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

**River System Sampling and Analysis Plan  
Task Completion Technical Memorandum  
Tree Swallow Sampling**

**Prepared by:  
Jacobs**

**for the Tennessee Valley Authority**

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## Table of Contents

|    |                                       |   |
|----|---------------------------------------|---|
| 1. | PURPOSE.....                          | 1 |
| 2. | BACKGROUND .....                      | 1 |
| 3. | SAMPLING AND ANALYSIS ACTIVITIES..... | 1 |
| 4. | ANALYTICAL DATA REVIEW .....          | 3 |
| 5. | DATA QUALITY SUMMARY .....            | 4 |
| 6. | DATA SUMMARY.....                     | 5 |

## List of Tables

|           |   |    |
|-----------|---|----|
| Table 1.  | Summary of Tree Swallow Egg and Nestling Field Activities .....                                       | 2  |
| Table 2.  | Applicable TVA Documents and Standard Operating Procedures .....                                      | 2  |
| Table 3.  | Data Review Summary .....   | 4  |
| Table 4.  | Summary of Tree Swallow Egg and Nestling Data Quality .....   | 5  |
| Table 5.  | 2009 Tree Swallow Egg Sampling at Emory River Mile 3.0.....   | 6  |
| Table 6.  | 2010 Tree Swallow Egg Sampling at Emory River Mile 3.0.....   | 7  |
| Table 7.  | 2009 Tree Swallow Egg Sampling at Emory River Mile 3.5.....   | 8  |
| Table 8.  | 2010 Tree Swallow Egg Sampling at Emory River Mile 3.5.....   | 9  |
| Table 9.  | 2009 Tree Swallow Egg Sampling at Clinch River Mile 2.5.....  | 10 |
| Table 10. | 2010 Tree Swallow Egg Sampling at Clinch River Mile 2.5.....  | 11 |
| Table 11. | 2009 Tree Swallow Egg Sampling at Fort Loudoun Dam.....   | 12 |
| Table 12. | 2010 Tree Swallow Egg Sampling at Fort Loudoun Dam.....   | 13 |
| Table 13. | 2009 Tree Swallow Egg Sampling at Melton Hill Dam .....   | 14 |
| Table 14. | 2010 Tree Swallow Egg Sampling at Melton Hill Dam .....   | 15 |
| Table 15. | 2010 Tree Swallow Egg Sampling at North, West, and East Embayments.....                               | 16 |
| Table 16. | 2010 Tree Swallow Egg Sampling at Clinch River Mile 1.0.....  | 17 |
| Table 17. | 2010 Tree Swallow Egg Sampling at Tennessee River Mile 566.0.....                                     | 18 |
| Table 18. | 2010 Tree Swallow Egg Sampling at Tennessee River Miles 569.5 and 571.5.....                          | 19 |
| Table 19. | 2010 Tree Swallow Egg Sampling at Tellico Dam.....  | 20 |
| Table 20. | 2010 Tree Swallow Egg Sampling at Lower Emory River Mile 2.0 .....                                    | 21 |
| Table 21. | 2010 Tree Swallow Dud Egg Sampling at Emory River Miles 3.0 and 3.5<br>and Clinch River Mile 2.5..... | 22 |
| Table 22. | 2010 Tree Swallow Dud Egg Sampling at Fort Loudoun Dam.....   | 23 |
| Table 23. | 2010 Tree Swallow Dud Egg Sampling at Melton Hill Dam .....   | 24 |
| Table 24. | 2010 Tree Swallow Egg Shell Sampling at Emory River Mile 3.0 .....                                    | 25 |
| Table 25. | 2010 Tree Swallow Egg Shell Sampling at the North, West, and East Embayments.....                     | 26 |
| Table 26. | 2010 Tree Swallow Egg Sampling at Downstream Tennessee River.....                                     | 27 |
| Table 27. | 2010 Tree Swallow Egg Shell Sampling at Tellico Dam .....   | 28 |
| Table 28. | 2010 Tree Swallow Egg Shell Sampling at Fort Loudoun Dam.....   | 29 |
| Table 29. | 2010 Tree Swallow Egg Shell Sampling at Melton Hill Dam .....   | 30 |

|   |    |
|---|----|
| Table 30. 2009 Tree Swallow Nestling Sampling at Emory River Mile 3.0 .....       | 31 |
| Table 31. 2010 Tree Swallow Nestling Sampling at Emory River Mile 3.0 .....       | 32 |
| Table 32. 2009 Tree Swallow Nestling Sampling at Emory River Mile 3.5 .....       | 33 |
| Table 33. 2010 Tree Swallow Nestling Sampling at Emory River Mile 3.5 .....       | 34 |
| Table 34. 2009 Tree Swallow Nestling Sampling at Clinch River Mile 2.5.....       | 35 |
| Table 35. 2010 Tree Swallow Nestling Sampling at Clinch River Mile 2.5.....       | 36 |
| Table 36. 2009 Tree Swallow Nestling Sampling at Fort Loudoun Dam.....            | 37 |
| Table 37. 2010 Tree Swallow Nestling Sampling at Fort Loudoun Dam.....            | 38 |
| Table 38. 2009 Tree Swallow Nestling Sampling at Melton Hill Dam.....             | 39 |
| Table 39. 2010 Tree Swallow Nestling Sampling at Melton Hill Dam.....             | 40 |
| Table 40. 2010 Tree Swallow Dead Nestling Sampling at Clinch River Mile 2.5 ..... | 41 |
| Table 41. 2010 Tree Swallow Dead Nestling Sampling at Melton Hill Dam.....        | 42 |

## **List of Figures (Attached)**

- Figure 1. Tree Swallow Sampling, 2009 and 2010
- Figure 2. Tree Swallow Box with Active Nest
- Figure 3a. Tree Swallow Egg Collection
- Figure 3b. Measurment of Tree Swallow Egg
- Figure 4. Collection of Tree Swallow Nestling

## **Appendices**

- Appendix A: Summary of Tree Swallow Collections
- Appendix B: Summary of Insectivorous Bird Shipments

## List of Acronyms

|        |                                      |
|--------|--------------------------------------|
| COC    | chain-of-custody                     |
| CRM    | Clinch River Mile                    |
| DQO    | data quality objective               |
| EDD    | electronic data deliverable          |
| EE/CA  | Engineering Evaluation/Cost Analysis |
| EEMBAY | East Embayment                       |
| ERM    | Emory River Mile                     |
| FLD    | Fort Loudoun Dam                     |
| KIF    | Kingston Fossil Plant                |
| LERM   | Lower Emory River Mile               |
| MDL    | method detection limit               |
| mg/kg  | milligram per kilogram               |
| MHD    | Melton Hill Dam                      |
| NA     | not applicable                       |
| NEMBAY | North Embayment                      |
| ND     | not detected                         |
| Pace   | Pace Analytical Services, Inc.       |
| QC     | quality control                      |
| SAP    | Sampling and Analysis Plan           |
| SOP    | Standard Operating Procedure         |
| TDL    | Tellico Dam                          |
| TM     | Technical Memorandum                 |
| TVA    | Tennessee Valley Authority           |
| WEMBAY | West Embayment                       |
| WP     | Work Package                         |

## 1. PURPOSE

The purpose of this Technical Memorandum (TM) is to summarize the completion of the 2009 and 2010 insectivorous bird sampling as 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.

## 2. BACKGROUND

The data quality objective (DQO) problem statement for insectivorous bird sampling is:

Naturally-occurring metals (e.g., arsenic and selenium) in ash may accumulate in wildlife (aquatic- and riparian-feeding birds and mammals) inhabiting the river system to concentrations that pose an unacceptable risk to these ecological receptors or ecological receptors who regularly consume these organisms.

Section 2.2.9 of the SAP discusses the design of the avian egg and nestling sampling studies. Concentrations of metals detected in bird eggs and nestlings are commonly used as biomarkers of exposure to these constituents. In order to estimate the potential bioaccumulation of ash-related constituents in wildlife, the concentrations of those constituents needed to be determined. While sampling of eggshells was not required for the SAP, concentrations of metals in these samples will also be considered as biomarkers of exposure. Effects of exposure to some constituents have been described in scientific literature and will be used when available. When possible, the metal concentrations in eggs and nestlings will be compared between impacted and unimpacted sites as well as between years. Elevated concentrations at impacted sites and changes in concentrations over time may indicate environmental stress and potential risk to tree swallows.

Insectivorous bird egg and nestlings sampling began in 2009, approximately five months after the spill, in order to provide baseline concentrations for future site comparisons. These sampling efforts were continued and expanded in 2010. The target species during both years of study was the tree swallow (*Tachycineta bicolor*). When possible, nests located around the ash impacted area near the Kingston Fossil Plant (KIF), downstream of the ash impacted area, and upstream of the ash impacted area (reference site) were sampled. One egg was collected from each occupied, accessible nest, with a target number in each area of 10 eggs in 2009 and 15 eggs in 2010. In addition, one 15-day nestling was collected from each occupied, accessible nest, with a target number in each area of 10 nestlings in 2009 and 15 nestlings in 2010. When possible, egg and nestling collections were collocated from the same nest.

In 2009, five colonies of tree swallows were established at three potentially impacted areas immediately around the ash spill and at two unimpacted areas (reference locations) away from the ash spill. Colony sites consisted of newly installed boxes and existing bird boxes. A total of 81 boxes were sampled in 2009. In 2010, the tree swallow study was expanded to include colonies at a total of nine potentially impacted areas as well as downstream on the Clinch and Tennessee Rivers, and a total of five unimpacted areas at nearby reference locations and upstream on the Tennessee River. In addition to increasing the number of established colonies, predator guards were also placed around the poles of each bird box in an effort to reduce predation of bird boxes. The number of monitored boxes increased from 81 in 2009 to 530 in 2010.

### 3. SAMPLING AND ANALYSIS ACTIVITIES

Field activities occurred in the spring of 2009 and 2010 in accordance with Standard Operating Procedure (SOP) TVA-KIF-SOP-28 *Sampling Tree Swallow Eggs and Nestlings*. Tree swallow egg and nestling sampling was conducted from April 27 through July 24, 2009 and from May 3 through July, 12, 2010. In 2009, all of the boxes were typically monitored weekly or bi-weekly. During 2010, most boxes were monitored bi-weekly or monthly, however a subset of target boxes at the five original 2009 sites were monitored daily. These five sites were the focus for egg and nestling collections; however, when possible, eggs were collected from all established colonies. Field crew accessed nests boxes on foot or by boat. One egg was randomly selected from each nest, sealed in a labeled plastic container for transport, and cooled on ice. Clutch size was recorded at time of collection. Eggs were processed, which included weighing and measuring length and width. After processing, each egg was repackaged in a labeled plastic bag, placed in a labeled glass jar, and then frozen. In addition to these egg collections, efforts were made in 2010 to collect un-hatched “dud” eggs remaining in tree swallow nests at the end of the breeding season. These eggs were collected and processed as previously noted. Once at the lab, a subset of 20 egg shells was selected and also analyzed for metals. This subset included egg shells from potentially impacted areas (13 eggs) and from reference areas (7 eggs).

Similarly, one nestling  $\geq$  15 days old was randomly selected from each nest and placed individually in a labeled, plastic bag. Clutch size and nestling survival were also recorded at the time of collection. The open bag was then placed in an insulated box with dry ice for euthanasia. Once the specimen was euthanized, the bag was sealed and cooled on ice until processing. Nestlings were processed (weighed, measured length of tarsus and third primary feather), within 24 hours of collection. After processing, each specimen was repackaged in a clean plastic bag, sealed, and frozen. When feasible, nestlings that were found dead in nest boxes during monitoring activities were also collected, sealed in labeled plastic bags, placed on ice, and processed in the same manner as other nestlings noted previously. Samples were then shipped to Pace Analytical Services, Inc. (Pace), Green Bay, Wisconsin on dry ice for chemical analysis. In addition to the field samples, crews collected quality control (QC) samples. Since a true field duplicate is not feasible for biological sampling, co-located samples were taken in 2009 and 2010 by collecting two eggs from one randomly selected nest. In 2009, two nestlings were also collected from one randomly selected nest; however, this was not continued in 2010 as it was not required. Co-located samples were analyzed as part of the data set. Field collection activities for 2009 and 2010 are summarized in Table 1.

**Table 1. Summary of Tree Swallow Egg and Nestling Field Activities**

| Summary  | 2009                        | 2010                        |
|--|-----------------------------|-----------------------------|
| Field collection period                        | April 27 through July 24    | May 3 through July 12       |
| Number egg samples collected <sup>1</sup>      | 63                          | 164                         |
| Number nestling samples collected <sup>1</sup> | 47                          | 67                          |
| Number QC samples collected                    | 2                           | 1                           |
| Frequency of QC sampling                       | Once per species per season | Once per species per season |

**Note:** <sup>1</sup>See Appendix A for collection details.

Sampling and analysis were performed in accordance with the *Quality Assurance Project Plan for the Tennessee Valley Authority Kingston Ash Recovery Project* hereinafter referred to as the TVA-KIF-QAPP, the listed SOPs, field guides, and work packages. Table 2 identifies the applicable TVA Documents and SOPs associated with tree swallow egg and nestling sampling.

All field and QC samples were shipped to Pace for analysis (see Appendix B for shipping details). Egg, nestling, and eggshells samples were analyzed for a suite of 26 metals and percent moisture (when sufficient mass remained after metals analysis).

**Table 2. 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: Tree Swallow Bird Box Installation                         | WP-1007         |
| TVA-KIF Work Package: Tree Swallow Nest Box Monitoring and Egg/Hatching Sampling | WP-1014         |
| TVA-KIF Work Package: Tree Swallow Bird Box Removal, Disassemble and Storage     | WP-1060         |
| <b>STANDARD OPERATION PROCEDURES</b>   |                 |
| Sampling Tree Swallow Eggs and Nestlings   | TVA-KIF-SOP-28  |
| 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 EQuISTM-Based Chain-of-Custody                  | TVA-KIF-SOP-18  |
| <b>FIELD CHANGE NOTICES</b>  |                 |
| Tree Swallow Box Locations   | FCN-010         |
| Egg Shell Analysis   | FCN-009         |

Note: For definitions, see the Acronyms section.

#### 4. SUMMARY OF CHANGES

Field Change Notices (FCNs) were prepared to document deviations from the SAP. FCNs were prepared and approved for the revision of tree swallow box locations and for the addition of eggshell analysis.

Tree swallow colonies were established at multiple locations around the site in order to support ongoing ecological studies at the Kingston Ash Recovery Project. These locations included two background reference locations (Fort Loudoun Dam and Melton Hill Dam) and three onsite locations (one near Clinch River Mile (CRM) 2.5 and two near Emory River Mile (ERM) 3.0). Colonies were also established near ERM 2.5, CRM 1.0, and Tennessee River Mile 566.0. Egg collections were made from these colonies when possible. Appendix A incorrectly stated that collections of eggs and nestlings would be made from two background reference locations (Fort Loudoun Dam and Melton Hill Dam) and six colonies (near CRM 2.5, CRM 3.5, ERM 1.5, ERM 2.5, and two near ERM 3.0). FCN-010 documents this correction.

In addition, a subset of tree swallow egg shells was analyzed for metals. Some trace elements, such as strontium which is a calcium analog, have the potential to be particularly elevated in the egg shell (a calcium-rich matrix) and can provide an additional line of evidence regarding trace element bioavailability, bioaccumulation, and maternal transport near the spill site. As a result, 20 tree swallow eggs were selected for analysis from potentially impacted areas and from reference areas (FCN-009).

## 5. 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 TVA-KIF-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 3.

**Table 3. Data Review Summary**

| No. COCs     | Matrix        | No. Samples | No. Equipment Blank Samples | No. Analytical Results | Percentage Validated |
|--------------|---------------|-------------|-----------------------------|------------------------|----------------------|
| 73           | Egg           | 218         | 0                           | 5,719                  | 100%                 |
|              | Nestling      | 112         |                             | 3,023                  |                      |
|              | Dud Egg       | 9           |                             | 234                    |                      |
|              | Dead Nestling | 2           |                             | 54                     |                      |
|              | Egg Shells    | 20          |                             | 520                    |                      |
| <b>Total</b> | -             | <b>361</b>  | <b>0</b>                    | <b>9,550</b>           | -                    |

Note: For definitions, see the Acronyms section.

## 6. 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;
- Pre and post 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 4 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 4. Summary of Tree Swallow Egg and Nestling Data Quality**

| Matrix        | Analytical Results (Total Count) | Acceptable (No Qualification) <sup>a</sup> |                                     | Acceptable (Estimated) <sup>b</sup> |                              | Blank Qualified <sup>c</sup> |                         | Rejected <sup>d,e</sup> |     |
|---------------|----------------------------------|--|-------------------------------------|-------------------------------------|------------------------------|------------------------------|-------------------------|-------------------------|-----|
|               |                                  | Acceptable (No Qualification) <sup>a</sup> | Acceptable (Estimated) <sup>b</sup> | Acceptable (Estimated) <sup>b</sup> | Blank Qualified <sup>c</sup> | Blank Qualified <sup>c</sup> | Rejected <sup>d,e</sup> |                         |     |
| Egg           | 5,719                            | 4,514                                      | 79%                                 | 956                                 | 17%                          | 165                          | 3%                      | 84                      | 1%  |
| Nestling      | 3,023                            | 2,511                                      | 83%                                 | 418                                 | 14%                          | 92                           | 3%                      | 2                       | <1% |
| Dud Egg       | 234                              | 181  | 77%                                 | 52                                  | 22%                          | 1                            | <1%                     | 0                       | 0%  |
| Dead Nestling | 54                               | 36   | 66%                                 | 14                                  | 26%                          | 2                            | 4%                      | 2                       | 4%  |
| Egg Shells    | 520                              | 403  | 78%                                 | 107                                 | 21%                          | 10                           | 1%                      | 0                       | 0%  |

**Notes:**

<sup>a</sup>Acceptable, No Qualification – Qualification of data was not warranted based on a review of the applicable QC measures.

<sup>b</sup>Acceptable, Estimated – Quantitation or detection limit is approximate due to limitations or bias identified during a review of the applicable QC measures.

<sup>c</sup>Blank Qualified – Result is considered “not-detected” because it was detected in an associated blank at a similar level.

<sup>d</sup>Rejected – Unreliable result or detection limit; analyte may or may not be present in sample.

<sup>e</sup>Most results are percent moisture results qualified as unusable due to limited sample mass and/or extended frozen storage prior to moisture determination.

## 7. DATA SUMMARY

Summary statistics for tree swallow eggs, eggshells, and nestlings are provided in Tables 5 through 41 for each location collected in 2009 and 2010. Rejected percent moisture results were due to small sample sizes and uncertainty in holding times; as a result, the data for each species are presented in wet weight until the percent moistures issues have been clarified.

