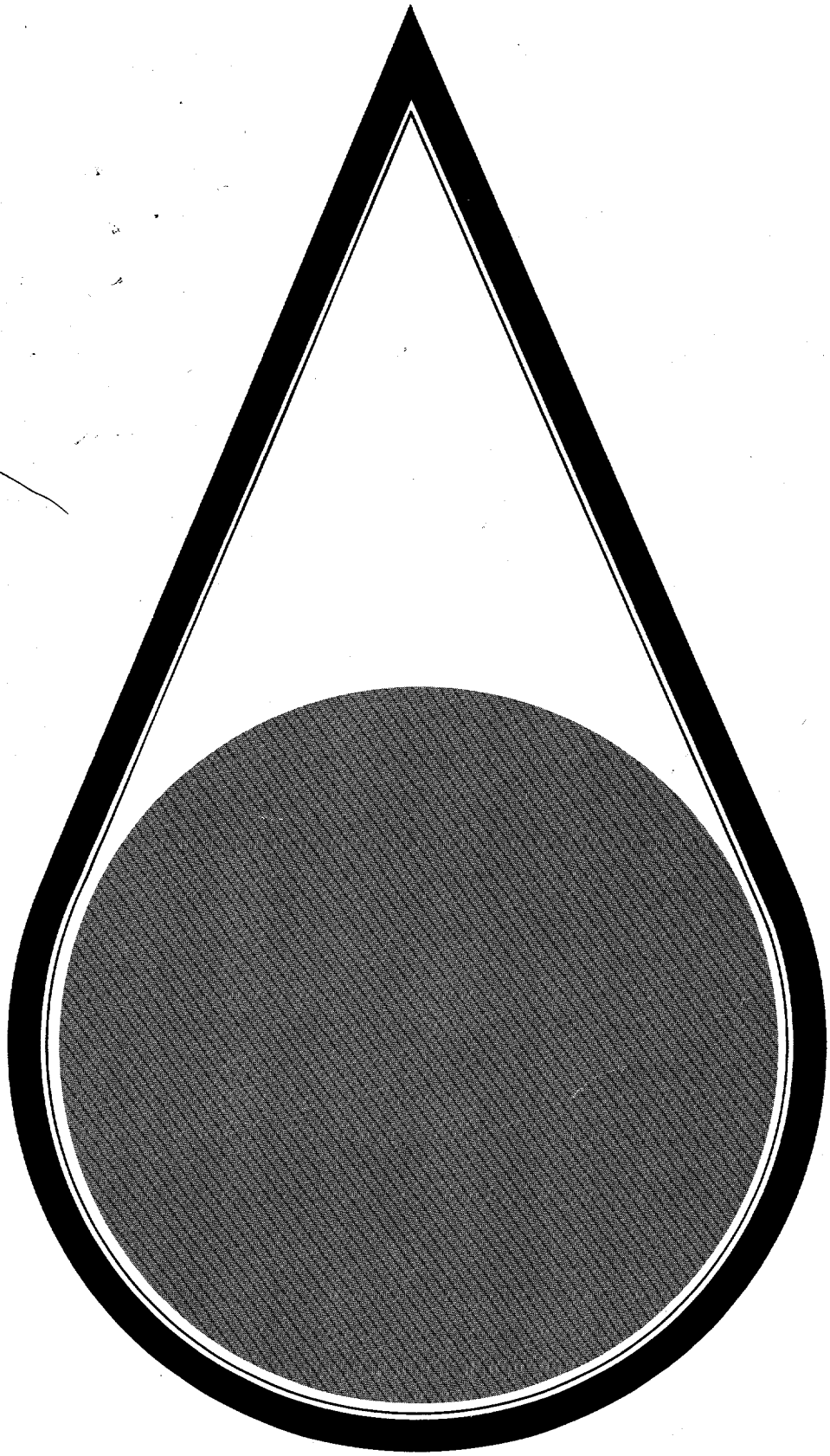
INSTREAM CONTAMINANT STUDY - TASK 4
FISH SAMPLING AND ANALYSIS

Office of Natural Resources
and Economic Development
Tennessee Valley Authority



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FISH SAMPLING AND ANALYSIS

TASK 4

INSTREAM CONTAMINANT STUDY

Prepared for

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Oak Ridge, Tennessee
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Tennessee Valley Authority
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TASK 4

