA-KIF-SOP-35 *Reservoir Benthic Macroinvertebrate Sampling* (issued August 2010).

For the initial assessment in summer 2009, a core of five sampling sites was chosen for collections of snails and mayflies (adults and nymphs), including three on the Emory River (Emory River Mile [ERM] 6.0, ERM 2.5, and ERM 1.0) and two on the Clinch River (Clinch River Mile [CRM] 6.0 and CRM 1.5) (Table 1). An additional sampling site for mayflies was established at Little Emory River Mile (LERM) 1.0. In 2010, a total of 11 sites were included in the study. Additional sites were ERM 4.0, CRM 3.5, and Tennessee River Mile [TRM] 572.5, TRM 566.3, and TRM 560.8. The uppermost site on each river (i.e., ERM 6.0, LERM 1.0, CRM 6.0, and TRM 572.5) served as a reference site. Due to the lack of suitable habitat for mayfly nymphs in the main channel at ERM 6.0, samples of nymphs for this site were collected from a small slough located on the left descending side of the river adjacent to ERM 6.0.

- Snails were collected between early July and early September in both years. Composite samples consisting of approximately 25 to 35 snails each were collected by hand from shallow rocky or stable wooden structures near the shoreline. In the laboratory, snails were either held for 72 hours to allow evacuation of their digestive system before the soft tissue was extracted from the shell (i.e., depurated samples), or soft tissue was extracted without evacuation of the gut (i.e., non-depurated samples). Up to four composites/replicates were collected at a site and each composite was collected approximately 50 to 100 meters apart to measure variability in metals concentrations.
- Mayfly nymphs were collected in June, July, and September 2009 and in May and June 2010. Composite samples consisting of approximately 80 to 120 mayfly nymphs each were collected by taking multiple grabs of sediment using Peterson and/or Ponar dredges and selectively removing the organisms. For each composite sample, a line-of-sight transect was established perpendicular to the channel and dredge grab samples collected at no less than five locations dispersed along this transect. In the laboratory, mayfly nymphs were either held for 48 hours to allow evacuation of their digestive system (i.e., depurated samples), or immediately frozen (i.e., non-depurated samples). Up to four composites/replicates were collected at a site and, where possible, each composite was collected approximately 50 to 100 meters apart to measure variability in metals concentrations.
- Adult mayflies were collected between late June and late August in both years. They were collected from vegetation along the shoreline using a sweep net or by hand. In the laboratory, the adult mayflies were sorted by sex and developmental stage (i.e., imago and subimago) prior to analysis. Adult mayflies do not feed, so there was no need to depurate. Because the timing and location of their emergence is unpredictable, collections were made opportunistically and, when possible, at the same approximately locations as the nymphs.

Table 1. Sites Included in the Study and Invertebrate Samples Analyzed for Bioaccumulation of Contaminants in 2009 and 2010

River/Site	Year	Mayfly Nymphs ^{1,2}		Mayfly Adults ²				Snails ^{1,2}	
				Subimagoes		Imagoes			
		D	ND	Female	Male	Female	Male	D	ND
Emory River									
ERM 0.6	2009	-	-	-	-	-	-	-	-
	2010	-	-	X	X	-	X	-	-
ERM 1.0 ³	2009	X	X	-	-	-	X	X	-
	2010	X	X	X	X	-	X	X	X
ERM 2.5 ⁴	2009	-	X	-	-	-	X	X	-
	2010	X	X	X	X	X	X	X	X
ERM 2.8	2009	-	-	-	-	-	-	-	-
	2010	-	-	-	-	X	X	-	-
ERM 4.0 ⁵	2009	-	-	-	-	-	X	-	-
	2010	X	X	-	-	-	-	X	X
ERM 6.0	2009	-	X	-	-	-	-	X	-
	2010	X	X	-	-	-	-	X	X
Clinch River									
CRM 1.5	2009	X	X	-	-	X	X	X	-
	2010	X	X	-	-	X	X	X	X
CRM 3.5	2009	-	-	-	-	-	X	-	-
	2010	X	X	X	-	X	X	X	X
CRM 4.6	2009	-	-	X	X	-	-	-	-
	2010	-	-	-	-	-	-	-	-
CRM 6.0 ⁶	2009	-	X	X	X	-	-	X	-
	2010	X	X	-	-	-	X	X	X
Tennessee River									
TRM 560.8	2009	-	-	-	-	-	-	-	-
	2010	-	X	-	-	-	-	-	-
TRM 563.0 ⁷	2009	-	-	-	-	-	X	-	-
	2010	-	-	X	X	-	X	-	-
TRM 566.3	2009	-	-	-	-	-	-	-	-
	2010	X	X	X	X	-	X	X	-
TRM 567.6	2009	-	-	X	X	X	X	-	-
	2010	-	-	X	X	-	X	-	-
TRM 572.5 ⁸	2009	-	-	-	-	-	-	-	-
	2010	X	X	X	X	-	X	X	-
Little Emory River									
LERM 1.0	2009	-	X	-	-	X	X	-	-
	2010	-	X	-	-	-	-	X	-

Notes:¹"ND" = not depurated; "D" = depurated.²Mayfly nymphs and adults = *Hexagenia bilineata*; snails = *Pleurocera canaliculatum*.³For adult mayfly collections, this site is referred to as ERM 1.1 and consists of collections between ~ERM 0.8 and ~ERM 1.1.⁴For adult mayfly collections, this site is referred to as ERM 2 and consists of collections between ~ERM 1.8 and ~ERM 2.5.⁵For adult mayfly collections, ERM 4.0 consists of collections between ~ERM 3.9 and ~ERM 4.5.⁶For adult mayfly collections, CRM 6.0 consists of collections between ~CRM 5.5 and ~CRM 6.2.⁷For adult mayfly collections, TRM 563.0 consists of collections between ~TRM 562.0 and ~TRM 563.5.⁸For adult mayfly collections, TRM 572.5 consists of collections between ~TRM 571.0 and ~TRM 573.0.

For all other definitions, see the Acronyms section.

In 2009, four composite samples each of depurated snails and non-depurated mayfly nymphs were analyzed from the five core sites. Four samples of non-depurated mayfly nymphs were analyzed from LERM 1.0. Two additional composite samples of nymphs were collected at ERM 1.0 and CRM 1.5 and depurated prior to analysis for comparison with contaminant concentrations in non-depurated nymphs. Samples of adult mayflies were collected from the same sites as the nymphs, with the exception of ERM 6.0. Adults also were collected at five additional locations (Table 1).

In 2010, a total of 11 sites were included in the study. Three depurated and three non-depurated samples each of snails and mayflies nymphs were analyzed from nine sites, including four sites on the Emory River (ERM 6.0, ERM 4.0, ERM 2.5, and ERM 1.0), three on the Clinch River (CRM 6.0, CRM 3.5, and CRM 1.5), and two on the Tennessee River (TRM 572.5 and TRM 566.3). A subset of samples was collected at LERM 1.0 and TRM 560.8 (Table 1). Adult mayflies also were collected at 11 sites, but this did not include all of the sites (i.e., ERM 6.0, ERM 4.0, LERM 1.0, and TRM 560.8) where nymphs were collected, nor all the same sites where adults were collected in 2009.

One duplicate sample set for every 20 investigative samples was created by dividing a field sample into approximate equal numbers of whole individuals. Samples were lyophilized by ORNL and shipped to the analytical lab(s) on dry ice for metals analysis. At least one equipment blank was collected for quality assurance/quality control (QC) each week during the period that samples were processed. Field collection activities for 2009 and 2010 are summarized in Table 2.

Table 2. Summary of Benthic Invertebrate Field Activities

Summary	2009	2010
Field collection period	May – September	May – August
Number snail samples ¹	21	70
Number larval mayfly samples ²	30	77
Number adult mayfly samples ³	51	114

Notes:

See Appendices B through O for collection details.

¹Snail samples – 21 in 2009, including 1 duplicate sample; 70 in 2010, including 6 duplicate samples and 16 samples submitted on a wet basis for comparison

²Larval mayfly samples – 30 in 2009, including 1 duplicate sample; 77 in 2010, including 5 duplicate samples and 6 samples submitted on a wet basis for comparison

³Adult mayfly samples – 51 in 2009, including 4 duplicates samples; 114 in 2010, including 12 duplicate samples and 9 samples submitted on a wet basis for comparison

Sampling and analysis were performed in accordance with the *Quality Assurance Project Plan for the Tennessee Valley Authority Kingston Ash Recovery Project (QAPP)*, hereinafter referred to as the TVA-KIF-QAPP, the listed SOPs, field guides, and Work Package WP-1064. Table 3 identifies the applicable TVA documents and SOPs associated with this benthic invertebrate sampling.

In 2009, snail and mayfly tissue from each sample was shipped to Pace Analytical Services, Inc., Green Bay, WI (Pace Analytical) and ALS Laboratory Group, Fort Collins, CO for metals analysis. In 2010, samples were shipped only to Pace Analytical. All samples were lyophilized by ORNL before analysis, except 31 samples (16 snail, 6 larval mayfly, and 9 adult mayfly samples) submitted on a wet basis for comparison. Laboratory split samples were created by separating the original sample into two or more parts containing approximately equal numbers of individuals and equal weight as opposed to equal portions/aliquots of homogenized tissue.

Table 3. Applicable TVA Documents and Standard Operating Procedures

Document	Document Number
TVA KIF Ash Recovery Project Quality Assurance Project Plan	TVA-KIF-QAPP
TVA-KIF Work Package: Benthic Macroinvertebrate Sampling on the Emory and Clinch Rivers	WP-1064
STANDARD OPERATION PROCEDURES:	
Mayfly Sampling	TVA-KIF-SOP-29
Aquatic Snail Sampling	TVA-KIF-SOP-30
Field Documentation	TVA-KIF-SOP-06
Sample Labeling, Packing, and Shipping	TVA-KIF-SOP-07
Decontamination of Equipment	TVA-KIF-SOP-08
Field Quality Control Sampling	TVA-KIF-SOP-11
Management and Implementation of EQuIS™-Based Chain-of-Custody	TVA-KIF-SOP-18

4. ANALYTICAL DATA REVIEW

TVA's contracted laboratories were required to submit three types of deliverables: a limited (Level 1) data package containing sample results and batch QC sample results; a fully-documented (Level 4) data package including raw data for all analyses; and electronic data deliverables (EDDs) for storage in TVA's EarthSoft EQuIS® database.

EDDs were subjected to completeness and correctness testing during loading to TVA's EQuIS database; once loaded to the EQuIS database, the data were subjected to verification. As defined in the TVA-KIF-QAPP, data verification involved comparison of the data loaded in the EQuIS database to the results reported in the Level 1 data package. In addition, data verification included review of the batch QC summary forms for compliance with the applicable methods and for data usability with respect to the project DQOs and the TVA-KIF-QAPP.

Following receipt of the Level 4 data package, data were subjected to validation. As defined in the TVA-KIF-QAPP, data validation included review of raw data and associated QC summary forms for compliance with the applicable methods and for data usability with respect to the appropriate guidance documents. As stated in the QAPP: "Initially, 100% of the chemical analysis data will be reported in full documentation data packages for independent data validation. Depending on the nature and frequency of issues identified during data validation, the percentage of data undergoing full data validation may be reduced to a lesser percentage (such as 20%) or data verification may be substituted. The reduction in full data validation may be matrix specific, laboratory specific, or analyte specific. If after the percentage of full data validation has decreased, a trend in frequency of reporting issues, method non-compliances, or data usability issues is identified, data validation will be conducted for specific data points or the percentage of full data validation percentage may be increased until the issues have been minimized to their initial frequency." Data validation expands upon the completeness, correctness, and usability assessment performed during verification to include evaluation of instrumental QC analyses, review of sample preparation information, and recalculation of reported results from raw data.

A summary of the data review effort is presented in Table 4.

Table 4. Data Review Summary

No. Chains-of-Custody	Matrix	No. Normal by Matrix	No. Equipment Blank Samples	No. Analytical Results	Percentage Final-Verified	Percentage Validated
41	Mayflies - Adult	165	0	4,301		100%
	Mayflies - Nymph	107		2,976		100%
	Snails	91		2,382		100%
	Aqueous	-		78	100%	
Total	-	363	3	9,737	-	-

5. DATA QUALITY SUMMARY

Data validation was performed based on the sample results, summary QC data, and raw data provided by the laboratory. Data validation includes a review of the following QC measures (where applicable):

- Sample condition upon laboratory receipt;
- Initial calibration linearity;
- Blank analysis results greater than the method detection limit (MDL);
- Sample preparation and holding times;
- Initial calibration verification/continuing calibration verification standard recoveries;
- Inductively coupled plasma interference check standard results;
- MDLs and linear ranges;
- Internal standard recoveries;
- Percent moisture;
- Matrix spike/matrix spike duplicate;
- Laboratory and field duplicate precision;
- Quantitation of positive results;
- Laboratory control sample/laboratory control sample duplicate recoveries and precision;
- Analytical sequence;
- Reporting limit standard recoveries;
- MDL verification standards; and
- Standard reference material recoveries.

The data met the DQOs defined for this task and are acceptable for use. Table 5 summarizes the data quality based on the review performed and as compared to the data quality measures identified in the TVA-KIF-QAPP. The text of the data validation reports for the samples included in this TM will be included in the EE/CA Report.

Table 5. Summary of Benthic Invertebrate Data Quality

Matrix	Analytical Results (Total Count)	Acceptable (No Qualification) ¹		Acceptable (Estimated) ²		Blank Qualified ³		Rejected ^{4,5}	
Mayflies - Adult	4,301	3,012	70%	1,074	25%	215	5%	0	0%

Matrix	Analytical Results (Total Count)	Acceptable (No Qualification)¹		Acceptable (Estimated)²		Blank Qualified³		Rejected^{4,5}	
Mayflies - Nymph	2,976	1,960	66%	869	29%	147	5%	0	0%
Snails	2,382	1,664	70%	649	27%	69	3%	0	0%
Aqueous	78	0	0%	75	96% ⁶	0	0%	3	4%

Notes:¹Acceptable, No Qualification – Qualification of data was not warranted based on a review of the applicable QC measures.²Acceptable, Estimated – Quantitation or detection limit is approximate due to limitations or bias identified during a review of the applicable QC measures.³Blank Qualified – Result is considered “not-detected” because it was detected in an associated blank at a similar level.⁴Rejected – Unreliable result or detection limit; analyte may or may not be present in sample.⁵Results were qualified as unusable due to grossly exceeded holding times for mercury in aqueous equipment blank samples..⁶Results were qualified as estimated due to exceeded holding times for metals in aqueous equipment blank samples.

6. DATA SUMMARY

Summary statistics for benthic invertebrates are provided in Appendices B through O for each location collected in 2009 and 2010.

Appendix A

Figures



Figure 1. Field Crew Using a Peterson Dredge to Collect Samples of Substrate Containing Mayfly Nymphs



Figure 2. Sample of Mayfly Nymphs



Figure 2. Adult Mayflies Congregated on Vegetation Along the Shoreline



Figure 3. Adult Mayflies – Male Subimago (Left) and Imago (Right)



Figure 4. Snail Sample Collected by Hand

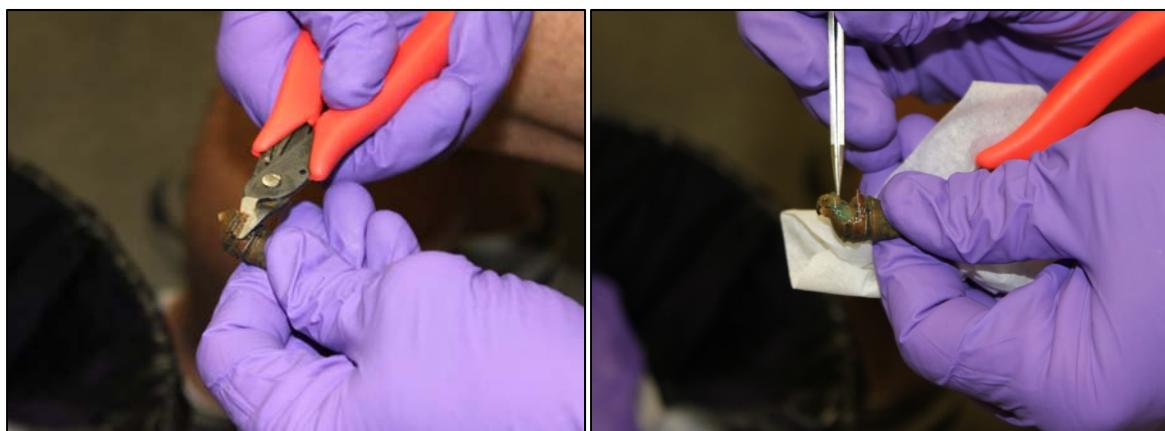


Figure 5. Snail Soft Tissue Being Extracted from the Shell

Appendix B
2009 Mayfly Sampling Results – Emory River

Table B-1: 2009 Mayfly Whole Body Adults (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6.4	6.4	9.6	2 / 2	8
Inorganic	Antimony	mg/kg	0.019 / 0.032	ND	ND	ND	0 / 2	0
Inorganic	Arsenic	mg/kg		0.31	0.31	0.38	2 / 2	0.345
Inorganic	Barium	mg/kg		1.1	1.1	1.3	2 / 2	1.2
Inorganic	Beryllium	mg/kg	0.0031 / 0.0032	ND	ND	ND	0 / 2	0
Inorganic	Boron	mg/kg	0.59 / 0.7	ND	ND	ND	0 / 2	0
Inorganic	Cadmium	mg/kg		0.32	0.32	0.37	2 / 2	0.345
Inorganic	Calcium	mg/kg		665	665	731	2 / 2	698
Inorganic	Chromium	mg/kg		0.44	0.44	0.45	2 / 2	0.445
Inorganic	Cobalt	mg/kg		0.65	0.65	0.72	2 / 2	0.685
Inorganic	Copper	mg/kg		29.4	29.4	31.3	2 / 2	30.35
Inorganic	Iron	mg/kg		217	217	219	2 / 2	218
Inorganic	Lead	mg/kg		0.082	0.082	0.23	2 / 2	0.156
Inorganic	Magnesium	mg/kg		875	875	885	2 / 2	880
Inorganic	Manganese	mg/kg		2.2	2.2	2.4	2 / 2	2.3
Inorganic	Mercury	mg/kg		0.055	0.055	0.06	2 / 2	0.0575
Inorganic	Molybdenum	mg/kg		0.51	0.51	0.78	2 / 2	0.645
Inorganic	Nickel	mg/kg		0.08	0.08	0.086	2 / 2	0.083
Inorganic	Potassium	mg/kg		13600	13600	13600	2 / 2	13600
Inorganic	Selenium	mg/kg		6.5	6.5	6.5	2 / 2	6.5
Inorganic	Silver	mg/kg		0.012	0.012	0.013	2 / 2	0.0125
Inorganic	Sodium	mg/kg		3770	3770	3820	2 / 2	3795
Inorganic	Strontium	mg/kg		0.83	0.83	1.1	2 / 2	0.965
Inorganic	Thallium	mg/kg	0.046 / 0.048	ND	ND	ND	0 / 2	0
Inorganic	Vanadium	mg/kg		0.34	0.34	0.37	2 / 2	0.355
Inorganic	Zinc	mg/kg		77.1	77.1	88.2	2 / 2	82.65

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table B-2: 2009 Mayfly Whole Body Nymphs (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		7520	7520	9740	4 / 4	8725
Inorganic	Antimony	mg/kg		0.41	0.41	0.6	4 / 4	0.475
Inorganic	Arsenic	mg/kg		29.2	29.2	50.1	4 / 4	41.43
Inorganic	Barium	mg/kg		113	113	144	4 / 4	129.5
Inorganic	Beryllium	mg/kg		0.83	0.83	1.2	4 / 4	1.083
Inorganic	Boron	mg/kg	1.3 / 14.3	ND	7.6	12.1	2 / 4	9.85
Inorganic	Cadmium	mg/kg		0.42	0.42	0.96	4 / 4	0.715
Inorganic	Calcium	mg/kg		2740	2740	3290	4 / 4	3088
Inorganic	Chromium	mg/kg	0.41 / 12.1	ND	10.4	13.5	2 / 4	11.95
Inorganic	Cobalt	mg/kg		6.7	6.7	8.2	4 / 4	7.45
Inorganic	Copper	mg/kg		21.4	21.4	25.5	4 / 4	24.25
Inorganic	Iron	mg/kg		8010	8010	9780	4 / 4	8790
Inorganic	Lead	mg/kg		7.5	7.5	10.1	4 / 4	8.95
Inorganic	Magnesium	mg/kg		1470	1470	1570	4 / 4	1535
Inorganic	Manganese	mg/kg		374	374	490	4 / 4	442.5
Inorganic	Mercury	mg/kg		0.11	0.11	0.14	4 / 4	0.1275
Inorganic	Molybdenum	mg/kg		3.2	3.2	4.1	4 / 4	3.75
Inorganic	Nickel	mg/kg		11.9	11.9	14.5	4 / 4	13.3
Inorganic	Potassium	mg/kg		6690	6690	7890	4 / 4	7230
Inorganic	Selenium	mg/kg		6.3	6.3	8.2	4 / 4	6.85
Inorganic	Silver	mg/kg	0.0093 / 0.073	ND	0.042	0.062	3 / 4	0.054
Inorganic	Sodium	mg/kg		3720	3720	4930	4 / 4	4538
Inorganic	Strontium	mg/kg		53.3	53.3	64.6	4 / 4	60.28
Inorganic	Thallium	mg/kg		0.35	0.35	0.66	4 / 4	0.5275
Inorganic	Vanadium	mg/kg		23.8	23.8	29.6	4 / 4	27.63
Inorganic	Zinc	mg/kg		151	151	179	4 / 4	162.8

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table B-3: 2009 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		1750	1750	7470	2 / 2	4610
Inorganic	Antimony	mg/kg	0.023 / 0.21	ND	0.57	0.57	1 / 2	0.57
Inorganic	Arsenic	mg/kg		13.6	13.6	28.9	2 / 2	21.25
Inorganic	Barium	mg/kg		34.9	34.9	124	2 / 2	79.45
Inorganic	Beryllium	mg/kg		0.22	0.22	1	2 / 2	0.61
Inorganic	Boron	mg/kg		4.9	4.9	10.4	2 / 2	7.65
Inorganic	Cadmium	mg/kg		0.79	0.79	0.94	2 / 2	0.865
Inorganic	Calcium	mg/kg		2030	2030	3070	2 / 2	2550
Inorganic	Chromium	mg/kg		2.9	2.9	10.6	2 / 2	6.75
Inorganic	Cobalt	mg/kg		2.5	2.5	6.4	2 / 2	4.45
Inorganic	Copper	mg/kg		23.2	23.2	33	2 / 2	28.1
Inorganic	Iron	mg/kg		1980	1980	7500	2 / 2	4740
Inorganic	Lead	mg/kg		3.1	3.1	10	2 / 2	6.55
Inorganic	Magnesium	mg/kg		1110	1110	1390	2 / 2	1250
Inorganic	Manganese	mg/kg		184	184	355	2 / 2	269.5
Inorganic	Mercury	mg/kg		0.06	0.06	0.12	2 / 2	0.09
Inorganic	Molybdenum	mg/kg		3.9	3.9	4.7	2 / 2	4.3
Inorganic	Nickel	mg/kg		3.4	3.4	11.2	2 / 2	7.3
Inorganic	Potassium	mg/kg		5740	5740	6700	2 / 2	6220
Inorganic	Selenium	mg/kg		5.9	5.9	5.9	2 / 2	5.9
Inorganic	Silver	mg/kg		0.013	0.013	0.048	2 / 2	0.0305
Inorganic	Sodium	mg/kg		3210	3210	4710	2 / 2	3960
Inorganic	Strontium	mg/kg		17	17	55.2	2 / 2	36.1
Inorganic	Thallium	mg/kg	0.018 / 0.14	ND	0.48	0.48	1 / 2	0.48
Inorganic	Vanadium	mg/kg		6.4	6.4	24.7	2 / 2	15.55
Inorganic	Zinc	mg/kg		207	207	212	2 / 2	209.5