**Table 5. 2009 Tree Swallow Egg Sampling at Emory River Mile 3.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 24.72 / 29.1          | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Antimony   | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Arsenic    | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Barium     | mg/kg |                       | 0.6175  | 0.6175                  | 16.42                   | RESIDENTIAL10                       | 05/08/2009                      | 10 / 10                        | 3.198              |
| Beryllium  | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Boron      | mg/kg | 1.98 / 2.3            | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Cadmium    | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Calcium    | mg/kg |                       | 479.6   | 479.6                   | 1290                    | RESIDENTIAL01                       | 05/08/2009                      | 10 / 10                        | 883.3              |
| Chromium   | mg/kg | 0.09801 / 0.1308      | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Cobalt     | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Copper     | mg/kg | 0.4875 / 0.58         | ND      | 0.4875                  | 0.62                    | RESIDENTIAL02                       | 05/28/2009                      | 2 / 10                         | 0.5538             |
| Iron       | mg/kg | 24.72 / 24.99         | ND      | 28.73                   | 73.71                   | RESIDENTIAL04                       | 05/08/2009                      | 8 / 10                         | 44.09              |
| Lead       | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Magnesium  | mg/kg | 98.98 / 103           | ND      | 100.7                   | 138                     | RESIDENTIAL01                       | 05/08/2009                      | 3 / 10                         | 119.7              |
| Manganese  | mg/kg |                       | 0.7475  | 0.7475                  | 2.052                   | RESIDENTIAL10                       | 05/08/2009                      | 10 / 10                        | 1.216              |
| Mercury    | mg/kg | 0.01962 / 0.036       | ND      | 0.0321                  | 0.0321                  | RESIDENTIAL07                       | 05/08/2009                      | 1 / 10                         | 0.0321             |
| Molybdenum | mg/kg | 0.9801 / 1.2          | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Nickel     | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Potassium  | mg/kg |                       | 1106    | 1106                    | 1780                    | RESIDENTIAL02                       | 05/28/2009                      | 10 / 10                        | 1372               |
| Selenium   | mg/kg |                       | 0.5004  | 0.5004                  | 1.287                   | RESIDENTIAL04                       | 05/08/2009                      | 10 / 10                        | 0.7606             |
| Silver     | mg/kg | 0.04875 / 0.058       | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Sodium     | mg/kg |                       | 1240    | 1240                    | 1528                    | RESIDENTIAL06                       | 05/08/2009                      | 10 / 10                        | 1407               |
| Strontium  | mg/kg |                       | 0.7089  | 0.7089                  | 3.709                   | RESIDENTIAL10                       | 05/08/2009                      | 10 / 10                        | 1.568              |
| Thallium   | mg/kg | 0.09801 / 0.12        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Vanadium   | mg/kg | 0.1962 / 0.23         | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Zinc       | mg/kg |                       | 11.88   | 11.88                   | 35.5                    | RESIDENTIAL01                       | 05/08/2009                      | 10 / 10                        | 22.01              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 6. 2010 Tree Swallow Egg Sampling at Emory River Mile 3.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.7 / 10.6            | ND      | ND                      | ND                      |                                     |                                 | 0 / 25                         | 0                  |
| Antimony   | mg/kg | 0.014 / 0.038         | ND      | 0.044                   | 0.044                   | ERM3.0                              | 05/12/2010                      | 1 / 30                         | 0.044              |
| Arsenic    | mg/kg | 0.027 / 0.15          | ND      | ND                      | ND                      |                                     |                                 | 0 / 30                         | 0                  |
| Barium     | mg/kg |                       | 0.3     | 0.3                     | 4.8                     | ERM3.0                              | 05/12/2010                      | 30 / 30                        | 1.595              |
| Beryllium  | mg/kg | 0.028 / 0.078         | ND      | ND                      | ND                      |                                     |                                 | 0 / 30                         | 0                  |
| Boron      | mg/kg | 0.39 / 1.1            | ND      | ND                      | ND                      |                                     |                                 | 0 / 30                         | 0                  |
| Cadmium    | mg/kg | 0.0073 / 0.048        | ND      | 0.01                    | 0.01                    | ERM3.0                              | 06/03/2010                      | 1 / 30                         | 0.01               |
| Calcium    | mg/kg |                       | 465     | 465                     | 5250                    | ERM3.0                              | 05/18/2010                      | 30 / 30                        | 1422               |
| Chromium   | mg/kg | 0.12 / 0.34           | ND      | 0.13                    | 0.27                    | ERM3.0                              | 05/12/2010                      | 4 / 30                         | 0.2                |
| Cobalt     | mg/kg | 0.013 / 0.035         | ND      | 0.014                   | 0.075                   | ERM3.0                              | 05/05/2010                      | 20 / 30                        | 0.02855            |
| Copper     | mg/kg |                       | 0.38    | 0.38                    | 0.74                    | ERM3.0                              | 05/05/2010                      | 30 / 30                        | 0.5453             |
| Iron       | mg/kg |                       | 18.5    | 18.5                    | 132                     | ERM3.0                              | 05/05/2010                      | 30 / 30                        | 40.38              |
| Lead       | mg/kg | 0.027 / 0.074         | ND      | ND                      | ND                      |                                     |                                 | 0 / 30                         | 0                  |
| Magnesium  | mg/kg | 45 / 121              | ND      | 60                      | 274                     | ERM3.0                              | 05/05/2010                      | 29 / 30                        | 106                |
| Manganese  | mg/kg |                       | 0.54    | 0.54                    | 5.8                     | ERM3.0                              | 05/05/2010                      | 30 / 30                        | 1.468              |
| Mercury    | mg/kg | 0.011 / 0.068         | ND      | 0.025                   | 0.048                   | ERM3.0                              | 05/12/2010                      | 7 / 30                         | 0.03871            |
| Molybdenum | mg/kg | 0.033 / 0.093         | ND      | 0.036                   | 0.055                   | ERM3.0                              | 05/05/2010                      | 5 / 30                         | 0.0442             |
| Nickel     | mg/kg | 0.091 / 0.24          | ND      | 0.12                    | 6.2                     | ERM3.0                              | 05/05/2010                      | 11 / 30                        | 2.304              |
| Potassium  | mg/kg |                       | 1270    | 1270                    | 2030                    | ERM3.0                              | 05/12/2010                      | 30 / 30                        | 1682               |
| Selenium   | mg/kg |                       | 0.45    | 0.45                    | 2.4                     | ERM3.0                              | 05/05/2010                      | 30 / 30                        | 0.8737             |
| Silver     | mg/kg | 0.0027 / 0.0077       | ND      | 0.0046                  | 0.0075                  | ERM3.0                              | 05/12/2010                      | 2 / 30                         | 0.00605            |
| Sodium     | mg/kg |                       | 1520    | 1520                    | 2290                    | ERM3.0                              | 05/05/2010                      | 30 / 30                        | 1852               |
| Strontium  | mg/kg |                       | 0.57    | 0.57                    | 6.1                     | ERM3.0                              | 05/18/2010                      | 30 / 30                        | 1.665              |
| Thallium   | mg/kg | 0.013 / 0.036         | ND      | ND                      | ND                      |                                     |                                 | 0 / 30                         | 0                  |
| Vanadium   | mg/kg | 0.012 / 0.24          | ND      | ND                      | ND                      |                                     |                                 | 0 / 30                         | 0                  |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 7. 2009 Tree Swallow Egg Sampling at Emory River Mile 3.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 24.75 / 47.9          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Antimony   | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Arsenic    | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Barium     | mg/kg | 0.0988 / 0.12         | ND      | 0.414                   | 4.1                     | FARM06                              | 06/04/2009                      | 14 / 15                        | 1.562              |
| Beryllium  | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 1.976 / 3.8           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cadmium    | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Calcium    | mg/kg |                       | 124     | 124                     | 5115                    | FARM03                              | 05/08/2009                      | 15 / 15                        | 2102               |
| Chromium   | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cobalt     | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Copper     | mg/kg | 0.4887 / 0.64         | ND      | 0.4995                  | 2.2                     | FARM06                              | 06/04/2009                      | 7 / 15                         | 0.8787             |
| Iron       | mg/kg | 24.75 / 29.7          | ND      | 28.9                    | 94.4                    | FARM06                              | 06/04/2009                      | 9 / 15                         | 45.64              |
| Lead       | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Magnesium  | mg/kg | 98.8 / 129            | ND      | 101.6                   | 330                     | FARM06                              | 06/04/2009                      | 4 / 15                         | 169.9              |
| Manganese  | mg/kg | 0.4887 / 0.59         | ND      | 0.56                    | 3.6                     | FARM06                              | 06/04/2009                      | 10 / 15                        | 1.558              |
| Mercury    | mg/kg | 0.01932 / 0.026       | ND      | 0.03328                 | 0.092                   | FARM06                              | 06/04/2009                      | 3 / 15                         | 0.0551             |
| Molybdenum | mg/kg | 0.988 / 1.9           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Nickel     | mg/kg | 0.0988 / 0.19         | ND      | 0.1042                  | 0.1042                  | FARM10                              | 05/08/2009                      | 1 / 15                         | 0.1042             |
| Potassium  | mg/kg |                       | 976     | 976                     | 6080                    | FARM06                              | 06/04/2009                      | 15 / 15                        | 1696               |
| Selenium   | mg/kg | 0.1932 / 0.24         | ND      | 0.442                   | 2                       | FARM06                              | 06/04/2009                      | 14 / 15                        | 0.714              |
| Silver     | mg/kg | 0.04887 / 0.096       | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Sodium     | mg/kg |                       | 1258    | 1258                    | 8020                    | FARM06                              | 06/04/2009                      | 15 / 15                        | 1990               |
| Strontium  | mg/kg |                       | 0.2     | 0.2                     | 4.325                   | FARM03                              | 05/08/2009                      | 15 / 15                        | 1.838              |
| Thallium   | mg/kg | 0.0988 / 0.19         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Vanadium   | mg/kg | 0.1932 / 0.38         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Zinc       | mg/kg | 1.976 / 2.4           | ND      | 7.254                   | 58.1                    | FARM06                              | 06/04/2009                      | 14 / 15                        | 20.21              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 8. 2010 Tree Swallow Egg Sampling at Emory River Mile 3.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.6 / 4.1             | ND      | 6.2                     | 6.2                     | ERM3.5                              | 05/12/2010                      | 1 / 12                         | 6.2                |
| Antimony   | mg/kg | 0.013 / 0.015         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Arsenic    | mg/kg | 0.027 / 0.058         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Barium     | mg/kg |                       | 0.41    | 0.41                    | 2.8                     | ERM3.5                              | 05/18/2010                      | 12 / 12                        | 1.155              |
| Beryllium  | mg/kg | 0.026 / 0.06          | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Boron      | mg/kg | 0.37 / 1.26           | ND      | 1.2                     | 1.2                     | ERM3.5                              | 05/12/2010                      | 1 / 12                         | 1.2                |
| Cadmium    | mg/kg | 0.0073 / 0.016        | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Calcium    | mg/kg |                       | 520     | 520                     | 937                     | ERM3.5                              | 05/18/2010                      | 12 / 12                        | 749.9              |
| Chromium   | mg/kg | 0.11 / 0.13           | ND      | 0.14                    | 1                       | ERM3.5                              | 06/03/2010                      | 3 / 12                         | 0.4567             |
| Cobalt     | mg/kg | 0.013 / 0.014         | ND      | 0.015                   | 0.025                   | ERM3.5                              | 05/07/2010                      | 9 / 12                         | 0.01933            |
| Copper     | mg/kg |                       | 0.37    | 0.37                    | 0.8                     | ERM3.5                              | 05/06/2010                      | 12 / 12                        | 0.4933             |
| Iron       | mg/kg |                       | 17      | 17                      | 47.8                    | ERM3.5                              | 05/18/2010                      | 12 / 12                        | 29.4               |
| Lead       | mg/kg | 0.025 / 0.083         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Magnesium  | mg/kg |                       | 59.4    | 59.4                    | 107                     | ERM3.5                              | 05/07/2010                      | 12 / 12                        | 83.1               |
| Manganese  | mg/kg |                       | 0.61    | 0.61                    | 1.8                     | ERM3.5                              | 05/11/2010                      | 12 / 12                        | 1.132              |
| Mercury    | mg/kg | 0.011 / 0.044         | ND      | 0.028                   | 0.052                   | ERM3.5                              | 06/03/2010                      | 6 / 12                         | 0.03767            |
| Molybdenum | mg/kg | 0.031 / 0.036         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Nickel     | mg/kg | 0.087 / 0.1           | ND      | 0.5                     | 1.2                     | ERM3.5                              | 05/07/2010                      | 2 / 12                         | 0.85               |
| Potassium  | mg/kg |                       | 1240    | 1240                    | 1680                    | ERM3.5                              | 05/06/2010                      | 12 / 12                        | 1502               |
| Selenium   | mg/kg |                       | 0.39    | 0.39                    | 0.77                    | ERM3.5                              | 05/12/2010                      | 12 / 12                        | 0.58               |
| Silver     | mg/kg | 0.0026 / 0.01         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Sodium     | mg/kg |                       | 1350    | 1350                    | 1990                    | ERM3.5                              | 05/18/2010                      | 12 / 12                        | 1737               |
| Strontium  | mg/kg |                       | 0.59    | 0.59                    | 1.4                     | ERM3.5                              | 05/07/2010                      | 12 / 12                        | 0.8792             |
| Thallium   | mg/kg | 0.012 / 0.041         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Vanadium   | mg/kg | 0.044 / 0.094         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Zinc       | mg/kg |                       | 11.7    | 11.7                    | 27.2                    | ERM3.5                              | 05/18/2010                      | 12 / 12                        | 17.77              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 9. 2009 Tree Swallow Egg Sampling at Clinch River Mile 2.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 67.4    | 67.4                    | 81.4                    | DISCHARGE04                         | 06/01/2009                      | 2 / 2                          | 74.4               |
| Aluminum   | mg/kg | 24.29 / 48.8          | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Antimony   | mg/kg | 0.09761 / 0.2         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Arsenic    | mg/kg | 0.09761 / 0.2         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Barium     | mg/kg |                       | 0.6303  | 0.6303                  | 2.539                   | DISCHARGE08                         | 05/08/2009                      | 12 / 12                        | 1.581              |
| Beryllium  | mg/kg | 0.09761 / 0.2         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Boron      | mg/kg | 1.952 / 3.9           | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Cadmium    | mg/kg | 0.09761 / 0.2         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Calcium    | mg/kg |                       | 425.3   | 425.3                   | 14849                   | DISCHARGE08                         | 05/08/2009                      | 12 / 12                        | 4037               |
| Chromium   | mg/kg | 0.09761 / 0.2418      | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Cobalt     | mg/kg | 0.09761 / 0.2         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Copper     | mg/kg | 0.4767 / 0.993        | ND      | 0.4994                  | 2.836                   | DISCHARGE03                         | 06/04/2009                      | 6 / 12                         | 1.002              |
| Iron       | mg/kg | 24.29 / 48.8          | ND      | 27.71                   | 79.44                   | DISCHARGE03                         | 06/16/2009                      | 6 / 12                         | 46.94              |
| Lead       | mg/kg | 0.09761 / 0.2         | ND      | 0.1646                  | 0.1646                  | DISCHARGE06                         | 05/08/2009                      | 1 / 12                         | 0.1646             |
| Magnesium  | mg/kg | 97.38 / 195           | ND      | 99                      | 258.8                   | DISCHARGE03                         | 06/04/2009                      | 6 / 12                         | 145.5              |
| Manganese  | mg/kg | 0.4767 / 2.1          | ND      | 0.4767                  | 3.376                   | DISCHARGE03                         | 06/16/2009                      | 9 / 12                         | 1.286              |
| Mercury    | mg/kg | 0.0191 / 0.039        | ND      | 0.02079                 | 0.03632                 | DISCHARGE05                         | 06/16/2009                      | 2 / 12                         | 0.02856            |
| Molybdenum | mg/kg | 0.9761 / 2            | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Nickel     | mg/kg | 0.09761 / 0.2         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Potassium  | mg/kg |                       | 1068    | 1068                    | 2106                    | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 1511               |
| Selenium   | mg/kg |                       | 0.4536  | 0.4536                  | 1.258                   | DISCHARGE03                         | 06/16/2009                      | 12 / 12                        | 0.7063             |
| Silver     | mg/kg | 0.04767 / 0.0993      | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Sodium     | mg/kg |                       | 1099    | 1099                    | 2269                    | DISCHARGE04                         | 06/01/2009                      | 12 / 12                        | 1579               |
| Strontium  | mg/kg |                       | 0.6426  | 0.6426                  | 9.467                   | DISCHARGE08                         | 05/08/2009                      | 12 / 12                        | 3.18               |
| Thallium   | mg/kg | 0.09761 / 0.2         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Vanadium   | mg/kg | 0.191 / 0.39          | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Zinc       | mg/kg |                       | 6.924   | 6.924                   | 43.63                   | DISCHARGE03                         | 06/16/2009                      | 12 / 12                        | 19.19              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 10. 2010 Tree Swallow Egg Sampling at Clinch River Mile 2.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Antimony   | mg/kg | 0.012 / 0.041         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Arsenic    | mg/kg | 0.024 / 0.08          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Barium     | mg/kg |                       | 0.34    | 0.34                    | 2.6                     | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 1.053              |
| Beryllium  | mg/kg | 0.025 / 0.084         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 0.35 / 1.2            | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cadmium    | mg/kg | 0.0065 / 0.022        | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Calcium    | mg/kg |                       | 594     | 594                     | 9400                    | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 1758               |
| Chromium   | mg/kg | 0.11 / 0.36           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cobalt     | mg/kg | 0.012 / 0.04          | ND      | 0.012                   | 0.041                   | CRM2.5                              | 05/05/2010                      | 10 / 15                        | 0.0235             |
| Copper     | mg/kg |                       | 0.34    | 0.34                    | 0.93                    | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 0.6013             |
| Iron       | mg/kg | 10.3 / 34.2           | ND      | 20.6                    | 46.3                    | CRM2.5                              | 05/05/2010                      | 13 / 15                        | 30.1               |
| Lead       | mg/kg | 0.024 / 0.079         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Magnesium  | mg/kg | 41.3 / 137            | ND      | 61.8                    | 111                     | CRM2.5                              | 05/05/2010                      | 14 / 15                        | 90.04              |
| Manganese  | mg/kg |                       | 0.61    | 0.61                    | 1.8                     | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 0.9973             |
| Mercury    | mg/kg | 0.024 / 0.055         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Molybdenum | mg/kg | 0.059 / 0.2           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Nickel     | mg/kg | 0.084 / 0.28          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Potassium  | mg/kg |                       | 1470    | 1470                    | 2270                    | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 1807               |
| Selenium   | mg/kg |                       | 0.45    | 0.45                    | 1.1                     | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 0.7067             |
| Silver     | mg/kg | 0.0025 / 0.0082       | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Sodium     | mg/kg |                       | 1520    | 1520                    | 2320                    | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 1891               |
| Strontium  | mg/kg |                       | 0.62    | 0.62                    | 5.1                     | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 1.349              |
| Thallium   | mg/kg | 0.012 / 0.039         | ND      | 0.017                   | 0.017                   | CRM2.5                              | 05/05/2010                      | 1 / 15                         | 0.017              |
| Vanadium   | mg/kg | 0.078 / 0.26          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Zinc       | mg/kg |                       | 10.5    | 10.5                    | 25.5                    | CRM2.5                              | 05/05/2010                      | 15 / 15                        | 15.45              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 11. 2009 Tree Swallow Egg Sampling at Fort Loudoun Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 24.69 / 25            | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Antimony   | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Arsenic    | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Barium     | mg/kg |                       | 0.2743  | 0.2743                  | 2.262                   | FLD.CONTROL05                       | 05/08/2009                      | 9 / 9                          | 1.2                |
| Beryllium  | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Boron      | mg/kg | 1.976 / 2.015         | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Cadmium    | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Calcium    | mg/kg |                       | 400.9   | 400.9                   | 1991                    | FLD.CONTROL06                       | 05/08/2009                      | 9 / 9                          | 1103               |
| Chromium   | mg/kg | 0.0988 / 0.1115       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Cobalt     | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Copper     | mg/kg | 0.4818 / 0.5032       | ND      | 0.4818                  | 0.8272                  | FLD.CONTROL07                       | 05/08/2009                      | 4 / 9                          | 0.5944             |
| Iron       | mg/kg | 24.69 / 24.99         | ND      | 26.89                   | 63.22                   | FLD.CONTROL05                       | 05/08/2009                      | 6 / 9                          | 42.42              |
| Lead       | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Magnesium  | mg/kg | 98.96 / 99.97         | ND      | 104.4                   | 107.7                   | FLD.CONTROL05                       | 05/08/2009                      | 2 / 9                          | 106.1              |
| Manganese  | mg/kg | 0.4818 / 0.4928       | ND      | 0.5256                  | 1.714                   | FLD.CONTROL25                       | 05/08/2009                      | 7 / 9                          | 1.029              |
| Mercury    | mg/kg | 0.01936 / 0.0204      | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Molybdenum | mg/kg | 0.988 / 1.007         | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Nickel     | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Potassium  | mg/kg |                       | 1164    | 1164                    | 1612                    | FLD23                               | 06/01/2009                      | 9 / 9                          | 1354               |
| Selenium   | mg/kg |                       | 0.2954  | 0.2954                  | 0.6939                  | FLD.CONTROL05                       | 05/08/2009                      | 9 / 9                          | 0.4863             |
| Silver     | mg/kg | 0.04818 / 0.05032     | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Sodium     | mg/kg |                       | 1279    | 1279                    | 1697                    | FLD23                               | 06/01/2009                      | 9 / 9                          | 1501               |
| Strontium  | mg/kg |                       | 0.422   | 0.422                   | 1.596                   | FLD.CONTROL06                       | 05/08/2009                      | 9 / 9                          | 1.091              |
| Thallium   | mg/kg | 0.0988 / 0.1007       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Vanadium   | mg/kg | 0.1936 / 0.204        | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Zinc       | mg/kg |                       | 6.225   | 6.225                   | 31.35                   | FLD.CONTROL05                       | 05/08/2009                      | 9 / 9                          | 18.03              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 12. 2010 Tree Swallow Egg Sampling at Fort Loudoun Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.3 / 8.1             | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Antimony   | mg/kg | 0.012 / 0.029         | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Arsenic    | mg/kg | 0.023 / 0.058         | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Barium     | mg/kg |                       | 0.33    | 0.33                    | 5.7                     | FLD                                 | 05/08/2010                      | 16 / 16                        | 1.539              |