FISH SAMPLING AND ANALYSIS
INSTREAM CONTAMINANT STUDY

1.0 INTRODUCTION

On November 3, 1983, the Oak Ridge Task Force under the direction of the Tennessee Division of Water Management, approved conceptual workplans prepared by four subgroups of the Task Force. These workplans addressed potential offsite contamination problems associated with the Department of Energy (DOE) facilities near Oak Ridge, Tennessee. The conceptual workplans were transmitted to DOE on November 14, 1983. DOE subsequently authorized the Tennessee Valley Authority (TVA) to prepare a technical workplan covering the instream water, sediment, fish, and floodplain sampling approved by the Task Force (1). The Instream Contaminant Study workplan was submitted to DOE in February of 1984 and the work authorized by Interagency Agreement No. DE-AI05-840R21444, TVA Contract No. TV-64095A, between DOE and TVA, and approved by the TVA Board of Directors on April 30, 1984.

This is the fourth of five task reports on the Instream Contaminant Study. It presents the results of field measurements and laboratory analyses of fish collected downstream of the DOE facilities. The Task 4 report presents the fish and aquatic animal data collected and the procedures followed for collecting, handling, and analyzing the samples. Results are summarized in graphs and tables that include available criteria, standards, and background levels. The procedures and data are discussed for clarification, but the implications of the data have not been assessed. All data are presented in Appendices I-III.

1.1 PURPOSE

The purposes of Task 4 of the Instream Contaminant Study are to determine contaminant concentrations in fish from selected sampling sites in Watts Bar and Melton Hill Reservoirs, East Fork Poplar Creek, Bear Creek, Poplar Creek, lower White Oak Creek, and White Oak Lake; and to obtain baseline population data from East Fork Poplar Creek and Bear Creek for future comparisons.

1.2 SCOPE

Fish samples were collected and analyzed to show the spatial delineation of contaminant levels in fish and to identify areas with the greatest potential risks to public health from the consumption of fish. Species relative abundance and species diversity in East Fork Poplar and Bear Creeks were determined. Selected aquatic life (frogs, snapping turtles, and crayfish) in East Fork Poplar and Bear Creeks (frogs and crayfish) were also sampled and contaminant levels determined.

2.0 SAMPLING LOCATIONS AND PARAMETERS

Fish and, in some areas, other aquatic animals (frogs, turtles, and
1984 crayfish) were collected from mid-May through June from 17 sites in Watts Bar and Melton Hill Reservoirs, White Oak Lake, lower White Oak Creek, East Fork Poplar Creek, Bear Creek, and Poplar Creek (Figure 1 and Table 1). Due to habitat and fish population variations between sites, different fish species were sometimes used for flesh contaminant analyses.