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table B-4: 2009 Mayfly Whole Body Adults (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6.5	6.5	15.6	2 / 2	11.05
Inorganic	Antimony	mg/kg	0.019 / 0.019	ND	ND	ND	0 / 2	0
Inorganic	Arsenic	mg/kg		0.21	0.21	0.23	2 / 2	0.22
Inorganic	Barium	mg/kg		1.2	1.2	1.3	2 / 2	1.25
Inorganic	Beryllium	mg/kg	0.0033 / 0.0033	ND	ND	ND	0 / 2	0
Inorganic	Boron	mg/kg	0.55 / 0.63	ND	ND	ND	0 / 2	0
Inorganic	Cadmium	mg/kg		0.26	0.26	0.34	2 / 2	0.3
Inorganic	Calcium	mg/kg	49.9 / 1000	ND	754	754	1 / 2	754
Inorganic	Chromium	mg/kg		0.36	0.36	0.39	2 / 2	0.375
Inorganic	Cobalt	mg/kg		0.94	0.94	1	2 / 2	0.97
Inorganic	Copper	mg/kg		26.7	26.7	28.6	2 / 2	27.65
Inorganic	Iron	mg/kg		210	210	212	2 / 2	211
Inorganic	Lead	mg/kg	0.011 / 0.044	ND	0.13	0.13	1 / 2	0.13
Inorganic	Magnesium	mg/kg		964	964	971	2 / 2	967.5
Inorganic	Manganese	mg/kg		2.1	2.1	2.5	2 / 2	2.3
Inorganic	Mercury	mg/kg		0.05	0.05	0.053	2 / 2	0.0515
Inorganic	Molybdenum	mg/kg		0.4	0.4	0.42	2 / 2	0.41
Inorganic	Nickel	mg/kg		0.082	0.082	0.12	2 / 2	0.101
Inorganic	Potassium	mg/kg		12200	12200	12400	2 / 2	12300
Inorganic	Selenium	mg/kg		4.2	4.2	4.2	2 / 2	4.2
Inorganic	Silver	mg/kg		0.034	0.034	0.04	2 / 2	0.037
Inorganic	Sodium	mg/kg		3710	3710	4010	2 / 2	3860
Inorganic	Strontium	mg/kg		0.82	0.82	0.84	2 / 2	0.83
Inorganic	Thallium	mg/kg	0.033 / 0.034	ND	ND	ND	0 / 2	0
Inorganic	Vanadium	mg/kg		0.14	0.14	0.16	2 / 2	0.15
Inorganic	Zinc	mg/kg		92.2	92.2	92.3	2 / 2	92.25

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table B-5: 2009 Mayfly Whole Body Nymphs (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		5530	5530	9180	5 / 5	7210
Inorganic	Antimony	mg/kg	0.016 / 0.21	ND	0.18	0.28	3 / 5	0.2233
Inorganic	Arsenic	mg/kg		9.4	9.4	16.9	5 / 5	14.3
Inorganic	Barium	mg/kg		54.3	54.3	91.5	5 / 5	71.58
Inorganic	Beryllium	mg/kg	0.014 / 0.67	ND	0.48	0.87	4 / 5	0.67
Inorganic	Boron	mg/kg	0.27 / 11.1	ND	4.9	6.3	3 / 5	5.467
Inorganic	Cadmium	mg/kg		0.21	0.21	1.2	5 / 5	0.572
Inorganic	Calcium	mg/kg		1990	1990	2600	5 / 5	2276
Inorganic	Chromium	mg/kg	0.53 / 11.2	ND	6.7	9.6	3 / 5	7.933
Inorganic	Cobalt	mg/kg		6.5	6.5	8.7	5 / 5	7.36
Inorganic	Copper	mg/kg		16.8	16.8	20.2	5 / 5	17.76
Inorganic	Iron	mg/kg		6350	6350	10300	5 / 5	8266
Inorganic	Lead	mg/kg		5.6	5.6	10.4	5 / 5	7.5
Inorganic	Magnesium	mg/kg		1360	1360	1590	5 / 5	1478
Inorganic	Manganese	mg/kg		354	354	710	5 / 5	473.2
Inorganic	Mercury	mg/kg	0.0043 / 0.07	ND	0.062	0.088	2 / 5	0.075
Inorganic	Molybdenum	mg/kg	0.046 / 1.3	ND	1.4	1.7	3 / 5	1.567
Inorganic	Nickel	mg/kg		9.3	9.3	14.9	5 / 5	11.62
Inorganic	Potassium	mg/kg		6130	6130	8120	5 / 5	7196
Inorganic	Selenium	mg/kg		3.9	3.9	5.4	5 / 5	4.58
Inorganic	Silver	mg/kg	0.013 / 0.057	ND	0.04	0.047	3 / 5	0.044
Inorganic	Sodium	mg/kg		4080	4080	6730	5 / 5	5288
Inorganic	Strontium	mg/kg		16.1	16.1	28.4	5 / 5	23
Inorganic	Thallium	mg/kg		0.17	0.17	0.26	5 / 5	0.216
Inorganic	Vanadium	mg/kg		12.3	12.3	21.7	5 / 5	16.4
Inorganic	Zinc	mg/kg		140	140	249	5 / 5	193.2

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table B-6: 2009 Mayfly Whole Body Adults (Freeze Dried) at Emory River Reach C

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		43.9	43.9	63.4	4 / 4	52.75
Inorganic	Antimony	mg/kg	0.018 / 0.019	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		0.14	0.14	0.15	4 / 4	0.1475
Inorganic	Barium	mg/kg		1.3	1.3	1.6	4 / 4	1.425
Inorganic	Beryllium	mg/kg	0.0031 / 0.0033	ND	ND	ND	0 / 4	0
Inorganic	Boron	mg/kg	0.061 / 0.66	ND	0.82	0.98	3 / 4	0.9033
Inorganic	Cadmium	mg/kg		0.12	0.12	0.15	4 / 4	0.13
Inorganic	Calcium	mg/kg		788	788	858	4 / 4	816.5
Inorganic	Chromium	mg/kg		0.25	0.25	0.34	4 / 4	0.2975
Inorganic	Cobalt	mg/kg		0.63	0.63	0.67	4 / 4	0.65
Inorganic	Copper	mg/kg		27.4	27.4	28.1	4 / 4	27.88
Inorganic	Iron	mg/kg		251	251	269	4 / 4	258.3
Inorganic	Lead	mg/kg		0.12	0.12	0.19	4 / 4	0.1525
Inorganic	Magnesium	mg/kg		788	788	813	4 / 4	805.3
Inorganic	Manganese	mg/kg		6.3	6.3	9.3	4 / 4	8.025
Inorganic	Mercury	mg/kg		0.07	0.07	0.074	4 / 4	0.073
Inorganic	Molybdenum	mg/kg		0.37	0.37	0.4	4 / 4	0.385
Inorganic	Nickel	mg/kg		0.15	0.15	0.21	4 / 4	0.175
Inorganic	Potassium	mg/kg		12400	12400	12900	4 / 4	12625
Inorganic	Selenium	mg/kg		4.7	4.7	5	4 / 4	4.825
Inorganic	Silver	mg/kg		0.053	0.053	0.056	4 / 4	0.0545
Inorganic	Sodium	mg/kg		3790	3790	4010	4 / 4	3933
Inorganic	Strontium	mg/kg		0.75	0.75	0.88	4 / 4	0.8025
Inorganic	Thallium	mg/kg	0.014 / 0.015	ND	ND	ND	0 / 4	0
Inorganic	Vanadium	mg/kg		0.1	0.1	0.13	4 / 4	0.1125
Inorganic	Zinc	mg/kg		85.4	85.4	88.8	4 / 4	87.28

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table B-7: 2009 Mayfly Whole Body Nymphs (Freeze Dried) at the Emory River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		3280	3280	4960	4 / 4	4285
Inorganic	Antimony	mg/kg	0.036 / 0.046	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		2.5	2.5	3.3	4 / 4	2.925
Inorganic	Barium	mg/kg		32.2	32.2	43.7	4 / 4	40.15
Inorganic	Beryllium	mg/kg	0.16 / 0.28	ND	ND	ND	0 / 4	0
Inorganic	Boron	mg/kg	2.9 / 5.8	ND	ND	ND	0 / 4	0
Inorganic	Cadmium	mg/kg		0.39	0.39	1	4 / 4	0.6125
Inorganic	Calcium	mg/kg		1560	1560	1830	4 / 4	1695
Inorganic	Chromium	mg/kg	3.8 / 5.5	ND	ND	ND	0 / 4	0
Inorganic	Cobalt	mg/kg		4.1	4.1	4.9	4 / 4	4.525
Inorganic	Copper	mg/kg		9.6	9.6	11.1	4 / 4	10.25
Inorganic	Iron	mg/kg		5060	5060	6890	4 / 4	6113
Inorganic	Lead	mg/kg		3.5	3.5	5.1	4 / 4	4.6
Inorganic	Magnesium	mg/kg		1200	1200	1320	4 / 4	1258
Inorganic	Manganese	mg/kg		419	419	464	4 / 4	449.3
Inorganic	Mercury	mg/kg	0.0043 / 0.059	ND	0.047	0.062	3 / 4	0.05567
Inorganic	Molybdenum	mg/kg	0.51 / 0.59	ND	ND	ND	0 / 4	0
Inorganic	Nickel	mg/kg		4.1	4.1	6.9	4 / 4	5.475
Inorganic	Potassium	mg/kg		6850	6850	7430	4 / 4	7115
Inorganic	Selenium	mg/kg		1.9	1.9	2.1	4 / 4	1.975
Inorganic	Silver	mg/kg	0.03 / 0.048	ND	ND	ND	0 / 4	0
Inorganic	Sodium	mg/kg		5500	5500	6410	4 / 4	5988
Inorganic	Strontium	mg/kg		4.1	4.1	5.7	4 / 4	5.225
Inorganic	Thallium	mg/kg	0.038 / 0.064	ND	ND	ND	0 / 4	0
Inorganic	Vanadium	mg/kg		5.6	5.6	9.1	4 / 4	7.6
Inorganic	Zinc	mg/kg		167	167	199	4 / 4	184.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix C
2009 Mayfly Sampling Results – Little Emory River

Table C-1: 2009 Mayfly Whole Body Adults (Freeze Dried) at the Little Emory River

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	0.85 / 3.6	ND	ND	ND	0 / 8	0
Inorganic	Antimony	mg/kg	0.018 / 0.019	ND	ND	ND	0 / 8	0
Inorganic	Arsenic	mg/kg		0.11	0.11	0.22	8 / 8	0.1625
Inorganic	Barium	mg/kg		0.83	0.83	1.6	8 / 8	1.145
Inorganic	Beryllium	mg/kg	0.0032 / 0.0033	ND	ND	ND	0 / 8	0
Inorganic	Boron	mg/kg	0.062 / 0.63	ND	0.86	1.4	3 / 8	1.187
Inorganic	Cadmium	mg/kg		0.55	0.55	0.76	8 / 8	0.685
Inorganic	Calcium	mg/kg		930	930	1480	8 / 8	1220
Inorganic	Chromium	mg/kg		0.19	0.19	0.41	8 / 8	0.2425
Inorganic	Cobalt	mg/kg		1.6	1.6	1.9	8 / 8	1.763
Inorganic	Copper	mg/kg		14.2	14.2	22.5	8 / 8	18.58
Inorganic	Iron	mg/kg		100	100	162	8 / 8	132.8
Inorganic	Lead	mg/kg	0.01 / 0.04	ND	ND	ND	0 / 8	0
Inorganic	Magnesium	mg/kg		953	953	1800	8 / 8	1340
Inorganic	Manganese	mg/kg		1.9	1.9	3.7	8 / 8	2.725
Inorganic	Mercury	mg/kg		0.056	0.056	0.07	8 / 8	0.06275
Inorganic	Molybdenum	mg/kg		0.32	0.32	0.39	8 / 8	0.3613
Inorganic	Nickel	mg/kg		0.059	0.059	0.11	8 / 8	0.08663
Inorganic	Potassium	mg/kg		9310	9310	11800	8 / 8	10675
Inorganic	Selenium	mg/kg		3.3	3.3	3.7	8 / 8	3.463
Inorganic	Silver	mg/kg		0.17	0.17	0.24	8 / 8	0.2025
Inorganic	Sodium	mg/kg		4090	4090	4480	8 / 8	4326
Inorganic	Strontium	mg/kg		0.48	0.48	1	8 / 8	0.7188
Inorganic	Thallium	mg/kg	0.014 / 0.015	ND	ND	ND	0 / 8	0
Inorganic	Vanadium	mg/kg	0.053 / 0.053	ND	0.056	0.077	7 / 8	0.06857
Inorganic	Zinc	mg/kg		84.5	84.5	217	8 / 8	142.9

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table C-2: 2009 Mayfly Whole Body Nymphs (Freeze Dried) at the Little Emory River

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6110	6110	7980	4 / 4	7360
Inorganic	Antimony	mg/kg	0.063 / 0.12	ND	0.13	0.15	2 / 4	0.14
Inorganic	Arsenic	mg/kg		4	4	5	4 / 4	4.525
Inorganic	Barium	mg/kg		69.1	69.1	72.4	4 / 4	70.6
Inorganic	Beryllium	mg/kg	0.13 / 0.55	ND	0.33	0.36	3 / 4	0.3467
Inorganic	Boron	mg/kg	1.8 / 10.7	ND	4	5.4	2 / 4	4.7
Inorganic	Cadmium	mg/kg		1.3	1.3	2.6	4 / 4	2.075
Inorganic	Calcium	mg/kg	208 / 8280	ND	1470	1740	3 / 4	1623
Inorganic	Chromium	mg/kg	0.55 / 20.5	ND	8.2	9.3	3 / 4	8.633
Inorganic	Cobalt	mg/kg		6.5	6.5	8.5	4 / 4	7.575
Inorganic	Copper	mg/kg	0.62 / 30	ND	13.1	13.7	3 / 4	13.33
Inorganic	Iron	mg/kg		9560	9560	10300	4 / 4	9935
Inorganic	Lead	mg/kg		6	6	6.9	4 / 4	6.55
Inorganic	Magnesium	mg/kg	208 / 8280	ND	1330	1430	3 / 4	1380
Inorganic	Manganese	mg/kg		1090	1090	1350	4 / 4	1238
Inorganic	Mercury	mg/kg		0.075	0.075	0.089	4 / 4	0.082
Inorganic	Molybdenum	mg/kg	0.15 / 1.8	ND	0.69	0.73	3 / 4	0.71
Inorganic	Nickel	mg/kg		9.3	9.3	11.5	4 / 4	10.65
Inorganic	Potassium	mg/kg	2310 / 8280	ND	6130	8020	3 / 4	7157
Inorganic	Selenium	mg/kg	0.29 / 8.9	ND	3.2	3.4	3 / 4	3.3
Inorganic	Silver	mg/kg	0.012 / 0.5	ND	0.15	0.16	3 / 4	0.1567
Inorganic	Sodium	mg/kg	208 / 8280	ND	3800	4810	3 / 4	4297
Inorganic	Strontium	mg/kg		6.7	6.7	8	4 / 4	7.375
Inorganic	Thallium	mg/kg	0.06 / 0.074	ND	ND	ND	0 / 4	0
Inorganic	Vanadium	mg/kg	0.2 / 9.1	ND	11.8	12.5	3 / 4	12.2
Inorganic	Zinc	mg/kg		223	223	289	4 / 4	256.8

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix D
2009 Mayfly Sampling Results – Clinch River

Table D-1: 2009 Mayfly Whole Body Adults (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	0.86 / 4.7	ND	8.9	8.9	1 / 4	8.9
Inorganic	Antimony	mg/kg	0.018 / 0.028	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		0.17	0.17	0.31	4 / 4	0.26
Inorganic	Barium	mg/kg		0.5	0.5	1.1	4 / 4	0.81
Inorganic	Beryllium	mg/kg	0.0031 / 0.0048	ND	ND	ND	0 / 4	0
Inorganic	Boron	mg/kg		0.14	0.14	1.5	4 / 4	0.835
Inorganic	Cadmium	mg/kg		0.22	0.22	1	4 / 4	0.6075
Inorganic	Calcium	mg/kg		804	804	1270	4 / 4	1028
Inorganic	Chromium	mg/kg		0.23	0.23	0.75	4 / 4	0.445
Inorganic	Cobalt	mg/kg		0.72	0.72	1	4 / 4	0.82
Inorganic	Copper	mg/kg		13.8	13.8	32.8	4 / 4	26.18
Inorganic	Iron	mg/kg		83	83	233	4 / 4	175
Inorganic	Lead	mg/kg	0.01 / 0.089	ND	0.077	0.088	2 / 4	0.0825
Inorganic	Magnesium	mg/kg		901	901	1930	4 / 4	1184
Inorganic	Manganese	mg/kg		2	2	4.9	4 / 4	2.875
Inorganic	Mercury	mg/kg	0.0041 / 0.036	ND	0.038	0.038	1 / 4	0.038
Inorganic	Molybdenum	mg/kg		0.39	0.39	0.48	4 / 4	0.43
Inorganic	Nickel	mg/kg		0.079	0.079	0.15	4 / 4	0.1065
Inorganic	Potassium	mg/kg		9190	9190	13000	4 / 4	11823
Inorganic	Selenium	mg/kg		3.4	3.4	5.2	4 / 4	4.475
Inorganic	Silver	mg/kg	0.0098 / 0.012	ND	ND	ND	0 / 4	0
Inorganic	Sodium	mg/kg		3420	3420	4300	4 / 4	3995
Inorganic	Strontium	mg/kg		0.62	0.62	0.97	4 / 4	0.815
Inorganic	Thallium	mg/kg	0.014 / 0.027	ND	ND	ND	0 / 4	0
Inorganic	Vanadium	mg/kg		0.1	0.1	0.44	4 / 4	0.2925
Inorganic	Zinc	mg/kg		78.2	78.2	217	4 / 4	120

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table D-2: 2009 Mayfly Whole Body Nymphs (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		7450	7450	8790	4 / 4	7920
Inorganic	Antimony	mg/kg		0.21	0.21	0.24	4 / 4	0.225
Inorganic	Arsenic	mg/kg		12	12	15.2	4 / 4	13.83
Inorganic	Barium	mg/kg		78.4	78.4	91.5	4 / 4	83.28
Inorganic	Beryllium	mg/kg		0.67	0.67	0.87	4 / 4	0.74
Inorganic	Boron	mg/kg		6.7	6.7	8.4	4 / 4	7.45
Inorganic	Cadmium	mg/kg		1.3	1.3	2.6	4 / 4	1.85
Inorganic	Calcium	mg/kg		2920	2920	3140	4 / 4	3013
Inorganic	Chromium	mg/kg		9.8	9.8	11.5	4 / 4	10.38
Inorganic	Cobalt	mg/kg		6.7	6.7	7.6	4 / 4	7
Inorganic	Copper	mg/kg		27.1	27.1	33	4 / 4	30.1
Inorganic	Iron	mg/kg		8130	8130	9410	4 / 4	8625
Inorganic	Lead	mg/kg		8.4	8.4	10.1	4 / 4	9.05
Inorganic	Magnesium	mg/kg		1660	1660	1850	4 / 4	1760
Inorganic	Manganese	mg/kg		1010	1010	1160	4 / 4	1093
Inorganic	Mercury	mg/kg		0.35	0.35	0.39	4 / 4	0.3675
Inorganic	Molybdenum	mg/kg	0.1 / 1.6	ND	1.6	2	3 / 4	1.767
Inorganic	Nickel	mg/kg		11	11	12.9	4 / 4	11.78
Inorganic	Potassium	mg/kg		6840	6840	7370	4 / 4	7115
Inorganic	Selenium	mg/kg		5.3	5.3	5.4	4 / 4	5.375
Inorganic	Silver	mg/kg		0.046	0.046	0.05	4 / 4	0.04825
Inorganic	Sodium	mg/kg		4890	4890	5700	4 / 4	5315
Inorganic	Strontium	mg/kg		30.1	30.1	36.9	4 / 4	33.08
Inorganic	Thallium	mg/kg		0.27	0.27	0.37	4 / 4	0.3075
Inorganic	Vanadium	mg/kg		18.2	18.2	21.6	4 / 4	19.43
Inorganic	Zinc	mg/kg		192	192	249	4 / 4	218.5

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table D-3: 2009 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		1520	1520	1580	2 / 2	1550
Inorganic	Antimony	mg/kg	0.1 / 0.11	ND	ND	ND	0 / 2	0
Inorganic	Arsenic	mg/kg		3.9	3.9	5.1	2 / 2	4.5
Inorganic	Barium	mg/kg		21.8	21.8	23.5	2 / 2	22.65
Inorganic	Beryllium	mg/kg		0.13	0.13	0.15	2 / 2	0.14
Inorganic	Boron	mg/kg		3.2	3.2	3.4	2 / 2	3.3
Inorganic	Cadmium	mg/kg		1.3	1.3	3.7	2 / 2	2.5
Inorganic	Calcium	mg/kg		1870	1870	1980	2 / 2	1925
Inorganic	Chromium	mg/kg		2.1	2.1	2.6	2 / 2	2.35
Inorganic	Cobalt	mg/kg		2.4	2.4	2.6	2 / 2	2.5
Inorganic	Copper	mg/kg		39.1	39.1	39.3	2 / 2	39.2
Inorganic	Iron	mg/kg		1750	1750	1820	2 / 2	1785
Inorganic	Lead	mg/kg		3.8	3.8	3.9	2 / 2	3.85
Inorganic	Magnesium	mg/kg		1100	1100	1130	2 / 2	1115
Inorganic	Manganese	mg/kg		273	273	452	2 / 2	362.5
Inorganic	Mercury	mg/kg	0.079 / 0.086	ND	ND	ND	0 / 2	0
Inorganic	Molybdenum	mg/kg		1.6	1.6	2.9	2 / 2	2.25
Inorganic	Nickel	mg/kg		2.9	2.9	3.1	2 / 2	3
Inorganic	Potassium	mg/kg		6130	6130	6320	2 / 2	6225
Inorganic	Selenium	mg/kg		4.4	4.4	5.1	2 / 2	4.75
Inorganic	Silver	mg/kg		0.021	0.021	0.022	2 / 2	0.0215
Inorganic	Sodium	mg/kg		2670	2670	3050	2 / 2	2860
Inorganic	Strontium	mg/kg		9.7	9.7	10.3	2 / 2	10
Inorganic	Thallium	mg/kg	0.091 / 0.13	ND	ND	ND	0 / 2	0
Inorganic	Vanadium	mg/kg		4.3	4.3	4.6	2 / 2	4.45
Inorganic	Zinc	mg/kg		259	259	379	2 / 2	319

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table D-4: 2009 Mayfly Whole Body Adults (Freeze Dried) at Clinch River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	0.82 / 4.4	ND	4.8	17	3 / 3	10.63
Inorganic	Antimony	mg/kg	0.018 / 0.031	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		0.18	0.18	0.29	3 / 3	0.23
Inorganic	Barium	mg/kg		0.65	0.65	1.1	3 / 3	0.9333
Inorganic	Beryllium	mg/kg	0.0032 / 0.0078	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg	0.06 / 0.43	ND	0.32	0.8	3 / 3	0.4967
Inorganic	Cadmium	mg/kg		0.18	0.18	0.68	3 / 3	0.3933
Inorganic	Calcium	mg/kg		871	871	1320	3 / 3	1109
Inorganic	Chromium	mg/kg		0.27	0.27	0.5	3 / 3	0.3767
Inorganic	Cobalt	mg/kg		0.58	0.58	0.83	3 / 3	0.7
Inorganic	Copper	mg/kg		14.4	14.4	31.9	3 / 3	24
Inorganic	Iron	mg/kg		106	106	201	3 / 3	162
Inorganic	Lead	mg/kg	0.0098 / 0.081	ND	0.099	0.16	2 / 3	0.1295
Inorganic	Magnesium	mg/kg		856	856	1770	3 / 3	1216
Inorganic	Manganese	mg/kg		2	2	5	3 / 3	3.233
Inorganic	Mercury	mg/kg	0.004 / 0.029	ND	0.061	0.065	2 / 3	0.063
Inorganic	Molybdenum	mg/kg		0.41	0.41	0.55	3 / 3	0.5033
Inorganic	Nickel	mg/kg		0.06	0.06	0.14	3 / 3	0.1
Inorganic	Potassium	mg/kg		8770	8770	12500	3 / 3	11017
Inorganic	Selenium	mg/kg		3.2	3.2	5.4	3 / 3	4.2
Inorganic	Silver	mg/kg	0.0084 / 0.018	ND	ND	ND	0 / 3	0
Inorganic	Sodium	mg/kg		3670	3670	4590	3 / 3	4283
Inorganic	Strontium	mg/kg		0.69	0.69	1.1	3 / 3	0.8933
Inorganic	Thallium	mg/kg	0.024 / 0.03	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.1	0.1	0.31	3 / 3	0.19
Inorganic	Zinc	mg/kg		85	85	198	3 / 3	128