| Beryllium  | mg/kg | 0.013 / 0.064         | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Boron      | mg/kg | 0.34 / 0.84           | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Cadmium    | mg/kg | 0.0076 / 0.017        | ND      | 0.0087                  | 0.0087                  | FLD                                 | 06/17/2010                      | 1 / 16                         | 0.0087             |
| Calcium    | mg/kg |                       | 288     | 288                     | 13000                   | FLD                                 | 06/11/2010                      | 16 / 16                        | 1585               |
| Chromium   | mg/kg | 0.11 / 0.26           | ND      | 0.15                    | 0.16                    | FLD                                 | 06/11/2010                      | 2 / 16                         | 0.155              |
| Cobalt     | mg/kg | 0.012 / 0.018         | ND      | 0.014                   | 0.031                   | FLD                                 | 06/15/2010                      | 11 / 16                        | 0.02064            |
| Copper     | mg/kg |                       | 0.34    | 0.34                    | 0.66                    | FLD                                 | 05/04/2010                      | 16 / 16                        | 0.4731             |
| Iron       | mg/kg | 10 / 15.3             | ND      | 12.6                    | 55.3                    | FLD                                 | 06/14/2010                      | 15 / 16                        | 34.11              |
| Lead       | mg/kg | 0.023 / 0.056         | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Magnesium  | mg/kg | 40.1 / 49.7           | ND      | 63.8                    | 140                     | FLD                                 | 06/14/2010                      | 15 / 16                        | 95.91              |
| Manganese  | mg/kg | 0.14 / 1              | ND      | 0.39                    | 2.3                     | FLD                                 | 05/08/2010                      | 11 / 16                        | 1.358              |
| Mercury    | mg/kg | 0.0096 / 0.033        | ND      | 0.016                   | 0.025                   | FLD                                 | 05/04/2010                      | 10 / 16                        | 0.02               |
| Molybdenum | mg/kg | 0.029 / 0.071         | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Nickel     | mg/kg | 0.081 / 0.38          | ND      | 1.4                     | 1.5                     | FLD                                 | 05/08/2010                      | 2 / 16                         | 1.45               |
| Potassium  | mg/kg |                       | 1300    | 1300                    | 1690                    | FLD                                 | 06/15/2010                      | 16 / 16                        | 1479               |
| Selenium   | mg/kg |                       | 0.24    | 0.24                    | 0.93                    | FLD                                 | 05/07/2010                      | 16 / 16                        | 0.5281             |
| Silver     | mg/kg | 0.0024 / 0.01         | ND      | 0.0028                  | 0.0062                  | FLD                                 | 05/08/2010                      | 3 / 16                         | 0.004567           |
| Sodium     | mg/kg |                       | 1480    | 1480                    | 1840                    | FLD                                 | 05/06/2010                      | 16 / 16                        | 1661               |
| Strontium  | mg/kg |                       | 0.34    | 0.34                    | 7.3                     | FLD                                 | 06/11/2010                      | 16 / 16                        | 1.269              |
| Thallium   | mg/kg | 0.011 / 0.028         | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Vanadium   | mg/kg | 0.038 / 0.095         | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                  |
| Zinc       | mg/kg |                       | 3.4     | 3.4                     | 30                      | FLD                                 | 06/15/2010                      | 16 / 16                        | 18.31              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 13. 2009 Tree Swallow Egg Sampling at Melton Hill Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detection s |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|---------------------|
| Aluminum   | mg/kg | 24.82 / 74.9          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Antimony   | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Arsenic    | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Barium     | mg/kg |                       | 0.3604  | 0.3604                  | 3.5                     | MHD02                               | 06/04/2009                      | 16 / 16                        | 1.397               |
| Beryllium  | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Boron      | mg/kg | 1.984 / 6             | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Cadmium    | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Calcium    | mg/kg |                       | 371     | 371                     | 5762                    | MHD.CONTROL18                       | 05/08/2009                      | 16 / 16                        | 1488                |
| Chromium   | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Cobalt     | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Copper     | mg/kg | 0.4914 / 1.5          | ND      | 0.5673                  | 3.5                     | MHD24                               | 06/14/2009                      | 7 / 16                         | 1.091               |
| Iron       | mg/kg | 24.82 / 74.9          | ND      | 25.44                   | 73.2                    | MHD.CONTROL18                       | 05/08/2009                      | 9 / 16                         | 42.18               |
| Lead       | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Magnesium  | mg/kg | 99.37 / 299           | ND      | 108                     | 141                     | MHD.CONTROL18                       | 05/08/2009                      | 2 / 16                         | 111                 |
| Manganese  | mg/kg | 0.4914 / 1.5          | ND      | 0.74                    | 2.62                    | MHD11                               | 06/01/2009                      | 12 / 16                        | 1.31                |
| Mercury    | mg/kg | 0.0191 / 0.06         | ND      | 0.02865                 | 0.041                   | MHD17                               | 06/14/2009                      | 2 / 16                         | 0.03483             |
| Molybdenum | mg/kg | 0.985 / 3             | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Nickel     | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Potassium  | mg/kg |                       | 1090    | 1090                    | 1960                    | MHD03                               | 06/04/2009                      | 16 / 16                        | 1408                |
| Selenium   | mg/kg | 0.191 / 0.6           | ND      | 0.4186                  | 1.1                     | MHD24                               | 06/14/2009                      | 15 / 16                        | 0.6896              |
| Silver     | mg/kg | 0.04914 / 0.15        | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Sodium     | mg/kg |                       | 1090    | 1090                    | 2530                    | MHD03                               | 06/04/2009                      | 16 / 16                        | 1540                |
| Strontium  | mg/kg |                       | 0.41    | 0.41                    | 3.67                    | MHD.CONTROL18                       | 05/08/2009                      | 16 / 16                        | 1.159               |
| Thallium   | mg/kg | 0.0985 / 0.3          | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Vanadium   | mg/kg | 0.191 / 0.6           | ND      | ND                      | ND                      |                                     |                                 | 0 / 16                         | 0                   |
| Zinc       | mg/kg |                       | 5.826   | 5.826                   | 36.5                    | MHD.CONTROL18                       | 05/08/2009                      | 16 / 16                        | 17.22               |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 14. 2010 Tree Swallow Egg Sampling at Melton Hill Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.6 / 9.8             | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Antimony   | mg/kg | 0.013 / 0.036         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Arsenic    | mg/kg | 0.025 / 0.069         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Barium     | mg/kg |                       | 0.36    | 0.36                    | 6.6                     | MHD                                 | 05/05/2010                      | 15 / 15                        | 2.027              |
| Beryllium  | mg/kg | 0.029 / 0.15          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 0.37 / 1              | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cadmium    | mg/kg | 0.0075 / 0.038        | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Calcium    | mg/kg |                       | 394     | 394                     | 4840                    | MHD                                 | 05/04/2010                      | 15 / 15                        | 1340               |
| Chromium   | mg/kg | 0.11 / 0.31           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cobalt     | mg/kg | 0.013 / 0.035         | ND      | 0.018                   | 0.075                   | MHD                                 | 05/04/2010                      | 10 / 15                        | 0.0272             |
| Copper     | mg/kg |                       | 0.35    | 0.35                    | 0.61                    | MHD                                 | 05/04/2010                      | 15 / 15                        | 0.47               |
| Iron       | mg/kg |                       | 14.9    | 14.9                    | 81.6                    | MHD                                 | 05/04/2010                      | 15 / 15                        | 38.13              |
| Lead       | mg/kg | 0.025 / 0.068         | ND      | 0.069                   | 0.069                   | MHD                                 | 05/04/2010                      | 1 / 15                         | 0.069              |
| Magnesium  | mg/kg |                       | 57.3    | 57.3                    | 215                     | MHD                                 | 05/04/2010                      | 15 / 15                        | 99.35              |
| Manganese  | mg/kg | 0.16 / 1              | ND      | 0.96                    | 4.8                     | MHD                                 | 05/04/2010                      | 10 / 15                        | 2.156              |
| Mercury    | mg/kg | 0.01 / 0.034          | ND      | 0.017                   | 0.028                   | MHD                                 | 05/04/2010                      | 10 / 15                        | 0.024              |
| Molybdenum | mg/kg | 0.031 / 0.086         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Nickel     | mg/kg | 0.087 / 0.24          | ND      | 1.4                     | 1.5                     | MHD                                 | 05/08/2010                      | 2 / 15                         | 1.45               |
| Potassium  | mg/kg |                       | 1290    | 1290                    | 1780                    | MHD                                 | 05/05/2010                      | 15 / 15                        | 1497               |
| Selenium   | mg/kg |                       | 0.48    | 0.48                    | 1.5                     | MHD                                 | 05/04/2010                      | 15 / 15                        | 0.766              |
| Silver     | mg/kg | 0.0029 / 0.024        | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Sodium     | mg/kg |                       | 1410    | 1410                    | 2150                    | MHD                                 | 05/05/2010                      | 15 / 15                        | 1627               |
| Strontium  | mg/kg |                       | 0.38    | 0.38                    | 2.9                     | MHD                                 | 05/04/2010                      | 15 / 15                        | 1.133              |
| Thallium   | mg/kg | 0.012 / 0.034         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Vanadium   | mg/kg | 0.041 / 0.11          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Zinc       | mg/kg |                       | 10.4    | 10.4                    | 54.8                    | MHD                                 | 05/04/2010                      | 15 / 15                        | 21.49              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 15. 2010 Tree Swallow Egg Sampling at North, West, and East Embayments**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.7 / 6.7             | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Antimony   | mg/kg | 0.013 / 0.024         | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Arsenic    | mg/kg | 0.027 / 0.058         | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Barium     | mg/kg |                       | 0.3648  | 0.3648                  | 2.9                     | EEMBAY                              | 05/05/2010                      | 10 / 10                        | 1.618              |
| Beryllium  | mg/kg | 0.027 / 0.1           | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Boron      | mg/kg | 0.38 / 1.17           | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Cadmium    | mg/kg | 0.00243 / 0.026       | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Calcium    | mg/kg |                       | 570     | 570                     | 4520                    | NEMBAY                              | 05/06/2010                      | 10 / 10                        | 1472               |
| Chromium   | mg/kg | 0.12 / 0.21           | ND      | 0.13                    | 0.13                    | NEMBAY                              | 05/11/2010                      | 1 / 10                         | 0.13               |
| Cobalt     | mg/kg | 0.013 / 0.024         | ND      | 0.01824                 | 0.036                   | EEMBAY                              | 05/05/2010                      | 7 / 10                         | 0.02675            |
| Copper     | mg/kg |                       | 0.39    | 0.39                    | 0.57                    | NEMBAY                              | 05/06/2010                      | 10 / 10                        | 0.4686             |
| Iron       | mg/kg |                       | 20.5    | 20.5                    | 60.6                    | NEMBAY                              | 05/11/2010                      | 10 / 10                        | 37.64              |
| Lead       | mg/kg | 0.026 / 0.083         | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Magnesium  | mg/kg |                       | 71      | 71                      | 162                     | EEMBAY                              | 05/05/2010                      | 10 / 10                        | 101.1              |
| Manganese  | mg/kg |                       | 0.42    | 0.42                    | 3.7                     | EEMBAY                              | 05/05/2010                      | 10 / 10                        | 1.786              |
| Mercury    | mg/kg | 0.011 / 0.053         | ND      | 0.026                   | 0.04408                 | EEMBAY                              | 05/05/2010                      | 6 / 10                         | 0.03451            |
| Molybdenum | mg/kg | 0.032 / 0.059         | ND      | 0.039                   | 0.04256                 | EEMBAY                              | 05/05/2010                      | 2 / 10                         | 0.04078            |
| Nickel     | mg/kg | 0.09 / 0.16           | ND      | 0.81                    | 6.3                     | NEMBAY                              | 05/06/2010                      | 4 / 10                         | 2.328              |
| Potassium  | mg/kg |                       | 1370    | 1370                    | 1690                    | WEMBAY                              | 05/06/2010                      | 10 / 10                        | 1580               |
| Selenium   | mg/kg |                       | 0.52    | 0.52                    | 1.1                     | NEMBAY                              | 05/11/2010                      | 10 / 10                        | 0.8054             |
| Silver     | mg/kg | 0.0027 / 0.009        | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Sodium     | mg/kg |                       | 1540    | 1540                    | 2070                    | EEMBAY                              | 05/05/2010                      | 10 / 10                        | 1823               |
| Strontium  | mg/kg |                       | 0.6384  | 0.6384                  | 3.7                     | NEMBAY                              | 05/06/2010                      | 10 / 10                        | 1.427              |
| Thallium   | mg/kg | 0.013 / 0.038         | ND      | 0.013                   | 0.013                   | WEMBAY                              | 05/06/2010                      | 1 / 10                         | 0.013              |
| Vanadium   | mg/kg | 0.043 / 0.093         | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Zinc       | mg/kg |                       | 11.9    | 11.9                    | 32.1                    | EEMBAY                              | 05/05/2010                      | 10 / 10                        | 20.51              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 16. 2010 Tree Swallow Egg Sampling at Clinch River Mile 1.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Antimony   | mg/kg | 0.014 / 0.028         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Arsenic    | mg/kg | 0.027 / 0.054         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Barium     | mg/kg |                       | 0.28    | 0.28                    | 6.5                     | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 2.249              |
| Beryllium  | mg/kg | 0.028 / 0.057         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 0.4 / 0.8             | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cadmium    | mg/kg | 0.0078 / 0.022        | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Calcium    | mg/kg |                       | 560     | 560                     | 3330                    | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 1186               |
| Chromium   | mg/kg | 0.12 / 0.24           | ND      | 0.14                    | 0.28                    | CRM1.0                              | 05/10/2010                      | 8 / 15                         | 0.18               |
| Cobalt     | mg/kg | 0.014 / 0.027         | ND      | 0.014                   | 0.047                   | CRM1.0                              | 05/10/2010                      | 11 / 15                        | 0.02455            |
| Copper     | mg/kg |                       | 0.38    | 0.38                    | 0.73                    | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 0.514              |
| Iron       | mg/kg | 11.6 / 23.1           | ND      | 23                      | 66.5                    | CRM1.0                              | 05/10/2010                      | 14 / 15                        | 38.09              |
| Lead       | mg/kg | 0.052 / 0.1           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Magnesium  | mg/kg | 46.3 / 92.6           | ND      | 71.9                    | 130                     | CRM1.0                              | 05/10/2010                      | 14 / 15                        | 97.37              |
| Manganese  | mg/kg |                       | 0.78    | 0.78                    | 3.1                     | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 1.493              |
| Mercury    | mg/kg | 0.023 / 0.068         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Molybdenum | mg/kg | 0.034 / 0.068         | ND      | 0.051                   | 0.052                   | CRM1.0                              | 05/10/2010                      | 2 / 15                         | 0.0515             |
| Nickel     | mg/kg | 0.094 / 0.19          | ND      | 0.38                    | 0.38                    | CRM1.0                              | 05/10/2010                      | 1 / 15                         | 0.38               |
| Potassium  | mg/kg |                       | 1310    | 1310                    | 1900                    | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 1568               |
| Selenium   | mg/kg |                       | 0.46    | 0.46                    | 1.1                     | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 0.682              |
| Silver     | mg/kg | 0.0028 / 0.0056       | ND      | 0.0031                  | 0.01                    | CRM1.0                              | 05/10/2010                      | 2 / 15                         | 0.00655            |
| Sodium     | mg/kg |                       | 1450    | 1450                    | 2060                    | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 1814               |
| Strontium  | mg/kg |                       | 0.66    | 0.66                    | 3.1                     | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 1.23               |
| Thallium   | mg/kg | 0.013 / 0.026         | ND      | 0.022                   | 0.022                   | CRM1.0                              | 05/10/2010                      | 1 / 15                         | 0.022              |
| Vanadium   | mg/kg | 0.044 / 0.088         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Zinc       | mg/kg |                       | 12.6    | 12.6                    | 36                      | CRM1.0                              | 05/10/2010                      | 15 / 15                        | 21.99              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 17. 2010 Tree Swallow Egg Sampling at Tennessee River Mile 566.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.8 / 8.5             | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Antimony   | mg/kg | 0.014 / 0.031         | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Arsenic    | mg/kg | 0.029 / 0.06          | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Barium     | mg/kg |                       | 0.84    | 0.84                    | 4.5                     | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 2.94               |
| Beryllium  | mg/kg | 0.03 / 0.13           | ND      | 0.03                    | 0.03                    | TRM566.0                            | 05/11/2010                      | 1 / 9                          | 0.03               |
| Boron      | mg/kg | 0.39 / 0.88           | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Cadmium    | mg/kg | 0.0079 / 0.033        | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Calcium    | mg/kg |                       | 692     | 692                     | 1630                    | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 1085               |
| Chromium   | mg/kg | 0.12 / 0.27           | ND      | 0.13                    | 0.13                    | TRM566.0                            | 05/11/2010                      | 1 / 9                          | 0.13               |
| Cobalt     | mg/kg | 0.013 / 0.03          | ND      | 0.013                   | 0.054                   | TRM566.0                            | 05/11/2010                      | 7 / 9                          | 0.02943            |
| Copper     | mg/kg |                       | 0.35    | 0.35                    | 0.52                    | TRM566.0                            | 05/11/2010                      | 9 / 9                          | 0.4478             |
| Iron       | mg/kg |                       | 29.7    | 29.7                    | 121                     | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 55.72              |
| Lead       | mg/kg | 0.029 / 0.083         | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Magnesium  | mg/kg |                       | 84.9    | 84.9                    | 185                     | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 116.6              |
| Manganese  | mg/kg |                       | 1.1     | 1.1                     | 8.2                     | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 2.589              |
| Mercury    | mg/kg | 0.011 / 0.025         | ND      | 0.017                   | 0.027                   | TRM566.0                            | 05/11/2010                      | 8 / 9                          | 0.022              |
| Molybdenum | mg/kg | 0.033 / 0.075         | ND      | 0.041                   | 0.049                   | TRM566.0                            | 05/04/2010                      | 2 / 9                          | 0.045              |
| Nickel     | mg/kg | 0.092 / 0.21          | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Potassium  | mg/kg |                       | 1320    | 1320                    | 1810                    | TRM566.0                            | 05/11/2010                      | 9 / 9                          | 1467               |
| Selenium   | mg/kg |                       | 0.53    | 0.53                    | 1.1                     | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 0.8033             |
| Silver     | mg/kg | 0.0027 / 0.0062       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Sodium     | mg/kg |                       | 1450    | 1450                    | 1850                    | TRM566.0                            | 05/11/2010                      | 9 / 9                          | 1647               |
| Strontium  | mg/kg |                       | 0.69    | 0.69                    | 2                       | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 1.198              |
| Thallium   | mg/kg | 0.013 / 0.029         | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Vanadium   | mg/kg | 0.047 / 0.098         | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Zinc       | mg/kg |                       | 21.8    | 21.8                    | 48.3                    | TRM566.0                            | 05/04/2010                      | 9 / 9                          | 28.61              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 18. 2010 Tree Swallow Egg Sampling at Tennessee River Miles 569.5 and 571.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.8 / 9               | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Antimony   | mg/kg | 0.014 / 0.033         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Arsenic    | mg/kg | 0.027 / 0.063         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Barium     | mg/kg |                       | 0.61    | 0.61                    | 7.4                     | TRM569.5                            | 05/19/2010                      | 15 / 15                        | 2.166              |
| Beryllium  | mg/kg | 0.056 / 0.13          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 0.39 / 0.93           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cadmium    | mg/kg | 0.0072 / 0.035        | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Calcium    | mg/kg |                       | 548     | 548                     | 12500                   | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 2261               |
| Chromium   | mg/kg | 0.12 / 0.29           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cobalt     | mg/kg | 0.013 / 0.032         | ND      | 0.014                   | 0.039                   | TRM571.5                            | 05/19/2010                      | 12 / 15                        | 0.02158            |
| Copper     | mg/kg | 0.14 / 1.9            | ND      | 0.34                    | 3                       | TRM571.5                            | 05/19/2010                      | 14 / 15                        | 0.7071             |
| Iron       | mg/kg | 11.4 / 27.2           | ND      | 16.6                    | 67.4                    | TRM571.5                            | 05/19/2010                      | 14 / 15                        | 39.65              |
| Lead       | mg/kg | 0.027 / 0.36          | ND      | 0.11                    | 0.11                    | TRM569.5                            | 05/13/2010                      | 1 / 15                         | 0.11               |
| Magnesium  | mg/kg |                       | 60.9    | 60.9                    | 152                     | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 97.77              |
| Manganese  | mg/kg |                       | 0.51    | 0.51                    | 2.8                     | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 1.321              |
| Mercury    | mg/kg |                       | 0.017   | 0.017                   | 0.049                   | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 0.02447            |
| Molybdenum | mg/kg | 0.033 / 0.079         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Nickel     | mg/kg | 0.093 / 0.22          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Potassium  | mg/kg |                       | 1260    | 1260                    | 3210                    | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 1497               |
| Selenium   | mg/kg |                       | 0.39    | 0.39                    | 0.92                    | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 0.548              |
| Silver     | mg/kg | 0.0028 / 0.038        | ND      | 0.0037                  | 0.0037                  | TRM571.5                            | 05/19/2010                      | 1 / 15                         | 0.0037             |
| Sodium     | mg/kg |                       | 1220    | 1220                    | 3530                    | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 1643               |
| Strontium  | mg/kg |                       | 0.57    | 0.57                    | 5.7                     | TRM571.5                            | 05/04/2010                      | 15 / 15                        | 1.562              |
| Thallium   | mg/kg | 0.013 / 0.031         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Vanadium   | mg/kg | 0.044 / 0.59          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Zinc       | mg/kg |                       | 10.9    | 10.9                    | 49                      | TRM571.5                            | 05/19/2010                      | 15 / 15                        | 22.89              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 19. 2010 Tree Swallow Egg Sampling at Tellico Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.5 / 8.3             | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Antimony   | mg/kg | 0.013 / 0.03          | ND      | 0.037                   | 0.037                   | TLD                                 | 05/07/2010                      | 1 / 15                         | 0.037              |