FIGURE 1. FISH SAMPLING LOCATIONS

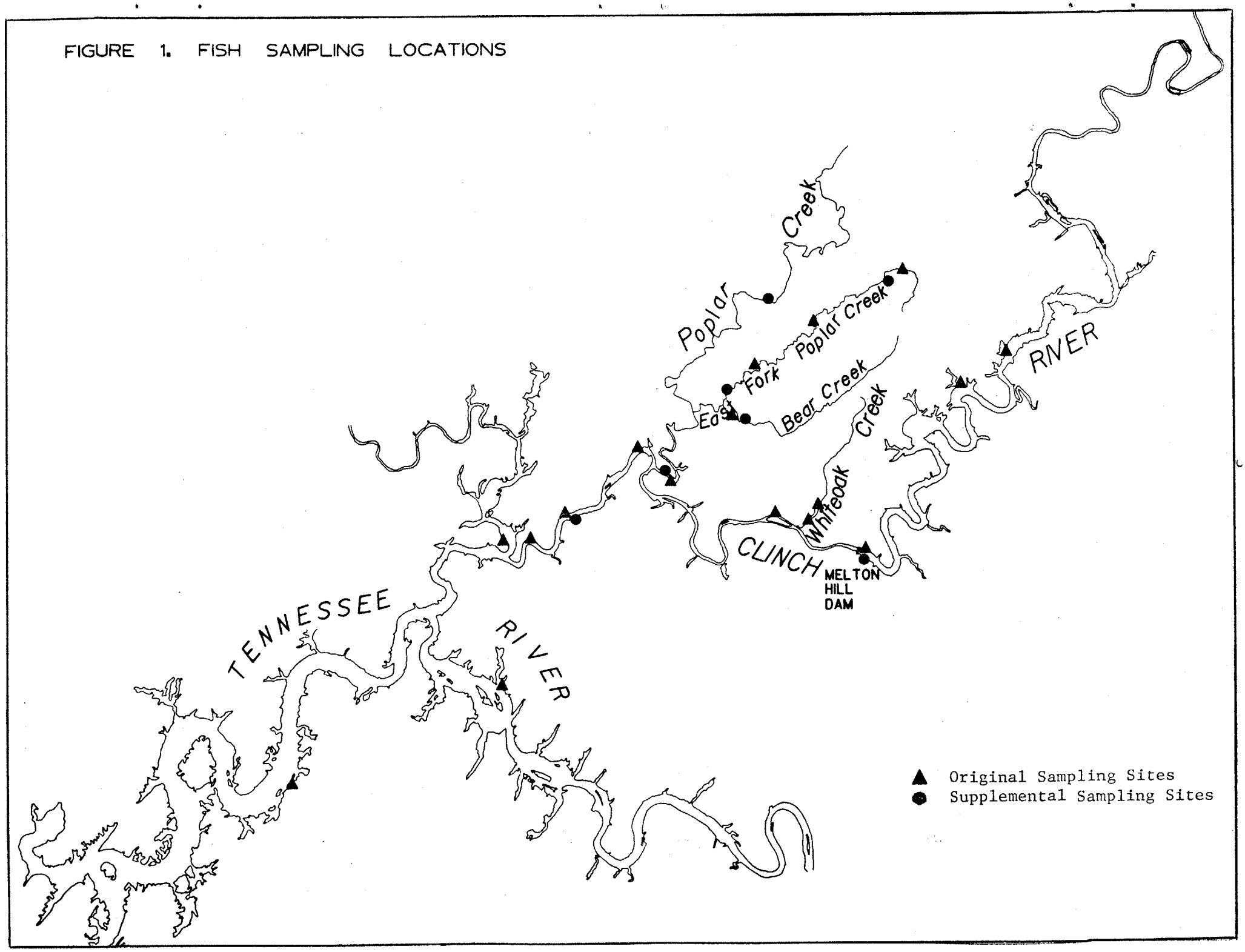

TABLE 1

INSTREAM CONTAMINANT STUDY - TASK 4
NUMBER* AND SPECIES OF FISH AND OTHER AQUATIC ANIMALS COLLECTED FOR
CONTAMINANT ANALYSIS AT EACH STATION