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table D-5: 2009 Mayfly Whole Body Adults (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	0.83 / 5.2	ND	9	9.7	2 / 6	9.35
Inorganic	Antimony	mg/kg	0.018 / 0.019	ND	ND	ND	0 / 6	0
Inorganic	Arsenic	mg/kg		0.29	0.29	0.43	6 / 6	0.3433
Inorganic	Barium	mg/kg		0.73	0.73	1.5	6 / 6	1.083
Inorganic	Beryllium	mg/kg	0.0031 / 0.0033	ND	ND	ND	0 / 6	0
Inorganic	Boron	mg/kg		0.46	0.46	1.5	6 / 6	1.102
Inorganic	Cadmium	mg/kg		0.13	0.13	0.22	6 / 6	0.17
Inorganic	Calcium	mg/kg		876	876	1230	6 / 6	1042
Inorganic	Chromium	mg/kg		0.21	0.21	0.31	6 / 6	0.2567
Inorganic	Cobalt	mg/kg		0.42	0.42	0.53	6 / 6	0.455
Inorganic	Copper	mg/kg		16.5	16.5	25.3	6 / 6	20.67
Inorganic	Iron	mg/kg		119	119	175	6 / 6	147.3
Inorganic	Lead	mg/kg	0.033 / 0.069	ND	ND	ND	0 / 6	0
Inorganic	Magnesium	mg/kg		972	972	1620	6 / 6	1297
Inorganic	Manganese	mg/kg		2.2	2.2	4.3	6 / 6	2.9
Inorganic	Mercury	mg/kg		0.083	0.083	0.11	6 / 6	0.09133
Inorganic	Molybdenum	mg/kg		0.42	0.42	0.54	6 / 6	0.4917
Inorganic	Nickel	mg/kg		0.044	0.044	0.072	6 / 6	0.05583
Inorganic	Potassium	mg/kg		9380	9380	11100	6 / 6	10327
Inorganic	Selenium	mg/kg		3	3	3.6	6 / 6	3.217
Inorganic	Silver	mg/kg	0.012 / 0.022	ND	ND	ND	0 / 6	0
Inorganic	Sodium	mg/kg		4020	4020	4730	6 / 6	4342
Inorganic	Strontium	mg/kg		0.72	0.72	1.3	6 / 6	0.9717
Inorganic	Thallium	mg/kg	0.03 / 0.03	ND	ND	ND	0 / 6	0
Inorganic	Vanadium	mg/kg	0.052 / 1.1	ND	0.067	0.087	4 / 6	0.074
Inorganic	Zinc	mg/kg		92.8	92.8	181	6 / 6	137.8

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table D-6: 2009 Mayfly Whole Body Nymphs (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6300	6300	7290	4 / 4	6748
Inorganic	Antimony	mg/kg	0.064 / 0.074	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		4.3	4.3	5.4	4 / 4	4.8
Inorganic	Barium	mg/kg		47.2	47.2	57.5	4 / 4	51.25
Inorganic	Beryllium	mg/kg	0.032 / 0.33	ND	0.35	0.38	2 / 4	0.365
Inorganic	Boron	mg/kg		5.4	5.4	7.3	4 / 4	5.975
Inorganic	Cadmium	mg/kg		0.82	0.82	1.2	4 / 4	1.018
Inorganic	Calcium	mg/kg		2760	2760	3060	4 / 4	2893
Inorganic	Chromium	mg/kg		7.9	7.9	9.5	4 / 4	8.6
Inorganic	Cobalt	mg/kg		4.7	4.7	5.5	4 / 4	5.15
Inorganic	Copper	mg/kg		16.3	16.3	18.3	4 / 4	17.18
Inorganic	Iron	mg/kg		7530	7530	9250	4 / 4	8200
Inorganic	Lead	mg/kg		8.1	8.1	9.5	4 / 4	8.625
Inorganic	Magnesium	mg/kg		1690	1690	1840	4 / 4	1778
Inorganic	Manganese	mg/kg		885	885	1000	4 / 4	932.8
Inorganic	Mercury	mg/kg		0.62	0.62	0.92	4 / 4	0.7525
Inorganic	Molybdenum	mg/kg	0.69 / 0.86	ND	ND	ND	0 / 4	0
Inorganic	Nickel	mg/kg		8.4	8.4	10.1	4 / 4	9.175
Inorganic	Potassium	mg/kg		6380	6380	7290	4 / 4	6928
Inorganic	Selenium	mg/kg		3.7	3.7	4.2	4 / 4	3.95
Inorganic	Silver	mg/kg		0.044	0.044	0.062	4 / 4	0.05325
Inorganic	Sodium	mg/kg		4450	4450	5300	4 / 4	4783
Inorganic	Strontium	mg/kg		8.7	8.7	11	4 / 4	9.65
Inorganic	Thallium	mg/kg	0.014 / 0.12	ND	0.096	0.12	3 / 4	0.1043
Inorganic	Vanadium	mg/kg		10.3	10.3	12.5	4 / 4	11.5
Inorganic	Zinc	mg/kg		171	171	212	4 / 4	189.5

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix E
2009 Mayfly Sampling Results – Tennessee River

Table E-1: 2009 Mayfly Whole Body Adults (Freeze Dried) at Tennessee River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	0.86 / 3.4	ND	5.2	5.2	1 / 4	5.2
Inorganic	Antimony	mg/kg	0.018 / 0.019	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		0.13	0.13	0.16	4 / 4	0.1475
Inorganic	Barium	mg/kg		0.51	0.51	0.81	4 / 4	0.645
Inorganic	Beryllium	mg/kg	0.0031 / 0.0033	ND	ND	ND	0 / 4	0
Inorganic	Boron	mg/kg	0.063 / 0.47	ND	0.97	0.97	1 / 4	0.97
Inorganic	Cadmium	mg/kg		0.31	0.31	0.39	4 / 4	0.355
Inorganic	Calcium	mg/kg		648	648	880	4 / 4	785.3
Inorganic	Chromium	mg/kg		0.16	0.16	0.27	4 / 4	0.2025
Inorganic	Cobalt	mg/kg		0.79	0.79	1	4 / 4	0.905
Inorganic	Copper	mg/kg		28.4	28.4	30.1	4 / 4	29.35
Inorganic	Iron	mg/kg		147	147	167	4 / 4	161.5
Inorganic	Lead	mg/kg	0.024 / 0.054	ND	ND	ND	0 / 4	0
Inorganic	Magnesium	mg/kg		933	933	982	4 / 4	960.5
Inorganic	Manganese	mg/kg		1.9	1.9	4.9	4 / 4	2.775
Inorganic	Mercury	mg/kg	0.027 / 0.032	ND	ND	ND	0 / 4	0
Inorganic	Molybdenum	mg/kg		0.27	0.27	0.33	4 / 4	0.31
Inorganic	Nickel	mg/kg		0.056	0.056	0.1	4 / 4	0.07775
Inorganic	Potassium	mg/kg		11700	11700	12200	4 / 4	12000
Inorganic	Selenium	mg/kg		2.8	2.8	3.2	4 / 4	3.075
Inorganic	Silver	mg/kg	0.017 / 0.021	ND	ND	ND	0 / 4	0
Inorganic	Sodium	mg/kg		3270	3270	3440	4 / 4	3378
Inorganic	Strontium	mg/kg		0.54	0.54	0.72	4 / 4	0.66
Inorganic	Thallium	mg/kg	0.014 / 0.015	ND	ND	ND	0 / 4	0
Inorganic	Vanadium	mg/kg		0.1	0.1	0.18	4 / 4	0.155
Inorganic	Zinc	mg/kg		71	71	84.3	4 / 4	80.25

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table E-2: 2009 Mayfly Whole Body Adults (Freeze Dried) at Tennessee River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		1.5	1.5	7.7	14 / 14	4.671
Inorganic	Antimony	mg/kg	0.017 / 0.024	ND	ND	ND	0 / 14	0
Inorganic	Arsenic	mg/kg		0.15	0.15	0.24	14 / 14	0.1943
Inorganic	Barium	mg/kg		0.54	0.54	1.6	14 / 14	0.9457
Inorganic	Beryllium	mg/kg	0.003 / 0.0041	ND	ND	ND	0 / 14	0
Inorganic	Boron	mg/kg	0.061 / 0.6	ND	0.6	1.2	7 / 14	0.7714
Inorganic	Cadmium	mg/kg		0.41	0.41	0.78	14 / 14	0.5943
Inorganic	Calcium	mg/kg		855	855	1610	14 / 14	1198
Inorganic	Chromium	mg/kg		0.42	0.42	0.6	14 / 14	0.525
Inorganic	Cobalt	mg/kg		0.55	0.55	0.87	14 / 14	0.7371
Inorganic	Copper	mg/kg		13.6	13.6	25	14 / 14	19.96
Inorganic	Iron	mg/kg		107	107	182	14 / 14	149.5
Inorganic	Lead	mg/kg	0.0095 / 0.013	ND	0.011	0.035	12 / 14	0.0205
Inorganic	Magnesium	mg/kg		966	966	1990	14 / 14	1343
Inorganic	Manganese	mg/kg		2.2	2.2	5.2	14 / 14	3.129
Inorganic	Mercury	mg/kg	0.049 / 0.13	ND	ND	ND	0 / 14	0
Inorganic	Molybdenum	mg/kg		0.35	0.35	0.63	14 / 14	0.5064
Inorganic	Nickel	mg/kg		0.043	0.043	0.14	14 / 14	0.07521
Inorganic	Potassium	mg/kg		8850	8850	11200	14 / 14	9866
Inorganic	Selenium	mg/kg		2.7	2.7	3.9	14 / 14	3.079
Inorganic	Silver	mg/kg		0.012	0.012	0.024	14 / 14	0.01736
Inorganic	Sodium	mg/kg		3440	3440	4870	14 / 14	4111
Inorganic	Strontium	mg/kg		0.61	0.61	1.5	14 / 14	0.9814
Inorganic	Thallium	mg/kg	0.021 / 0.044	ND	ND	ND	0 / 14	0
Inorganic	Vanadium	mg/kg		0.13	0.13	0.28	14 / 14	0.2107
Inorganic	Zinc	mg/kg		79.6	79.6	229	14 / 14	132.9

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix F
2010 Mayfly Sampling Results – Emory River

Table F- 1: 2010 Mayfly Whole Body Adults (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.7 / 4.2	ND	3.9	17.6	6 / 18	7.55
Inorganic	Antimony	mg/kg	0.013 / 0.015	ND	0.017	0.017	1 / 18	0.017
Inorganic	Arsenic	mg/kg		0.22	0.22	0.41	18 / 18	0.2822
Inorganic	Barium	mg/kg		0.71	0.71	1.7	18 / 18	1.229
Inorganic	Beryllium	mg/kg	0.027 / 0.031	ND	ND	ND	0 / 18	0
Inorganic	Boron	mg/kg		0.42	0.42	3.3	18 / 18	1.082
Inorganic	Cadmium	mg/kg		0.033	0.033	0.24	18 / 18	0.1265
Inorganic	Calcium	mg/kg		640	640	1380	18 / 18	996.3
Inorganic	Chromium	mg/kg	0.12 / 1.8	ND	0.13	0.29	9 / 18	0.1878
Inorganic	Cobalt	mg/kg		0.54	0.54	0.91	18 / 18	0.7628
Inorganic	Copper	mg/kg		10.6	10.6	26.7	18 / 18	19.45
Inorganic	Iron	mg/kg		90.5	90.5	196	18 / 18	149
Inorganic	Lead	mg/kg	0.026 / 0.029	ND	ND	ND	0 / 18	0
Inorganic	Magnesium	mg/kg		920	920	2010	18 / 18	1263
Inorganic	Manganese	mg/kg		1.9	1.9	6.4	18 / 18	2.928
Inorganic	Mercury	mg/kg		0.038	0.038	0.069	18 / 18	0.04944
Inorganic	Molybdenum	mg/kg		0.33	0.33	0.85	18 / 18	0.6028
Inorganic	Nickel	mg/kg	0.089 / 0.1	ND	0.1	0.1	1 / 18	0.1
Inorganic	Potassium	mg/kg		8910	8910	12500	18 / 18	10926
Inorganic	Selenium	mg/kg		5.6	5.6	8.2	18 / 18	7.106
Inorganic	Silver	mg/kg		0.0067	0.0067	0.017	18 / 18	0.01176
Inorganic	Sodium	mg/kg		3550	3550	4820	18 / 18	4116
Inorganic	Strontium	mg/kg		0.63	0.63	1.2	18 / 18	0.8878
Inorganic	Thallium	mg/kg	0.013 / 0.042	ND	ND	ND	0 / 18	0
Inorganic	Vanadium	mg/kg		0.069	0.069	0.2	18 / 18	0.1548
Inorganic	Zinc	mg/kg		87.6	87.6	220	18 / 18	136.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F- 2: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		7540	7540	8540	3 / 3	8090
Inorganic	Antimony	mg/kg		0.26	0.26	0.53	3 / 3	0.4133
Inorganic	Arsenic	mg/kg		33.5	33.5	97	3 / 3	61.67
Inorganic	Barium	mg/kg		91.3	91.3	140	3 / 3	123.1
Inorganic	Beryllium	mg/kg		0.77	0.77	0.96	3 / 3	0.8767
Inorganic	Boron	mg/kg		5.4	5.4	8.7	3 / 3	7.1
Inorganic	Cadmium	mg/kg	0.088 / 0.47	ND	0.24	1.1	3 / 3	0.6333
Inorganic	Calcium	mg/kg		2350	2350	2650	3 / 3	2470
Inorganic	Chromium	mg/kg		10.8	10.8	12	3 / 3	11.27
Inorganic	Cobalt	mg/kg		7.4	7.4	8.1	3 / 3	7.667
Inorganic	Copper	mg/kg		19.5	19.5	21.2	3 / 3	20.37
Inorganic	Iron	mg/kg		8760	8760	11600	3 / 3	10093
Inorganic	Lead	mg/kg		8.6	8.6	10.3	3 / 3	9.6
Inorganic	Magnesium	mg/kg		1190	1190	1370	3 / 3	1293
Inorganic	Manganese	mg/kg		427	427	535	3 / 3	507
Inorganic	Mercury	mg/kg		0.09	0.09	0.14	3 / 3	0.1117
Inorganic	Molybdenum	mg/kg		1.6	1.6	2.9	3 / 3	2.3
Inorganic	Nickel	mg/kg		12.4	12.4	13.3	3 / 3	12.87
Inorganic	Potassium	mg/kg	901 / 8370	ND	6220	6710	2 / 3	6465
Inorganic	Selenium	mg/kg		6.3	6.3	11.9	3 / 3	10
Inorganic	Silver	mg/kg	0.04 / 0.112	ND	ND	ND	0 / 3	0
Inorganic	Sodium	mg/kg		4220	4220	4910	3 / 3	4600
Inorganic	Strontium	mg/kg		27.5	27.5	57.2	3 / 3	45.67
Inorganic	Thallium	mg/kg		0.23	0.23	0.56	3 / 3	0.4367
Inorganic	Vanadium	mg/kg		19.1	19.1	25.5	3 / 3	22.47
Inorganic	Zinc	mg/kg		137	137	155	3 / 3	146

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F- 3: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		1220	1220	2140	3 / 3	1660
Inorganic	Antimony	mg/kg		0.13	0.13	0.23	3 / 3	0.19
Inorganic	Arsenic	mg/kg		18.2	18.2	41.6	3 / 3	31.47
Inorganic	Barium	mg/kg		34	34	42.7	3 / 3	39.1
Inorganic	Beryllium	mg/kg		0.14	0.14	0.25	3 / 3	0.1933
Inorganic	Boron	mg/kg		2.4	2.4	4	3 / 3	3.367
Inorganic	Cadmium	mg/kg		0.24	0.24	0.73	3 / 3	0.49
Inorganic	Calcium	mg/kg		1990	1990	2290	3 / 3	2153
Inorganic	Chromium	mg/kg		1.8	1.8	3.3	3 / 3	2.533
Inorganic	Cobalt	mg/kg		1.5	1.5	2.4	3 / 3	1.9
Inorganic	Copper	mg/kg		31.8	31.8	41.3	3 / 3	36.63
Inorganic	Iron	mg/kg		1940	1940	3430	3 / 3	2893
Inorganic	Lead	mg/kg		4	4	7.2	3 / 3	5.833
Inorganic	Magnesium	mg/kg		1110	1110	1180	3 / 3	1157
Inorganic	Manganese	mg/kg		177	177	216	3 / 3	193
Inorganic	Mercury	mg/kg		0.041	0.041	0.049	3 / 3	0.04533
Inorganic	Molybdenum	mg/kg		2.4	2.4	3.2	3 / 3	2.867
Inorganic	Nickel	mg/kg		2.3	2.3	3.6	3 / 3	2.933
Inorganic	Potassium	mg/kg		8590	8590	9210	3 / 3	8817
Inorganic	Selenium	mg/kg		6.9	6.9	8.7	3 / 3	8
Inorganic	Silver	mg/kg	0.004 / 0.022	ND	0.032	0.039	2 / 3	0.0355
Inorganic	Sodium	mg/kg		5770	5770	6270	3 / 3	5947
Inorganic	Strontium	mg/kg		16.5	16.5	18.7	3 / 3	17.7
Inorganic	Thallium	mg/kg	0.058 / 0.15	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		3.9	3.9	7.4	3 / 3	5.933
Inorganic	Zinc	mg/kg		179	179	189	3 / 3	183.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F- 4: 2010 Mayfly Whole Body Adults (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.7 / 4.1	ND	4.1	27.1	11 / 18	7.982
Inorganic	Antimony	mg/kg	0.014 / 0.015	ND	0.017	0.044	2 / 18	0.0305
Inorganic	Arsenic	mg/kg		0.35	0.35	0.62	18 / 18	0.4661
Inorganic	Barium	mg/kg		0.91	0.91	1.8	18 / 18	1.377
Inorganic	Beryllium	mg/kg	0.028 / 0.062	ND	ND	ND	0 / 18	0
Inorganic	Boron	mg/kg		0.48	0.48	2.3	18 / 18	1.254
Inorganic	Cadmium	mg/kg		0.015	0.015	0.15	18 / 18	0.07606
Inorganic	Calcium	mg/kg		724	724	1780	18 / 18	1113
Inorganic	Chromium	mg/kg		0.14	0.14	0.23	18 / 18	0.1772
Inorganic	Cobalt	mg/kg		0.37	0.37	0.79	18 / 18	0.5989
Inorganic	Copper	mg/kg		12.3	12.3	27.7	18 / 18	18.74
Inorganic	Iron	mg/kg		101	101	233	18 / 18	152.9
Inorganic	Lead	mg/kg	0.026 / 0.029	ND	ND	ND	0 / 18	0
Inorganic	Magnesium	mg/kg		951	951	2460	18 / 18	1554
Inorganic	Manganese	mg/kg		2	2	4.8	18 / 18	3.189
Inorganic	Mercury	mg/kg		0.025	0.025	0.037	18 / 18	0.03039
Inorganic	Molybdenum	mg/kg		0.34	0.34	1.4	18 / 18	0.7178
Inorganic	Nickel	mg/kg	0.091 / 0.1	ND	ND	ND	0 / 18	0
Inorganic	Potassium	mg/kg		8600	8600	14500	18 / 18	11051
Inorganic	Selenium	mg/kg		6.5	6.5	8.4	18 / 18	7.561
Inorganic	Silver	mg/kg		0.005	0.005	0.018	18 / 18	0.01021
Inorganic	Sodium	mg/kg		3520	3520	4890	18 / 18	4037
Inorganic	Strontium	mg/kg		0.57	0.57	1.4	18 / 18	0.9678
Inorganic	Thallium	mg/kg	0.013 / 0.038	ND	ND	ND	0 / 18	0
Inorganic	Vanadium	mg/kg		0.11	0.11	0.25	18 / 18	0.1811
Inorganic	Zinc	mg/kg		82.5	82.5	246	18 / 18	152.9

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F- 5: 2010 Mayfly Whole Body Adults (Wet Weight) at Emory River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.7 / 4.2	ND	ND	ND	0 / 6	0
Inorganic	Antimony	mg/kg	0.013 / 0.015	ND	0.016	0.016	1 / 6	0.016
Inorganic	Arsenic	mg/kg		0.098	0.098	0.28	6 / 6	0.2247
Inorganic	Barium	mg/kg		0.48	0.48	1.1	6 / 6	0.755
Inorganic	Beryllium	mg/kg	0.027 / 0.031	ND	ND	ND	0 / 6	0
Inorganic	Boron	mg/kg	0.38 / 0.42	ND	0.4	0.58	4 / 6	0.4975
Inorganic	Cadmium	mg/kg	0.007 / 0.0077	ND	0.01	0.029	4 / 6	0.01825
Inorganic	Calcium	mg/kg		322	322	713	6 / 6	487.8
Inorganic	Chromium	mg/kg	0.12 / 0.13	ND	ND	ND	0 / 6	0
Inorganic	Cobalt	mg/kg		0.13	0.13	0.15	6 / 6	0.1433
Inorganic	Copper	mg/kg		4.8	4.8	8.8	6 / 6	6.767
Inorganic	Iron	mg/kg		38.5	38.5	68.8	6 / 6	51.95
Inorganic	Lead	mg/kg	0.025 / 0.029	ND	ND	ND	0 / 6	0
Inorganic	Magnesium	mg/kg		325	325	947	6 / 6	611.3
Inorganic	Manganese	mg/kg		0.71	0.71	2	6 / 6	1.315
Inorganic	Mercury	mg/kg		0.012	0.012	0.015	6 / 6	0.01333
Inorganic	Molybdenum	mg/kg		0.13	0.13	0.27	6 / 6	0.19
Inorganic	Nickel	mg/kg	0.089 / 0.1	ND	0.46	0.46	1 / 6	0.46
Inorganic	Potassium	mg/kg		3600	3600	3960	6 / 6	3825
Inorganic	Selenium	mg/kg		2.2	2.2	3.3	6 / 6	2.65
Inorganic	Silver	mg/kg		0.0041	0.0041	0.012	6 / 6	0.00635
Inorganic	Sodium	mg/kg		1380	1380	1530	6 / 6	1455
Inorganic	Strontium	mg/kg		0.28	0.28	0.6	6 / 6	0.415
Inorganic	Thallium	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 6	0
Inorganic	Vanadium	mg/kg		0.052	0.052	0.081	6 / 6	0.06367
Inorganic	Zinc	mg/kg		30.7	30.7	120	6 / 6	72.08
Physical Properties	% Moisture	%		56.9	56.9	66.5	6 / 6	61.25

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table F- 6: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		9050	9050	10300	3 / 3	9693
Inorganic	Antimony	mg/kg		0.2	0.2	0.22	3 / 3	0.2133
Inorganic	Arsenic	mg/kg		13.1	13.1	17.6	3 / 3	14.87
Inorganic	Barium	mg/kg		84.9	84.9	93	3 / 3	89.57
Inorganic	Beryllium	mg/kg		0.74	0.74	0.88	3 / 3	0.7967
Inorganic	Boron	mg/kg	4.3 / 5.8	ND	5	5.4	2 / 3	5.2
Inorganic	Cadmium	mg/kg		0.45	0.45	0.68	3 / 3	0.5767
Inorganic	Calcium	mg/kg		2200	2200	2240	3 / 3	2217
Inorganic	Chromium	mg/kg		10.9	10.9	12.4	3 / 3	11.63
Inorganic	Cobalt	mg/kg		8.9	8.9	9.8	3 / 3	9.233
Inorganic	Copper	mg/kg		17.8	17.8	19.4	3 / 3	18.83
Inorganic	Iron	mg/kg		10200	10200	11400	3 / 3	10967
Inorganic	Lead	mg/kg		8.8	8.8	9.7	3 / 3	9.133
Inorganic	Magnesium	mg/kg		1490	1490	1600	3 / 3	1553
Inorganic	Manganese	mg/kg		454	454	520	3 / 3	490.7
Inorganic	Mercury	mg/kg		0.076	0.076	0.078	3 / 3	0.07733
Inorganic	Molybdenum	mg/kg		1.2	1.2	1.4	3 / 3	1.267
Inorganic	Nickel	mg/kg		14.1	14.1	15.6	3 / 3	14.8
Inorganic	Potassium	mg/kg	7500 / 10200	ND	ND	ND	0 / 3	0
Inorganic	Selenium	mg/kg		6.6	6.6	7.2	3 / 3	7
Inorganic	Silver	mg/kg	0.03 / 0.124	ND	0.037	0.048	2 / 3	0.0425
Inorganic	Sodium	mg/kg		5770	5770	6950	3 / 3	6210
Inorganic	Strontium	mg/kg		22.1	22.1	25	3 / 3	23.63
Inorganic	Thallium	mg/kg		0.21	0.21	0.26	3 / 3	0.2367
Inorganic	Vanadium	mg/kg		17.3	17.3	19.7	3 / 3	18.57
Inorganic	Zinc	mg/kg		174	174	187	3 / 3	180