| Arsenic    | mg/kg | 0.02584 / 0.064       | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Barium     | mg/kg |                       | 0.4088  | 0.4088                  | 4.7                     | TLD                                 | 05/07/2010                      | 15 / 15                        | 1.375              |
| Beryllium  | mg/kg | 0.026 / 0.12          | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 0.36 / 0.86           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cadmium    | mg/kg | 0.0069 / 0.032        | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Calcium    | mg/kg |                       | 502.2   | 502.2                   | 15000                   | TLD                                 | 05/07/2010                      | 15 / 15                        | 1858               |
| Chromium   | mg/kg | 0.11 / 0.26           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cobalt     | mg/kg | 0.012 / 0.029         | ND      | 0.017                   | 0.043                   | TLD                                 | 05/04/2010                      | 10 / 15                        | 0.02363            |
| Copper     | mg/kg |                       | 0.38    | 0.38                    | 0.72                    | TLD                                 | 05/04/2010                      | 15 / 15                        | 0.5273             |
| Iron       | mg/kg | 10.6 / 23.3           | ND      | 20.37                   | 52                      | TLD                                 | 05/04/2010                      | 14 / 15                        | 37.3               |
| Lead       | mg/kg | 0.024 / 0.058         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Magnesium  | mg/kg |                       | 68.62   | 68.62                   | 144.2                   | TLD                                 | 05/04/2010                      | 15 / 15                        | 103.7              |
| Manganese  | mg/kg |                       | 0.5694  | 0.5694                  | 2.6                     | TLD                                 | 05/04/2010                      | 15 / 15                        | 1.397              |
| Mercury    | mg/kg | 0.01064 / 0.061       | ND      | 0.021                   | 0.0356                  | TLD                                 | 05/04/2010                      | 9 / 15                         | 0.02954            |
| Molybdenum | mg/kg | 0.031 / 0.073         | ND      | 0.032                   | 0.049                   | TLD                                 | 05/04/2010                      | 4 / 15                         | 0.0394             |
| Nickel     | mg/kg | 0.086 / 0.2           | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Potassium  | mg/kg |                       | 1270    | 1270                    | 2360                    | TLD                                 | 05/04/2010                      | 15 / 15                        | 1634               |
| Selenium   | mg/kg |                       | 0.4088  | 0.4088                  | 1.1                     | TLD                                 | 05/04/2010                      | 15 / 15                        | 0.6044             |
| Silver     | mg/kg | 0.00258 / 0.006       | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Sodium     | mg/kg |                       | 1577    | 1577                    | 2577                    | TLD                                 | 05/04/2010                      | 15 / 15                        | 1831               |
| Strontium  | mg/kg |                       | 0.37    | 0.37                    | 8.8                     | TLD                                 | 05/07/2010                      | 15 / 15                        | 1.436              |
| Thallium   | mg/kg | 0.012 / 0.028         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Vanadium   | mg/kg | 0.04256 / 0.104       | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Zinc       | mg/kg |                       | 11.1    | 11.1                    | 36.67                   | TLD                                 | 05/04/2010                      | 15 / 15                        | 20.07              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 20. 2010 Tree Swallow Egg Sampling at Lower Emory River Mile 2.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detection s |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|---------------------|
| Aluminum   | mg/kg | 4.2 / 12.4            | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Antimony   | mg/kg | 0.015 / 0.045         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Arsenic    | mg/kg | 0.058 / 0.17          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Barium     | mg/kg |                       | 2.2     | 2.2                     | 5.5                     | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 3.85                |
| Beryllium  | mg/kg | 0.06 / 0.091          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Boron      | mg/kg | 0.43 / 1.3            | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Cadmium    | mg/kg | 0.015 / 0.024         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Calcium    | mg/kg |                       | 1000    | 1000                    | 1810                    | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 1405                |
| Chromium   | mg/kg | 0.13 / 0.39           | ND      | 0.35                    | 0.35                    | LERM2.0                             | 05/11/2010                      | 1 / 2                          | 0.35                |
| Cobalt     | mg/kg |                       | 0.028   | 0.028                   | 0.043                   | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 0.0355              |
| Copper     | mg/kg |                       | 0.47    | 0.47                    | 0.48                    | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 0.475               |
| Iron       | mg/kg |                       | 40      | 40                      | 108                     | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 74                  |
| Lead       | mg/kg | 0.084 / 0.086         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Magnesium  | mg/kg |                       | 105     | 105                     | 154                     | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 129.5               |
| Manganese  | mg/kg |                       | 2.2     | 2.2                     | 3                       | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 2.6                 |
| Mercury    | mg/kg | 0.012 / 0.036         | ND      | 0.027                   | 0.027                   | LERM2.0                             | 05/11/2010                      | 1 / 2                          | 0.027               |
| Molybdenum | mg/kg | 0.036 / 0.11          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Nickel     | mg/kg | 0.1 / 0.3             | ND      | 0.12                    | 0.12                    | LERM2.0                             | 05/11/2010                      | 1 / 2                          | 0.12                |
| Potassium  | mg/kg |                       | 1500    | 1500                    | 1520                    | LERM2.0                             | 05/11/2010                      | 2 / 2                          | 1510                |
| Selenium   | mg/kg |                       | 0.73    | 0.73                    | 1.3                     | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 1.015               |
| Silver     | mg/kg | 0.003 / 0.0089        | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Sodium     | mg/kg |                       | 1360    | 1360                    | 1560                    | LERM2.0                             | 05/11/2010                      | 2 / 2                          | 1460                |
| Strontium  | mg/kg |                       | 1.5     | 1.5                     | 3                       | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 2.25                |
| Thallium   | mg/kg | 0.014 / 0.043         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Vanadium   | mg/kg | 0.094 / 0.28          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                   |
| Zinc       | mg/kg |                       | 23      | 23                      | 52.2                    | LERM2.0                             | 05/17/2010                      | 2 / 2                          | 37.6                |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 21. 2010 Tree Swallow Dud Egg Sampling at Emory River Miles 3.0 and 3.5 and Clinch River Mile 2.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.9 / 5.4             | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Antimony   | mg/kg | 0.014 / 0.019         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Arsenic    | mg/kg | 0.027 / 0.029         | ND      | 0.064                   | 0.064                   | CRM2.5                              | 06/07/2010                      | 1 / 4                          | 0.064              |
| Barium     | mg/kg |                       | 0.77    | 0.77                    | 6.6                     | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 2.543              |
| Beryllium  | mg/kg | 0.058 / 0.08          | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Boron      | mg/kg | 0.4 / 0.42            | ND      | 0.87                    | 0.87                    | CRM2.5                              | 06/07/2010                      | 1 / 4                          | 0.87               |
| Cadmium    | mg/kg | 0.0074 / 0.01         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Calcium    | mg/kg |                       | 683     | 683                     | 46000                   | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 13258              |
| Chromium   | mg/kg | 0.12 / 0.17           | ND      | 0.22                    | 0.22                    | ERM3.0                              | 06/08/2010                      | 1 / 4                          | 0.22               |
| Cobalt     | mg/kg | 0.014 / 0.014         | ND      | 0.015                   | 0.053                   | CRM2.5                              | 06/07/2010                      | 3 / 4                          | 0.03067            |
| Copper     | mg/kg |                       | 0.51    | 0.51                    | 1.9                     | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 1.063              |
| Iron       | mg/kg |                       | 15.8    | 15.8                    | 74.3                    | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 35.38              |
| Lead       | mg/kg | 0.027 / 0.037         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Magnesium  | mg/kg |                       | 59.8    | 59.8                    | 428                     | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 172.7              |
| Manganese  | mg/kg |                       | 0.35    | 0.35                    | 7.6                     | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 2.515              |
| Mercury    | mg/kg |                       | 0.031   | 0.031                   | 0.11                    | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 0.056              |
| Molybdenum | mg/kg | 0.034 / 0.047         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Nickel     | mg/kg | 0.095 / 0.13          | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Potassium  | mg/kg |                       | 1330    | 1330                    | 4870                    | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 2375               |
| Selenium   | mg/kg |                       | 0.53    | 0.53                    | 2.1                     | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 0.9875             |
| Silver     | mg/kg | 0.0028 / 0.0039       | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Sodium     | mg/kg |                       | 1700    | 1700                    | 5930                    | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 2828               |
| Strontium  | mg/kg |                       | 0.75    | 0.75                    | 33.4                    | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 9.763              |
| Thallium   | mg/kg | 0.013 / 0.039         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Vanadium   | mg/kg | 0.044 / 0.061         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Zinc       | mg/kg |                       | 9.2     | 9.2                     | 38.2                    | CRM2.5                              | 06/07/2010                      | 4 / 4                          | 18.08              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 22. 2010 Tree Swallow Dud Egg Sampling at Fort Loudoun Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 12.1 / 12.1           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Antimony   | mg/kg | 0.044 / 0.044         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Arsenic    | mg/kg | 0.085 / 0.085         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Barium     | mg/kg |                       | 0.44    | 0.44                    | 0.44                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 0.44               |
| Beryllium  | mg/kg | 0.18 / 0.18           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Boron      | mg/kg | 1.2 / 1.2             | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Cadmium    | mg/kg | 0.023 / 0.023         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Calcium    | mg/kg |                       | 1100    | 1100                    | 1100                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 1100               |
| Chromium   | mg/kg | 0.38 / 0.38           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Cobalt     | mg/kg | 0.042 / 0.042         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Copper     | mg/kg |                       | 0.66    | 0.66                    | 0.66                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 0.66               |
| Iron       | mg/kg | 36.3 / 36.3           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Lead       | mg/kg | 0.084 / 0.084         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Magnesium  | mg/kg | 145 / 145             | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Manganese  | mg/kg |                       | 0.74    | 0.74                    | 0.74                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 0.74               |
| Mercury    | mg/kg |                       | 0.047   | 0.047                   | 0.047                   | FLD                                 | 06/08/2010                      | 1 / 1                          | 0.047              |
| Molybdenum | mg/kg | 0.11 / 0.11           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Nickel     | mg/kg | 0.29 / 0.29           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Potassium  | mg/kg | 2180 / 2180           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Selenium   | mg/kg |                       | 0.59    | 0.59                    | 0.59                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 0.59               |
| Silver     | mg/kg | 0.0087 / 0.0087       | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Sodium     | mg/kg |                       | 1880    | 1880                    | 1880                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 1880               |
| Strontium  | mg/kg |                       | 0.78    | 0.78                    | 0.78                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 0.78               |
| Thallium   | mg/kg | 0.042 / 0.042         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Vanadium   | mg/kg | 0.14 / 0.14           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Zinc       | mg/kg |                       | 14.3    | 14.3                    | 14.3                    | FLD                                 | 06/08/2010                      | 1 / 1                          | 14.3               |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 23. 2010 Tree Swallow Dud Egg Sampling at Melton Hill Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 4 / 6.5               | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Antimony   | mg/kg | 0.014 / 0.024         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Arsenic    | mg/kg | 0.028 / 0.046         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Barium     | mg/kg |                       | 0.23    | 0.23                    | 1.8                     | MHD                                 | 06/08/2010                      | 4 / 4                          | 0.935              |
| Beryllium  | mg/kg | 0.059 / 0.097         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Boron      | mg/kg | 0.41 / 0.68           | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Cadmium    | mg/kg | 0.0075 / 0.012        | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Calcium    | mg/kg |                       | 412     | 412                     | 3970                    | MHD                                 | 06/08/2010                      | 4 / 4                          | 1523               |
| Chromium   | mg/kg | 0.13 / 0.21           | ND      | 0.14                    | 0.14                    | MHD                                 | 06/14/2010                      | 1 / 4                          | 0.14               |
| Cobalt     | mg/kg |                       | 0.017   | 0.017                   | 0.042                   | MHD                                 | 06/08/2010                      | 4 / 4                          | 0.0275             |
| Copper     | mg/kg |                       | 0.52    | 0.52                    | 1.3                     | MHD                                 | 06/08/2010                      | 4 / 4                          | 0.825              |
| Iron       | mg/kg |                       | 13.1    | 13.1                    | 64.9                    | MHD                                 | 06/08/2010                      | 4 / 4                          | 31.83              |
| Lead       | mg/kg | 0.028 / 0.045         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Magnesium  | mg/kg | 47.6 / 48.2           | ND      | 72                      | 197                     | MHD                                 | 06/08/2010                      | 3 / 4                          | 118.1              |
| Manganese  | mg/kg |                       | 0.22    | 0.22                    | 3.2                     | MHD                                 | 06/08/2010                      | 4 / 4                          | 1.448              |
| Mercury    | mg/kg |                       | 0.013   | 0.013                   | 0.072                   | MHD                                 | 06/08/2010                      | 4 / 4                          | 0.03975            |
| Molybdenum | mg/kg | 0.035 / 0.057         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Nickel     | mg/kg | 0.096 / 0.16          | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Potassium  | mg/kg |                       | 1400    | 1400                    | 2750                    | MHD                                 | 06/08/2010                      | 4 / 4                          | 1863               |
| Selenium   | mg/kg |                       | 0.53    | 0.53                    | 1.5                     | MHD                                 | 06/08/2010                      | 4 / 4                          | 0.89               |
| Silver     | mg/kg | 0.0029 / 0.0047       | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Sodium     | mg/kg |                       | 1690    | 1690                    | 3630                    | MHD                                 | 06/08/2010                      | 4 / 4                          | 2275               |
| Strontium  | mg/kg |                       | 0.28    | 0.28                    | 3                       | MHD                                 | 06/08/2010                      | 4 / 4                          | 1.185              |
| Thallium   | mg/kg | 0.014 / 0.022         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Vanadium   | mg/kg | 0.045 / 0.075         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Zinc       | mg/kg |                       | 4.6     | 4.6                     | 24.1                    | MHD                                 | 06/08/2010                      | 4 / 4                          | 13.1               |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 24. 2010 Tree Swallow Egg Shell Sampling at Emory River Mile 3.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 6.1 / 13.2            | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Antimony   | mg/kg | 0.022 / 0.048         | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Arsenic    | mg/kg | 0.043 / 0.15          | ND      | 0.055                   | 0.093                   | ERM3.0                              | 05/05/2010                      | 5 / 7                          | 0.0718             |
| Barium     | mg/kg |                       | 5.1     | 5.1                     | 22                      | ERM3.0                              | 05/05/2010                      | 7 / 7                          | 13.14              |
| Beryllium  | mg/kg | 0.091 / 0.2           | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Boron      | mg/kg | 0.63 / 1.4            | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Cadmium    | mg/kg | 0.024 / 0.051         | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Calcium    | mg/kg |                       | 98400   | 98400                   | 191000                  | ERM3.0                              | 05/05/2010                      | 7 / 7                          | 127629             |
| Chromium   | mg/kg | 0.19 / 0.42           | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Cobalt     | mg/kg | 0.022 / 0.046         | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Copper     | mg/kg |                       | 0.8     | 0.8                     | 1.2                     | ERM3.0                              | 05/12/2010                      | 7 / 7                          | 0.9329             |
| Iron       | mg/kg | 18.4 / 39.8           | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Lead       | mg/kg | 0.043 / 0.092         | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Magnesium  | mg/kg |                       | 353     | 353                     | 691                     | ERM3.0                              | 05/05/2010                      | 7 / 7                          | 481.1              |
| Manganese  | mg/kg |                       | 0.28    | 0.28                    | 1.4                     | ERM3.0                              | 05/05/2010                      | 7 / 7                          | 0.6971             |
| Mercury    | mg/kg | 0.018 / 0.038         | ND      | 0.027                   | 0.04                    | ERM3.0                              | 05/12/2010                      | 5 / 7                          | 0.0312             |
| Molybdenum | mg/kg | 0.054 / 0.12          | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Nickel     | mg/kg | 0.15 / 0.32           | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Potassium  | mg/kg | 1110 / 2390           | ND      | 1300                    | 1360                    | ERM3.0                              | 05/05/2010                      | 2 / 7                          | 1330               |
| Selenium   | mg/kg |                       | 0.28    | 0.28                    | 0.58                    | ERM3.0                              | 05/12/2010                      | 7 / 7                          | 0.3729             |
| Silver     | mg/kg | 0.0044 / 0.0096       | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Sodium     | mg/kg |                       | 1210    | 1210                    | 1550                    | ERM3.0                              | 05/05/2010                      | 7 / 7                          | 1417               |
| Strontium  | mg/kg |                       | 60.3    | 60.3                    | 143                     | ERM3.0                              | 05/05/2010                      | 7 / 7                          | 98.83              |
| Thallium   | mg/kg | 0.026 / 0.058         | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Vanadium   | mg/kg | 0.14 / 0.3            | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |
| Zinc       | mg/kg | 3.3 / 7.2             | ND      | ND                      | ND                      |                                     |                                 | 0 / 7                          | 0                  |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 25. 2010 Tree Swallow Egg Shell Sampling at the North, West, and East Embayments**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 11.3 / 18.4           | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Antimony   | mg/kg | 0.041 / 0.066         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Arsenic    | mg/kg | 0.079 / 0.26          | ND      | 0.093                   | 0.1                     | WEMBAY                              | 05/06/2010                      | 2 / 4                          | 0.0965             |
| Barium     | mg/kg |                       | 8.8     | 8.8                     | 37.4                    | WEMBAY                              | 05/06/2010                      | 4 / 4                          | 21.28              |
| Beryllium  | mg/kg | 0.17 / 0.27           | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Boron      | mg/kg | 1.2 / 1.9             | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Cadmium    | mg/kg | 0.043 / 0.071         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Calcium    | mg/kg |                       | 147000  | 147000                  | 202000                  | WEMBAY                              | 05/06/2010                      | 4 / 4                          | 170500             |
| Chromium   | mg/kg | 0.36 / 0.58           | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Cobalt     | mg/kg | 0.04 / 0.065          | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Copper     | mg/kg |                       | 0.73    | 0.73                    | 1.4                     | NEMBAY                              | 05/11/2010                      | 4 / 4                          | 1.018              |
| Iron       | mg/kg | 34 / 55.3             | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Lead       | mg/kg | 0.079 / 0.13          | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Magnesium  | mg/kg |                       | 567     | 567                     | 802                     | NEMBAY                              | 05/11/2010                      | 4 / 4                          | 658.8              |
| Manganese  | mg/kg | 0.48 / 0.78           | ND      | 0.86                    | 1.6                     | EEMBAY                              | 05/05/2010                      | 3 / 4                          | 1.187              |
| Mercury    | mg/kg | 0.033 / 0.053         | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Molybdenum | mg/kg | 0.099 / 0.16          | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Nickel     | mg/kg | 0.28 / 0.45           | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Potassium  | mg/kg | 2040 / 3320           | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Selenium   | mg/kg |                       | 0.31    | 0.31                    | 0.44                    | EEMBAY                              | 05/05/2010                      | 4 / 4                          | 0.3675             |
| Silver     | mg/kg | 0.0082 / 0.013        | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Sodium     | mg/kg |                       | 1400    | 1400                    | 1650                    | NEMBAY                              | 05/11/2010                      | 4 / 4                          | 1470               |
| Strontium  | mg/kg |                       | 84.5    | 84.5                    | 171                     | WEMBAY                              | 05/06/2010                      | 4 / 4                          | 119.4              |
| Thallium   | mg/kg | 0.044 / 0.14          | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Vanadium   | mg/kg | 0.26 / 0.42           | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |
| Zinc       | mg/kg | 6.1 / 10              | ND      | ND                      | ND                      |                                     |                                 | 0 / 4                          | 0                  |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 26. 2010 Tree Swallow Egg Sampling at Downstream Tennessee River**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 10.3 / 14.4           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Antimony   | mg/kg | 0.037 / 0.052         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Arsenic    | mg/kg | 0.1 / 0.14            | ND      | 0.1                     | 0.1                     | TRM566.0                            | 05/11/2010                      | 1 / 2                          | 0.1                |
| Barium     | mg/kg |                       | 40      | 40                      | 97.2                    | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 68.6               |
| Beryllium  | mg/kg | 0.15 / 0.22           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Boron      | mg/kg | 1.1 / 1.5             | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Cadmium    | mg/kg | 0.04 / 0.056          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Calcium    | mg/kg |                       | 161000  | 161000                  | 169000                  | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 165000             |
| Chromium   | mg/kg | 0.33 / 0.46           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Cobalt     | mg/kg | 0.036 / 0.051         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Copper     | mg/kg |                       | 1.1     | 1.1                     | 1.3                     | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 1.2                |
| Iron       | mg/kg | 30.9 / 43.4           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Lead       | mg/kg | 0.072 / 0.1           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Magnesium  | mg/kg |                       | 634     | 634                     | 648                     | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 641                |
| Manganese  | mg/kg |                       | 1.2     | 1.2                     | 2.2                     | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 1.7                |
| Mercury    | mg/kg | 0.03 / 0.042          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Molybdenum | mg/kg | 0.09 / 0.13           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Nickel     | mg/kg | 0.25 / 0.35           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Potassium  | mg/kg | 1860 / 2600           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Selenium   | mg/kg |                       | 0.26    | 0.26                    | 0.4                     | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 0.33               |