Station / Species	Scarboro Creek Embayment CRM 41.2	McCoy Branch Embayment CRM 37.3	Melton Hill Dam CRM 23.5	EFPC Mile 13.8	EFPC Mile 8.8	EFPC Mile 4.0	Bear Creek Mile 0.4	Poplar Creek Mile 0.2	White Oak Lake	White Oak Embayment Mile 0.2	Clinch River Mile 20.0	Clinch River Mile 11.0	Clinch River Mile 6.0	Clinch River Mile 2.0	Emory River Mile 1.0	Tennessee River Mile 572.0	Tennessee River Mile 558.0
Paddlefish																1	
Gizzard shad						1**											
Common carp				4-R	R				8-R								
White sucker						2	4-R										
Northern hog sucker						1	3										
Smallmouth buffalo								7		R		10					
Spotted sucker						1-R											
Black redhorse						1-R											
Yellow bullhead		1	4							2							
Channel catfish	10-R	9-R	3-R			1-R		10		8-R	R	10-R	10	10	10	10	10
White bass								1			R						
Yellow bass									7								
Striped bass-hybrids								3		5-R	R						
Rock bass					10-R	1	10-R										
Redbreast sunfish				10-R	10-R	2	2										
Green sunfish						1											
Warmouth						1											
Bluegill	10-R	10-R	9-R	2-R**	6	5	2	10	10-R	10-R		10-R	10	10	10	10	10
Largemouth bass	10-R	10-R	10-R	8-R				10	2-R	5	R	10-R	10	10	10	10	10
Yellow perch						1											
Sauger								2								2	
Frogs				10			1										
Snapping turtle				5	5	4											
Crayfish				C	C	C	C										

*The number given for each species and station indicates the number of individual fish samples collected for metal and organic analyses.
**Composite samples due to small size of individuals.
R - Composite radionuclide sample of 1 to 5 pounds of fillets.
C - Composite sample of whole crayfish.

Fish flesh from 17 sites were analyzed for 6 selected priority pollutant metals and PCBs (Table 2). Samples from 5 of the 17 sites were analyzed for priority pollutants (i.e., 13 metals, pesticides, acid extractables, volatiles, and base/neutrals). Radiological analyses (including gross alpha, beta emitters, and gamma emitters) were conducted on fish from 11 sites and strontium 89 and 90 levels were measured from fish at four of these sites.

Supplemental fish samples were collected from seven sites (Table 3) from mid to late May 1984, as requested by the Oak Ridge National Laboratory. These samples were analyzed for 11 priority pollutant metals and one radionuclide (Tc-99).

3.0 PROCEDURES AND METHODOLOGY

3.1 FIELD PROCEDURES

All fish and other biota samples were obtained in accordance with applicable sample collection, handling, and preservation procedures as described in the TVA Field Operations Biological Resources Procedures Manual (2).

3.1.1 SAMPLE COLLECTION FOR TISSUE CONTAMINANT ANALYSES

Fish, frogs, crayfish, and snapping turtles for tissue contaminant analyses were collected from stream stations on East Fork Poplar Creek and Bear Creek with backpack shockers in May and June 1984. Additional

TABLE 2

INSTREAM CONTAMINANT STUDY - TASK 4
PARAMETERS ANALYZED BY SAMPLING STATION

Station	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
	Scarboro Creek Embayment CRM 41.2	McCoy Branch Embayment CRM 37.3	Melton Hill Dam CRM 23.5	EFPC Mile 13.8	EFPC Mile 8.8	EFPC Mile 4.0	Bear Creek Mile 0.4	Poplar Creek Mile 0.2	Whiteoak Lake	Whiteoak Embayment Mile 0.2	Clinch River Mile 20.0	Clinch River Mile 11.0	Clinch River Mile 6.0	Clinch River Mile 2.0	Emory River Mile 1.0	Tennessee River Mile 572.0	Tennessee River Mile 558.0
Selected Metals																	
Cadmium	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Chromium	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Silver	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Arsenic	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Mercury	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Nickel	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Priority Pollutants																	
Metals	x	x		x				x		x							
PCB	x	x	x	x	x	x	x	x	x	x		x	x	x	x	x	x
Pesticides	x	x		x				x		x							
Acid extractable	x	x		x				x		x							
Volatile compounds	x	x		x				x		x							
Base neutral	x	x		x				x		x							
Radionuclides																	
Strontium 89 and 90				x	x				x	x		x					
Gross Alpha & Beta Emitter	x	x	x	x	x	x	x		x	x	x	x					
Gamma Emitter	x	x	x	x	x	x	x		x	x	x	x					

TABLE 3

INSTREAM CONTAMINANT STUDY - TASK 4

LOCATIONS AND PARAMETERS FOR SUPPLEMENTAL SAMPLING STATIONS - METALS AND RADIONUCLIDE (Tc^{99}) ANALYSES SUNFISH AND CARP FLESH