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F- 7: 2010 Mayfly Whole Body Nymphs (Wet Weight) at Emory River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		2080	2080	2140	3 / 3	2100
Inorganic	Antimony	mg/kg		0.049	0.049	0.053	3 / 3	0.05067
Inorganic	Arsenic	mg/kg		2.9	2.9	3.8	3 / 3	3.333
Inorganic	Barium	mg/kg		19.4	19.4	20.3	3 / 3	19.97
Inorganic	Beryllium	mg/kg	0.15 / 0.15	ND	0.16	0.16	2 / 3	0.16
Inorganic	Boron	mg/kg	2.1 / 2.1	ND	2.9	2.9	1 / 3	2.9
Inorganic	Cadmium	mg/kg		0.069	0.069	0.21	3 / 3	0.1263
Inorganic	Calcium	mg/kg		479	479	529	3 / 3	512
Inorganic	Chromium	mg/kg		2.5	2.5	2.6	3 / 3	2.567
Inorganic	Cobalt	mg/kg		1.9	1.9	2.1	3 / 3	2.033
Inorganic	Copper	mg/kg		4.2	4.2	4.7	3 / 3	4.367
Inorganic	Iron	mg/kg		2310	2310	2440	3 / 3	2363
Inorganic	Lead	mg/kg		1.9	1.9	2	3 / 3	1.933
Inorganic	Magnesium	mg/kg		335	335	348	3 / 3	340.3
Inorganic	Manganese	mg/kg		102	102	117	3 / 3	109.7
Inorganic	Mercury	mg/kg		0.014	0.014	0.018	3 / 3	0.016
Inorganic	Molybdenum	mg/kg		0.28	0.28	0.3	3 / 3	0.2933
Inorganic	Nickel	mg/kg		3.1	3.1	3.4	3 / 3	3.267
Inorganic	Potassium	mg/kg	3690 / 3750	ND	ND	ND	0 / 3	0
Inorganic	Selenium	mg/kg		1.5	1.5	1.6	3 / 3	1.567
Inorganic	Silver	mg/kg	0.049 / 0.05	ND	ND	ND	0 / 3	0
Inorganic	Sodium	mg/kg		1320	1320	1390	3 / 3	1363
Inorganic	Strontium	mg/kg		5.2	5.2	5.6	3 / 3	5.4
Inorganic	Thallium	mg/kg	0.029 / 0.036	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		4.1	4.1	4.1	3 / 3	4.1
Inorganic	Zinc	mg/kg		37.4	37.4	45.1	3 / 3	40.63
Physical Properties	% Moisture	%		76.6	76.6	77.9	3 / 3	77.33

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table F- 8: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		424	424	525	3 / 3	480
Inorganic	Antimony	mg/kg		0.035	0.035	0.04	3 / 3	0.037
Inorganic	Arsenic	mg/kg		2.1	2.1	3.4	3 / 3	2.933
Inorganic	Barium	mg/kg		20.1	20.1	21.7	3 / 3	20.8
Inorganic	Beryllium	mg/kg	0.034 / 0.11	ND	0.048	0.048	1 / 3	0.048
Inorganic	Boron	mg/kg		0.95	0.95	2.7	3 / 3	1.75
Inorganic	Cadmium	mg/kg		0.54	0.54	0.96	3 / 3	0.6933
Inorganic	Calcium	mg/kg		2030	2030	2180	3 / 3	2127
Inorganic	Chromium	mg/kg		0.68	0.68	0.86	3 / 3	0.7867
Inorganic	Cobalt	mg/kg		1	1	1.7	3 / 3	1.267
Inorganic	Copper	mg/kg		23.3	23.3	29	3 / 3	25.97
Inorganic	Iron	mg/kg		728	728	968	3 / 3	868.3
Inorganic	Lead	mg/kg		1.6	1.6	1.9	3 / 3	1.767
Inorganic	Magnesium	mg/kg		1170	1170	1220	3 / 3	1197
Inorganic	Manganese	mg/kg		107	107	129	3 / 3	120.7
Inorganic	Mercury	mg/kg		0.047	0.047	0.053	3 / 3	0.04967
Inorganic	Molybdenum	mg/kg		1.1	1.1	1.2	3 / 3	1.133
Inorganic	Nickel	mg/kg		0.95	0.95	1.2	3 / 3	1.083
Inorganic	Potassium	mg/kg		9110	9110	9630	3 / 3	9333
Inorganic	Selenium	mg/kg		4.8	4.8	5.9	3 / 3	5.5
Inorganic	Silver	mg/kg		0.034	0.034	0.037	3 / 3	0.035
Inorganic	Sodium	mg/kg		6170	6170	6850	3 / 3	6447
Inorganic	Strontium	mg/kg		9.8	9.8	10.4	3 / 3	10
Inorganic	Thallium	mg/kg	0.02 / 0.043	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		1.3	1.3	1.5	3 / 3	1.4
Inorganic	Zinc	mg/kg		218	218	229	3 / 3	225

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F- 9: 2010 Mayfly Purged Whole Body Nymphs (Wet Weight) at Emory River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		136	136	187	3 / 3	168.3
Inorganic	Antimony	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		0.79	0.79	1.2	3 / 3	0.9567
Inorganic	Barium	mg/kg		4.8	4.8	6	3 / 3	5.5
Inorganic	Beryllium	mg/kg	0.054 / 0.059	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		0.93	0.93	2.5	3 / 3	1.463
Inorganic	Cadmium	mg/kg		0.047	0.047	0.07	3 / 3	0.05933
Inorganic	Calcium	mg/kg		373	373	406	3 / 3	390.3
Inorganic	Chromium	mg/kg		0.21	0.21	0.31	3 / 3	0.27
Inorganic	Cobalt	mg/kg		0.24	0.24	0.32	3 / 3	0.2933
Inorganic	Copper	mg/kg		4.9	4.9	5.7	3 / 3	5.3
Inorganic	Iron	mg/kg		240	240	322	3 / 3	269
Inorganic	Lead	mg/kg		0.39	0.39	0.53	3 / 3	0.4467
Inorganic	Magnesium	mg/kg		217	217	222	3 / 3	219.7
Inorganic	Manganese	mg/kg		27.4	27.4	32.2	3 / 3	29.13
Inorganic	Mercury	mg/kg	0.01 / 0.011	ND	ND	ND	0 / 3	0
Inorganic	Molybdenum	mg/kg		0.2	0.2	0.26	3 / 3	0.2233
Inorganic	Nickel	mg/kg		0.28	0.28	0.39	3 / 3	0.34
Inorganic	Potassium	mg/kg		1610	1610	1650	3 / 3	1630
Inorganic	Selenium	mg/kg		1	1	1.1	3 / 3	1.067
Inorganic	Silver	mg/kg	0.0058 / 0.0066	ND	ND	ND	0 / 3	0
Inorganic	Sodium	mg/kg		1010	1010	1130	3 / 3	1087
Inorganic	Strontium	mg/kg		2	2	2.2	3 / 3	2.1
Inorganic	Thallium	mg/kg	0.012 / 0.014	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.36	0.36	0.5	3 / 3	0.4333
Inorganic	Zinc	mg/kg		38.8	38.8	39.4	3 / 3	39.07
Physical Properties	% Moisture	%		81.1	81.1	82.6	3 / 3	81.93

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table F-10: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at Emory River Reach C

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		5330	5330	6340	3 / 3	5667
Inorganic	Antimony	mg/kg		0.11	0.11	0.12	3 / 3	0.1167
Inorganic	Arsenic	mg/kg		6.8	6.8	8.1	3 / 3	7.367
Inorganic	Barium	mg/kg		54.2	54.2	63	3 / 3	57.17
Inorganic	Beryllium	mg/kg		0.4	0.4	0.5	3 / 3	0.4333
Inorganic	Boron	mg/kg		2.8	2.8	3.3	3 / 3	3
Inorganic	Cadmium	mg/kg	0.038 / 0.17	ND	0.19	0.25	2 / 3	0.22
Inorganic	Calcium	mg/kg		1860	1860	1930	3 / 3	1890
Inorganic	Chromium	mg/kg		6.2	6.2	7.2	3 / 3	6.533
Inorganic	Cobalt	mg/kg		5.1	5.1	6.1	3 / 3	5.467
Inorganic	Copper	mg/kg		11.5	11.5	13.1	3 / 3	12.07
Inorganic	Iron	mg/kg		6850	6850	9220	3 / 3	7670
Inorganic	Lead	mg/kg		5.9	5.9	6.3	3 / 3	6.1
Inorganic	Magnesium	mg/kg		1270	1270	1340	3 / 3	1307
Inorganic	Manganese	mg/kg		246	246	407	3 / 3	301.7
Inorganic	Mercury	mg/kg		0.066	0.066	0.071	3 / 3	0.068
Inorganic	Molybdenum	mg/kg		0.71	0.71	0.76	3 / 3	0.7433
Inorganic	Nickel	mg/kg		8.3	8.3	9.6	3 / 3	8.767
Inorganic	Potassium	mg/kg		6250	6250	7190	3 / 3	6640
Inorganic	Selenium	mg/kg		3.8	3.8	5	3 / 3	4.567
Inorganic	Silver	mg/kg	0.033 / 0.047	ND	ND	ND	0 / 3	0
Inorganic	Sodium	mg/kg		4490	4490	5960	3 / 3	5120
Inorganic	Strontium	mg/kg		11.8	11.8	12.7	3 / 3	12.17
Inorganic	Thallium	mg/kg	0.11 / 0.12	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		9.5	9.5	10.7	3 / 3	9.967
Inorganic	Zinc	mg/kg		153	153	217	3 / 3	187.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F-11: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Emory River Reach C

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		509	509	1400	3 / 3	1062
Inorganic	Antimony	mg/kg		0.026	0.026	0.04	3 / 3	0.03633
Inorganic	Arsenic	mg/kg		2	2	3.6	3 / 3	3.1
Inorganic	Barium	mg/kg		14.9	14.9	23.4	3 / 3	20.27
Inorganic	Beryllium	mg/kg	0.031 / 0.61	ND	0.049	0.049	1 / 3	0.049
Inorganic	Boron	mg/kg	0.43 / 4.2	ND	1.9	2.4	1 / 3	2.4
Inorganic	Cadmium	mg/kg		0.066	0.066	0.14	3 / 3	0.1
Inorganic	Calcium	mg/kg		1710	1710	2040	3 / 3	1923
Inorganic	Chromium	mg/kg		0.69	0.69	1.7	3 / 3	1.307
Inorganic	Cobalt	mg/kg		1.2	1.2	1.6	3 / 3	1.533
Inorganic	Copper	mg/kg		30	30	37.6	3 / 3	35.77
Inorganic	Iron	mg/kg		1410	1410	2480	3 / 3	2297
Inorganic	Lead	mg/kg		2.2	2.2	3.4	3 / 3	3.067
Inorganic	Magnesium	mg/kg		1120	1120	1340	3 / 3	1253
Inorganic	Manganese	mg/kg		99.6	99.6	244	3 / 3	157.5
Inorganic	Mercury	mg/kg		0.053	0.053	0.063	3 / 3	0.05833
Inorganic	Molybdenum	mg/kg		0.68	0.68	1.1	3 / 3	0.87
Inorganic	Nickel	mg/kg		1.1	1.1	2.4	3 / 3	1.933
Inorganic	Potassium	mg/kg		8980	8980	9840	3 / 3	9493
Inorganic	Selenium	mg/kg		3.3	3.3	4.1	3 / 3	3.733
Inorganic	Silver	mg/kg		0.033	0.033	0.041	3 / 3	0.038
Inorganic	Sodium	mg/kg		5910	5910	6660	3 / 3	6227
Inorganic	Strontium	mg/kg		5.5	5.5	8.6	3 / 3	7.333
Inorganic	Thallium	mg/kg	0.028 / 0.054	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		1.3	1.3	2.7	3 / 3	2.3
Inorganic	Zinc	mg/kg		232	232	259	3 / 3	243

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F-12: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at the Emory River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		4350	4350	6380	3 / 3	5547
Inorganic	Antimony	mg/kg		0.057	0.057	0.073	3 / 3	0.067
Inorganic	Arsenic	mg/kg		2.8	2.8	3.2	3 / 3	3
Inorganic	Barium	mg/kg		43.2	43.2	55.1	3 / 3	49.5
Inorganic	Beryllium	mg/kg		0.22	0.22	0.29	3 / 3	0.2633
Inorganic	Boron	mg/kg		2.5	2.5	4	3 / 3	3.067
Inorganic	Cadmium	mg/kg		0.35	0.35	0.61	3 / 3	0.47
Inorganic	Calcium	mg/kg		1550	1550	1710	3 / 3	1630
Inorganic	Chromium	mg/kg		4.6	4.6	6.8	3 / 3	5.867
Inorganic	Cobalt	mg/kg		4.1	4.1	5.1	3 / 3	4.7
Inorganic	Copper	mg/kg		9.5	9.5	10.6	3 / 3	10.13
Inorganic	Iron	mg/kg		6090	6090	8430	3 / 3	7410
Inorganic	Lead	mg/kg		5.2	5.2	6.8	3 / 3	6.033
Inorganic	Magnesium	mg/kg		1030	1030	1280	3 / 3	1160
Inorganic	Manganese	mg/kg		378	378	441	3 / 3	416.3
Inorganic	Mercury	mg/kg		0.055	0.055	0.061	3 / 3	0.05867
Inorganic	Molybdenum	mg/kg		0.5	0.5	0.53	3 / 3	0.51
Inorganic	Nickel	mg/kg		5.3	5.3	7	3 / 3	6.333
Inorganic	Potassium	mg/kg		5580	5580	5960	3 / 3	5730
Inorganic	Selenium	mg/kg		2.6	2.6	3.2	3 / 3	2.833
Inorganic	Silver	mg/kg		0.03	0.03	0.038	3 / 3	0.03333
Inorganic	Sodium	mg/kg		4040	4040	4770	3 / 3	4477
Inorganic	Strontium	mg/kg		5.8	5.8	6.7	3 / 3	6.3
Inorganic	Thallium	mg/kg	0.057 / 0.073	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		6.7	6.7	9.4	3 / 3	8.233
Inorganic	Zinc	mg/kg		167	167	191	3 / 3	177

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table F-13: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at the Emory River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		502	502	1380	3 / 3	857
Inorganic	Antimony	mg/kg	0.018 / 0.022	ND	0.024	0.024	1 / 3	0.024
Inorganic	Arsenic	mg/kg		0.85	0.85	1.1	3 / 3	0.95
Inorganic	Barium	mg/kg		9.3	9.3	16.4	3 / 3	11.77
Inorganic	Beryllium	mg/kg	0.037 / 0.045	ND	0.072	0.072	1 / 3	0.072
Inorganic	Boron	mg/kg		1.9	1.9	2.2	3 / 3	2.033
Inorganic	Cadmium	mg/kg		0.46	0.46	0.91	3 / 3	0.7467
Inorganic	Calcium	mg/kg		1440	1440	1750	3 / 3	1600
Inorganic	Chromium	mg/kg		0.69	0.69	1.5	3 / 3	1
Inorganic	Cobalt	mg/kg		1.4	1.4	2.2	3 / 3	1.8
Inorganic	Copper	mg/kg		30.1	30.1	33.1	3 / 3	31.67
Inorganic	Iron	mg/kg		810	810	2010	3 / 3	1297
Inorganic	Lead	mg/kg		2	2	2.8	3 / 3	2.367
Inorganic	Magnesium	mg/kg		1080	1080	1140	3 / 3	1100
Inorganic	Manganese	mg/kg		102	102	214	3 / 3	146
Inorganic	Mercury	mg/kg		0.039	0.039	0.048	3 / 3	0.04333
Inorganic	Molybdenum	mg/kg		0.52	0.52	0.55	3 / 3	0.5367
Inorganic	Nickel	mg/kg		1.1	1.1	2.1	3 / 3	1.467
Inorganic	Potassium	mg/kg		8300	8300	8910	3 / 3	8583
Inorganic	Selenium	mg/kg		2.2	2.2	2.7	3 / 3	2.4
Inorganic	Silver	mg/kg		0.042	0.042	0.051	3 / 3	0.04767
Inorganic	Sodium	mg/kg		3810	3810	4350	3 / 3	4127
Inorganic	Strontium	mg/kg		2.7	2.7	3.8	3 / 3	3.4
Inorganic	Thallium	mg/kg	0.017 / 0.021	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.85	0.85	2.1	3 / 3	1.35
Inorganic	Zinc	mg/kg		243	243	255	3 / 3	250.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix G
2010 Mayfly Sampling Results – Little Emory River

Table G-1: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at the Little Emory River

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		4090	4090	4550	3 / 3	4337
Inorganic	Antimony	mg/kg		0.074	0.074	0.085	3 / 3	0.08033
Inorganic	Arsenic	mg/kg		3.6	3.6	4.5	3 / 3	3.9
Inorganic	Barium	mg/kg		47.8	47.8	58.6	3 / 3	52.03
Inorganic	Beryllium	mg/kg		0.19	0.19	0.23	3 / 3	0.2067
Inorganic	Boron	mg/kg		3.1	3.1	3.5	3 / 3	3.267
Inorganic	Cadmium	mg/kg		0.92	0.92	2.4	3 / 3	1.773
Inorganic	Calcium	mg/kg		1590	1590	1700	3 / 3	1643
Inorganic	Chromium	mg/kg		4.5	4.5	5.2	3 / 3	4.9
Inorganic	Cobalt	mg/kg		6.1	6.1	7.2	3 / 3	6.5
Inorganic	Copper	mg/kg		10.8	10.8	12.8	3 / 3	11.6
Inorganic	Iron	mg/kg		5930	5930	7200	3 / 3	6527
Inorganic	Lead	mg/kg		4.5	4.5	5	3 / 3	4.767
Inorganic	Magnesium	mg/kg		1170	1170	1310	3 / 3	1227
Inorganic	Manganese	mg/kg		1170	1170	1380	3 / 3	1307
Inorganic	Mercury	mg/kg		0.052	0.052	0.066	3 / 3	0.059
Inorganic	Molybdenum	mg/kg		0.71	0.71	0.72	3 / 3	0.7167
Inorganic	Nickel	mg/kg		6.7	6.7	7.4	3 / 3	7.067
Inorganic	Potassium	mg/kg		5680	5680	6200	3 / 3	5933
Inorganic	Selenium	mg/kg		3.7	3.7	4.2	3 / 3	3.933
Inorganic	Silver	mg/kg		0.14	0.14	0.16	3 / 3	0.1467
Inorganic	Sodium	mg/kg		4090	4090	4320	3 / 3	4217
Inorganic	Strontium	mg/kg		4.5	4.5	5.5	3 / 3	4.967
Inorganic	Thallium	mg/kg	0.052 / 0.053	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		6.7	6.7	7.4	3 / 3	7.1
Inorganic	Zinc	mg/kg		218	218	316	3 / 3	279

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix H
2010 Mayfly Sampling Results – Clinch River

Table H- 1: 2010 Mayfly Whole Body Adults (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.6 / 4	ND	ND	ND	0 / 6	0
Inorganic	Antimony	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 6	0
Inorganic	Arsenic	mg/kg		0.15	0.15	0.26	6 / 6	0.1933
Inorganic	Barium	mg/kg		0.39	0.39	0.72	6 / 6	0.5667
Inorganic	Beryllium	mg/kg	0.027 / 0.029	ND	ND	ND	0 / 6	0
Inorganic	Boron	mg/kg	0.38 / 0.41	ND	0.4	0.78	5 / 6	0.682
Inorganic	Cadmium	mg/kg		0.48	0.48	0.7	6 / 6	0.6233
Inorganic	Calcium	mg/kg		764	764	1310	6 / 6	1078
Inorganic	Chromium	mg/kg		0.23	0.23	0.32	6 / 6	0.2617
Inorganic	Cobalt	mg/kg		0.81	0.81	1	6 / 6	0.9117
Inorganic	Copper	mg/kg		17	17	27.5	6 / 6	22.3
Inorganic	Iron	mg/kg		104	104	177	6 / 6	140.8
Inorganic	Lead	mg/kg	0.025 / 0.028	ND	ND	ND	0 / 6	0
Inorganic	Magnesium	mg/kg		993	993	1910	6 / 6	1429
Inorganic	Manganese	mg/kg		1.8	1.8	3.7	6 / 6	2.717
Inorganic	Mercury	mg/kg		0.041	0.041	0.055	6 / 6	0.049
Inorganic	Molybdenum	mg/kg		0.32	0.32	0.5	6 / 6	0.405
Inorganic	Nickel	mg/kg	0.089 / 0.096	ND	ND	ND	0 / 6	0
Inorganic	Potassium	mg/kg		10100	10100	12700	6 / 6	11350
Inorganic	Selenium	mg/kg		5.2	5.2	6.7	6 / 6	5.883
Inorganic	Silver	mg/kg		0.0059	0.0059	0.0098	6 / 6	0.007967
Inorganic	Sodium	mg/kg		3610	3610	4000	6 / 6	3807
Inorganic	Strontium	mg/kg		0.44	0.44	0.83	6 / 6	0.6317
Inorganic	Thallium	mg/kg	0.013 / 0.031	ND	ND	ND	0 / 6	0
Inorganic	Vanadium	mg/kg		0.16	0.16	0.25	6 / 6	0.1983
Inorganic	Zinc	mg/kg		80.1	80.1	205	6 / 6	138

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H- 2: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6930	6930	10900	3 / 3	8970
Inorganic	Antimony	mg/kg		0.19	0.19	0.27	3 / 3	0.2333
Inorganic	Arsenic	mg/kg		11	11	14.6	3 / 3	13.5
Inorganic	Barium	mg/kg		75.9	75.9	104	3 / 3	93.23
Inorganic	Beryllium	mg/kg		0.55	0.55	0.84	3 / 3	0.7267
Inorganic	Boron	mg/kg		6.6	6.6	9	3 / 3	8.167
Inorganic	Cadmium	mg/kg		1.1	1.1	2.1	3 / 3	1.533
Inorganic	Calcium	mg/kg		2510	2510	3030	3 / 3	2963
Inorganic	Chromium	mg/kg		8.7	8.7	13.4	3 / 3	11.3
Inorganic	Cobalt	mg/kg		5.7	5.7	8.3	3 / 3	7.233
Inorganic	Copper	mg/kg		18.6	18.6	23.4	3 / 3	21.73
Inorganic	Iron	mg/kg		7180	7180	11900	3 / 3	9540
Inorganic	Lead	mg/kg		6.7	6.7	10.5	3 / 3	8.8
Inorganic	Magnesium	mg/kg		1440	1440	1800	3 / 3	1677
Inorganic	Manganese	mg/kg		733	733	959	3 / 3	861
Inorganic	Mercury	mg/kg		0.26	0.26	0.31	3 / 3	0.29
Inorganic	Molybdenum	mg/kg		1.2	1.2	1.6	3 / 3	1.567
Inorganic	Nickel	mg/kg		9.6	9.6	14.1	3 / 3	12.13
Inorganic	Potassium	mg/kg		5480	5480	6750	3 / 3	6007
Inorganic	Selenium	mg/kg		6.1	6.1	6.6	3 / 3	6.567
Inorganic	Silver	mg/kg		0.054	0.054	0.08	3 / 3	0.067
Inorganic	Sodium	mg/kg		3290	3290	4680	3 / 3	4090
Inorganic	Strontium	mg/kg		22.7	22.7	31	3 / 3	27.63
Inorganic	Thallium	mg/kg	0.2 / 0.33	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		13.6	13.6	20.7	3 / 3	17.87
Inorganic	Zinc	mg/kg		175	175	194	3 / 3	185.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H- 3: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		453	453	914	3 / 3	663.3
Inorganic	Antimony	mg/kg	0.017 / 0.029	ND	0.042	0.052	2 / 3	0.047
Inorganic	Arsenic	mg/kg		2	2	4.7	3 / 3	3.733
Inorganic	Barium	mg/kg		12.2	12.2	20.7	3 / 3	16.63
Inorganic	Beryllium	mg/kg	0.034 / 0.058	ND	0.051	0.082	2 / 3	0.0665
Inorganic	Boron	mg/kg		2.7	2.7	5.4	3 / 3	4
Inorganic	Cadmium	mg/kg		0.59	0.59	1.8	3 / 3	1.093
Inorganic	Calcium	mg/kg		1980	1980	2410	3 / 3	2227
Inorganic	Chromium	mg/kg		0.87	0.87	1.4	3 / 3	1.083
Inorganic	Cobalt	mg/kg		1.1	1.1	1.4	3 / 3	1.233
Inorganic	Copper	mg/kg		32.4	32.4	34.1	3 / 3	33.03
Inorganic	Iron	mg/kg		536	536	1100	3 / 3	810.3
Inorganic	Lead	mg/kg		2.3	2.3	3.1	3 / 3	2.667
Inorganic	Magnesium	mg/kg		1170	1170	1220	3 / 3	1200
Inorganic	Manganese	mg/kg		136	136	213	3 / 3	174.3
Inorganic	Mercury	mg/kg		0.069	0.069	0.087	3 / 3	0.08067
Inorganic	Molybdenum	mg/kg		1.3	1.3	1.9	3 / 3	1.7
Inorganic	Nickel	mg/kg		1.2	1.2	1.8	3 / 3	1.5
Inorganic	Potassium	mg/kg		9200	9200	9410	3 / 3	9337
Inorganic	Selenium	mg/kg		6.9	6.9	7.4	3 / 3	7.133
Inorganic	Silver	mg/kg		0.028	0.028	0.036	3 / 3	0.03233
Inorganic	Sodium	mg/kg		4970	4970	5510	3 / 3	5213
Inorganic	Strontium	mg/kg		7.3	7.3	9.7	3 / 3	8.667
Inorganic	Thallium	mg/kg	0.03 / 0.039	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		1.3	1.3	2.3	3 / 3	1.767
Inorganic	Zinc	mg/kg		184	184	224	3 / 3	201.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H- 4: 2010 Mayfly Whole Body Adults (Freeze Dried) at Clinch River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.7 / 5	ND	ND	ND	0 / 9	0
Inorganic	Antimony	mg/kg	0.013 / 0.018	ND	ND	ND	0 / 9	0
Inorganic	Arsenic	mg/kg		0.19	0.19	0.28	9 / 9	0.2322
Inorganic	Barium	mg/kg		0.56	0.56	0.92	9 / 9	0.7178
Inorganic	Beryllium	mg/kg	0.027 / 0.037	ND	ND	ND	0 / 9	0
Inorganic	Boron	mg/kg	0.38 / 0.38	ND	0.46	1.4	8 / 9	0.8563
Inorganic	Cadmium	mg/kg		0.2	0.2	0.37	9 / 9	0.29
Inorganic	Calcium	mg/kg		920	920	1490	9 / 9	1299
Inorganic	Chromium	mg/kg	0.12 / 0.68	ND	0.21	0.29	7 / 9	0.2443
Inorganic	Cobalt	mg/kg		0.67	0.67	0.89	9 / 9	0.7711
Inorganic	Copper	mg/kg		11.8	11.8	28.5	9 / 9	18.54
Inorganic	Iron	mg/kg		94.6	94.6	189	9 / 9	131.6
Inorganic	Lead	mg/kg	0.026 / 0.035	ND	ND	ND	0 / 9	0
Inorganic	Magnesium	mg/kg		1000	1000	1940	9 / 9	1573
Inorganic	Manganese	mg/kg		2	2	3.4	9 / 9	2.789
Inorganic	Mercury	mg/kg		0.056	0.056	0.08	9 / 9	0.065
Inorganic	Molybdenum	mg/kg		0.41	0.41	0.69	9 / 9	0.5211
Inorganic	Nickel	mg/kg	0.09 / 0.12	ND	0.33	0.33	1 / 9	0.33
Inorganic	Potassium	mg/kg		9040	9040	13000	9 / 9	10794
Inorganic	Selenium	mg/kg		5.8	5.8	6.6	9 / 9	6.222
Inorganic	Silver	mg/kg		0.0071	0.0071	0.016	9 / 9	0.01144
Inorganic	Sodium	mg/kg		3710	3710	4350	9 / 9	4060
Inorganic	Strontium	mg/kg		0.61	0.61	0.94	9 / 9	0.7089
Inorganic	Thallium	mg/kg	0.017 / 0.041	ND	ND	ND	0 / 9	0
Inorganic	Vanadium	mg/kg		0.17	0.17	0.25	9 / 9	0.2067
Inorganic	Zinc	mg/kg		91.4	91.4	212	9 / 9	164.8