| Silver     | mg/kg | 0.0074 / 0.01         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Sodium     | mg/kg |                       | 1270    | 1270                    | 1540                    | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 1405               |
| Strontium  | mg/kg |                       | 120     | 120                     | 123                     | TRM566.0                            | 05/11/2010                      | 2 / 2                          | 121.5              |
| Thallium   | mg/kg | 0.035 / 0.05          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Vanadium   | mg/kg | 0.23 / 0.33           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Zinc       | mg/kg | 5.6 / 5.6             | ND      | 10                      | 10                      | TRM566.0                            | 05/11/2010                      | 1 / 2                          | 10                 |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 27. 2010 Tree Swallow Egg Shell Sampling at Tellico Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 11.9 / 16.7           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Antimony   | mg/kg | 0.043 / 0.06          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Arsenic    | mg/kg | 0.17 / 0.23           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Barium     | mg/kg |                       | 9.9     | 9.9                     | 16.2                    | TLD                                 | 05/04/2010                      | 2 / 2                          | 13.05              |
| Beryllium  | mg/kg | 0.18 / 0.25           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Boron      | mg/kg | 1.2 / 1.7             | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Cadmium    | mg/kg | 0.046 / 0.065         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Calcium    | mg/kg |                       | 156000  | 156000                  | 181000                  | TLD                                 | 05/04/2010                      | 2 / 2                          | 168500             |
| Chromium   | mg/kg | 0.38 / 0.53           | ND      | 0.77                    | 0.77                    | TLD                                 | 05/04/2010                      | 1 / 2                          | 0.77               |
| Cobalt     | mg/kg | 0.042 / 0.059         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Copper     | mg/kg |                       | 1.1     | 1.1                     | 2.1                     | TLD                                 | 05/04/2010                      | 2 / 2                          | 1.6                |
| Iron       | mg/kg | 35.7 / 50.4           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Lead       | mg/kg | 0.083 / 0.12          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Magnesium  | mg/kg |                       | 667     | 667                     | 720                     | TLD                                 | 05/04/2010                      | 2 / 2                          | 693.5              |
| Manganese  | mg/kg |                       | 1.1     | 1.1                     | 1.8                     | TLD                                 | 05/04/2010                      | 2 / 2                          | 1.45               |
| Mercury    | mg/kg | 0.034 / 0.048         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Molybdenum | mg/kg | 0.1 / 0.15            | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Nickel     | mg/kg | 0.29 / 0.41           | ND      | 0.38                    | 0.38                    | TLD                                 | 05/04/2010                      | 1 / 2                          | 0.38               |
| Potassium  | mg/kg | 2140 / 3020           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Selenium   | mg/kg |                       | 0.38    | 0.38                    | 0.39                    | TLD                                 | 05/04/2010                      | 2 / 2                          | 0.385              |
| Silver     | mg/kg | 0.0086 / 0.012        | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Sodium     | mg/kg |                       | 1390    | 1390                    | 2060                    | TLD                                 | 05/04/2010                      | 2 / 2                          | 1725               |
| Strontium  | mg/kg |                       | 78.2    | 78.2                    | 83.6                    | TLD                                 | 05/04/2010                      | 2 / 2                          | 80.9               |
| Thallium   | mg/kg | 0.041 / 0.058         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Vanadium   | mg/kg | 0.27 / 0.38           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Zinc       | mg/kg | 6.4 / 9.1             | ND      | 8.4                     | 8.4                     | TLD                                 | 05/04/2010                      | 1 / 2                          | 8.4                |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 28. 2010 Tree Swallow Egg Shell Sampling at Fort Loudoun Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 7.9 / 16              | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Antimony   | mg/kg | 0.029 / 0.058         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Arsenic    | mg/kg | 0.055 / 0.22          | ND      | 0.067                   | 0.067                   | FLD                                 | 05/04/2010                      | 1 / 2                          | 0.067              |
| Barium     | mg/kg |                       | 8.6     | 8.6                     | 10.9                    | FLD                                 | 05/04/2010                      | 2 / 2                          | 9.75               |
| Beryllium  | mg/kg | 0.12 / 0.24           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Boron      | mg/kg | 0.82 / 1.7            | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Cadmium    | mg/kg | 0.03 / 0.062          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Calcium    | mg/kg |                       | 92600   | 92600                   | 126000                  | FLD                                 | 05/04/2010                      | 2 / 2                          | 109300             |
| Chromium   | mg/kg | 0.25 / 0.51           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Cobalt     | mg/kg | 0.028 / 0.056         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Copper     | mg/kg |                       | 0.72    | 0.72                    | 0.95                    | FLD                                 | 05/11/2010                      | 2 / 2                          | 0.835              |
| Iron       | mg/kg | 23.8 / 48.1           | ND      | 32.1                    | 32.1                    | FLD                                 | 05/04/2010                      | 1 / 2                          | 32.1               |
| Lead       | mg/kg | 0.055 / 0.11          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Magnesium  | mg/kg |                       | 417     | 417                     | 496                     | FLD                                 | 05/04/2010                      | 2 / 2                          | 456.5              |
| Manganese  | mg/kg |                       | 0.8     | 0.8                     | 1.9                     | FLD                                 | 05/11/2010                      | 2 / 2                          | 1.35               |
| Mercury    | mg/kg | 0.023 / 0.046         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Molybdenum | mg/kg | 0.069 / 0.14          | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Nickel     | mg/kg | 0.19 / 0.39           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Potassium  | mg/kg | 1430 / 2880           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Selenium   | mg/kg |                       | 0.6     | 0.6                     | 0.61                    | FLD                                 | 05/04/2010                      | 2 / 2                          | 0.605              |
| Silver     | mg/kg | 0.0057 / 0.012        | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Sodium     | mg/kg |                       | 1330    | 1330                    | 1370                    | FLD                                 | 05/04/2010                      | 2 / 2                          | 1350               |
| Strontium  | mg/kg |                       | 57      | 57                      | 81.6                    | FLD                                 | 05/04/2010                      | 2 / 2                          | 69.3               |
| Thallium   | mg/kg | 0.027 / 0.055         | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Vanadium   | mg/kg | 0.18 / 0.36           | ND      | ND                      | ND                      |                                     |                                 | 0 / 2                          | 0                  |
| Zinc       | mg/kg |                       | 16.4    | 16.4                    | 17.7                    | FLD                                 | 05/11/2010                      | 2 / 2                          | 17.05              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 29. 2010 Tree Swallow Egg Shell Sampling at Melton Hill Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 7.6 / 10.3            | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Antimony   | mg/kg | 0.027 / 0.037         | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Arsenic    | mg/kg | 0.062 / 0.11          | ND      | 0.081                   | 0.084                   | MHD                                 | 05/04/2010                      | 2 / 3                          | 0.0825             |
| Barium     | mg/kg |                       | 8.5     | 8.5                     | 31.2                    | MHD                                 | 05/04/2010                      | 3 / 3                          | 19.9               |
| Beryllium  | mg/kg | 0.11 / 0.15           | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Boron      | mg/kg | 0.79 / 1.1            | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Cadmium    | mg/kg | 0.029 / 0.04          | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Calcium    | mg/kg |                       | 101000  | 101000                  | 145000                  | MHD                                 | 05/04/2010                      | 3 / 3                          | 129000             |
| Chromium   | mg/kg | 0.24 / 0.33           | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Cobalt     | mg/kg | 0.027 / 0.036         | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Copper     | mg/kg |                       | 0.69    | 0.69                    | 1.2                     | MHD                                 | 05/04/2010                      | 3 / 3                          | 0.9567             |
| Iron       | mg/kg | 22.9 / 30.9           | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Lead       | mg/kg | 0.053 / 0.072         | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Magnesium  | mg/kg |                       | 412     | 412                     | 532                     | MHD                                 | 05/04/2010                      | 3 / 3                          | 491.7              |
| Manganese  | mg/kg |                       | 0.47    | 0.47                    | 1.9                     | MHD                                 | 05/04/2010                      | 3 / 3                          | 1.01               |
| Mercury    | mg/kg | 0.022 / 0.03          | ND      | 0.025                   | 0.025                   | MHD                                 | 05/04/2010                      | 1 / 3                          | 0.025              |
| Molybdenum | mg/kg | 0.067 / 0.09          | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Nickel     | mg/kg | 0.19 / 0.25           | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Potassium  | mg/kg | 1370 / 1860           | ND      | 1380                    | 1380                    | MHD                                 | 05/04/2010                      | 1 / 3                          | 1380               |
| Selenium   | mg/kg |                       | 0.33    | 0.33                    | 0.58                    | MHD                                 | 05/04/2010                      | 3 / 3                          | 0.42               |
| Silver     | mg/kg | 0.0055 / 0.0074       | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Sodium     | mg/kg |                       | 1260    | 1260                    | 1520                    | MHD                                 | 05/04/2010                      | 3 / 3                          | 1423               |
| Strontium  | mg/kg |                       | 51.3    | 51.3                    | 78                      | MHD                                 | 05/04/2010                      | 3 / 3                          | 63                 |
| Thallium   | mg/kg | 0.03 / 0.051          | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Vanadium   | mg/kg | 0.17 / 0.23           | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Zinc       | mg/kg | 4.1 / 5.6             | ND      | 9.9                     | 9.9                     | MHD                                 | 05/04/2010                      | 1 / 3                          | 9.9                |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 30. 2009 Tree Swallow Nestling Sampling at Emory River Mile 3.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 65.30   | 65.30                   | 74.20                   | RESIDENTIAL10                       | 05/28/2009                      | 9 / 9                          | 69.56              |
| Aluminum   | mg/kg | 24.5 / 25.28          | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Antimony   | mg/kg | 0.09648 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Arsenic    | mg/kg | 0.09648 / 0.1011      | ND      | 0.2015                  | 0.2015                  | RESIDENTIAL04                       | 06/14/2009                      | 1 / 11                         | 0.2015             |
| Barium     | mg/kg |                       | 0.7236  | 0.7236                  | 18.32                   | RESIDENTIAL07                       | 06/01/2009                      | 11 / 11                        | 4.383              |
| Beryllium  | mg/kg | 0.09648 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Boron      | mg/kg | 1.934 / 2.029         | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Cadmium    | mg/kg | 0.09648 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Calcium    | mg/kg |                       | 2002    | 2002                    | 34094                   | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 8347               |
| Chromium   | mg/kg | 0.09648 / 0.1728      | ND      | 0.1209                  | 0.1209                  | RESIDENTIAL04                       | 06/14/2009                      | 1 / 11                         | 0.1209             |
| Cobalt     | mg/kg | 0.09648 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Copper     | mg/kg |                       | 1.463   | 1.463                   | 7.335                   | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 2.811              |
| Iron       | mg/kg |                       | 45.22   | 45.22                   | 234.5                   | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 76.18              |
| Lead       | mg/kg | 0.09648 / 0.1011      | ND      | 0.09672                 | 0.09672                 | RESIDENTIAL04                       | 06/14/2009                      | 1 / 11                         | 0.09672            |
| Magnesium  | mg/kg |                       | 199     | 199                     | 1298                    | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 383.8              |
| Manganese  | mg/kg |                       | 0.603   | 0.603                   | 15.52                   | RESIDENTIAL07                       | 06/01/2009                      | 11 / 11                        | 3.503              |
| Mercury    | mg/kg | 0.01934 / 0.03817     | ND      | 0.02272                 | 0.1048                  | RESIDENTIAL04                       | 06/14/2009                      | 4 / 11                         | 0.04895            |
| Molybdenum | mg/kg | 0.9648 / 1.011        | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Nickel     | mg/kg | 0.09648 / 0.1174      | ND      | 0.1128                  | 0.1128                  | RESIDENTIAL04                       | 06/14/2009                      | 1 / 11                         | 0.1128             |
| Potassium  | mg/kg |                       | 2023    | 2023                    | 5441                    | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 2558               |
| Selenium   | mg/kg |                       | 0.8512  | 0.8512                  | 3.708                   | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 1.291              |
| Silver     | mg/kg | 0.04824 / 0.05152     | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Sodium     | mg/kg |                       | 1017    | 1017                    | 3796                    | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 1483               |
| Strontium  | mg/kg |                       | 1.166   | 1.166                   | 31.6                    | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 7.945              |
| Thallium   | mg/kg | 0.09648 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Vanadium   | mg/kg | 0.1934 / 0.2029       | ND      | ND                      | ND                      |                                     |                                 | 0 / 11                         | 0                  |
| Zinc       | mg/kg |                       | 26.8    | 26.8                    | 107.2                   | RESIDENTIAL04                       | 06/14/2009                      | 11 / 11                        | 38.26              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 31. 2010 Tree Swallow Nestling Sampling at Emory River Mile 3.0**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 63.80   | 63.80                   | 72.70                   | ERM3.0                              | 05/26/2010                      | 15 / 15                        | 67.52              |
| Aluminum   | mg/kg | 3.782 / 4.166         | ND      | 4.25                    | 4.25                    | ERM3.0                              | 05/27/2010                      | 1 / 15                         | 4.25               |
| Antimony   | mg/kg | 0.01369 / 0.01509     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Arsenic    | mg/kg | 0.02641 / 0.02926     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Barium     | mg/kg |                       | 0.6741  | 0.6741                  | 5.93                    | ERM3.0                              | 05/24/2010                      | 15 / 15                        | 1.933              |
| Beryllium  | mg/kg | 0.02771 / 0.0603      | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 0.1284 / 0.4452       | ND      | 0.4186                  | 0.4186                  | ERM3.0                              | 05/27/2010                      | 1 / 15                         | 0.4186             |
| Cadmium    | mg/kg | 0.00234 / 0.01562     | ND      | 0.00828                 | 0.0273                  | ERM3.0                              | 05/26/2010                      | 13 / 15                        | 0.01592            |
| Calcium    | mg/kg |                       | 941.4   | 941.4                   | 10453                   | ERM3.0                              | 06/02/2010                      | 15 / 15                        | 5637               |
| Chromium   | mg/kg | 0.1206 / 0.1316       | ND      | 0.4648                  | 0.4648                  | ERM3.0                              | 06/02/2010                      | 1 / 15                         | 0.4648             |
| Cobalt     | mg/kg | 0.01337 / 0.01463     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Copper     | mg/kg |                       | 2.185   | 2.185                   | 3.551                   | ERM3.0                              | 05/24/2010                      | 15 / 15                        | 2.667              |
| Iron       | mg/kg |                       | 46.9    | 46.9                    | 80.32                   | ERM3.0                              | 06/02/2010                      | 15 / 15                        | 68.77              |
| Lead       | mg/kg | 0.02608 / 0.02894     | ND      | 0.03685                 | 0.03685                 | ERM3.0                              | 05/24/2010                      | 1 / 15                         | 0.03685            |
| Magnesium  | mg/kg |                       | 242.7   | 242.7                   | 421.5                   | ERM3.0                              | 06/02/2010                      | 15 / 15                        | 329.1              |
| Manganese  | mg/kg |                       | 0.7935  | 0.7935                  | 2.999                   | ERM3.0                              | 06/02/2010                      | 15 / 15                        | 1.613              |
| Mercury    | mg/kg |                       | 0.01843 | 0.01843                 | 0.03852                 | ERM3.0                              | 06/03/2010                      | 15 / 15                        | 0.03074            |
| Molybdenum | mg/kg | 0.0331 / 0.0636       | ND      | 0.05474                 | 0.06552                 | ERM3.0                              | 05/26/2010                      | 7 / 15                         | 0.06035            |
| Nickel     | mg/kg | 0.09128 / 0.1027      | ND      | 0.1231                  | 0.1926                  | ERM3.0                              | 06/02/2010                      | 2 / 15                         | 0.1579             |
| Potassium  | mg/kg |                       | 2277    | 2277                    | 2926                    | ERM3.0                              | 06/01/2010                      | 15 / 15                        | 2650               |
| Selenium   | mg/kg |                       | 0.9184  | 0.9184                  | 1.374                   | ERM3.0                              | 05/24/2010                      | 15 / 15                        | 1.101              |
| Silver     | mg/kg | 0.00274 / 0.00871     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Sodium     | mg/kg |                       | 1097    | 1097                    | 1521                    | ERM3.0                              | 05/26/2010                      | 15 / 15                        | 1298               |
| Strontium  | mg/kg |                       | 1.38    | 1.38                    | 12.13                   | ERM3.0                              | 05/24/2010                      | 15 / 15                        | 4.509              |
| Thallium   | mg/kg | 0.01304 / 0.01445     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Vanadium   | mg/kg | 0.04238 / 0.09309     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Zinc       | mg/kg |                       | 28.45   | 28.45                   | 43.13                   | ERM3.0                              | 05/26/2010                      | 15 / 15                        | 32.93              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 32. 2009 Tree Swallow Nestling Sampling at Emory River Mile 3.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 52.80   | 52.80                   | 72.10                   | FARM07                              | 06/04/2009                      | 12 / 12                        | 65.82              |
| Aluminum   | mg/kg | 24.5 / 25.03          | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Antimony   | mg/kg | 0.0984 / 0.1014       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Arsenic    | mg/kg | 0.0984 / 0.1014       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Barium     | mg/kg |                       | 0.1427  | 0.1427                  | 4.531                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 1.658              |
| Beryllium  | mg/kg | 0.0984 / 0.1014       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Boron      | mg/kg | 1.971 / 2.001         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Cadmium    | mg/kg | 0.0984 / 0.1014       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Calcium    | mg/kg |                       | 1243    | 1243                    | 12555                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 5425               |
| Chromium   | mg/kg | 0.09855 / 0.2648      | ND      | 0.1752                  | 0.1752                  | FARM02                              | 06/08/2009                      | 1 / 12                         | 0.1752             |
| Cobalt     | mg/kg | 0.0984 / 0.1014       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Copper     | mg/kg |                       | 1.947   | 1.947                   | 6.183                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 2.756              |
| Iron       | mg/kg |                       | 52.33   | 52.33                   | 141.1                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 69.82              |
| Lead       | mg/kg | 0.0984 / 0.1014       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Magnesium  | mg/kg |                       | 161.7   | 161.7                   | 599.4                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 302.4              |
| Manganese  | mg/kg | 0.472 / 1.958         | ND      | 0.5072                  | 2.785                   | FARM07                              | 06/14/2009                      | 10 / 12                        | 1.271              |
| Mercury    | mg/kg | 0.0198 / 0.0357       | ND      | 0.02013                 | 0.05664                 | FARM07                              | 06/14/2009                      | 2 / 12                         | 0.03839            |
| Molybdenum | mg/kg | 0.984 / 1.014         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Nickel     | mg/kg | 0.0984 / 0.1059       | ND      | 0.5022                  | 0.5022                  | FARM10                              | 06/01/2009                      | 1 / 12                         | 0.5022             |
| Potassium  | mg/kg |                       | 1705    | 1705                    | 4413                    | FARM07                              | 06/14/2009                      | 12 / 12                        | 2422               |
| Selenium   | mg/kg |                       | 0.759   | 0.759                   | 2.266                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 1.122              |
| Silver     | mg/kg | 0.0472 / 0.0512       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Sodium     | mg/kg |                       | 903.5   | 903.5                   | 2983                    | FARM07                              | 06/14/2009                      | 12 / 12                        | 1294               |
| Strontium  | mg/kg |                       | 0.634   | 0.634                   | 8.685                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 3.513              |
| Thallium   | mg/kg | 0.0984 / 0.1014       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Vanadium   | mg/kg | 0.1971 / 0.2001       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Zinc       | mg/kg |                       | 21.83   | 21.83                   | 66.08                   | FARM07                              | 06/14/2009                      | 12 / 12                        | 32.89              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 33. 2010 Tree Swallow Nestling Sampling at Emory River Mile 3.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 65.20   | 65.20                   | 72.20                   | ERM3.5                              | 06/13/2010                      | 10 / 10                        | 69.34              |
| Aluminum   | mg/kg | 3.718 / 4.132         | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Antimony   | mg/kg | 0.01344 / 0.015       | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Arsenic    | mg/kg | 0.02673 / 0.0566      | ND      | 0.02866                 | 0.03948                 | ERM3.5                              | 06/15/2010                      | 3 / 10                         | 0.033              |
| Barium     | mg/kg |                       | 0.504   | 0.504                   | 1.773                   | ERM3.5                              | 05/28/2010                      | 10 / 10                        | 1.19               |
| Beryllium  | mg/kg | 0.02746 / 0.03113     | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Boron      | mg/kg | 0.3718 / 0.4245       | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Cadmium    | mg/kg | 0.00708 / 0.0148      | ND      | 0.0094                  | 0.05474                 | ERM3.5                              | 06/13/2010                      | 9 / 10                         | 0.02592            |
| Calcium    | mg/kg |                       | 3024    | 3024                    | 14825                   | ERM3.5                              | 06/06/2010                      | 10 / 10                        | 6634               |
| Chromium   | mg/kg | 0.1173 / 0.1302       | ND      | 0.1252                  | 0.3119                  | ERM3.5                              | 06/28/2010                      | 4 / 10                         | 0.1907             |
| Cobalt     | mg/kg | 0.01316 / 0.01472     | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Copper     | mg/kg |                       | 2.031   | 2.031                   | 3.528                   | ERM3.5                              | 06/28/2010                      | 10 / 10                        | 2.571              |
| Iron       | mg/kg |                       | 55.77   | 55.77                   | 78.75                   | ERM3.5                              | 06/28/2010                      | 10 / 10                        | 64.67              |
| Lead       | mg/kg | 0.02603 / 0.02869     | ND      | 0.03336                 | 0.03336                 | ERM3.5                              | 06/13/2010                      | 1 / 10                         | 0.03336            |
| Magnesium  | mg/kg |                       | 262.4   | 262.4                   | 525.5                   | ERM3.5                              | 06/06/2010                      | 10 / 10                        | 347.4              |
| Manganese  | mg/kg |                       | 0.6615  | 0.6615                  | 4.087                   | ERM3.5                              | 06/13/2010                      | 10 / 10                        | 1.518              |
| Mercury    | mg/kg |                       | 0.02227 | 0.02227                 | 0.03864                 | ERM3.5                              | 06/13/2010                      | 10 / 10                        | 0.031              |
| Molybdenum | mg/kg |                       | 0.0522  | 0.0522                  | 0.07924                 | ERM3.5                              | 06/25/2010                      | 10 / 10                        | 0.0645             |
| Nickel     | mg/kg | 0.09152 / 0.1019      | ND      | 0.138                   | 0.1701                  | ERM3.5                              | 06/28/2010                      | 2 / 10                         | 0.1541             |