Station	Stream	Mile	Metals*	Tc^{99}
EFPC-1	East Fork Poplar Creek	1.7	x	x
EFPC-2	East Fork Poplar Creek	13.8	x	x
BC-1	Bear Creek	1.2	x	x
PC-1	Poplar Creek	0.2	x	x
PC-Control	Poplar Creek	13.8	x	
Melton Hill Dam	Clinch River	23.5	x	
CRM-6.8	Clinch River	6.8	x	x

*Antimony, Arsenic, Beryllium, Cadmium, Copper, Lead, Mercury, Nickel, Selenium, Silver, Thallium, and Zinc

snapping turtles were collected in August using baited hoop nets and additional crayfish samples were obtained in October by digging crayfish burrows and collecting specimens from under rocks by hand.

Fish were collected from sites in Watts Bar Reservoir, Melton Hill Reservoir, lower White Oak Creek, and Poplar Creek in May and June 1984, using gill nets and a boat-mounted electrofishing unit. Gill nets were 100 x 8 feet with 1 1/2-inch bar mesh size. White Oak Lake was sampled on May 25 for fish with a boat-mounted electrofishing unit.

3.1.2 SAMPLE HANDLING

All fish and other organisms were put on ice and transported to the TVA Fisheries Laboratory in Norris for preliminary processing. At the laboratory, each specimen was weighed to the nearest gram and measured (both standard and total length) to the nearest millimeter. Fish were filleted, wrapped in aluminum foil, and labeled to include species, weight, length, collection site, and date of collection. Sex of fish with sufficiently developed gonads for identification also was recorded.

Samples for metal and organic analyses included at least 100 g of flesh from an individual specimen whenever possible. Fish collected for radiological analyses were composited by species to obtain 1 to 5 pounds of flesh per species per station.

The fillets were frozen and shipped on dry ice to the TVA Laboratory Branch in Chattanooga. Snapping turtles, frogs, and crayfish were handled similarly except frogs were processed whole and crayfish were combined to form composites for each station. Meat was removed from individual turtles and handled in the same manner as fish flesh.

3.1.3 FISH SPECIES OCCURRENCE AND ABUNDANCE SAMPLING

Fish species occurrence and relative abundance estimates were obtained at East Fork Poplar Creek sites (EFPCM 13.8, 8.8, and 4.0) and the Bear Creek site (BCM 0.4) by repeatedly backpack electrofishing 100 meter (m) areas. Sampling areas included both riffle and pool habitat types. Upstream and downstream boundaries were blocked with 3/16-inch mesh nets to prevent migration into or out of the sample area. Sampling boundaries were permanently marked with flagged stakes and/or painted trees for future monitoring efforts for future reference. Two "runs" were made through each 100 m area electrofishing all bank habitat and instream structures. Mark and recapture techniques were attempted, but due to low fish population densities at most sites, these data were not used. All fish collected were identified, measured to inch class, counted, and weighed in inch class groups. Species composition and relative abundance at each site were recorded for use as baseline data to evaluate future population trends. Quantitative sampling outside the 100 m sampling areas, but within 0.25 miles of the station, was done with the backpack shocker to better define the species composition within each stream reach.

3.2 LABORATORY PROCEDURES

3.2.1 SAMPLE COLLECTION, SHIPPING, AND RECEIVING

Samples were collected and shipped along with field data sheets to the TVA Laboratory Branch in Chattanooga or to the TVA Western Area Radiological Laboratory (WARL) in Muscle Shoals (Appendix IV - Figure 1). Upon receipt in the laboratory, samples were inventoried, irregularities noted, and the samples logged into the computer system. Blind laboratory duplicates were prepared by splitting thoroughly homogenized samples. These split samples were also logged into the computer system.