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H- 5: 2010 Mayfly Whole Body Adults (Wet Weight) at Clinch River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.5 / 4.1	ND	ND	ND	0 / 6	0
Inorganic	Antimony	mg/kg	0.013 / 0.015	ND	ND	ND	0 / 6	0
Inorganic	Arsenic	mg/kg		0.13	0.13	0.22	6 / 6	0.185
Inorganic	Barium	mg/kg		0.39	0.39	0.74	6 / 6	0.5533
Inorganic	Beryllium	mg/kg	0.026 / 0.03	ND	ND	ND	0 / 6	0
Inorganic	Boron	mg/kg		0.5	0.5	0.95	6 / 6	0.73
Inorganic	Cadmium	mg/kg		0.076	0.076	0.12	6 / 6	0.1017
Inorganic	Calcium	mg/kg		342	342	665	6 / 6	466.8
Inorganic	Chromium	mg/kg	0.11 / 0.13	ND	0.12	0.13	3 / 6	0.1267
Inorganic	Cobalt	mg/kg		0.24	0.24	0.36	6 / 6	0.2767
Inorganic	Copper	mg/kg		5.1	5.1	8.2	6 / 6	6.8
Inorganic	Iron	mg/kg		39.3	39.3	56.5	6 / 6	48.68
Inorganic	Lead	mg/kg	0.025 / 0.029	ND	ND	ND	0 / 6	0
Inorganic	Magnesium	mg/kg		305	305	865	6 / 6	550.3
Inorganic	Manganese	mg/kg		0.64	0.64	1.4	6 / 6	0.9917
Inorganic	Mercury	mg/kg		0.023	0.023	0.028	6 / 6	0.02533
Inorganic	Molybdenum	mg/kg		0.12	0.12	0.22	6 / 6	0.1667
Inorganic	Nickel	mg/kg	0.087 / 0.1	ND	ND	ND	0 / 6	0
Inorganic	Potassium	mg/kg		3550	3550	3920	6 / 6	3713
Inorganic	Selenium	mg/kg		1.8	1.8	2.6	6 / 6	2.167
Inorganic	Silver	mg/kg		0.0029	0.0029	0.0053	6 / 6	0.004133
Inorganic	Sodium	mg/kg		1210	1210	1490	6 / 6	1343
Inorganic	Strontium	mg/kg		0.23	0.23	0.33	6 / 6	0.275
Inorganic	Thallium	mg/kg	0.012 / 0.014	ND	ND	ND	0 / 6	0
Inorganic	Vanadium	mg/kg		0.061	0.061	0.086	6 / 6	0.07183
Inorganic	Zinc	mg/kg		30.7	30.7	89.8	6 / 6	57.17
Physical Properties	% Moisture	%		59.4	59.4	70.5	6 / 6	65.1

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table H- 6: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at Clinch River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		8440	8440	9120	3 / 3	8870
Inorganic	Antimony	mg/kg		0.23	0.23	0.25	3 / 3	0.24
Inorganic	Arsenic	mg/kg		13.1	13.1	16.4	3 / 3	14.57
Inorganic	Barium	mg/kg		91.5	91.5	96.9	3 / 3	94.73
Inorganic	Beryllium	mg/kg		0.69	0.69	0.77	3 / 3	0.74
Inorganic	Boron	mg/kg		6.2	6.2	7.2	3 / 3	6.8
Inorganic	Cadmium	mg/kg		0.76	0.76	1.2	3 / 3	1.02
Inorganic	Calcium	mg/kg		2760	2760	2950	3 / 3	2830
Inorganic	Chromium	mg/kg		10.7	10.7	11.7	3 / 3	11.33
Inorganic	Cobalt	mg/kg		7	7	7.7	3 / 3	7.467
Inorganic	Copper	mg/kg		19.3	19.3	21	3 / 3	20.67
Inorganic	Iron	mg/kg		8970	8970	9560	3 / 3	9317
Inorganic	Lead	mg/kg		8.1	8.1	8.9	3 / 3	8.733
Inorganic	Magnesium	mg/kg		1580	1580	1670	3 / 3	1637
Inorganic	Manganese	mg/kg		745	745	807	3 / 3	782.7
Inorganic	Mercury	mg/kg		0.26	0.26	0.3	3 / 3	0.2867
Inorganic	Molybdenum	mg/kg		1.5	1.5	1.6	3 / 3	1.567
Inorganic	Nickel	mg/kg		11.6	11.6	12.4	3 / 3	12.23
Inorganic	Potassium	mg/kg	4050 / 8310	ND	5830	6110	1 / 3	6110
Inorganic	Selenium	mg/kg		6.6	6.6	7.4	3 / 3	7.033
Inorganic	Silver	mg/kg		0.061	0.061	0.065	3 / 3	0.06333
Inorganic	Sodium	mg/kg		3890	3890	4390	3 / 3	4170
Inorganic	Strontium	mg/kg		25.9	25.9	31.1	3 / 3	28.63
Inorganic	Thallium	mg/kg	0.28 / 0.31	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		17	17	18.9	3 / 3	18.17
Inorganic	Zinc	mg/kg		172	172	182	3 / 3	177.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H- 7: 2010 Mayfly Whole Body Nymphs (Wet Weight) at Clinch River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		2230	2230	2530	3 / 3	2363
Inorganic	Antimony	mg/kg		0.065	0.065	0.077	3 / 3	0.06967
Inorganic	Arsenic	mg/kg		3.6	3.6	7.5	3 / 3	5.033
Inorganic	Barium	mg/kg		24.4	24.4	28.7	3 / 3	25.93
Inorganic	Beryllium	mg/kg		0.19	0.19	0.23	3 / 3	0.2067
Inorganic	Boron	mg/kg		2.1	2.1	2.2	3 / 3	2.167
Inorganic	Cadmium	mg/kg		0.21	0.21	0.42	3 / 3	0.31
Inorganic	Calcium	mg/kg		694	694	948	3 / 3	784.7
Inorganic	Chromium	mg/kg		2.9	2.9	3.4	3 / 3	3.1
Inorganic	Cobalt	mg/kg		1.8	1.8	2.3	3 / 3	1.967
Inorganic	Copper	mg/kg		4.9	4.9	6.1	3 / 3	5.4
Inorganic	Iron	mg/kg		2280	2280	2810	3 / 3	2463
Inorganic	Lead	mg/kg		2.2	2.2	2.6	3 / 3	2.367
Inorganic	Magnesium	mg/kg		386	386	498	3 / 3	425.3
Inorganic	Manganese	mg/kg		185	185	205	3 / 3	194
Inorganic	Mercury	mg/kg		0.07	0.07	0.083	3 / 3	0.07833
Inorganic	Molybdenum	mg/kg		0.35	0.35	0.44	3 / 3	0.4
Inorganic	Nickel	mg/kg		3.1	3.1	3.8	3 / 3	3.333
Inorganic	Potassium	mg/kg	1490 / 3600	ND	ND	ND	0 / 3	0
Inorganic	Selenium	mg/kg		1.6	1.6	2.2	3 / 3	1.833
Inorganic	Silver	mg/kg		0.016	0.016	0.018	3 / 3	0.01667
Inorganic	Sodium	mg/kg		825	825	1350	3 / 3	1026
Inorganic	Strontium	mg/kg		7.5	7.5	9.3	3 / 3	8.2
Inorganic	Thallium	mg/kg	0.072 / 0.084	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		4.7	4.7	5.4	3 / 3	4.933
Inorganic	Zinc	mg/kg		39.6	39.6	61	3 / 3	48.17
Physical Properties	% Moisture	%		74.7	74.7	79.1	3 / 3	77.4

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table H- 8: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Clinch River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		737	737	1450	3 / 3	1132
Inorganic	Antimony	mg/kg		0.046	0.046	0.075	3 / 3	0.06433
Inorganic	Arsenic	mg/kg		3.7	3.7	5.3	3 / 3	4.5
Inorganic	Barium	mg/kg		18.8	18.8	24.5	3 / 3	22.3
Inorganic	Beryllium	mg/kg		0.058	0.058	0.13	3 / 3	0.1027
Inorganic	Boron	mg/kg		2.2	2.2	4.1	3 / 3	3.333
Inorganic	Cadmium	mg/kg		1.1	1.1	1.4	3 / 3	1.233
Inorganic	Calcium	mg/kg		2400	2400	2530	3 / 3	2480
Inorganic	Chromium	mg/kg		1.2	1.2	2.2	3 / 3	1.767
Inorganic	Cobalt	mg/kg		1.4	1.4	1.8	3 / 3	1.6
Inorganic	Copper	mg/kg		30	30	35.1	3 / 3	31.8
Inorganic	Iron	mg/kg		908	908	1520	3 / 3	1236
Inorganic	Lead	mg/kg		2.5	2.5	3.3	3 / 3	2.967
Inorganic	Magnesium	mg/kg		1130	1130	1300	3 / 3	1230
Inorganic	Manganese	mg/kg		186	186	215	3 / 3	200.7
Inorganic	Mercury	mg/kg		0.084	0.084	0.099	3 / 3	0.09033
Inorganic	Molybdenum	mg/kg		1.4	1.4	1.6	3 / 3	1.533
Inorganic	Nickel	mg/kg		1.6	1.6	2.5	3 / 3	2.133
Inorganic	Potassium	mg/kg		8980	8980	9050	3 / 3	9013
Inorganic	Selenium	mg/kg		7.6	7.6	8.3	3 / 3	7.9
Inorganic	Silver	mg/kg		0.022	0.022	0.05	3 / 3	0.03367
Inorganic	Sodium	mg/kg		4250	4250	5290	3 / 3	4670
Inorganic	Strontium	mg/kg		9	9	12.3	3 / 3	11.1
Inorganic	Thallium	mg/kg	0.034 / 0.061	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		2	2	3.6	3 / 3	2.9
Inorganic	Zinc	mg/kg		197	197	205	3 / 3	201.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H- 9: 2010 Mayfly Purged Whole Body Nymphs (Wet Weight) at Clinch River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		101	101	528	3 / 3	269.7
Inorganic	Antimony	mg/kg	0.014 / 0.015	ND	0.023	0.023	1 / 3	0.023
Inorganic	Arsenic	mg/kg		0.69	0.69	1.5	3 / 3	1.053
Inorganic	Barium	mg/kg		4.6	4.6	8.2	3 / 3	6
Inorganic	Beryllium	mg/kg	0.028 / 0.03	ND	0.045	0.045	1 / 3	0.045
Inorganic	Boron	mg/kg		1.5	1.5	1.9	3 / 3	1.7
Inorganic	Cadmium	mg/kg		0.25	0.25	0.43	3 / 3	0.3467
Inorganic	Calcium	mg/kg		457	457	582	3 / 3	516.7
Inorganic	Chromium	mg/kg		0.22	0.22	0.76	3 / 3	0.44
Inorganic	Cobalt	mg/kg		0.19	0.19	0.56	3 / 3	0.3467
Inorganic	Copper	mg/kg		5.1	5.1	5.7	3 / 3	5.467
Inorganic	Iron	mg/kg		123	123	519	3 / 3	276.7
Inorganic	Lead	mg/kg		0.31	0.31	0.84	3 / 3	0.56
Inorganic	Magnesium	mg/kg		224	224	283	3 / 3	249
Inorganic	Manganese	mg/kg		31.2	31.2	66.2	3 / 3	44.7
Inorganic	Mercury	mg/kg		0.015	0.015	0.033	3 / 3	0.022
Inorganic	Molybdenum	mg/kg		0.28	0.28	0.36	3 / 3	0.3267
Inorganic	Nickel	mg/kg		0.28	0.28	0.86	3 / 3	0.5133
Inorganic	Potassium	mg/kg		1580	1580	1790	3 / 3	1660
Inorganic	Selenium	mg/kg		1.4	1.4	1.6	3 / 3	1.533
Inorganic	Silver	mg/kg		0.0047	0.0047	0.011	3 / 3	0.007333
Inorganic	Sodium	mg/kg		837	837	982	3 / 3	911.7
Inorganic	Strontium	mg/kg		2	2	3.6	3 / 3	2.633
Inorganic	Thallium	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.27	0.27	1.2	3 / 3	0.66
Inorganic	Zinc	mg/kg		37	37	46	3 / 3	42.53
Physical Properties	% Moisture	%		80.9	80.9	83.1	3 / 3	81.73

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table H-10: 2010 Mayfly Whole Body Adults (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.9 / 4.2	ND	5.2	5.2	1 / 6	5.2
Inorganic	Antimony	mg/kg	0.014 / 0.015	ND	ND	ND	0 / 6	0
Inorganic	Arsenic	mg/kg		0.11	0.11	0.14	6 / 6	0.1233
Inorganic	Barium	mg/kg		0.54	0.54	0.68	6 / 6	0.625
Inorganic	Beryllium	mg/kg	0.029 / 0.031	ND	ND	ND	0 / 6	0
Inorganic	Boron	mg/kg		0.44	0.44	0.77	6 / 6	0.5317
Inorganic	Cadmium	mg/kg		0.3	0.3	0.4	6 / 6	0.3533
Inorganic	Calcium	mg/kg		878	878	1090	6 / 6	979.7
Inorganic	Chromium	mg/kg	0.55 / 1.3	ND	12.7	12.7	1 / 6	12.7
Inorganic	Cobalt	mg/kg		0.76	0.76	0.82	6 / 6	0.7917
Inorganic	Copper	mg/kg		26.3	26.3	27.9	6 / 6	27.3
Inorganic	Iron	mg/kg		177	177	185	6 / 6	180.2
Inorganic	Lead	mg/kg	0.027 / 0.029	ND	ND	ND	0 / 6	0
Inorganic	Magnesium	mg/kg		921	921	946	6 / 6	936.5
Inorganic	Manganese	mg/kg		2	2	2.9	6 / 6	2.283
Inorganic	Mercury	mg/kg		0.1	0.1	0.13	6 / 6	0.1133
Inorganic	Molybdenum	mg/kg		0.34	0.34	0.37	6 / 6	0.3517
Inorganic	Nickel	mg/kg	0.095 / 0.1	ND	ND	ND	0 / 6	0
Inorganic	Potassium	mg/kg		12100	12100	12400	6 / 6	12217
Inorganic	Selenium	mg/kg		3.7	3.7	4.1	6 / 6	3.883
Inorganic	Silver	mg/kg		0.024	0.024	0.028	6 / 6	0.02633
Inorganic	Sodium	mg/kg		3900	3900	4090	6 / 6	4037
Inorganic	Strontium	mg/kg		0.58	0.58	0.74	6 / 6	0.6983
Inorganic	Thallium	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 6	0
Inorganic	Vanadium	mg/kg		0.12	0.12	0.14	6 / 6	0.1283
Inorganic	Zinc	mg/kg		88	88	98.7	6 / 6	93.77

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H-11: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6610	6610	7620	3 / 3	7150
Inorganic	Antimony	mg/kg		0.091	0.091	0.098	3 / 3	0.094
Inorganic	Arsenic	mg/kg		4.7	4.7	5.2	3 / 3	4.967
Inorganic	Barium	mg/kg		56.4	56.4	59.8	3 / 3	57.7
Inorganic	Beryllium	mg/kg		0.33	0.33	0.36	3 / 3	0.3433
Inorganic	Boron	mg/kg		5.7	5.7	7.9	3 / 3	6.7
Inorganic	Cadmium	mg/kg		0.74	0.74	0.95	3 / 3	0.87
Inorganic	Calcium	mg/kg		3030	3030	3240	3 / 3	3113
Inorganic	Chromium	mg/kg		9	9	9.9	3 / 3	9.367
Inorganic	Cobalt	mg/kg		5.7	5.7	6.2	3 / 3	5.967
Inorganic	Copper	mg/kg		18.3	18.3	19.3	3 / 3	18.93
Inorganic	Iron	mg/kg		8640	8640	9230	3 / 3	8930
Inorganic	Lead	mg/kg		9.2	9.2	9.8	3 / 3	9.5
Inorganic	Magnesium	mg/kg		1860	1860	1970	3 / 3	1927
Inorganic	Manganese	mg/kg		905	905	1040	3 / 3	969.3
Inorganic	Mercury	mg/kg		0.81	0.81	1.2	3 / 3	1.037
Inorganic	Molybdenum	mg/kg		0.67	0.67	0.79	3 / 3	0.7467
Inorganic	Nickel	mg/kg		9.6	9.6	10.4	3 / 3	9.9
Inorganic	Potassium	mg/kg		6900	6900	7940	3 / 3	7457
Inorganic	Selenium	mg/kg		4.2	4.2	4.6	3 / 3	4.467
Inorganic	Silver	mg/kg	0.057 / 0.095	ND	ND	ND	0 / 3	0
Inorganic	Sodium	mg/kg		5180	5180	5910	3 / 3	5467
Inorganic	Strontium	mg/kg		8.9	8.9	9.4	3 / 3	9.167
Inorganic	Thallium	mg/kg	0.094 / 0.11	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		10.9	10.9	11.9	3 / 3	11.33
Inorganic	Zinc	mg/kg		168	168	197	3 / 3	184

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table H-12: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		258	258	374	3 / 3	316
Inorganic	Antimony	mg/kg	0.02 / 0.021	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		1.5	1.5	2.2	3 / 3	1.933
Inorganic	Barium	mg/kg		6.1	6.1	6.8	3 / 3	6.433
Inorganic	Beryllium	mg/kg	0.042 / 0.079	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		2.6	2.6	6.7	3 / 3	4.833
Inorganic	Cadmium	mg/kg		0.97	0.97	2.1	3 / 3	1.39
Inorganic	Calcium	mg/kg		2300	2300	2380	3 / 3	2333
Inorganic	Chromium	mg/kg		0.52	0.52	0.7	3 / 3	0.6267
Inorganic	Cobalt	mg/kg		0.93	0.93	1.7	3 / 3	1.187
Inorganic	Copper	mg/kg		35.8	35.8	40.4	3 / 3	37.77
Inorganic	Iron	mg/kg		412	412	593	3 / 3	522
Inorganic	Lead	mg/kg		2.8	2.8	3.2	3 / 3	3
Inorganic	Magnesium	mg/kg		1260	1260	1310	3 / 3	1287
Inorganic	Manganese	mg/kg		91.8	91.8	138	3 / 3	113.3
Inorganic	Mercury	mg/kg		0.13	0.13	0.16	3 / 3	0.15
Inorganic	Molybdenum	mg/kg		0.89	0.89	0.92	3 / 3	0.9067
Inorganic	Nickel	mg/kg		1.1	1.1	1.2	3 / 3	1.133
Inorganic	Potassium	mg/kg		8700	8700	9920	3 / 3	9290
Inorganic	Selenium	mg/kg		4	4	4.5	3 / 3	4.2
Inorganic	Silver	mg/kg		0.027	0.027	0.037	3 / 3	0.03067
Inorganic	Sodium	mg/kg		3380	3380	5380	3 / 3	4627
Inorganic	Strontium	mg/kg		4	4	5.3	3 / 3	4.767
Inorganic	Thallium	mg/kg	0.02 / 0.04	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.58	0.58	0.82	3 / 3	0.7
Inorganic	Zinc	mg/kg		245	245	324	3 / 3	276.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix I
2010 Mayfly Sampling Results – Tennessee River

Table I-1: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at Tennessee River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		8060	8060	10900	3 / 3	9787
Inorganic	Antimony	mg/kg		0.15	0.15	0.16	3 / 3	0.1567
Inorganic	Arsenic	mg/kg		9.3	9.3	11	3 / 3	10.3
Inorganic	Barium	mg/kg		66.1	66.1	86.2	3 / 3	79
Inorganic	Beryllium	mg/kg		0.44	0.44	0.66	3 / 3	0.5533
Inorganic	Boron	mg/kg	3.8 / 3.8	ND	5.3	5.6	2 / 3	5.45
Inorganic	Cadmium	mg/kg		0.76	0.76	1.6	3 / 3	1.1
Inorganic	Calcium	mg/kg		2370	2370	2710	3 / 3	2560
Inorganic	Chromium	mg/kg		9.3	9.3	12.2	3 / 3	11.07
Inorganic	Cobalt	mg/kg		6.7	6.7	7.8	3 / 3	7.433
Inorganic	Copper	mg/kg		19.7	19.7	21.7	3 / 3	20.9
Inorganic	Iron	mg/kg		9040	9040	11700	3 / 3	10780
Inorganic	Lead	mg/kg		8	8	10.4	3 / 3	9.5
Inorganic	Magnesium	mg/kg		1840	1840	1930	3 / 3	1897
Inorganic	Manganese	mg/kg		1190	1190	1500	3 / 3	1373
Inorganic	Mercury	mg/kg		0.14	0.14	0.17	3 / 3	0.16
Inorganic	Molybdenum	mg/kg		0.93	0.93	0.97	3 / 3	0.9433
Inorganic	Nickel	mg/kg		8.4	8.4	10.8	3 / 3	9.9
Inorganic	Potassium	mg/kg	6660 / 7430	ND	7040	7040	1 / 3	7040
Inorganic	Selenium	mg/kg		4.9	4.9	5.9	3 / 3	5.467
Inorganic	Silver	mg/kg		0.043	0.043	0.077	3 / 3	0.06133
Inorganic	Sodium	mg/kg		4920	4920	5720	3 / 3	5357
Inorganic	Strontium	mg/kg		17.3	17.3	20.9	3 / 3	19.53
Inorganic	Thallium	mg/kg		0.13	0.13	0.16	3 / 3	0.1467
Inorganic	Vanadium	mg/kg		14	14	18.3	3 / 3	16.6
Inorganic	Zinc	mg/kg		218	218	292	3 / 3	251