| Potassium  | mg/kg |                       | 2219    | 2219                    | 3141                    | ERM3.5                              | 06/09/2010                      | 10 / 10                        | 2702               |
| Selenium   | mg/kg |                       | 0.8618  | 0.8618                  | 1.355                   | ERM3.5                              | 06/28/2010                      | 10 / 10                        | 1.053              |
| Silver     | mg/kg | 0.00269 / 0.00738     | ND      | 0.00547                 | 0.01168                 | ERM3.5                              | 06/13/2010                      | 2 / 10                         | 0.008577           |
| Sodium     | mg/kg |                       | 1190    | 1190                    | 1782                    | ERM3.5                              | 06/09/2010                      | 10 / 10                        | 1362               |
| Strontium  | mg/kg |                       | 2.029   | 2.029                   | 5.846                   | ERM3.5                              | 06/06/2010                      | 10 / 10                        | 3.815              |
| Thallium   | mg/kg | 0.01287 / 0.0174      | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Vanadium   | mg/kg | 0.04186 / 0.09339     | ND      | 0.05355                 | 0.05355                 | ERM3.5                              | 06/28/2010                      | 1 / 10                         | 0.05355            |
| Zinc       | mg/kg |                       | 28.36   | 28.36                   | 39.67                   | ERM3.5                              | 06/06/2010                      | 10 / 10                        | 33.09              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 34. 2009 Tree Swallow Nestling Sampling at Clinch River Mile 2.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 59      | 59                      | 74.90                   | DISCHARGE10                         | 07/06/2009                      | 11 / 11                        | 65.82              |
| Aluminum   | mg/kg | 24.56 / 41            | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Antimony   | mg/kg | 0.0975 / 0.16         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Arsenic    | mg/kg | 0.0975 / 0.16         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Barium     | mg/kg |                       | 0.3828  | 0.3828                  | 7.7                     | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 1.913              |
| Beryllium  | mg/kg | 0.0975 / 0.16         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Boron      | mg/kg | 1.95 / 3.3            | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Cadmium    | mg/kg | 0.0975 / 0.16         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Calcium    | mg/kg |                       | 1952    | 1952                    | 29800                   | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 8105               |
| Chromium   | mg/kg | 0.0975 / 0.2263       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Cobalt     | mg/kg | 0.0975 / 0.16         | ND      | 0.3526                  | 0.3526                  | DISCHARGE05                         | 07/12/2009                      | 1 / 12                         | 0.3526             |
| Copper     | mg/kg |                       | 1.95    | 1.95                    | 3.366                   | DISCHARGE05                         | 05/28/2009                      | 12 / 12                        | 2.517              |
| Iron       | mg/kg |                       | 50.2    | 50.2                    | 87.3                    | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 61.05              |
| Lead       | mg/kg | 0.0975 / 0.16         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Magnesium  | mg/kg |                       | 193.5   | 193.5                   | 446.9                   | DISCHARGE06                         | 06/01/2009                      | 12 / 12                        | 293.4              |
| Manganese  | mg/kg |                       | 0.578   | 0.578                   | 5.7                     | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 1.749              |
| Mercury    | mg/kg | 0.0195 / 0.02591      | ND      | 0.02138                 | 0.076                   | DISCHARGE03                         | 06/04/2009                      | 6 / 12                         | 0.03596            |
| Molybdenum | mg/kg | 0.975 / 1.6           | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Nickel     | mg/kg | 0.0975 / 0.16         | ND      | 0.3972                  | 0.3972                  | DISCHARGE06                         | 06/01/2009                      | 1 / 12                         | 0.3972             |
| Potassium  | mg/kg |                       | 1774    | 1774                    | 5470                    | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 2571               |
| Selenium   | mg/kg |                       | 1.004   | 1.004                   | 2.2                     | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 1.221              |
| Silver     | mg/kg | 0.04784 / 0.082       | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Sodium     | mg/kg |                       | 1017    | 1017                    | 6370                    | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 1649               |
| Strontium  | mg/kg |                       | 1.292   | 1.292                   | 16.7                    | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 4.814              |
| Thallium   | mg/kg | 0.0975 / 0.16         | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Vanadium   | mg/kg | 0.195 / 0.33          | ND      | ND                      | ND                      |                                     |                                 | 0 / 12                         | 0                  |
| Zinc       | mg/kg |                       | 25.35   | 25.35                   | 49.2                    | DISCHARGE03                         | 06/04/2009                      | 12 / 12                        | 32.97              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 35. 2010 Tree Swallow Nestling Sampling at Clinch River Mile 2.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detection s |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|---------------------|
| % Moisture | %     |                       | 65      | 65                      | 73                      | CRM2.5                              | 05/28/2010                      | 15 / 15                        | 68.77               |
| Aluminum   | mg/kg | 3.606 / 4.131         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                   |
| Antimony   | mg/kg | 0.01288 / 0.01487     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                   |
| Arsenic    | mg/kg | 0.02666 / 0.0572      | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                   |
| Barium     | mg/kg |                       | 0.9724  | 0.9724                  | 2.346                   | CRM2.5                              | 05/28/2010                      | 15 / 15                        | 1.465               |
| Beryllium  | mg/kg | 0.0264 / 0.05933      | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                   |
| Boron      | mg/kg | 0.3666 / 0.432        | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                   |
| Cadmium    | mg/kg | 0.00676 / 0.01505     | ND      | 0.00983                 | 0.02995                 | CRM2.5                              | 05/31/2010                      | 13 / 15                        | 0.01799             |
| Calcium    | mg/kg |                       | 2806    | 2806                    | 7503                    | CRM2.5                              | 05/31/2010                      | 15 / 15                        | 4971                |
| Chromium   | mg/kg | 0.1127 / 0.1277       | ND      | 0.1539                  | 1.173                   | CRM2.5                              | 05/28/2010                      | 3 / 15                         | 0.4968              |
| Cobalt     | mg/kg | 0.01256 / 0.01458     | ND      | 0.0141                  | 0.0141                  | CRM2.5                              | 05/31/2010                      | 1 / 15                         | 0.0141              |
| Copper     | mg/kg |                       | 2.061   | 2.061                   | 3.885                   | CRM2.5                              | 06/01/2010                      | 15 / 15                        | 2.62                |
| Iron       | mg/kg |                       | 42.5    | 42.5                    | 105.3                   | CRM2.5                              | 05/31/2010                      | 15 / 15                        | 64.02               |
| Lead       | mg/kg | 0.02512 / 0.0297      | ND      | 0.03091                 | 0.1011                  | CRM2.5                              | 05/28/2010                      | 2 / 15                         | 0.06601             |
| Magnesium  | mg/kg |                       | 259.7   | 259.7                   | 367.1                   | CRM2.5                              | 05/31/2010                      | 15 / 15                        | 302.9               |
| Manganese  | mg/kg |                       | 0.6762  | 0.6762                  | 2.611                   | CRM2.5                              | 06/01/2010                      | 15 / 15                        | 1.519               |
| Mercury    | mg/kg |                       | 0.01958 | 0.01958                 | 0.0423                  | CRM2.5                              | 05/31/2010                      | 15 / 15                        | 0.02894             |
| Molybdenum | mg/kg | 0.03102 / 0.05817     | ND      | 0.03762                 | 0.08866                 | CRM2.5                              | 05/28/2010                      | 14 / 15                        | 0.06451             |
| Nickel     | mg/kg | 0.08694 / 0.0999      | ND      | 0.1932                  | 0.2202                  | CRM2.5                              | 05/28/2010                      | 2 / 15                         | 0.2067              |
| Potassium  | mg/kg |                       | 2286    | 2286                    | 2811                    | CRM2.5                              | 06/01/2010                      | 15 / 15                        | 2509                |
| Selenium   | mg/kg |                       | 0.7084  | 0.7084                  | 1.043                   | CRM2.5                              | 05/31/2010                      | 15 / 15                        | 0.9125              |
| Silver     | mg/kg | 0.00261 / 0.00297     | ND      | 0.00316                 | 0.00316                 | CRM2.5                              | 05/28/2010                      | 1 / 15                         | 0.003162            |
| Sodium     | mg/kg |                       | 1236    | 1236                    | 2054                    | CRM2.5                              | 05/31/2010                      | 15 / 15                        | 1373                |
| Strontium  | mg/kg |                       | 1.803   | 1.803                   | 5.356                   | CRM2.5                              | 05/26/2010                      | 15 / 15                        | 3.197               |
| Thallium   | mg/kg | 0.01224 / 0.0212      | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                   |
| Vanadium   | mg/kg | 0.04186 / 0.04704     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                   |
| Zinc       | mg/kg |                       | 28.02   | 28.02                   | 51.84                   | CRM2.5                              | 05/31/2010                      | 15 / 15                        | 33.46               |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 36. 2009 Tree Swallow Nestling Sampling at Fort Loudoun Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 63.50   | 63.50                   | 68.20                   | FLD02                               | 06/21/2009                      | 3 / 3                          | 66                 |
| Aluminum   | mg/kg | 24.78 / 25.11         | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Antimony   | mg/kg | 0.09855 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Arsenic    | mg/kg | 0.09855 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Barium     | mg/kg |                       | 0.4718  | 0.4718                  | 2.194                   | FLD02                               | 06/21/2009                      | 3 / 3                          | 1.315              |
| Beryllium  | mg/kg | 0.09855 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Boron      | mg/kg | 1.971 / 2.022         | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Cadmium    | mg/kg | 0.09855 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Calcium    | mg/kg |                       | 3808    | 3808                    | 8213                    | FLD18                               | 06/01/2009                      | 3 / 3                          | 6212               |
| Chromium   | mg/kg | 0.1081 / 0.1247       | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Cobalt     | mg/kg | 0.09855 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Copper     | mg/kg |                       | 2.056   | 2.056                   | 3.721                   | FLD02                               | 06/21/2009                      | 3 / 3                          | 3.021              |
| Iron       | mg/kg |                       | 59.65   | 59.65                   | 85.41                   | FLD18                               | 06/01/2009                      | 3 / 3                          | 75.28              |
| Lead       | mg/kg | 0.09855 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Magnesium  | mg/kg |                       | 219.4   | 219.4                   | 323.4                   | FLD18                               | 06/01/2009                      | 3 / 3                          | 285.3              |
| Manganese  | mg/kg |                       | 0.8425  | 0.8425                  | 2.226                   | FLD02                               | 06/21/2009                      | 3 / 3                          | 1.68               |
| Mercury    | mg/kg | 0.01971 / 0.02022     | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Molybdenum | mg/kg | 0.9855 / 1.011        | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Nickel     | mg/kg | 0.09858 / 0.2154      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Potassium  | mg/kg |                       | 1742    | 1742                    | 2960                    | FLD18                               | 06/01/2009                      | 3 / 3                          | 2251               |
| Selenium   | mg/kg |                       | 0.6066  | 0.6066                  | 1.789                   | FLD18                               | 06/01/2009                      | 3 / 3                          | 1.074              |
| Silver     | mg/kg | 0.05055 / 0.0511      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Sodium     | mg/kg |                       | 957.1   | 957.1                   | 1205                    | FLD18                               | 06/01/2009                      | 3 / 3                          | 1116               |
| Strontium  | mg/kg |                       | 1.988   | 1.988                   | 5.256                   | FLD18                               | 06/01/2009                      | 3 / 3                          | 4.005              |
| Thallium   | mg/kg | 0.09855 / 0.1011      | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Vanadium   | mg/kg | 0.1971 / 0.2022       | ND      | ND                      | ND                      |                                     |                                 | 0 / 3                          | 0                  |
| Zinc       | mg/kg |                       | 25.65   | 25.65                   | 33.71                   | FLD02                               | 06/21/2009                      | 3 / 3                          | 30.75              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 37. 2010 Tree Swallow Nestling Sampling at Fort Loudoun Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 62.20   | 62.20                   | 74                      | FLD                                 | 07/12/2010                      | 10 / 10                        | 68.08              |
| Aluminum   | mg/kg | 3.728 / 4.141         | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Antimony   | mg/kg | 0.01338 / 0.01509     | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Arsenic    | mg/kg | 0.026 / 0.05678       | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Barium     | mg/kg |                       | 0.2688  | 0.2688                  | 3.704                   | FLD                                 | 06/01/2010                      | 10 / 10                        | 1.394              |
| Beryllium  | mg/kg | 0.02744 / 0.0305      | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Boron      | mg/kg | 0.3773 / 0.4342       | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Cadmium    | mg/kg | 0.0072 / 0.01518      | ND      | 0.0078                  | 0.02151                 | FLD                                 | 06/05/2010                      | 7 / 10                         | 0.0148             |
| Calcium    | mg/kg |                       | 2747    | 2747                    | 11642                   | FLD                                 | 06/01/2010                      | 10 / 10                        | 5682               |
| Chromium   | mg/kg | 0.1201 / 0.2389       | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Cobalt     | mg/kg | 0.01303 / 0.01445     | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Copper     | mg/kg |                       | 2.009   | 2.009                   | 2.541                   | FLD                                 | 06/01/2010                      | 10 / 10                        | 2.291              |
| Iron       | mg/kg |                       | 61.12   | 61.12                   | 108.9                   | FLD                                 | 07/08/2010                      | 10 / 10                        | 78.66              |
| Lead       | mg/kg | 0.02583 / 0.02889     | ND      | 0.03024                 | 0.9018                  | FLD                                 | 05/28/2010                      | 2 / 10                         | 0.466              |
| Magnesium  | mg/kg |                       | 216.3   | 216.3                   | 487.6                   | FLD                                 | 06/01/2010                      | 10 / 10                        | 318.7              |
| Manganese  | mg/kg |                       | 0.7725  | 0.7725                  | 1.456                   | FLD                                 | 07/12/2010                      | 10 / 10                        | 1.147              |
| Mercury    | mg/kg | 0.01079 / 0.01188     | ND      | 0.01166                 | 0.01297                 | FLD                                 | 05/31/2010                      | 3 / 10                         | 0.01211            |
| Molybdenum | mg/kg | 0.0327 / 0.05966      | ND      | 0.0567                  | 0.08832                 | FLD                                 | 05/31/2010                      | 9 / 10                         | 0.06883            |
| Nickel     | mg/kg | 0.09156 / 0.1838      | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Potassium  | mg/kg |                       | 2268    | 2268                    | 3100                    | FLD                                 | 06/01/2010                      | 10 / 10                        | 2753               |
| Selenium   | mg/kg |                       | 0.52    | 0.52                    | 1.325                   | FLD                                 | 05/31/2010                      | 10 / 10                        | 0.9562             |
| Silver     | mg/kg | 0.00271 / 0.0091      | ND      | 0.00288                 | 0.00371                 | FLD                                 | 07/06/2010                      | 2 / 10                         | 0.003295           |
| Sodium     | mg/kg |                       | 1221    | 1221                    | 1711                    | FLD                                 | 05/31/2010                      | 10 / 10                        | 1408               |
| Strontium  | mg/kg |                       | 1.174   | 1.174                   | 4.838                   | FLD                                 | 06/01/2010                      | 10 / 10                        | 2.319              |
| Thallium   | mg/kg | 0.01275 / 0.01412     | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Vanadium   | mg/kg | 0.04116 / 0.08792     | ND      | ND                      | ND                      |                                     |                                 | 0 / 10                         | 0                  |
| Zinc       | mg/kg |                       | 19.93   | 19.93                   | 36.7                    | FLD                                 | 06/01/2010                      | 10 / 10                        | 30.08              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 38. 2009 Tree Swallow Nestling Sampling at Melton Hill Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 58.90   | 58.90                   | 69.50                   | MHD12                               | 06/01/2009                      | 9 / 9                          | 63.87              |
| Aluminum   | mg/kg | 24.8 / 25.11          | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Antimony   | mg/kg | 0.0985 / 0.1018       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Arsenic    | mg/kg | 0.0985 / 0.1018       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Barium     | mg/kg |                       | 0.376   | 0.376                   | 1.872                   | MHD25                               | 05/28/2009                      | 9 / 9                          | 0.9328             |
| Beryllium  | mg/kg | 0.0985 / 0.1018       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Boron      | mg/kg | 1.97 / 2.014          | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Cadmium    | mg/kg | 0.0985 / 0.1018       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Calcium    | mg/kg |                       | 1874    | 1874                    | 8025                    | MHD02                               | 05/28/2009                      | 9 / 9                          | 3818               |
| Chromium   | mg/kg | 0.0985 / 0.2712       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Cobalt     | mg/kg | 0.0985 / 0.1018       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Copper     | mg/kg |                       | 1.922   | 1.922                   | 3.21                    | MHD02                               | 05/28/2009                      | 9 / 9                          | 2.397              |
| Iron       | mg/kg |                       | 43.92   | 43.92                   | 101.1                   | MHD02                               | 05/28/2009                      | 9 / 9                          | 66.39              |
| Lead       | mg/kg | 0.0985 / 0.1018       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Magnesium  | mg/kg |                       | 207     | 207                     | 316.2                   | MHD02                               | 05/28/2009                      | 9 / 9                          | 245.9              |
| Manganese  | mg/kg |                       | 0.5338  | 0.5338                  | 1.299                   | MHD25                               | 05/28/2009                      | 9 / 9                          | 0.8592             |
| Mercury    | mg/kg | 0.0197 / 0.02187      | ND      | 0.02302                 | 0.02302                 | MHD03                               | 07/16/2009                      | 1 / 9                          | 0.02302            |
| Molybdenum | mg/kg | 0.985 / 1.018         | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Nickel     | mg/kg | 0.0985 / 0.1757       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Potassium  | mg/kg |                       | 1959    | 1959                    | 2751                    | MHD02                               | 05/28/2009                      | 9 / 9                          | 2264               |
| Selenium   | mg/kg |                       | 1.356   | 1.356                   | 2.903                   | MHD01                               | 06/01/2009                      | 9 / 9                          | 2.19               |
| Silver     | mg/kg | 0.04836 / 0.05136     | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Sodium     | mg/kg |                       | 976.4   | 976.4                   | 1169                    | MHD25                               | 05/28/2009                      | 9 / 9                          | 1073               |
| Strontium  | mg/kg |                       | 1.128   | 1.128                   | 3.595                   | MHD02                               | 05/28/2009                      | 9 / 9                          | 1.806              |
| Thallium   | mg/kg | 0.0985 / 0.1018       | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Vanadium   | mg/kg | 0.197 / 0.2014        | ND      | ND                      | ND                      |                                     |                                 | 0 / 9                          | 0                  |
| Zinc       | mg/kg |                       | 24.1    | 24.1                    | 36.05                   | MHD14                               | 06/04/2009                      | 9 / 9                          | 29.97              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 39. 2010 Tree Swallow Nestling Sampling at Melton Hill Dam**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| % Moisture | %     |                       | 64.20   | 64.20                   | 72.40                   | MHD                                 | 06/16/2010                      | 15 / 15                        | 68.16              |
| Aluminum   | mg/kg | 3.777 / 4.168         | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Antimony   | mg/kg | 0.01372 / 0.01503     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Arsenic    | mg/kg | 0.02648 / 0.05678     | ND      | 0.03069                 | 0.0414                  | MHD                                 | 06/16/2010                      | 2 / 15                         | 0.03605            |
| Barium     | mg/kg |                       | 0.5304  | 0.5304                  | 3.054                   | MHD                                 | 06/02/2010                      | 15 / 15                        | 1.564              |
| Beryllium  | mg/kg | 0.02789 / 0.03073     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Boron      | mg/kg | 0.3883 / 0.4416       | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Cadmium    | mg/kg | 0.00706 / 0.00749     | ND      | 0.01423                 | 0.04968                 | MHD                                 | 06/16/2010                      | 14 / 15                        | 0.02658            |
| Calcium    | mg/kg |                       | 2331    | 2331                    | 8003                    | MHD                                 | 06/02/2010                      | 15 / 15                        | 4663               |
| Chromium   | mg/kg | 0.1197 / 0.1319       | ND      | 0.1483                  | 1.197                   | MHD                                 | 06/08/2010                      | 4 / 15                         | 0.5701             |
| Cobalt     | mg/kg | 0.01325 / 0.0147      | ND      | 0.01372                 | 0.01451                 | MHD                                 | 06/14/2010                      | 2 / 15                         | 0.01412            |
| Copper     | mg/kg |                       | 1.805   | 1.805                   | 3.248                   | MHD                                 | 06/01/2010                      | 15 / 15                        | 2.497              |
| Iron       | mg/kg |                       | 56.58   | 56.58                   | 89.94                   | MHD                                 | 06/08/2010                      | 15 / 15                        | 71.08              |
| Lead       | mg/kg | 0.02648 / 0.02906     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Magnesium  | mg/kg |                       | 245.2   | 245.2                   | 478.9                   | MHD                                 | 06/08/2010                      | 15 / 15                        | 305.8              |
| Manganese  | mg/kg |                       | 0.4992  | 0.4992                  | 2.457                   | MHD                                 | 06/02/2010                      | 15 / 15                        | 1.243              |
| Mercury    | mg/kg | 0.01094 / 0.01123     | ND      | 0.01438                 | 0.02705                 | MHD                                 | 05/28/2010                      | 14 / 15                        | 0.01969            |
| Molybdenum | mg/kg | 0.03212 / 0.06318     | ND      | 0.06012                 | 0.09384                 | MHD                                 | 06/16/2010                      | 10 / 15                        | 0.07336            |
| Nickel     | mg/kg | 0.09178 / 0.1006      | ND      | 0.1002                  | 0.5548                  | MHD                                 | 06/08/2010                      | 3 / 15                         | 0.3287             |
| Potassium  | mg/kg |                       | 2047    | 2047                    | 2955                    | MHD                                 | 06/03/2010                      | 15 / 15                        | 2661               |
| Selenium   | mg/kg |                       | 0.5552  | 0.5552                  | 2.482                   | MHD                                 | 06/08/2010                      | 15 / 15                        | 1.644              |
| Silver     | mg/kg | 0.00276 / 0.00459     | ND      | 0.00301                 | 0.00301                 | MHD                                 | 05/28/2010                      | 1 / 15                         | 0.003006           |
| Sodium     | mg/kg |                       | 1189    | 1189                    | 1533                    | MHD                                 | 06/08/2010                      | 15 / 15                        | 1396               |
| Strontium  | mg/kg |                       | 0.6864  | 0.6864                  | 3.721                   | MHD                                 | 06/02/2010                      | 15 / 15                        | 2.16               |
| Thallium   | mg/kg | 0.01306 / 0.03312     | ND      | ND                      | ND                      |                                     |                                 | 0 / 15                         | 0                  |
| Vanadium   | mg/kg | 0.04236 / 0.09369     | ND      | 0.0966                  | 0.3212                  | MHD                                 | 06/08/2010                      | 2 / 15                         | 0.2089             |
| Zinc       | mg/kg |                       | 15.57   | 15.57                   | 35.05                   | MHD                                 | 06/16/2010                      | 15 / 15                        | 30.43              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 40. 2010 Tree Swallow Dead Nestling Sampling at Clinch River Mile 2.5**

| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 3.922 / 3.922         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Antimony   | mg/kg | 0.01425 / 0.01425     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Arsenic    | mg/kg |                       | 0.0518  | 0.0518                  | 0.0518                  | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.0518             |
| Barium     | mg/kg |                       | 5.495   | 5.495                   | 5.495                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 5.495              |
| Beryllium  | mg/kg | 0.05735 / 0.05735     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Boron      | mg/kg |                       | 2.257   | 2.257                   | 2.257                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 2.257              |
| Cadmium    | mg/kg |                       | 0.1166  | 0.1166                  | 0.1166                  | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.1166             |
| Calcium    | mg/kg |                       | 1343    | 1343                    | 1343                    | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 1343               |
| Chromium   | mg/kg | 0.124 / 0.124         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Cobalt     | mg/kg |                       | 0.03145 | 0.03145                 | 0.03145                 | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.03145            |
| Copper     | mg/kg |                       | 4.681   | 4.681                   | 4.681                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 4.681              |
| Iron       | mg/kg |                       | 36.82   | 36.82                   | 36.82                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 36.82              |
| Lead       | mg/kg |                       | 0.037   | 0.037                   | 0.037                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.037              |
| Magnesium  | mg/kg |                       | 283.1   | 283.1                   | 283.1                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 283.1              |
| Manganese  | mg/kg |                       | 11.54   | 11.54                   | 11.54                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 11.54              |
| Mercury    | mg/kg |                       | 0.01776 | 0.01776                 | 0.01776                 | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.01776            |
| Molybdenum | mg/kg |                       | 0.1221  | 0.1221                  | 0.1221                  | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.1221             |
| Nickel     | mg/kg | 0.0962 / 0.0962       | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Potassium  | mg/kg |                       | 1998    | 1998                    | 1998                    | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 1998               |
| Selenium   | mg/kg |                       | 0.6105  | 0.6105                  | 0.6105                  | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.6105             |
| Silver     | mg/kg |                       | 0.01591 | 0.01591                 | 0.01591                 | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 0.01591            |
| Sodium     | mg/kg |                       | 2405    | 2405                    | 2405                    | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 2405               |
| Strontium  | mg/kg |                       | 2.183   | 2.183                   | 2.183                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 2.183              |
| Thallium   | mg/kg | 0.01554 / 0.01554     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Vanadium   | mg/kg | 0.0444 / 0.0444       | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Zinc       | mg/kg |                       | 31.45   | 31.45                   | 31.45                   | CRM2.5                              | 05/26/2010                      | 1 / 1                          | 31.45              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