3.2.2 LABORATORY ANALYSES AND DATA REPORTING

A flow chart showing laboratory and data reporting steps is given in Appendix IV - Figure 2. Samples and blanks were analyzed in accordance with standard TVA laboratory procedures (3). Specific references, type of analysis, and detection limits for the analytical procedures are listed in Appendix IV. The Laboratory Branch Intralaboratory Quality Control Program was followed by analyzing approximately ten percent of the samples in duplicate and, when possible, spiking ten percent of the samples.

Results from accuracy and precision quality control samples were plotted on control charts. If a result was outside the control limits, the samples were resubmitted for analyses.

All analytical data were recorded in laboratory notebooks, calculations checked, analyses approved, and results forwarded to the Quality Assurance Coordinator (QAC). The QAC summarized the blind laboratory and field duplicates along with the reference samples. If the data indicated a problem, corrective actions were taken. If possible, the samples were resubmitted for analysis.

The QAC compared the blind laboratory duplicates with the field duplicates. If there was a significant difference between the laboratory and field variability, the QAC notified the Project Manager of homogeneity problems. The QAC also "flagged" all questionable data with appropriate qualifying remarks.

3.3 DATA STORAGE

The QAC forwarded the approved data to the Task Leader who prepared a report of results which was submitted to data processing. The data were keypunched, verified, and stored on the EPA-STORET data system. Completed printouts of data were forwarded to the responsible Task Leader who reviewed the printout for reasonableness and approved final printout of data.

3.4 QUALITY CONTROL

A complete discussion of the TVA Quality Assurance Program is given in Reference 4.

3.4.1 INTRALABORATORY CONTROL CHARTS

3.4.1.1 EVALUATION OF ACCURACY

Data for accuracy control charts were generated by analyzing actual samples spiked with known amounts of the analyte. The percent recovery was determined, and 100 percent was subtracted from the recovery to obtain the percent bias. Percent bias values were plotted on control charts that indicated upper and lower warning and control limits.

Warning and control limits for accuracy control charts were calculated from actual recovery data obtained from analysis of large batches of samples (nominally, at least 20 values). Using the individual percent bias values, the mean ($\overline{x}$) and the standard deviation (SD) were calculated. Warning and control limits were established as $\overline{x} \pm 1$ SD and $\overline{x} \pm 2$ SD, respectively.

Two consecutive observations or repeated results outside the warning limits required an examination of the system to prevent it from going out of control. The analysis was judged "out of control" when any value fell outside the control limits. Standard policy was to reanalyze all samples determined during any period shown to be out-of-control.

3.4.1.2 EVALUATION OF PRECISION

Data for precision control charts were generated by analyzing actual samples in duplicate. The difference between the two values was multiplied by 0.89 to obtain the approximate standard deviation (3). The standard deviation multiplied by 100 divided by the mean of the duplicate values yielded the relative standard deviation in percent (percent RSD). The percent RSD values were plotted on control charts that indicated warning and control limits.

Warning and control limits for precision control charts were calculated from actual precision data obtained from the analyses of large batches of samples (nominally, at least 20 values). Using the individual relative standard deviation values, the mean ($\overline{x}$) and standard deviation (SD) were calculated. The warning and control limits were established as $\overline{x}$ + 1 SD and $\overline{x}$ + 2 SD, respectively.

Two consecutive observations or repeated results outside the warning limit required corrective action. The analysis was judged out-of-control when any value fell outside the control limits. Standard policy was to reanalyze all samples determined during a period shown to be out-of-control.

3.4.2 REFERENCE SAMPLES

Standard reference materials supplied by National Bureau of Standards (NBS), Eastman Kodak Company, and Environmental Protection

Agency (EPA) were analyzed (when certified material was available) with each set of Oak Ridge samples. These results were used to provide a measure of the accuracy of the overall data set.

The recovery data for each parameter was summarized by calculating the mean percent recovery and the standard deviation. An estimate of the reliability of mean percent recovery values was determined by calculating the 95 percent confidence interval of the mean. The equation for this calculation is $\overline{x} \pm t(SD/n)$, where t is the students t value, SD is the standard deviation, and n the number of reference samples determined. This interval means that there is a 95 percent chance the true percent recovery value lies within the values. If there is no statistically significant bias in the analytical procedure, the 95 percent confidence interval of the mean should encompass 100 percent recovery.