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table I-2: 2010 Mayfly Whole Body Adults (Freeze Dried) at Tennessee River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.9 / 4.3	ND	ND	ND	0 / 18	0
Inorganic	Antimony	mg/kg	0.014 / 0.015	ND	ND	ND	0 / 18	0
Inorganic	Arsenic	mg/kg		0.11	0.11	0.23	18 / 18	0.1494
Inorganic	Barium	mg/kg		0.4	0.4	0.83	18 / 18	0.67
Inorganic	Beryllium	mg/kg	0.028 / 0.064	ND	ND	ND	0 / 18	0
Inorganic	Boron	mg/kg	0.4 / 0.44	ND	0.44	0.66	4 / 18	0.5475
Inorganic	Cadmium	mg/kg		0.11	0.11	0.38	18 / 18	0.2444
Inorganic	Calcium	mg/kg		850	850	1450	18 / 18	1133
Inorganic	Chromium	mg/kg		0.14	0.14	0.28	18 / 18	0.2006
Inorganic	Cobalt	mg/kg		0.75	0.75	1.1	18 / 18	0.9228
Inorganic	Copper	mg/kg		11.3	11.3	28.2	18 / 18	20.39
Inorganic	Iron	mg/kg		76.9	76.9	184	18 / 18	135
Inorganic	Lead	mg/kg	0.027 / 0.03	ND	ND	ND	0 / 18	0
Inorganic	Magnesium	mg/kg		932	932	1950	18 / 18	1264
Inorganic	Manganese	mg/kg		1.9	1.9	5.3	18 / 18	2.906
Inorganic	Mercury	mg/kg		0.026	0.026	0.057	18 / 18	0.04244
Inorganic	Molybdenum	mg/kg		0.34	0.34	0.66	18 / 18	0.5017
Inorganic	Nickel	mg/kg	0.094 / 0.1	ND	ND	ND	0 / 18	0
Inorganic	Potassium	mg/kg		7990	7990	12800	18 / 18	10344
Inorganic	Selenium	mg/kg		3.3	3.3	5.3	18 / 18	3.906
Inorganic	Silver	mg/kg	0.0028 / 0.015	ND	0.0078	0.023	12 / 18	0.01682
Inorganic	Sodium	mg/kg		3230	3230	4950	18 / 18	4049
Inorganic	Strontium	mg/kg		0.55	0.55	1.1	18 / 18	0.7883
Inorganic	Thallium	mg/kg	0.013 / 0.033	ND	ND	ND	0 / 18	0
Inorganic	Vanadium	mg/kg		0.08	0.08	0.21	18 / 18	0.1495
Inorganic	Zinc	mg/kg		89.1	89.1	213	18 / 18	131.9

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table I-3: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at Tennessee River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		9250	9250	10700	3 / 3	9810
Inorganic	Antimony	mg/kg		0.16	0.16	0.18	3 / 3	0.17
Inorganic	Arsenic	mg/kg		9.1	9.1	10.4	3 / 3	9.633
Inorganic	Barium	mg/kg		73.1	73.1	87.6	3 / 3	81.17
Inorganic	Beryllium	mg/kg		0.42	0.42	0.62	3 / 3	0.51
Inorganic	Boron	mg/kg		6.6	6.6	7.4	3 / 3	6.967
Inorganic	Cadmium	mg/kg		0.96	0.96	1.7	3 / 3	1.387
Inorganic	Calcium	mg/kg		2470	2470	2710	3 / 3	2583
Inorganic	Chromium	mg/kg		10.6	10.6	12.1	3 / 3	11.17
Inorganic	Cobalt	mg/kg		6.3	6.3	7.2	3 / 3	6.633
Inorganic	Copper	mg/kg		20.2	20.2	21.4	3 / 3	20.77
Inorganic	Iron	mg/kg		10300	10300	11400	3 / 3	10700
Inorganic	Lead	mg/kg		8.9	8.9	10.1	3 / 3	9.333
Inorganic	Magnesium	mg/kg		1720	1720	1900	3 / 3	1810
Inorganic	Manganese	mg/kg		979	979	1460	3 / 3	1276
Inorganic	Mercury	mg/kg		0.11	0.11	0.13	3 / 3	0.1233
Inorganic	Molybdenum	mg/kg		0.88	0.88	1.3	3 / 3	1.093
Inorganic	Nickel	mg/kg		9.3	9.3	10.6	3 / 3	9.767
Inorganic	Potassium	mg/kg	8950 / 10200	ND	ND	ND	0 / 3	0
Inorganic	Selenium	mg/kg		5.6	5.6	6	3 / 3	5.8
Inorganic	Silver	mg/kg	0.036 / 0.136	ND	0.039	0.039	1 / 3	0.039
Inorganic	Sodium	mg/kg		5290	5290	6170	3 / 3	5620
Inorganic	Strontium	mg/kg		19.5	19.5	22.4	3 / 3	20.7
Inorganic	Thallium	mg/kg	0.017 / 0.16	ND	0.19	0.19	1 / 3	0.19
Inorganic	Vanadium	mg/kg		16.2	16.2	18.4	3 / 3	16.97
Inorganic	Zinc	mg/kg		193	193	240	3 / 3	220.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table I-4: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at Tennessee River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		313	313	780	3 / 3	560.7
Inorganic	Antimony	mg/kg		0.022	0.022	0.029	3 / 3	0.02433
Inorganic	Arsenic	mg/kg		1.6	1.6	2.2	3 / 3	1.833
Inorganic	Barium	mg/kg		7	7	10.4	3 / 3	8.567
Inorganic	Beryllium	mg/kg	0.083 / 0.096	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		2.6	2.6	4.7	3 / 3	3.333
Inorganic	Cadmium	mg/kg		1.5	1.5	3	3 / 3	2.333
Inorganic	Calcium	mg/kg		1850	1850	2140	3 / 3	2007
Inorganic	Chromium	mg/kg		0.64	0.64	1.2	3 / 3	0.98
Inorganic	Cobalt	mg/kg		1.4	1.4	1.6	3 / 3	1.5
Inorganic	Copper	mg/kg		27.7	27.7	32.7	3 / 3	29.9
Inorganic	Iron	mg/kg		399	399	913	3 / 3	681.7
Inorganic	Lead	mg/kg		2.3	2.3	2.9	3 / 3	2.7
Inorganic	Magnesium	mg/kg		1170	1170	1190	3 / 3	1180
Inorganic	Manganese	mg/kg		75.9	75.9	153	3 / 3	106.1
Inorganic	Mercury	mg/kg		0.036	0.036	0.045	3 / 3	0.04067
Inorganic	Molybdenum	mg/kg		0.61	0.61	0.82	3 / 3	0.74
Inorganic	Nickel	mg/kg		0.82	0.82	1.3	3 / 3	1.073
Inorganic	Potassium	mg/kg		8730	8730	9060	3 / 3	8927
Inorganic	Selenium	mg/kg		3.3	3.3	3.9	3 / 3	3.633
Inorganic	Silver	mg/kg	0.004 / 0.027	ND	0.03	0.03	1 / 3	0.03
Inorganic	Sodium	mg/kg		3590	3590	4850	3 / 3	4047
Inorganic	Strontium	mg/kg		4.5	4.5	5.2	3 / 3	4.9
Inorganic	Thallium	mg/kg	0.019 / 0.032	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.72	0.72	1.5	3 / 3	1.14
Inorganic	Zinc	mg/kg		275	275	353	3 / 3	315

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table I-5: 2010 Mayfly Whole Body Adults (Freeze Dried) at the Tennessee River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.7 / 4.1	ND	6.2	7.7	3 / 9	6.8
Inorganic	Antimony	mg/kg	0.013 / 0.015	ND	0.025	0.025	1 / 9	0.025
Inorganic	Arsenic	mg/kg		0.09	0.09	0.26	9 / 9	0.1733
Inorganic	Barium	mg/kg		0.78	0.78	1.4	9 / 9	1.011
Inorganic	Beryllium	mg/kg	0.027 / 0.061	ND	ND	ND	0 / 9	0
Inorganic	Boron	mg/kg	0.38 / 0.4	ND	0.69	1.5	8 / 9	1.008
Inorganic	Cadmium	mg/kg		0.25	0.25	0.42	9 / 9	0.3333
Inorganic	Calcium	mg/kg		978	978	1870	9 / 9	1363
Inorganic	Chromium	mg/kg		0.22	0.22	0.28	9 / 9	0.2389
Inorganic	Cobalt	mg/kg		0.77	0.77	1.2	9 / 9	0.98
Inorganic	Copper	mg/kg		13.8	13.8	27.1	9 / 9	21.99
Inorganic	Iron	mg/kg		92.2	92.2	182	9 / 9	147.3
Inorganic	Lead	mg/kg	0.026 / 0.029	ND	0.11	0.11	1 / 9	0.11
Inorganic	Magnesium	mg/kg		919	919	2330	9 / 9	1467
Inorganic	Manganese	mg/kg		2	2	6.7	9 / 9	3.489
Inorganic	Mercury	mg/kg		0.018	0.018	0.04	9 / 9	0.029
Inorganic	Molybdenum	mg/kg		0.33	0.33	0.47	9 / 9	0.4056
Inorganic	Nickel	mg/kg	0.09 / 0.1	ND	0.15	0.15	1 / 9	0.15
Inorganic	Potassium	mg/kg		10200	10200	13300	9 / 9	11733
Inorganic	Selenium	mg/kg		1.5	1.5	2	9 / 9	1.767
Inorganic	Silver	mg/kg		0.029	0.029	0.069	9 / 9	0.05167
Inorganic	Sodium	mg/kg		3970	3970	5750	9 / 9	4748
Inorganic	Strontium	mg/kg		0.58	0.58	1.3	9 / 9	0.8822
Inorganic	Thallium	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 9	0
Inorganic	Vanadium	mg/kg		0.095	0.095	0.14	9 / 9	0.1094
Inorganic	Zinc	mg/kg		94.4	94.4	216	9 / 9	133.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table I-6: 2010 Mayfly Whole Body Nymphs (Freeze Dried) at the Tennessee River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6710	6710	9420	3 / 3	8160
Inorganic	Antimony	mg/kg		0.078	0.078	0.1	3 / 3	0.08967
Inorganic	Arsenic	mg/kg		4.4	4.4	6	3 / 3	5.4
Inorganic	Barium	mg/kg		58.1	58.1	87	3 / 3	72.93
Inorganic	Beryllium	mg/kg		0.29	0.29	0.4	3 / 3	0.3467
Inorganic	Boron	mg/kg		2.2	2.2	3.4	3 / 3	2.967
Inorganic	Cadmium	mg/kg		1.1	1.1	1.3	3 / 3	1.2
Inorganic	Calcium	mg/kg		1930	1930	2280	3 / 3	2130
Inorganic	Chromium	mg/kg		7.5	7.5	10.6	3 / 3	9.1
Inorganic	Cobalt	mg/kg		4.4	4.4	6	3 / 3	5.267
Inorganic	Copper	mg/kg		12	12	15	3 / 3	13.6
Inorganic	Iron	mg/kg		8290	8290	12000	3 / 3	10230
Inorganic	Lead	mg/kg		8.3	8.3	12.1	3 / 3	10.3
Inorganic	Magnesium	mg/kg		1440	1440	1750	3 / 3	1597
Inorganic	Manganese	mg/kg		861	861	1540	3 / 3	1264
Inorganic	Mercury	mg/kg		0.051	0.051	0.066	3 / 3	0.058
Inorganic	Molybdenum	mg/kg		0.51	0.51	0.69	3 / 3	0.5867
Inorganic	Nickel	mg/kg		5.7	5.7	8	3 / 3	6.933
Inorganic	Potassium	mg/kg		5420	5420	6170	3 / 3	5987
Inorganic	Selenium	mg/kg		4	4	4.8	3 / 3	4.5
Inorganic	Silver	mg/kg	0.055 / 0.073	ND	ND	ND	0 / 3	0
Inorganic	Sodium	mg/kg		2980	2980	3620	3 / 3	3403
Inorganic	Strontium	mg/kg		7.2	7.2	8.9	3 / 3	8.267
Inorganic	Thallium	mg/kg	0.083 / 0.13	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		10.7	10.7	15.1	3 / 3	13.03
Inorganic	Zinc	mg/kg		196	196	214	3 / 3	212.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table I-7: 2010 Mayfly Purged Whole Body Nymphs (Freeze Dried) at the Tennessee River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		767	767	1730	3 / 3	1169
Inorganic	Antimony	mg/kg		0.025	0.025	0.036	3 / 3	0.03
Inorganic	Arsenic	mg/kg		1.1	1.1	1.8	3 / 3	1.433
Inorganic	Barium	mg/kg		10	10	15.6	3 / 3	12
Inorganic	Beryllium	mg/kg	0.038 / 0.053	ND	0.069	0.069	1 / 3	0.069
Inorganic	Boron	mg/kg		1.6	1.6	2.4	3 / 3	1.933
Inorganic	Cadmium	mg/kg		1.5	1.5	2.1	3 / 3	1.767
Inorganic	Calcium	mg/kg		2090	2090	2360	3 / 3	2227
Inorganic	Chromium	mg/kg		1.1	1.1	2.1	3 / 3	1.533
Inorganic	Cobalt	mg/kg		1.3	1.3	1.7	3 / 3	1.567
Inorganic	Copper	mg/kg		24.9	24.9	28.2	3 / 3	26.8
Inorganic	Iron	mg/kg		965	965	2270	3 / 3	1532
Inorganic	Lead	mg/kg		3.6	3.6	4.7	3 / 3	4.3
Inorganic	Magnesium	mg/kg		1110	1110	1150	3 / 3	1130
Inorganic	Manganese	mg/kg		153	153	321	3 / 3	218.3
Inorganic	Mercury	mg/kg		0.032	0.032	0.04	3 / 3	0.037
Inorganic	Molybdenum	mg/kg		0.5	0.5	0.56	3 / 3	0.5233
Inorganic	Nickel	mg/kg		1.1	1.1	1.8	3 / 3	1.4
Inorganic	Potassium	mg/kg		7970	7970	9190	3 / 3	8383
Inorganic	Selenium	mg/kg		2	2	2.3	3 / 3	2.2
Inorganic	Silver	mg/kg		0.045	0.045	0.051	3 / 3	0.04733
Inorganic	Sodium	mg/kg		3720	3720	4170	3 / 3	3897
Inorganic	Strontium	mg/kg		3.9	3.9	4.7	3 / 3	4.367
Inorganic	Thallium	mg/kg	0.02 / 0.027	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		1.3	1.3	2.7	3 / 3	1.9
Inorganic	Zinc	mg/kg		306	306	354	3 / 3	322.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix J
2009 Snail Sampling Results – Emory River

Table J-1: 2009 Snail Purged Whole Body Samples (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		31.9	31.9	92.2	4 / 4	56.78
Inorganic	Antimony	mg/kg	0.018 / 0.024	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		7.8	7.8	12	4 / 4	10.2
Inorganic	Barium	mg/kg		14.4	14.4	24.1	4 / 4	18.63
Inorganic	Beryllium	mg/kg		0.0079	0.0079	0.03	4 / 4	0.01898
Inorganic	Boron	mg/kg	0.061 / 1.1	ND	1.3	1.8	2 / 4	1.55
Inorganic	Cadmium	mg/kg		0.96	0.96	1.3	4 / 4	1.14
Inorganic	Calcium	mg/kg		25600	25600	38300	4 / 4	31150
Inorganic	Chromium	mg/kg		0.67	0.67	1.8	4 / 4	1.185
Inorganic	Cobalt	mg/kg		6.5	6.5	16	4 / 4	11.15
Inorganic	Copper	mg/kg		84.4	84.4	118	4 / 4	107.6
Inorganic	Iron	mg/kg		243	243	597	4 / 4	457
Inorganic	Lead	mg/kg		0.26	0.26	0.48	4 / 4	0.3475
Inorganic	Magnesium	mg/kg		9220	9220	13200	4 / 4	10880
Inorganic	Manganese	mg/kg		103	103	449	4 / 4	246.3
Inorganic	Mercury	mg/kg		0.037	0.037	0.081	4 / 4	0.0605
Inorganic	Molybdenum	mg/kg		0.36	0.36	0.8	4 / 4	0.6
Inorganic	Nickel	mg/kg		13.6	13.6	37.4	4 / 4	24.63
Inorganic	Potassium	mg/kg		3770	3770	4140	4 / 4	3900
Inorganic	Selenium	mg/kg		4.7	4.7	6.1	4 / 4	5.45
Inorganic	Silver	mg/kg	0.0029 / 0.022	ND	0.031	0.099	3 / 4	0.07467
Inorganic	Sodium	mg/kg		900	900	1180	4 / 4	1015
Inorganic	Strontium	mg/kg		33.6	33.6	52.7	4 / 4	41.85
Inorganic	Thallium	mg/kg		0.29	0.29	0.39	4 / 4	0.345
Inorganic	Vanadium	mg/kg		0.33	0.33	1.5	4 / 4	0.84
Inorganic	Zinc	mg/kg		130	130	246	4 / 4	179

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table J-2: 2009 Snail Purged Whole Body Samples (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		7.4	7.4	14.2	4 / 4	11.35
Inorganic	Antimony	mg/kg	0.018 / 0.019	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		7.9	7.9	9	4 / 4	8.425
Inorganic	Barium	mg/kg		13.4	13.4	26	4 / 4	19.58
Inorganic	Beryllium	mg/kg	0.0045 / 0.0074	ND	ND	ND	0 / 4	0
Inorganic	Boron	mg/kg		1.2	1.2	1.9	4 / 4	1.475
Inorganic	Cadmium	mg/kg		0.73	0.73	0.8	4 / 4	0.765
Inorganic	Calcium	mg/kg		18500	18500	40000	4 / 4	29350
Inorganic	Chromium	mg/kg		0.53	0.53	1	4 / 4	0.68
Inorganic	Cobalt	mg/kg		9.3	9.3	12.2	4 / 4	10.88
Inorganic	Copper	mg/kg		71.1	71.1	94.2	4 / 4	86.5
Inorganic	Iron	mg/kg		309	309	396	4 / 4	358
Inorganic	Lead	mg/kg		0.35	0.35	0.51	4 / 4	0.435
Inorganic	Magnesium	mg/kg		8160	8160	10200	4 / 4	9480
Inorganic	Manganese	mg/kg		172	172	221	4 / 4	188.8
Inorganic	Mercury	mg/kg		0.05	0.05	0.059	4 / 4	0.05325
Inorganic	Molybdenum	mg/kg		0.47	0.47	0.53	4 / 4	0.5125
Inorganic	Nickel	mg/kg		22.4	22.4	25.7	4 / 4	23.75
Inorganic	Potassium	mg/kg		3330	3330	3390	4 / 4	3365
Inorganic	Selenium	mg/kg		3.7	3.7	3.9	4 / 4	3.775
Inorganic	Silver	mg/kg		0.088	0.088	0.17	4 / 4	0.1395
Inorganic	Sodium	mg/kg		1090	1090	1450	4 / 4	1280
Inorganic	Strontium	mg/kg		23.7	23.7	47.9	4 / 4	35.85
Inorganic	Thallium	mg/kg		0.091	0.091	0.13	4 / 4	0.1153
Inorganic	Vanadium	mg/kg		0.13	0.13	0.2	4 / 4	0.1525
Inorganic	Zinc	mg/kg		89.2	89.2	113	4 / 4	104.8

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table J-3: 2009 Snail Purged Whole Body Samples (Freeze Dried) at the Emory River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		7.5	7.5	24.3	4 / 4	15.58
Inorganic	Antimony	mg/kg	0.019 / 0.019	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		6.1	6.1	7.6	4 / 4	6.725
Inorganic	Barium	mg/kg		14.1	14.1	23.1	4 / 4	18
Inorganic	Beryllium	mg/kg	0.005 / 0.0095	ND	ND	ND	0 / 4	0
Inorganic	Boron	mg/kg		0.59	0.59	1.6	4 / 4	1.05
Inorganic	Cadmium	mg/kg		0.47	0.47	0.63	4 / 4	0.5275
Inorganic	Calcium	mg/kg		17600	17600	25500	4 / 4	20650
Inorganic	Chromium	mg/kg		0.43	0.43	0.59	4 / 4	0.4975
Inorganic	Cobalt	mg/kg		4.4	4.4	6.1	4 / 4	5
Inorganic	Copper	mg/kg		97	97	121	4 / 4	105.9
Inorganic	Iron	mg/kg		222	222	421	4 / 4	324.8
Inorganic	Lead	mg/kg		0.31	0.31	0.67	4 / 4	0.47
Inorganic	Magnesium	mg/kg		8850	8850	10100	4 / 4	9508
Inorganic	Manganese	mg/kg		149	149	249	4 / 4	195
Inorganic	Mercury	mg/kg		0.046	0.046	0.075	4 / 4	0.058
Inorganic	Molybdenum	mg/kg		0.32	0.32	0.49	4 / 4	0.4275
Inorganic	Nickel	mg/kg		11.6	11.6	18.8	4 / 4	14.28
Inorganic	Potassium	mg/kg		3250	3250	3510	4 / 4	3373
Inorganic	Selenium	mg/kg		2.8	2.8	3.3	4 / 4	3
Inorganic	Silver	mg/kg		0.51	0.51	0.94	4 / 4	0.7425
Inorganic	Sodium	mg/kg		1210	1210	1380	4 / 4	1285
Inorganic	Strontium	mg/kg		22.1	22.1	33.5	4 / 4	25.95
Inorganic	Thallium	mg/kg	0.016 / 0.037	ND	ND	ND	0 / 4	0
Inorganic	Vanadium	mg/kg		0.1	0.1	0.22	4 / 4	0.1375
Inorganic	Zinc	mg/kg		96.3	96.3	115	4 / 4	106.1

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix K
2009 Snail Sampling Results – Clinch River

Table K-1: 2009 Snail Purged Whole Body Samples (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	0.83 / 6.9	ND	11.4	37.2	3 / 4	20.87
Inorganic	Antimony	mg/kg	0.018 / 0.019	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		9.9	9.9	11.7	4 / 4	10.6
Inorganic	Barium	mg/kg		8.6	8.6	12.7	4 / 4	11.55
Inorganic	Beryllium	mg/kg		0.0037	0.0037	0.013	4 / 4	0.00735
Inorganic	Boron	mg/kg	0.064 / 1	ND	1.2	1.6	2 / 4	1.4
Inorganic	Cadmium	mg/kg		0.95	0.95	1.7	4 / 4	1.188
Inorganic	Calcium	mg/kg		22500	22500	27400	4 / 4	25175
Inorganic	Chromium	mg/kg		0.62	0.62	2.5	4 / 4	1.218
Inorganic	Cobalt	mg/kg		5.5	5.5	9.6	4 / 4	7.75
Inorganic	Copper	mg/kg		75.3	75.3	110	4 / 4	97.58
Inorganic	Iron	mg/kg		292	292	487	4 / 4	374.5
Inorganic	Lead	mg/kg		0.21	0.21	0.36	4 / 4	0.3
Inorganic	Magnesium	mg/kg		7640	7640	10500	4 / 4	9333
Inorganic	Manganese	mg/kg		163	163	438	4 / 4	274.5
Inorganic	Mercury	mg/kg		0.045	0.045	0.1	4 / 4	0.07275
Inorganic	Molybdenum	mg/kg		0.64	0.64	0.92	4 / 4	0.7425
Inorganic	Nickel	mg/kg		13.8	13.8	27.4	4 / 4	18.65
Inorganic	Potassium	mg/kg		3260	3260	3740	4 / 4	3540
Inorganic	Selenium	mg/kg		3.9	3.9	6.3	4 / 4	4.95
Inorganic	Silver	mg/kg		0.05	0.05	0.13	4 / 4	0.07525
Inorganic	Sodium	mg/kg		599	599	856	4 / 4	703.3
Inorganic	Strontium	mg/kg		25.8	25.8	31.6	4 / 4	29.95
Inorganic	Thallium	mg/kg	0.014 / 0.21	ND	0.22	0.29	2 / 4	0.28
Inorganic	Vanadium	mg/kg		0.37	0.37	1.2	4 / 4	0.7625
Inorganic	Zinc	mg/kg		134	134	172	4 / 4	148.5