**Table 41. 2010 Tree Swallow Dead Nestling Sampling at Melton Hill Dam**

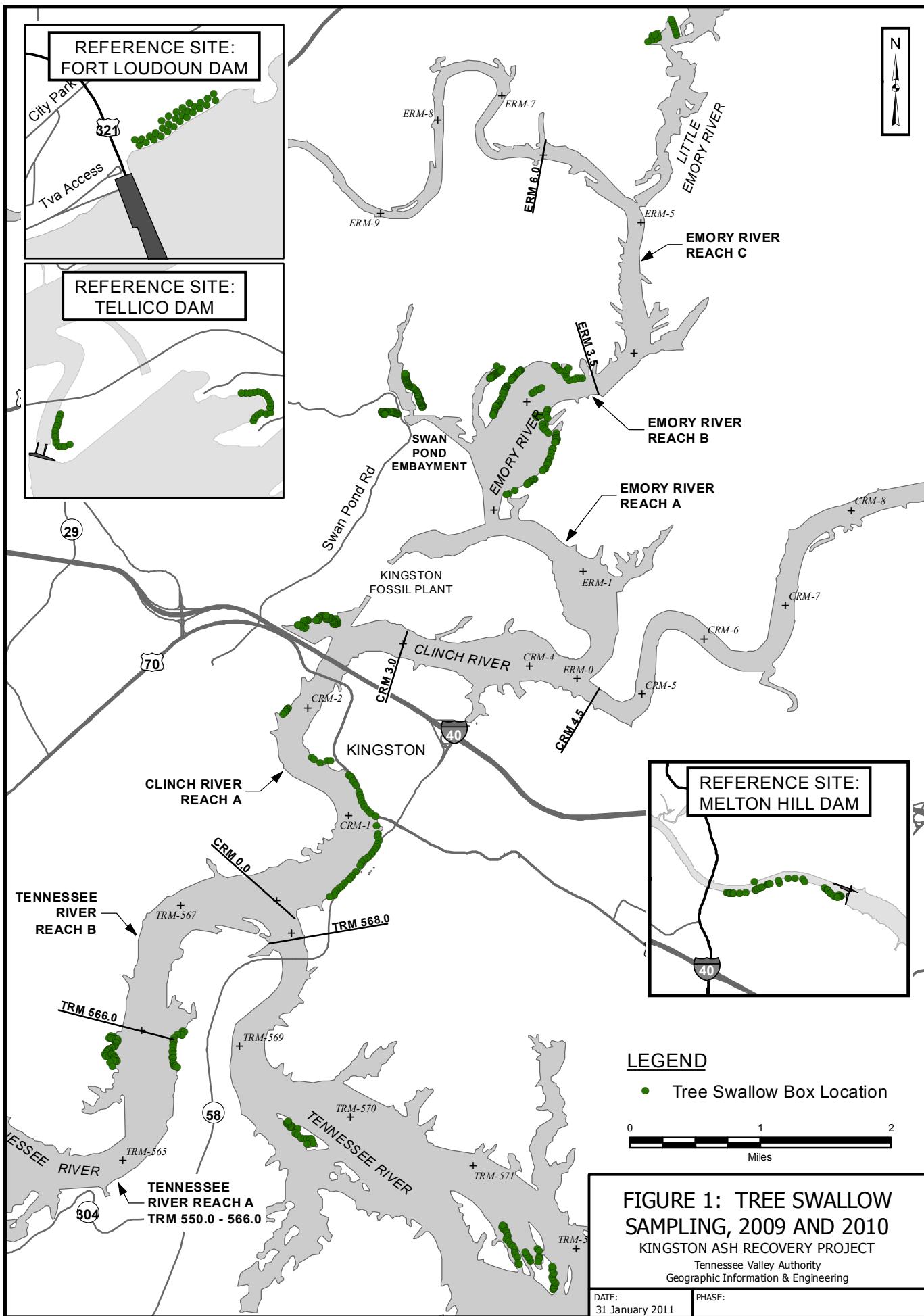
| Analyte    | Units | Detection Limit Range | Minimum | Minimum Detected Result | Maximum Detected Result | Location of Maximum Detected Result | Date of Maximum Detected Result | Number of Detections / Samples | Mean of Detections |
|------------|-------|-----------------------|---------|-------------------------|-------------------------|-------------------------------------|---------------------------------|--------------------------------|--------------------|
| Aluminum   | mg/kg | 4.108 / 4.108         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Antimony   | mg/kg | 0.01487 / 0.01487     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Arsenic    | mg/kg | 0.02772 / 0.02772     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Barium     | mg/kg |                       | 1.966   | 1.966                   | 1.966                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 1.966              |
| Beryllium  | mg/kg | 0.06048 / 0.06048     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Boron      | mg/kg | 0.4284 / 0.4284       | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Cadmium    | mg/kg | 0.00781 / 0.00781     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Calcium    | mg/kg |                       | 6376    | 6376                    | 6376                    | MHD                                 | 06/14/2010                      | 1 / 1                          | 6376               |
| Chromium   | mg/kg | 0.131 / 0.131         | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Cobalt     | mg/kg | 0.01436 / 0.01436     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Copper     | mg/kg |                       | 1.764   | 1.764                   | 1.764                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 1.764              |
| Iron       | mg/kg |                       | 25.96   | 25.96                   | 25.96                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 25.96              |
| Lead       | mg/kg | 0.02772 / 0.02772     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Magnesium  | mg/kg |                       | 299.9   | 299.9                   | 299.9                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 299.9              |
| Manganese  | mg/kg |                       | 1.235   | 1.235                   | 1.235                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 1.235              |
| Mercury    | mg/kg |                       | 0.01184 | 0.01184                 | 0.01184                 | MHD                                 | 06/14/2010                      | 1 / 1                          | 0.01184            |
| Molybdenum | mg/kg | 0.03528 / 0.03528     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Nickel     | mg/kg | 0.1008 / 0.1008       | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Potassium  | mg/kg | 7434 / 7434           | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Selenium   | mg/kg |                       | 2.621   | 2.621                   | 2.621                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 2.621              |
| Silver     | mg/kg | 0.00302 / 0.00302     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Sodium     | mg/kg |                       | 2402    | 2402                    | 2402                    | MHD                                 | 06/14/2010                      | 1 / 1                          | 2402               |
| Strontium  | mg/kg |                       | 2.596   | 2.596                   | 2.596                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 2.596              |
| Thallium   | mg/kg | 0.01663 / 0.01663     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Vanadium   | mg/kg | 0.04788 / 0.04788     | ND      | ND                      | ND                      |                                     |                                 | 0 / 1                          | 0                  |
| Zinc       | mg/kg |                       | 29.23   | 29.23                   | 29.23                   | MHD                                 | 06/14/2010                      | 1 / 1                          | 29.23              |

**Notes:**

Data are presented in wet weight.

For definitions, see the Acronyms section.

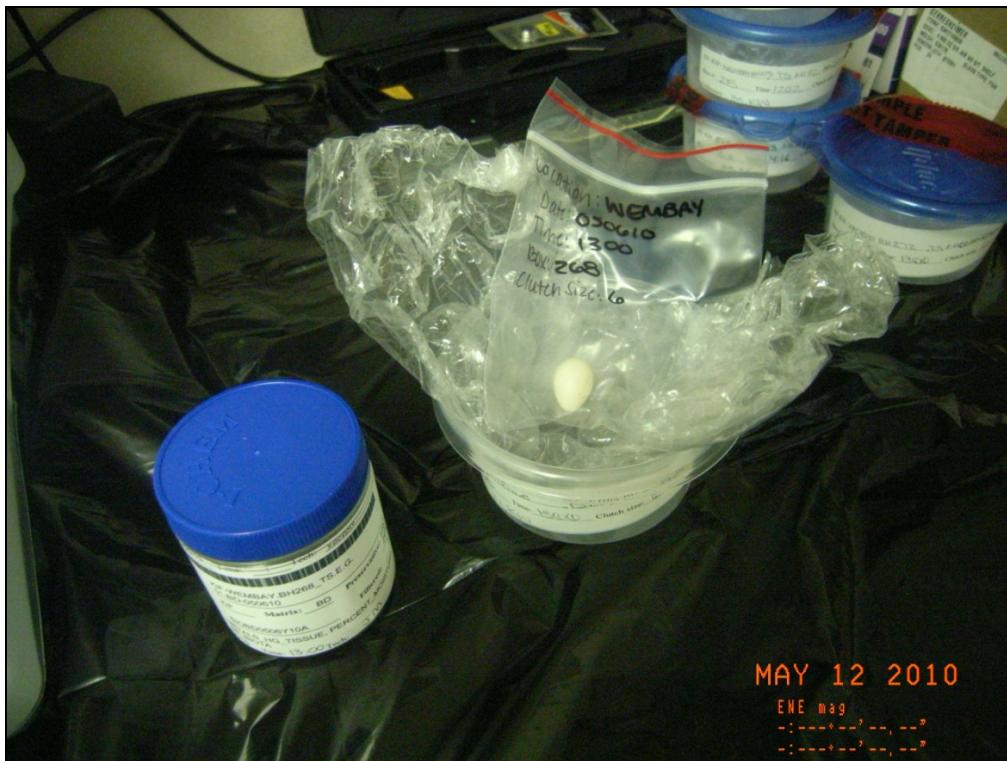
## **Figures**



**Figure 2. Tree Swallow Box with Active Nest**



**Figure 3a. Tree Swallow Egg Collection**



**Figure 3b. Measurement of Tree Swallow Egg**



**Figure 4. Collection of Tree Swallow Nestling**



**Appendix A**  
**Summary of Tree Swallow Collections**

**Table A-1. Summary of Tree Swallow Egg and Nestling Collections, 2009**

| Location                         | Type                       | Egg | Nestling |
|----------------------------------|----------------------------|-----|----------|
| Ft. Loudoun Dam                  | Reference Sites            | 9   | 3        |
| Melton Hill Dam <sup>1</sup>     |                            | 17  | 9        |
| Emory River Mile 3.5             | Potentially Affected Sites | 15  | 12       |
| Emory River Mile 3.0- Right Bank |                            | 10  | 11       |
| Clinch River Mile 2.5            |                            | 12  | 12       |

**Note:** <sup>1</sup>Site has legacy constituents.

**Table A-2. Summary of Tree Swallow Egg and Nestling Collections, 2010**

| Site Name                                     | Type                       | Sample Type      |                       |          |    |
|---|----------------------------|------------------|-----------------------|----------|----|
|   |                            | Egg <sup>1</sup> | Nestling <sup>2</sup> | Eggshell |    |
| Ft. Loudoun Dam <sup>3</sup>                  | Reference Sites            | 16               | +1                    | 10       | 0  |
| Melton Hill Dam <sup>3, 4</sup>               |                            | 16               | +4                    | 15       | +1 |
| Tellico Dam                                   |                            | 15               | 0                     | 0        | 0  |
| Little Emory River Mile 2.0                   |                            | 2                | 0                     | 0        | 0  |
| Tennessee River Mile 569.5 to 571.5           |                            | 15               | 0                     | 0        | 0  |
| Emory River Mile 3.5 <sup>3</sup>             | Potentially Affected Sites | 12               | 0                     | 10       | 0  |
| Emory River Mile 3.0- Right Bank <sup>3</sup> |                            | 15               | 0                     | 15       | 0  |
| Emory River Mile 3.0- Islands and Left Bank   |                            | 15               | 0                     | 0        | 0  |
| West Embayment                                |                            | 2                | 0                     | 0        | 0  |
| North Embayment                               |                            | 4                | 0                     | 0        | 0  |
| East Embayment                                |                            | 4                | 0                     | 0        | 0  |
| Clinch River Mile 2.5 <sup>3</sup>            |                            | 15               | +1                    | 15       | +1 |
| Clinch River Mile 1.0                         |                            | 15               | 0                     | 0        | 0  |
| Tennessee River Mile 566.0                    |                            | 9                | 0                     | 0        | 0  |

**Notes:**

<sup>1</sup>Number of eggs collected; (number of dud eggs, designated as "+").

<sup>2</sup>Number of live nestlings collected; (number of dead nestlings, designated as "+").

<sup>3</sup>Location for nestling collection.

<sup>4</sup>Site has legacy constituents.

**Appendix B**  
**Summary of Insectivorous Bird Shipments**

**Table B-1. Summary of Insectivorous Bird Shipments, 2009**

| Shipment Date | COCs Shipped   | Sample Type |           | Total Samples per COC | Shipment Sample Total |
|---------------|----------------|-------------|-----------|-----------------------|-----------------------|
|               |                | Eggs        | Nestlings |                       |                       |
| 18-May-09     | 0BIOBD0508Y09a | 20          |           | 20                    | 38                    |
|               | 0BIOBD0508Y09b | 181         |           | 18                    |                       |
| 16-Jun-09     | BIOBD0528Y09a  | 2           | 5         | 7                     | 46                    |
|               | BIOBD0601Y09a  | 6           | 11        | 17                    |                       |
|               | BIOBD0604Y09a  | 5           | 8         | 13                    |                       |
|               | BIOBD0608Y09a  | 1           | 2         | 3                     |                       |
|               | BIOBD0614Y09a  | 3           | 3         | 6                     |                       |
| 04-Aug-09     | BIOBD0614Y09b  |             | 2         | 2                     | 26                    |
|               | BIOBD0616Y09a  | 3           | 1         | 4                     |                       |
|               | BIOBD0621Y09a  | 4           | 2         | 6                     |                       |
|               | BIOBD0625Y09a  |             | 1         | 1                     |                       |
|               | BIOBD0701Y09a  |             | 2         | 2                     |                       |
|               | BIOBD0706Y09a  |             | 2         | 2                     |                       |
|               | BIOBD0712Y09a  |             | 4         | 4                     |                       |
|               | BIOBD0716Y09a  | 1           | 3         | 4                     |                       |
|               | BIOBD0724Y09a  |             | 1         | 1                     |                       |
| <b>Total</b>  |                | <b>63</b>   | <b>47</b> | <b>110</b>            | <b>110</b>            |

**Note:** For definitions, see the Acronyms list.

**Table B-2. Summary of Insectivorous Bird Shipments, 2010**

| Shipment Date | COCs Shipped  | Sample Type |           | Total Samples per COC | Shipment Sample Total |
|---------------|---------------|-------------|-----------|-----------------------|-----------------------|
|               |               | Eggs        | Nestlings |                       |                       |
| 13-May-10     | BIOBD0504Y10A | 13          |           | 13                    | 87                    |
|               | RSIBD0504Y10A | 201         |           | 20                    |                       |
|               | BIOBD0505Y10A | 3           |           | 3                     |                       |
|               | RSIBD0505Y10A | 31          |           | 31                    |                       |
|               | BIOBD0506Y10A | 4           |           | 4                     |                       |
|               | RSIBD0506Y10A | 6           |           | 6                     |                       |
|               | BIOBD0507Y10A | 6           |           | 6                     |                       |
|               | RSIBD0507Y10A | 2           |           | 2                     |                       |
|               | RSIBD0508Y10A | 2           |           | 2                     |                       |
| 19-May-10     | BIOBD0510Y10A | 15          |           | 15                    | 45                    |
|               | BIOBD0511Y10A | 9           |           | 9                     |                       |
|               | RSIBD0511Y10A | 3           |           | 3                     |                       |
|               | BIOBD0512Y10A | 1           |           | 1                     |                       |
|               | RSIBD0512Y10A | 6           |           | 6                     |                       |
|               | BIOBD0513Y10A | 10          |           | 10                    |                       |
|               | BIOBD0517Y10A | 1           |           | 1                     |                       |
| 27-May-10     | BIOBD0518Y10A | 2           |           | 2                     | 11                    |
|               | RSIBD0518Y10A | 4           |           | 4                     |                       |
|               | BIOBD0519Y10A | 4           |           | 4                     |                       |
|               | RSIBD0524Y10A |             | 1         | 1                     |                       |
| 03-Jun-10     | RSIBD0526Y10A |             | 2         | 2                     | 18                    |
|               | RSIBD0527Y10A |             | 1         | 1                     |                       |
|               | BIOBD0528Y10A |             | 1         | 1                     |                       |
|               | RSIBD0528Y10A |             | 7         | 7                     |                       |
|               | RSIBD0531Y10A |             | 7         | 7                     |                       |
| 17-Jun-10     | RSIBD0601Y10A |             | 11        | 11                    | 41                    |
|               | RSIBD0602Y10A | 1           | 9         | 10                    |                       |
|               | BIOBD0603Y10A | 3           |           | 3                     |                       |
|               | RSIBD0603Y10A | 2           | 3         | 5                     |                       |
|               | RSIBD0604Y10A |             | 3         | 3                     |                       |
|               | RSIBD0605Y10A |             | 1         | 1                     |                       |
|               | BIOBD0606Y10A |             | 2         | 2                     |                       |

**Table B-2. Summary of Insectivorous Bird Shipments, 2010 (continued)**

| Shipment Date | COCs Shipped  | Sample Type |           | Total Samples per COC | Shipment Sample Total |
|---------------|---------------|-------------|-----------|-----------------------|-----------------------|
|               |               | Eggs        | Nestlings |                       |                       |
| 17-Jun-10     | RSIBD0607Y10A |             | 3         | 3                     |                       |
|               | RSIBD0608Y10A |             | 1         | 1                     |                       |
|               | BIOBD0609Y10A |             | 1         | 1                     |                       |
|               | RSIBD0609Y10A | 1           |           | 1                     |                       |
| 24-Jun-10     | BIOBD0611Y10A |             | 1         | 1                     | 11                    |
|               | RSIBD0611Y10A | 1           |           | 1                     |                       |
|               | BIOBD0613Y10A |             | 2         | 2                     |                       |
|               | RSIBD0614Y10A | 1           | 1         | 2                     |                       |
|               | BIOBD0615Y10A |             | 1         | 1                     |                       |
|               | RSIBD0615Y10A | 1           |           | 1                     |                       |
|               | RSIBD0616Y10A |             | 1         | 1                     |                       |
|               | RSIBD0617Y10A | 2           |           | 2                     |                       |
| 29-Jul-10     | BIOBD0625Y10A |             | 1         | 1                     | 6                     |
|               | BIOBD0628Y10A |             | 1         | 1                     |                       |
|               | RSIBD0706Y10A |             | 1         | 1                     |                       |
|               | RSIBD0707Y10A |             | 1         | 1                     |                       |
|               | RSIBD0708Y10A |             | 1         | 1                     |                       |
|               | RSIBD0712Y10A |             | 1         | 1                     |                       |
| 08-Sep-10     | RSIBD0526Y10B |             | 12        | 1                     | 11                    |
|               | RSIBD0607Y10B | 13          |           | 1                     |                       |
|               | RSIBD0608Y10B | 63          |           | 6                     |                       |
|               | RSIBD0608Y10C | 13          |           | 1                     |                       |
|               | RSIBD0614Y10B | 13          | 12        | 2                     |                       |
| 07-Oct-10     | BIOBD0512Y10B | 1           |           | 1                     | 1                     |
| <b>Total</b>  |               | <b>164</b>  | <b>67</b> | <b>231</b>            | <b>231</b>            |

**Note:** For definitions, see the Acronyms list.