TVA's Western Area Radiological Laboratory (WARL) participates in twelve or more of the laboratory intercomparison studies conducted by EPA's Las Vegas laboratory. The results from this intercomparison are presented in the annual environmental operating reports for TVA's nuclear power plants. The WARL also analyzes crosscheck samples produced by TVA's laboratory quality control program for nuclear radiochemical laboratories.

3.4.3 BLIND DUPLICATE SAMPLES

3.4.3.1 BLIND LABORATORY DUPLICATES

The Quality Assurance Coordinator prepared a second aliquot from an original sample by splitting the sample after it had been thoroughly mixed. These samples were inserted blind into the analytical stream. The relative standard deviation was calculated from these duplicate data as described in Section 3.4.1.2.

The WARL routinely checks its various radiochemical procedures by analyzing a series of quality control samples comprising approximately 10 percent of its sample load. These quality control checks include blind laboratory duplicates, blanks, backgrounds, counting standards, work station routine spikes, blind spikes, and in-house crosschecks.

3.4.4 EPA SPLIT SAMPLES

Approximately five percent of all fish samples were thoroughly homogenized and a representative aliquot sent to the EPA Region IV Laboratory and/or the EPA Eastern Environmental Radiation Facility (EERL) for the analysis of the same parameters analyzed on the original sample. EPA split samples were submitted incrementally throughout the project to ensure early detection and correction of any analytical problem. Interlaboratory split

data were analyzed using percent relative error to determine if bias existed between the TVA and EPA laboratories. This procedure is explained as follows:

Percent relative error is defined as the difference between two replicate samples divided by the mean of the samples expressed as percent. It is calculated as follows:

$$\% \text{ Relative Error} = \frac{\{\text{EPA Result} - \text{TVA Result}\}}{\{\text{EPA Result} + \text{TVA Result}\}} \times 200$$

Percent relative error can vary only between -200 and +200. A helpful way of conceptualizing relative error is to consider its relationship to the ratio of the two laboratories. This relationship can be calculated as follows:

$$\text{Ratio } \frac{\text{EPA Result}}{\text{TVA Result}} = \frac{\{200 + \% \text{ relative error}\}}{\{200 - \% \text{ relative error}\}}$$

Representative values are as follows:

Ratio EPA Result / TVA Result	% Relative Error	Ratio EPA Result / TVA Result	% Relative Error
0	-200	∞	200
0.01	-196	100	196
0.10	-164	10	164
0.20	-138	5	133
0.33	-100	3	100
0.50	- 67	2	67
0.67	- 40	1.5	40
0.83	- 18	1.2	18

4.0 RESULTS

4.1 PRIORITY POLLUTANT METALS

Measured concentrations of 13 metals from 380 fish and 33 other aquatic animal tissue samples are given in Appendix I - Table 1 to 3. Detection limit values are followed by either a "U" indicating no evidence of parameter presence, or by an "M" indicating evidence of parameter presence but which could not be quantified below the detection limit.

Mercury is the only priority pollutant metal with a Food and Drug Administration (FDA) action level for fish flesh (1.0 mg/kg methyl mercury). In November 1984 (49 Fed. Reg., 224:45663) FDA ammended the action level for mercury to include only methyl mercury. This revision went into effect after laboratory analyses of the fish collected in this study; therefore, only total mercury is reported. The Federal Register notification of this change states that most mercury in fish is present in the methyl form. Background mercury concentrations are based on previously collected data (5).

Concentrations of metals other than mercury in fish tissues collected during this investigation were found to be similar to those reported by Milligan and Neal (6) for fish from Chickamauga Reservoir and within the range of background concentrations. Mercury concentrations frequently exceeded background levels with some samples exceeding 1.0 mg/kg.