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table K-2: 2009 Snail Purged Whole Body Samples (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		10.9	10.9	39.9	4 / 4	20.9
Inorganic	Antimony	mg/kg	0.018 / 0.019	ND	ND	ND	0 / 4	0
Inorganic	Arsenic	mg/kg		9.3	9.3	11.6	4 / 4	10.78
Inorganic	Barium	mg/kg		10.5	10.5	19.3	4 / 4	14.7
Inorganic	Beryllium	mg/kg	0.0031 / 0.0031	ND	0.0037	0.0056	3 / 4	0.0047
Inorganic	Boron	mg/kg	0.06 / 0.68	ND	1.2	1.6	2 / 4	1.4
Inorganic	Cadmium	mg/kg		0.79	0.79	1.3	4 / 4	1.078
Inorganic	Calcium	mg/kg		23000	23000	33500	4 / 4	27500
Inorganic	Chromium	mg/kg		0.92	0.92	2.8	4 / 4	1.78
Inorganic	Cobalt	mg/kg		5.2	5.2	7.1	4 / 4	6.125
Inorganic	Copper	mg/kg		95.4	95.4	149	4 / 4	118.6
Inorganic	Iron	mg/kg		360	360	460	4 / 4	411
Inorganic	Lead	mg/kg		0.39	0.39	0.57	4 / 4	0.4725
Inorganic	Magnesium	mg/kg		8250	8250	10500	4 / 4	9118
Inorganic	Manganese	mg/kg		93.3	93.3	150	4 / 4	120.1
Inorganic	Mercury	mg/kg		0.12	0.12	0.16	4 / 4	0.13
Inorganic	Molybdenum	mg/kg		0.59	0.59	0.68	4 / 4	0.64
Inorganic	Nickel	mg/kg		16.1	16.1	18.3	4 / 4	16.93
Inorganic	Potassium	mg/kg		3710	3710	4280	4 / 4	3910
Inorganic	Selenium	mg/kg		4	4	4.7	4 / 4	4.325
Inorganic	Silver	mg/kg		0.14	0.14	0.2	4 / 4	0.1675
Inorganic	Sodium	mg/kg		720	720	1010	4 / 4	859.8
Inorganic	Strontium	mg/kg		29.9	29.9	40	4 / 4	34.38
Inorganic	Thallium	mg/kg	0.17 / 0.18	ND	ND	ND	0 / 4	0
Inorganic	Vanadium	mg/kg		0.2	0.2	0.31	4 / 4	0.2575
Inorganic	Zinc	mg/kg		131	131	152	4 / 4	142

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix L
2010 Snail Sampling Results – Emory River

Table L-1: 2010 Snail Whole Body Samples (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		735	735	2240	3 / 3	2123
Inorganic	Antimony	mg/kg		0.042	0.042	0.091	3 / 3	0.07833
Inorganic	Arsenic	mg/kg		11.5	11.5	13.9	3 / 3	12.7
Inorganic	Barium	mg/kg		27.7	27.7	42.4	3 / 3	39.77
Inorganic	Beryllium	mg/kg		0.064	0.064	0.16	3 / 3	0.1433
Inorganic	Boron	mg/kg		2.3	2.3	3.4	3 / 3	3.133
Inorganic	Cadmium	mg/kg		1.3	1.3	1.8	3 / 3	1.533
Inorganic	Calcium	mg/kg		29500	29500	41100	3 / 3	36667
Inorganic	Chromium	mg/kg		1.7	1.7	4.6	3 / 3	3.833
Inorganic	Cobalt	mg/kg		10.1	10.1	17.3	3 / 3	13.53
Inorganic	Copper	mg/kg		102	102	175	3 / 3	134.7
Inorganic	Iron	mg/kg		757	757	2120	3 / 3	1920
Inorganic	Lead	mg/kg		0.68	0.68	2	3 / 3	1.767
Inorganic	Magnesium	mg/kg		11400	11400	17400	3 / 3	14967
Inorganic	Manganese	mg/kg		237	237	505	3 / 3	428
Inorganic	Mercury	mg/kg		0.095	0.095	0.13	3 / 3	0.1117
Inorganic	Molybdenum	mg/kg		0.45	0.45	0.73	3 / 3	0.56
Inorganic	Nickel	mg/kg		21.9	21.9	30.7	3 / 3	26.2
Inorganic	Potassium	mg/kg		4630	4630	4980	3 / 3	4930
Inorganic	Selenium	mg/kg		4.7	4.7	5.7	3 / 3	5.333
Inorganic	Silver	mg/kg		0.068	0.068	0.1	3 / 3	0.079
Inorganic	Sodium	mg/kg		2470	2470	2980	3 / 3	2640
Inorganic	Strontium	mg/kg		45.9	45.9	55.6	3 / 3	50.97
Inorganic	Thallium	mg/kg		0.51	0.51	0.63	3 / 3	0.5667
Inorganic	Vanadium	mg/kg		1.8	1.8	5.8	3 / 3	4.867
Inorganic	Zinc	mg/kg		124	124	204	3 / 3	169.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table L-2: 2010 Snail Purged Whole Body Samples (Freeze Dried) at Emory River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		19.5	19.5	35	3 / 3	27.8
Inorganic	Antimony	mg/kg		0.021	0.021	0.034	3 / 3	0.02933
Inorganic	Arsenic	mg/kg		11.6	11.6	14.7	3 / 3	13.23
Inorganic	Barium	mg/kg		13.9	13.9	21.1	3 / 3	16.93
Inorganic	Beryllium	mg/kg	0.028 / 0.03	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		0.71	0.71	1.7	3 / 3	1.17
Inorganic	Cadmium	mg/kg		1.2	1.2	1.6	3 / 3	1.4
Inorganic	Calcium	mg/kg		20800	20800	28200	3 / 3	24900
Inorganic	Chromium	mg/kg		0.93	0.93	3	3 / 3	2.01
Inorganic	Cobalt	mg/kg		10.7	10.7	24.5	3 / 3	16.63
Inorganic	Copper	mg/kg		103	103	152	3 / 3	135.3
Inorganic	Iron	mg/kg		301	301	776	3 / 3	610.3
Inorganic	Lead	mg/kg		0.25	0.25	0.32	3 / 3	0.28
Inorganic	Magnesium	mg/kg		9360	9360	11200	3 / 3	10253
Inorganic	Manganese	mg/kg		164	164	543	3 / 3	379
Inorganic	Mercury	mg/kg		0.063	0.063	0.1	3 / 3	0.08733
Inorganic	Molybdenum	mg/kg		0.37	0.37	0.75	3 / 3	0.5867
Inorganic	Nickel	mg/kg		22	22	52	3 / 3	36.63
Inorganic	Potassium	mg/kg		3380	3380	3580	3 / 3	3497
Inorganic	Selenium	mg/kg		4.5	4.5	6.1	3 / 3	5.533
Inorganic	Silver	mg/kg		0.057	0.057	0.067	3 / 3	0.06133
Inorganic	Sodium	mg/kg		599	599	849	3 / 3	746.7
Inorganic	Strontium	mg/kg		25.8	25.8	34.6	3 / 3	29.93
Inorganic	Thallium	mg/kg		0.32	0.32	0.44	3 / 3	0.37
Inorganic	Vanadium	mg/kg		0.58	0.58	1.6	3 / 3	1.227
Inorganic	Zinc	mg/kg		167	167	292	3 / 3	226.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table L-3: 2010 Snail Whole Body Samples (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		2690	2690	4630	3 / 3	3690
Inorganic	Antimony	mg/kg	0.013 / 0.063	ND	0.073	0.1	2 / 3	0.0865
Inorganic	Arsenic	mg/kg		10.5	10.5	13.6	3 / 3	11.93
Inorganic	Barium	mg/kg		36.4	36.4	66.7	3 / 3	50.17
Inorganic	Beryllium	mg/kg		0.17	0.17	0.31	3 / 3	0.2233
Inorganic	Boron	mg/kg		6.4	6.4	9.5	3 / 3	8.133
Inorganic	Cadmium	mg/kg		0.63	0.63	1.5	3 / 3	1.077
Inorganic	Calcium	mg/kg		27800	27800	38800	3 / 3	34167
Inorganic	Chromium	mg/kg		4.5	4.5	6.9	3 / 3	5.533
Inorganic	Cobalt	mg/kg		6.6	6.6	18.1	3 / 3	11.77
Inorganic	Copper	mg/kg		102	102	121	3 / 3	113
Inorganic	Iron	mg/kg		2710	2710	4620	3 / 3	3440
Inorganic	Lead	mg/kg		2.3	2.3	4.1	3 / 3	3.3
Inorganic	Magnesium	mg/kg		8680	8680	13400	3 / 3	11427
Inorganic	Manganese	mg/kg		345	345	817	3 / 3	530.3
Inorganic	Mercury	mg/kg		0.074	0.074	0.12	3 / 3	0.098
Inorganic	Molybdenum	mg/kg		0.52	0.52	0.74	3 / 3	0.6033
Inorganic	Nickel	mg/kg		14.2	14.2	35.9	3 / 3	26.07
Inorganic	Potassium	mg/kg		4600	4600	5760	3 / 3	5300
Inorganic	Selenium	mg/kg		3.3	3.3	4.2	3 / 3	3.733
Inorganic	Silver	mg/kg		0.21	0.21	0.31	3 / 3	0.2533
Inorganic	Sodium	mg/kg		1910	1910	2560	3 / 3	2273
Inorganic	Strontium	mg/kg		41.6	41.6	47.8	3 / 3	45.2
Inorganic	Thallium	mg/kg		0.38	0.38	0.4	3 / 3	0.39
Inorganic	Vanadium	mg/kg		5.1	5.1	8.4	3 / 3	6.433
Inorganic	Zinc	mg/kg		88.5	88.5	140	3 / 3	116.8

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table L-4: 2010 Snail Whole Body Samples (Wet Weight) at Emory River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		364	364	770	3 / 3	714
Inorganic	Antimony	mg/kg	0.013 / 0.019	ND	0.016	0.017	2 / 3	0.0165
Inorganic	Arsenic	mg/kg		2	2	2.9	3 / 3	2.633
Inorganic	Barium	mg/kg		7.4	7.4	12	3 / 3	10.23
Inorganic	Beryllium	mg/kg	0.026 / 0.027	ND	0.035	0.046	3 / 3	0.041
Inorganic	Boron	mg/kg		1.5	1.5	2.4	3 / 3	1.833
Inorganic	Cadmium	mg/kg		0.12	0.12	0.21	3 / 3	0.17
Inorganic	Calcium	mg/kg		7920	7920	11600	3 / 3	9697
Inorganic	Chromium	mg/kg		0.57	0.57	1.3	3 / 3	1.117
Inorganic	Cobalt	mg/kg		0.99	0.99	1.8	3 / 3	1.633
Inorganic	Copper	mg/kg		18.5	18.5	29	3 / 3	24.1
Inorganic	Iron	mg/kg		318	318	729	3 / 3	648.7
Inorganic	Lead	mg/kg		0.29	0.29	0.92	3 / 3	0.5967
Inorganic	Magnesium	mg/kg		2890	2890	4510	3 / 3	3647
Inorganic	Manganese	mg/kg		50.1	50.1	111	3 / 3	95.03
Inorganic	Mercury	mg/kg		0.017	0.017	0.025	3 / 3	0.021
Inorganic	Molybdenum	mg/kg		0.095	0.095	0.15	3 / 3	0.1467
Inorganic	Nickel	mg/kg		2.9	2.9	4.6	3 / 3	4.067
Inorganic	Potassium	mg/kg		1110	1110	1250	3 / 3	1213
Inorganic	Selenium	mg/kg		0.92	0.92	1.1	3 / 3	1.023
Inorganic	Silver	mg/kg		0.045	0.045	0.13	3 / 3	0.07667
Inorganic	Sodium	mg/kg		532	532	618	3 / 3	584.3
Inorganic	Strontium	mg/kg		11.6	11.6	15.7	3 / 3	13.13
Inorganic	Thallium	mg/kg	0.064 / 0.1	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.64	0.64	1.4	3 / 3	1.2
Inorganic	Zinc	mg/kg		20.9	20.9	30.4	3 / 3	26.1
Physical Properties	% Moisture	%		70.2	70.2	76.5	3 / 3	73.97

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table L-5: 2010 Snail Purged Whole Body Samples (Freeze Dried) at Emory River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		12.2	12.2	108	3 / 3	49
Inorganic	Antimony	mg/kg		0.018	0.018	0.021	3 / 3	0.01933
Inorganic	Arsenic	mg/kg		10.4	10.4	13	3 / 3	11.67
Inorganic	Barium	mg/kg		20.1	20.1	26.1	3 / 3	24.07
Inorganic	Beryllium	mg/kg	0.027 / 0.03	ND	0.035	0.035	1 / 3	0.035
Inorganic	Boron	mg/kg		1.7	1.7	2.1	3 / 3	1.833
Inorganic	Cadmium	mg/kg		1.1	1.1	1.9	3 / 3	1.467
Inorganic	Calcium	mg/kg		25800	25800	36300	3 / 3	32567
Inorganic	Chromium	mg/kg		0.71	0.71	0.95	3 / 3	0.8033
Inorganic	Cobalt	mg/kg		8	8	9.5	3 / 3	8.8
Inorganic	Copper	mg/kg		111	111	184	3 / 3	145
Inorganic	Iron	mg/kg		431	431	609	3 / 3	526
Inorganic	Lead	mg/kg		0.34	0.34	0.4	3 / 3	0.38
Inorganic	Magnesium	mg/kg		9860	9860	11900	3 / 3	11213
Inorganic	Manganese	mg/kg		220	220	291	3 / 3	253
Inorganic	Mercury	mg/kg		0.076	0.076	0.085	3 / 3	0.08367
Inorganic	Molybdenum	mg/kg		0.5	0.5	0.84	3 / 3	0.67
Inorganic	Nickel	mg/kg		21.9	21.9	22.6	3 / 3	22.23
Inorganic	Potassium	mg/kg		3150	3150	3530	3 / 3	3493
Inorganic	Selenium	mg/kg		3.8	3.8	4.5	3 / 3	4.1
Inorganic	Silver	mg/kg		0.31	0.31	0.65	3 / 3	0.47
Inorganic	Sodium	mg/kg		497	497	1120	3 / 3	916.3
Inorganic	Strontium	mg/kg		34.1	34.1	45.9	3 / 3	40.9
Inorganic	Thallium	mg/kg	0.013 / 0.25	ND	0.24	0.28	2 / 3	0.265
Inorganic	Vanadium	mg/kg		0.29	0.29	0.48	3 / 3	0.4033
Inorganic	Zinc	mg/kg		125	125	140	3 / 3	130.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table L-6: 2010 Snail Purged Whole Body Samples (Wet Weight) at Emory River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		3.8	3.8	36	3 / 3	15.07
Inorganic	Antimony	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		2	2	3.1	3 / 3	2.433
Inorganic	Barium	mg/kg		4	4	9.8	3 / 3	6.533
Inorganic	Beryllium	mg/kg	0.026 / 0.029	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		0.51	0.51	0.72	3 / 3	0.5967
Inorganic	Cadmium	mg/kg		0.21	0.21	0.38	3 / 3	0.3033
Inorganic	Calcium	mg/kg		4710	4710	14800	3 / 3	9463
Inorganic	Chromium	mg/kg		0.2	0.2	0.45	3 / 3	0.31
Inorganic	Cobalt	mg/kg		2.3	2.3	3.4	3 / 3	2.967
Inorganic	Copper	mg/kg		21.2	21.2	46	3 / 3	35
Inorganic	Iron	mg/kg		107	107	218	3 / 3	157.3
Inorganic	Lead	mg/kg		0.053	0.053	0.11	3 / 3	0.08333
Inorganic	Magnesium	mg/kg		1130	1130	4660	3 / 3	3427
Inorganic	Manganese	mg/kg		52	52	132	3 / 3	79.07
Inorganic	Mercury	mg/kg		0.015	0.015	0.028	3 / 3	0.021
Inorganic	Molybdenum	mg/kg		0.09	0.09	0.2	3 / 3	0.1297
Inorganic	Nickel	mg/kg		6.1	6.1	9.1	3 / 3	7.367
Inorganic	Potassium	mg/kg	635 / 708	ND	704	745	2 / 3	724.5
Inorganic	Selenium	mg/kg		0.81	0.81	1.1	3 / 3	0.9867
Inorganic	Silver	mg/kg		0.051	0.051	0.092	3 / 3	0.07033
Inorganic	Sodium	mg/kg		129	129	181	3 / 3	157.3
Inorganic	Strontium	mg/kg		5.7	5.7	16.9	3 / 3	11.57
Inorganic	Thallium	mg/kg	0.039 / 0.079	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.073	0.073	0.15	3 / 3	0.111
Inorganic	Zinc	mg/kg		23.4	23.4	40.2	3 / 3	33.67
Physical Properties	% Moisture	%		68.9	68.9	78.6	3 / 3	75.9

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table L-7: 2010 Snail Purged Whole Body Samples (Freeze Dried) at Emory River Reach C

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		27.6	27.6	182	3 / 3	121.2
Inorganic	Antimony	mg/kg	0.015 / 0.019	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		10.3	10.3	10.8	3 / 3	10.57
Inorganic	Barium	mg/kg		27	27	32.1	3 / 3	29.33
Inorganic	Beryllium	mg/kg	0.031 / 0.033	ND	0.031	0.038	2 / 3	0.0345
Inorganic	Boron	mg/kg		2.2	2.2	2.8	3 / 3	2.5
Inorganic	Cadmium	mg/kg		1.1	1.1	1.5	3 / 3	1.267
Inorganic	Calcium	mg/kg		36000	36000	39400	3 / 3	37933
Inorganic	Chromium	mg/kg		0.46	0.46	1.1	3 / 3	0.72
Inorganic	Cobalt	mg/kg		8.1	8.1	12.8	3 / 3	10.13
Inorganic	Copper	mg/kg		118	118	132	3 / 3	125.7
Inorganic	Iron	mg/kg		652	652	832	3 / 3	738
Inorganic	Lead	mg/kg		0.35	0.35	0.38	3 / 3	0.3667
Inorganic	Magnesium	mg/kg		10300	10300	11700	3 / 3	11067
Inorganic	Manganese	mg/kg		288	288	365	3 / 3	332.3
Inorganic	Mercury	mg/kg		0.071	0.071	0.1	3 / 3	0.08467
Inorganic	Molybdenum	mg/kg		0.52	0.52	0.58	3 / 3	0.55
Inorganic	Nickel	mg/kg		25.2	25.2	38.8	3 / 3	31.37
Inorganic	Potassium	mg/kg		3600	3600	4500	3 / 3	4177
Inorganic	Selenium	mg/kg		3.7	3.7	4	3 / 3	3.833
Inorganic	Silver	mg/kg		0.67	0.67	1	3 / 3	0.8167
Inorganic	Sodium	mg/kg		595	595	1060	3 / 3	796.3
Inorganic	Strontium	mg/kg		47.8	47.8	51.1	3 / 3	49.63
Inorganic	Thallium	mg/kg	0.11 / 0.15	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.35	0.35	0.57	3 / 3	0.4733
Inorganic	Zinc	mg/kg		177	177	236	3 / 3	205.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table L-8: 2010 Snail Whole Body Samples (Freeze Dried) at the Emory River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		1310	1310	1800	3 / 3	1553
Inorganic	Antimony	mg/kg		0.026	0.026	0.26	3 / 3	0.1057
Inorganic	Arsenic	mg/kg		6.1	6.1	8.6	3 / 3	7.733
Inorganic	Barium	mg/kg		39.6	39.6	52.4	3 / 3	47.5
Inorganic	Beryllium	mg/kg		0.095	0.095	0.12	3 / 3	0.1047
Inorganic	Boron	mg/kg		2.8	2.8	5.2	3 / 3	3.9
Inorganic	Cadmium	mg/kg		0.7	0.7	1	3 / 3	0.8667
Inorganic	Calcium	mg/kg		29800	29800	35500	3 / 3	31833
Inorganic	Chromium	mg/kg		2.3	2.3	10.1	3 / 3	5
Inorganic	Cobalt	mg/kg		8.4	8.4	12.3	3 / 3	10.93
Inorganic	Copper	mg/kg		76.9	76.9	127	3 / 3	108.8
Inorganic	Iron	mg/kg		2090	2090	3090	3 / 3	2523
Inorganic	Lead	mg/kg		1.3	1.3	11.3	3 / 3	4.767
Inorganic	Magnesium	mg/kg		10500	10500	12100	3 / 3	11300
Inorganic	Manganese	mg/kg		544	544	686	3 / 3	592.3
Inorganic	Mercury	mg/kg		0.091	0.091	0.16	3 / 3	0.1337
Inorganic	Molybdenum	mg/kg		0.52	0.52	0.69	3 / 3	0.5967
Inorganic	Nickel	mg/kg		18.8	18.8	32.7	3 / 3	27.07
Inorganic	Potassium	mg/kg		3600	3600	4030	3 / 3	3850
Inorganic	Selenium	mg/kg		2.5	2.5	3.8	3 / 3	3.233
Inorganic	Silver	mg/kg		0.78	0.78	1.2	3 / 3	1.05
Inorganic	Sodium	mg/kg		2020	2020	3440	3 / 3	2783
Inorganic	Strontium	mg/kg		35.6	35.6	43.1	3 / 3	38.63
Inorganic	Thallium	mg/kg	0.096 / 0.14	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		2.4	2.4	3.8	3 / 3	3.067
Inorganic	Zinc	mg/kg		120	120	166	3 / 3	151.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table L-9: 2010 Snail Purged Whole Body Samples (Freeze Dried) at the Emory River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		7.3	7.3	10.9	3 / 3	8.8
Inorganic	Antimony	mg/kg	0.015 / 0.019	ND	0.017	0.038	2 / 3	0.0275
Inorganic	Arsenic	mg/kg		8.7	8.7	9.2	3 / 3	9
Inorganic	Barium	mg/kg		24.1	24.1	29.9	3 / 3	26.83
Inorganic	Beryllium	mg/kg	0.069 / 0.076	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		1.4	1.4	2.7	3 / 3	2.033
Inorganic	Cadmium	mg/kg		0.89	0.89	1.7	3 / 3	1.173
Inorganic	Calcium	mg/kg		27600	27600	32800	3 / 3	30067
Inorganic	Chromium	mg/kg		0.76	0.76	1.4	3 / 3	0.99
Inorganic	Cobalt	mg/kg		11.1	11.1	22.4	3 / 3	14.87
Inorganic	Copper	mg/kg		127	127	167	3 / 3	143.7
Inorganic	Iron	mg/kg		614	614	894	3 / 3	723.3
Inorganic	Lead	mg/kg		0.26	0.26	0.99	3 / 3	0.5067
Inorganic	Magnesium	mg/kg		10700	10700	11700	3 / 3	11200
Inorganic	Manganese	mg/kg		427	427	585	3 / 3	496
Inorganic	Mercury	mg/kg		0.14	0.14	0.19	3 / 3	0.1633
Inorganic	Molybdenum	mg/kg		0.5	0.5	0.69	3 / 3	0.59
Inorganic	Nickel	mg/kg		28.2	28.2	71.1	3 / 3	43
Inorganic	Potassium	mg/kg		3470	3470	3770	3 / 3	3650
Inorganic	Selenium	mg/kg		3.2	3.2	3.9	3 / 3	3.433
Inorganic	Silver	mg/kg		0.96	0.96	1.6	3 / 3	1.253
Inorganic	Sodium	mg/kg		1760	1760	2260	3 / 3	1993
Inorganic	Strontium	mg/kg		32.5	32.5	39.7	3 / 3	35.33
Inorganic	Thallium	mg/kg	0.033 / 0.041	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.26	0.26	0.31	3 / 3	0.28
Inorganic	Zinc	mg/kg		126	126	171	3 / 3	142

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix M
2010 Snail Sampling Results – Little Emory River

Table M-1: 2010 Snail Purged Whole Body Samples (Freeze Dried) at the Little Emory River

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6.4	6.4	10.3	3 / 3	8.6
Inorganic	Antimony	mg/kg	0.015 / 0.018	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		7.2	7.2	13.5	3 / 3	10.87
Inorganic	Barium	mg/kg		16.3	16.3	35.9	3 / 3	28.87
Inorganic	Beryllium	mg/kg	0.061 / 0.072	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		1.5	1.5	3.3	3 / 3	2.6
Inorganic	Cadmium	mg/kg		0.61	0.61	1.3	3 / 3	1.037
Inorganic	Calcium	mg/kg		25600	25600	42000	3 / 3	34400
Inorganic	Chromium	mg/kg		0.35	0.35	2.2	3 / 3	1.113
Inorganic	Cobalt	mg/kg		1.7	1.7	5.2	3 / 3	3.933
Inorganic	Copper	mg/kg		96.9	96.9	157	3 / 3	127.3
Inorganic	Iron	mg/kg		253	253	774	3 / 3	560.7
Inorganic	Lead	mg/kg		0.18	0.18	0.24	3 / 3	0.2133
Inorganic	Magnesium	mg/kg		10300	10300	12500	3 / 3	11733
Inorganic	Manganese	mg/kg		119	119	337	3 / 3	247
Inorganic	Mercury	mg/kg		0.099	0.099	0.25	3 / 3	0.1863
Inorganic	Molybdenum	mg/kg		0.4	0.4	0.7	3 / 3	0.56
Inorganic	Nickel	mg/kg		7.8	7.8	19.9	3 / 3	15.57
Inorganic	Potassium	mg/kg		3930	3930	4060	3 / 3	3997
Inorganic	Selenium	mg/kg		3.7	3.7	6.4	3 / 3	5.267
Inorganic	Silver	mg/kg		1.5	1.5	5.9	3 / 3	4.033
Inorganic	Sodium	mg/kg		1750	1750	3680	3 / 3	2820
Inorganic	Strontium	mg/kg		29.5	29.5	49.3	3 / 3	39.8
Inorganic	Thallium	mg/kg	0.039 / 0.057	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.15	0.15	0.44	3 / 3	0.2833
Inorganic	Zinc	mg/kg		115	115	170	3 / 3	148.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix N
2010 Snail Sampling Results – Clinch River

Table N-1: 2010 Snail Whole Body Samples (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		185	185	590	3 / 3	438.7
Inorganic	Antimony	mg/kg		0.031	0.031	0.048	3 / 3	0.04
Inorganic	Arsenic	mg/kg		11.6	11.6	20.1	3 / 3	16.6
Inorganic	Barium	mg/kg		24.5	24.5	40.6	3 / 3	32.1
Inorganic	Beryllium	mg/kg	0.029 / 0.04	ND	0.047	0.053	2 / 3	0.05
Inorganic	Boron	mg/kg		1.5	1.5	3	3 / 3	2.367
Inorganic	Cadmium	mg/kg		1.7	1.7	5	3 / 3	3.833
Inorganic	Calcium	mg/kg		43000	43000	49300	3 / 3	46400
Inorganic	Chromium	mg/kg		3.2	3.2	7.1	3 / 3	5.3
Inorganic	Cobalt	mg/kg		11	11	16.1	3 / 3	13
Inorganic	Copper	mg/kg		102	102	166	3 / 3	138.7
Inorganic	Iron	mg/kg		858	858	1460	3 / 3	1084
Inorganic	Lead	mg/kg		0.64	0.64	6.8	3 / 3	2.727
Inorganic	Magnesium	mg/kg		13300	13300	15500	3 / 3	14700
Inorganic	Manganese	mg/kg		340	340	814	3 / 3	579
Inorganic	Mercury	mg/kg		0.19	0.19	0.24	3 / 3	0.22
Inorganic	Molybdenum	mg/kg		0.67	0.67	0.98	3 / 3	0.8233
Inorganic	Nickel	mg/kg		24	24	44.1	3 / 3	35.53
Inorganic	Potassium	mg/kg		4050	4050	4850	3 / 3	4503
Inorganic	Selenium	mg/kg		4.3	4.3	7.9	3 / 3	6.633
Inorganic	Silver	mg/kg		0.097	0.097	0.37	3 / 3	0.2423
Inorganic	Sodium	mg/kg		2330	2330	3790	3 / 3	3150
Inorganic	Strontium	mg/kg		50	50	65.2	3 / 3	57.27
Inorganic	Thallium	mg/kg		0.42	0.42	0.57	3 / 3	0.5
Inorganic	Vanadium	mg/kg		1.8	1.8	3	3 / 3	2.267
Inorganic	Zinc	mg/kg		127	127	236	3 / 3	192

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table N-2: 2010 Snail Purged Samples Whole Body (Freeze Dried) at Clinch River Reach A

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		7.7	7.7	35.4	3 / 3	18.57
Inorganic	Antimony	mg/kg		0.015	0.015	0.026	3 / 3	0.02233
Inorganic	Arsenic	mg/kg		11.4	11.4	19.8	3 / 3	16.23
Inorganic	Barium	mg/kg		18.4	18.4	28.8	3 / 3	24.67
Inorganic	Beryllium	mg/kg	0.03 / 0.038	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		1.1	1.1	2.2	3 / 3	1.6
Inorganic	Cadmium	mg/kg		1.5	1.5	5.4	3 / 3	3.533
Inorganic	Calcium	mg/kg		42000	42000	45800	3 / 3	44700
Inorganic	Chromium	mg/kg		1.2	1.2	10.1	3 / 3	5.333
Inorganic	Cobalt	mg/kg		7.4	7.4	16.2	3 / 3	13.03
Inorganic	Copper	mg/kg		144	144	217	3 / 3	189.7
Inorganic	Iron	mg/kg		392	392	790	3 / 3	639.3
Inorganic	Lead	mg/kg		0.37	0.37	0.9	3 / 3	0.6667
Inorganic	Magnesium	mg/kg		12500	12500	15800	3 / 3	14800
Inorganic	Manganese	mg/kg		373	373	636	3 / 3	541.7
Inorganic	Mercury	mg/kg		0.13	0.13	0.21	3 / 3	0.1767
Inorganic	Molybdenum	mg/kg		0.7	0.7	0.98	3 / 3	0.8467
Inorganic	Nickel	mg/kg		18.8	18.8	49.4	3 / 3	36.93
Inorganic	Potassium	mg/kg		3070	3070	4560	3 / 3	4053
Inorganic	Selenium	mg/kg		3.7	3.7	9.2	3 / 3	6.833
Inorganic	Silver	mg/kg		0.055	0.055	0.33	3 / 3	0.2283
Inorganic	Sodium	mg/kg		860	860	1800	3 / 3	1350
Inorganic	Strontium	mg/kg		50.2	50.2	58.5	3 / 3	55.27
Inorganic	Thallium	mg/kg		0.29	0.29	0.4	3 / 3	0.3667
Inorganic	Vanadium	mg/kg		0.56	0.56	1.7	3 / 3	1.287
Inorganic	Zinc	mg/kg		126	126	246	3 / 3	191.7

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table N-3: 2010 Snail Whole Body Samples (Freeze Dried) at Clinch River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		235	235	2050	3 / 3	1185
Inorganic	Antimony	mg/kg	0.013 / 0.029	ND	0.048	0.08	2 / 3	0.064
Inorganic	Arsenic	mg/kg		13.7	13.7	15.2	3 / 3	14.73
Inorganic	Barium	mg/kg		17.6	17.6	42.3	3 / 3	29.7
Inorganic	Beryllium	mg/kg	0.027 / 0.03	ND	0.075	0.16	2 / 3	0.1175
Inorganic	Boron	mg/kg		2.1	2.1	3.3	3 / 3	2.6
Inorganic	Cadmium	mg/kg		1.4	1.4	2	3 / 3	1.733
Inorganic	Calcium	mg/kg		35200	35200	48100	3 / 3	40067
Inorganic	Chromium	mg/kg		3.3	3.3	4.3	3 / 3	3.767
Inorganic	Cobalt	mg/kg		5.1	5.1	8.5	3 / 3	7.233
Inorganic	Copper	mg/kg		134	134	170	3 / 3	155
Inorganic	Iron	mg/kg		483	483	2000	3 / 3	1274
Inorganic	Lead	mg/kg		0.43	0.43	2.6	3 / 3	1.443
Inorganic	Magnesium	mg/kg		10700	10700	14900	3 / 3	12867
Inorganic	Manganese	mg/kg		219	219	450	3 / 3	359.7
Inorganic	Mercury	mg/kg		0.1	0.1	0.16	3 / 3	0.1333
Inorganic	Molybdenum	mg/kg		0.81	0.81	1.1	3 / 3	0.9067
Inorganic	Nickel	mg/kg		14.4	14.4	19	3 / 3	17.07
Inorganic	Potassium	mg/kg		4500	4500	4770	3 / 3	4653
Inorganic	Selenium	mg/kg		4.7	4.7	6.8	3 / 3	5.6
Inorganic	Silver	mg/kg		0.1	0.1	0.13	3 / 3	0.11
Inorganic	Sodium	mg/kg		2360	2360	2600	3 / 3	2507
Inorganic	Strontium	mg/kg		42.2	42.2	59.4	3 / 3	48.93
Inorganic	Thallium	mg/kg		0.4	0.4	0.59	3 / 3	0.4833
Inorganic	Vanadium	mg/kg		1.8	1.8	5.4	3 / 3	3.467
Inorganic	Zinc	mg/kg		146	146	178	3 / 3	171.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table N-4: 2010 Snail Whole Body Samples (Wet Weight) at Clinch River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		44.7	44.7	306	3 / 3	191.8
Inorganic	Antimony	mg/kg	0.013 / 0.014	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		2.7	2.7	3.6	3 / 3	3.167
Inorganic	Barium	mg/kg		4.6	4.6	8.1	3 / 3	7.167
Inorganic	Beryllium	mg/kg	0.027 / 0.029	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		0.5	0.5	0.83	3 / 3	0.6633
Inorganic	Cadmium	mg/kg		0.28	0.28	0.46	3 / 3	0.4433
Inorganic	Calcium	mg/kg		10100	10100	14400	3 / 3	12567
Inorganic	Chromium	mg/kg		0.59	0.59	1.3	3 / 3	0.98
Inorganic	Cobalt	mg/kg		1.6	1.6	2.5	3 / 3	2.033
Inorganic	Copper	mg/kg		29.7	29.7	36.3	3 / 3	34.23
Inorganic	Iron	mg/kg		114	114	299	3 / 3	249.7
Inorganic	Lead	mg/kg		0.09	0.09	0.29	3 / 3	0.2233
Inorganic	Magnesium	mg/kg		3620	3620	5700	3 / 3	4627
Inorganic	Manganese	mg/kg		50.6	50.6	105	3 / 3	94
Inorganic	Mercury	mg/kg		0.021	0.021	0.043	3 / 3	0.034
Inorganic	Molybdenum	mg/kg		0.14	0.14	0.22	3 / 3	0.18
Inorganic	Nickel	mg/kg		3.7	3.7	6.6	3 / 3	5.133
Inorganic	Potassium	mg/kg		955	955	997	3 / 3	979
Inorganic	Selenium	mg/kg		1.1	1.1	1.8	3 / 3	1.4
Inorganic	Silver	mg/kg		0.015	0.015	0.037	3 / 3	0.028
Inorganic	Sodium	mg/kg		543	543	627	3 / 3	592.7
Inorganic	Strontium	mg/kg		12.7	12.7	16.9	3 / 3	15.5
Inorganic	Thallium	mg/kg	0.013 / 0.12	ND	0.16	0.16	1 / 3	0.16
Inorganic	Vanadium	mg/kg		0.28	0.28	0.74	3 / 3	0.65
Inorganic	Zinc	mg/kg		35.5	35.5	62.7	3 / 3	47.07
Physical Properties	% Moisture	%		70.2	70.2	77	3 / 3	74.93

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table N-5: 2010 Snail Purged Whole Body Samples (Freeze Dried) at Clinch River Reach B

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		9.1	9.1	15.3	3 / 3	12.43
Inorganic	Antimony	mg/kg		0.019	0.019	0.027	3 / 3	0.02233
Inorganic	Arsenic	mg/kg		10	10	17.8	3 / 3	14.47
Inorganic	Barium	mg/kg		21.9	21.9	27.5	3 / 3	24.5
Inorganic	Beryllium	mg/kg	0.028 / 0.03	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		1.2	1.2	1.2	3 / 3	1.2
Inorganic	Cadmium	mg/kg		1.4	1.4	2.4	3 / 3	2.033
Inorganic	Calcium	mg/kg		39500	39500	49400	3 / 3	45767
Inorganic	Chromium	mg/kg		1.6	1.6	4.7	3 / 3	3.067
Inorganic	Cobalt	mg/kg		10.4	10.4	13.2	3 / 3	11.47
Inorganic	Copper	mg/kg		140	140	196	3 / 3	172
Inorganic	Iron	mg/kg		461	461	680	3 / 3	581.7
Inorganic	Lead	mg/kg		0.31	0.31	0.37	3 / 3	0.34
Inorganic	Magnesium	mg/kg		10600	10600	14400	3 / 3	12767
Inorganic	Manganese	mg/kg		319	319	409	3 / 3	355
Inorganic	Mercury	mg/kg		0.1	0.1	0.18	3 / 3	0.1433
Inorganic	Molybdenum	mg/kg		0.57	0.57	1.1	3 / 3	0.86
Inorganic	Nickel	mg/kg		23.6	23.6	35.1	3 / 3	28.07
Inorganic	Potassium	mg/kg		3300	3300	4190	3 / 3	3827
Inorganic	Selenium	mg/kg		4.5	4.5	7.1	3 / 3	6.067
Inorganic	Silver	mg/kg		0.06	0.06	0.14	3 / 3	0.11
Inorganic	Sodium	mg/kg		681	681	1490	3 / 3	1080
Inorganic	Strontium	mg/kg		48	48	60.7	3 / 3	55.3
Inorganic	Thallium	mg/kg	0.013 / 0.44	ND	0.27	0.37	2 / 3	0.32
Inorganic	Vanadium	mg/kg		0.86	0.86	1.6	3 / 3	1.253
Inorganic	Zinc	mg/kg		188	188	227	3 / 3	208.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table N-6: 2010 Snail Purged Whole Body Samples (Wet Weight) at Clinch River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg	3.7 / 4.2	ND	5.8	5.8	1 / 3	5.8
Inorganic	Antimony	mg/kg	0.013 / 0.015	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		2.3	2.3	7.1	3 / 3	4.2
Inorganic	Barium	mg/kg		3.7	3.7	6.5	3 / 3	5.533
Inorganic	Beryllium	mg/kg	0.027 / 0.031	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg	0.38 / 0.43	ND	0.45	0.61	2 / 3	0.53
Inorganic	Cadmium	mg/kg		0.21	0.21	0.58	3 / 3	0.4433
Inorganic	Calcium	mg/kg		5890	5890	16500	3 / 3	11697
Inorganic	Chromium	mg/kg		0.26	0.26	1.5	3 / 3	0.9067
Inorganic	Cobalt	mg/kg		1.3	1.3	2.8	3 / 3	2
Inorganic	Copper	mg/kg		32.6	32.6	44.7	3 / 3	39.5
Inorganic	Iron	mg/kg		55.4	55.4	198	3 / 3	125.5
Inorganic	Lead	mg/kg		0.052	0.052	0.11	3 / 3	0.07467
Inorganic	Magnesium	mg/kg		2060	2060	5230	3 / 3	4043
Inorganic	Manganese	mg/kg		40.8	40.8	139	3 / 3	99.6
Inorganic	Mercury	mg/kg		0.027	0.027	0.057	3 / 3	0.043
Inorganic	Molybdenum	mg/kg		0.088	0.088	0.34	3 / 3	0.2093
Inorganic	Nickel	mg/kg		2.9	2.9	7.3	3 / 3	5.1
Inorganic	Potassium	mg/kg	670 / 753	ND	736	769	3 / 3	758
Inorganic	Selenium	mg/kg		1.1	1.1	1.6	3 / 3	1.333
Inorganic	Silver	mg/kg		0.018	0.018	0.068	3 / 3	0.04267
Inorganic	Sodium	mg/kg		168	168	306	3 / 3	236
Inorganic	Strontium	mg/kg		7.8	7.8	19.6	3 / 3	14.27
Inorganic	Thallium	mg/kg	0.014 / 0.12	ND	0.11	0.11	1 / 3	0.11
Inorganic	Vanadium	mg/kg		0.13	0.13	0.37	3 / 3	0.2567
Inorganic	Zinc	mg/kg		31.8	31.8	63.6	3 / 3	49.3
Physical Properties	% Moisture	%		79.7	79.7	84.2	3 / 3	81.63

Notes:

Composite sample results are presented in wet weight.

For definitions, see the Acronyms section.

Table N-7: 2010 Snail Whole Body Samples (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		220	220	1060	3 / 3	579.3
Inorganic	Antimony	mg/kg		0.019	0.019	0.037	3 / 3	0.02667
Inorganic	Arsenic	mg/kg		12.6	12.6	14.1	3 / 3	13.53
Inorganic	Barium	mg/kg		24.9	24.9	44.7	3 / 3	31.87
Inorganic	Beryllium	mg/kg	0.029 / 0.58	ND	0.056	0.056	1 / 3	0.056
Inorganic	Boron	mg/kg		1.8	1.8	1.9	3 / 3	1.867
Inorganic	Cadmium	mg/kg		0.97	0.97	2	3 / 3	1.423
Inorganic	Calcium	mg/kg		39100	39100	54800	3 / 3	45600
Inorganic	Chromium	mg/kg		2.5	2.5	3.7	3 / 3	3.133
Inorganic	Cobalt	mg/kg		6	6	8.8	3 / 3	7.133
Inorganic	Copper	mg/kg		147	147	165	3 / 3	155
Inorganic	Iron	mg/kg		666	666	1300	3 / 3	919
Inorganic	Lead	mg/kg		0.44	0.44	3.3	3 / 3	1.563
Inorganic	Magnesium	mg/kg		13800	13800	14900	3 / 3	14167
Inorganic	Manganese	mg/kg		148	148	322	3 / 3	248.3
Inorganic	Mercury	mg/kg		0.25	0.25	0.29	3 / 3	0.2733
Inorganic	Molybdenum	mg/kg		0.81	0.81	0.85	3 / 3	0.8267
Inorganic	Nickel	mg/kg		15.1	15.1	18.8	3 / 3	16.97
Inorganic	Potassium	mg/kg		4130	4130	4510	3 / 3	4337
Inorganic	Selenium	mg/kg		4.3	4.3	4.8	3 / 3	4.533
Inorganic	Silver	mg/kg		0.14	0.14	0.19	3 / 3	0.17
Inorganic	Sodium	mg/kg		2520	2520	3020	3 / 3	2717
Inorganic	Strontium	mg/kg		50.6	50.6	63	3 / 3	55.6
Inorganic	Thallium	mg/kg	0.013 / 0.22	ND	0.29	0.38	2 / 3	0.335
Inorganic	Vanadium	mg/kg		0.92	0.92	3.2	3 / 3	1.807
Inorganic	Zinc	mg/kg		134	134	140	3 / 3	136.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table N-8: 2010 Snail Purged Whole Body Samples (Freeze Dried) at the Clinch River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6.1	6.1	12	3 / 3	8.567
Inorganic	Antimony	mg/kg		0.019	0.019	0.021	3 / 3	0.01967
Inorganic	Arsenic	mg/kg		15.2	15.2	17.9	3 / 3	16.73
Inorganic	Barium	mg/kg		20.7	20.7	35	3 / 3	27.13
Inorganic	Beryllium	mg/kg	0.06 / 0.062	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		0.85	0.85	1.4	3 / 3	1.15
Inorganic	Cadmium	mg/kg		1.2	1.2	6.1	3 / 3	3.1
Inorganic	Calcium	mg/kg		38200	38200	53700	3 / 3	47733
Inorganic	Chromium	mg/kg		2.9	2.9	3.6	3 / 3	3.167
Inorganic	Cobalt	mg/kg		7.2	7.2	11.6	3 / 3	9.333
Inorganic	Copper	mg/kg		175	175	226	3 / 3	201.3
Inorganic	Iron	mg/kg		523	523	597	3 / 3	567.7
Inorganic	Lead	mg/kg		0.37	0.37	0.87	3 / 3	0.5833
Inorganic	Magnesium	mg/kg		12400	12400	18000	3 / 3	15233
Inorganic	Manganese	mg/kg		161	161	318	3 / 3	215
Inorganic	Mercury	mg/kg		0.24	0.24	0.33	3 / 3	0.28
Inorganic	Molybdenum	mg/kg		0.9	0.9	1.1	3 / 3	0.9767
Inorganic	Nickel	mg/kg		21.9	21.9	28.2	3 / 3	25.07
Inorganic	Potassium	mg/kg		3530	3530	3940	3 / 3	3697
Inorganic	Selenium	mg/kg		4.6	4.6	4.9	3 / 3	4.733
Inorganic	Silver	mg/kg		0.18	0.18	0.36	3 / 3	0.25
Inorganic	Sodium	mg/kg		1150	1150	1830	3 / 3	1530
Inorganic	Strontium	mg/kg		47.2	47.2	68.2	3 / 3	58.3
Inorganic	Thallium	mg/kg	0.014 / 0.26	ND	0.28	0.28	1 / 3	0.28
Inorganic	Vanadium	mg/kg		0.65	0.65	0.82	3 / 3	0.75
Inorganic	Zinc	mg/kg		149	149	213	3 / 3	174

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Appendix O
2010 Snail Sampling Results – Tennessee River

Table O-1: 2010 Snail Purged Whole Body Samples (Freeze Dried) at Tennessee River Reach B

Group	Analyte	Units (Wet Wt. basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		6	6	9.8	3 / 3	8.9
Inorganic	Antimony	mg/kg	0.014 / 0.015	ND	0.022	0.022	1 / 3	0.022
Inorganic	Arsenic	mg/kg		8.6	8.6	11.3	3 / 3	10.07
Inorganic	Barium	mg/kg		20.7	20.7	25.5	3 / 3	22.63
Inorganic	Beryllium	mg/kg	0.059 / 0.062	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		1.2	1.2	2	3 / 3	1.6
Inorganic	Cadmium	mg/kg		0.89	0.89	1.4	3 / 3	1.163
Inorganic	Calcium	mg/kg		30100	30100	52300	3 / 3	40267
Inorganic	Chromium	mg/kg		0.92	0.92	1.7	3 / 3	1.273
Inorganic	Cobalt	mg/kg		5.2	5.2	8.2	3 / 3	6.6
Inorganic	Copper	mg/kg		99.7	99.7	187	3 / 3	129.9
Inorganic	Iron	mg/kg		378	378	564	3 / 3	459.3
Inorganic	Lead	mg/kg		0.23	0.23	0.29	3 / 3	0.2633
Inorganic	Magnesium	mg/kg		11200	11200	21000	3 / 3	15500
Inorganic	Manganese	mg/kg		238	238	306	3 / 3	262
Inorganic	Mercury	mg/kg		0.094	0.094	0.15	3 / 3	0.1247
Inorganic	Molybdenum	mg/kg		0.72	0.72	1.2	3 / 3	0.97
Inorganic	Nickel	mg/kg		8.7	8.7	18.9	3 / 3	12.67
Inorganic	Potassium	mg/kg		3390	3390	3840	3 / 3	3747
Inorganic	Selenium	mg/kg		2.8	2.8	3.6	3 / 3	3.433
Inorganic	Silver	mg/kg		0.14	0.14	0.24	3 / 3	0.1933
Inorganic	Sodium	mg/kg		1470	1470	1920	3 / 3	1837
Inorganic	Strontium	mg/kg		38.3	38.3	65.4	3 / 3	50.67
Inorganic	Thallium	mg/kg	0.12 / 0.19	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.42	0.42	0.54	3 / 3	0.4867
Inorganic	Zinc	mg/kg		142	142	146	3 / 3	144

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.

Table O-2: 2010 Snail Purged Whole Body Samples (Freeze Dried) at the Tennessee River Reference Reach

Group	Analyte	Units (Freeze Dried basis)	Detection Limit Range	Minimum	Minimum Detected Result	Maximum Detected Result	Number of Detections / Samples	Mean of Detections
Inorganic	Aluminum	mg/kg		4.7	4.7	18.3	3 / 3	9.767
Inorganic	Antimony	mg/kg	0.014 / 0.015	ND	ND	ND	0 / 3	0
Inorganic	Arsenic	mg/kg		4.8	4.8	5.7	3 / 3	5.333
Inorganic	Barium	mg/kg		9.7	9.7	12.4	3 / 3	11.23
Inorganic	Beryllium	mg/kg	0.06 / 0.062	ND	ND	ND	0 / 3	0
Inorganic	Boron	mg/kg		1.5	1.5	1.7	3 / 3	1.6
Inorganic	Cadmium	mg/kg		0.54	0.54	0.64	3 / 3	0.5767
Inorganic	Calcium	mg/kg		23100	23100	34600	3 / 3	29967
Inorganic	Chromium	mg/kg		0.35	0.35	0.52	3 / 3	0.41
Inorganic	Cobalt	mg/kg		5.5	5.5	7.3	3 / 3	6.2
Inorganic	Copper	mg/kg		107	107	117	3 / 3	110.3
Inorganic	Iron	mg/kg		258	258	355	3 / 3	295
Inorganic	Lead	mg/kg		0.22	0.22	0.33	3 / 3	0.2733
Inorganic	Magnesium	mg/kg		8430	8430	11100	3 / 3	10110
Inorganic	Manganese	mg/kg		163	163	288	3 / 3	214
Inorganic	Mercury	mg/kg		0.04	0.04	0.046	3 / 3	0.04267
Inorganic	Molybdenum	mg/kg		0.48	0.48	0.65	3 / 3	0.59
Inorganic	Nickel	mg/kg		4.9	4.9	6.5	3 / 3	5.733
Inorganic	Potassium	mg/kg		3560	3560	3670	3 / 3	3627
Inorganic	Selenium	mg/kg		2.1	2.1	2.3	3 / 3	2.233
Inorganic	Silver	mg/kg		0.38	0.38	0.68	3 / 3	0.5533
Inorganic	Sodium	mg/kg		939	939	1280	3 / 3	1065
Inorganic	Strontium	mg/kg		27	27	45.2	3 / 3	37.67
Inorganic	Thallium	mg/kg	0.027 / 0.035	ND	ND	ND	0 / 3	0
Inorganic	Vanadium	mg/kg		0.23	0.23	0.32	3 / 3	0.28
Inorganic	Zinc	mg/kg		116	116	120	3 / 3	118.3

Notes:

Composite sample results are freeze dried.

For definitions, see the Acronyms section.