Mercury concentrations were highest in fish and other aquatic animal (frog, turtle, and crayfish) tissues from EFPCM 13.8 (Table 4). Mean total mercury concentrations were above 1.0 mg/kg for three of the four fish species tested from this station. Total mercury concentrations in frogs (including bullfrogs, green frogs, and pickerel frogs) also averaged over 1.0 mg/kg, and while snapping turtle and crayfish tissues had lower means both groups had individuals with concentrations over 1.0 mg/kg.

Mean levels of mercury in fish flesh samples decreased in downstream stations to below 1.0 mg/kg (Figure 2); however, individuals with concentrations above 1.0 mg/kg were captured at each station in East Fork Poplar Creek (Table 5).

Tissue samples from Bear Creek, a tributary to East Fork Poplar Creek, did not reveal elevated mercury levels. At the confluence of East Fork Poplar Creek with Poplar Creek, levels were still elevated in some largemouth bass, sauger, and smallmouth buffalo. Two individuals of the latter species at the Clinch River station (CRM 11.0) immediately below the confluence of Poplar Creek were found to have total mercury levels slightly over 1.0 mg/kg. Fish samples from the remaining stations had total mercury concentrations below 1.0 mg/kg.

TABLE 4

INSTREAM CONTAMINANT STUDY - TASK 4
MERCURY CONCENTRATIONS IN FISH AND OTHER AQUATIC ORGANISMS

Sampling Location Species	Number of Fish	Mercury Concentration (mg/kg) Mean	Range
Scarboro Creek			
Channel catfish	10	U*	U
Largemouth bass	10	.11	U-.44
Bluegill	10	.06	U-.21
McCoy Branch			
Channel catfish	9	U	U
Yellow bullhead	1	U	U
Largemouth bass	10	.08	U-.17
Bluegill	10	.04	U-.14
Melton Hill Dam			
Largemouth bass	10	.11	U-.23
Bluegill	9	.02	U-.14
White Oak Lake			
Largemouth bass	2	.41	.24-.57
Bluegill	10	.23	U-.46
Yellow bass	7	.07	U-.23
White Oak Creek Mile 0.2			
Channel catfish	8	.06	U-.16
Black bullhead	2	.06	U-.11
Largemouth bass	5	.13	U-.36
Bluegill	10	.16	U-.56
Striped bass - hybrid	5	.11	U-.15
Clinch River Mile 11.0			
Smallmouth buffalo	10	.46	U-1.2
Largemouth bass	10	.34	.19-.58
Bluegill	10	.16	U-.40
Clinch River Mile 6.0			
Largemouth bass	10	.31	.20-.56
Bluegill	10	.19	.12-.33
Clinch River Mile 2.0			
Largemouth bass	10	.10	U-.26
Bluegill	10	.03	U-.13
Emory River Mile 1.0			
Largemouth bass	10	.12	U-.32
Bluegill	10	.05	U-.20

TABLE 4 (CONTINUED)

INSTREAM CONTAMINANT STUDY - TASK 4
MERCURY CONCENTRATIONS IN FISH AND OTHER AQUATIC ORGANISMS

Sampling Location Species	Number of Fish	Mercury Concentration (mg/kg) Mean	Range
Tennessee River Mile 572			
Largemouth bass	10	.16	U-.45
Bluegill	10	.02	U-.17
Sauger	2	.30	.30-.30
Paddlefish	1	U	U
Tennessee River Mile 558			
Largemouth bass	10	.05	U-.14
Bluegill	10	.04	U-.18
East Fork Poplar Creek Mile 13.8			
Common carp	4	1.0	.57-1.3
Largemouth bass	8	1.3	.80-1.9
Bluegill (composite)	2	.68	.54-.82
Redbreast sunfish	10	1.7	.24-3.3
Frogs	10	1.6	U-3.0
Snapping turtles	5	.72	.43-1.2
Crayfish	2	.82	.43-1.2
East Fork Poplar Creek Mile 8.8			
Bluegill	6	.80	.51-1.0
Redbreast sunfish	10	.96	.64-1.4
Snapping turtle	5	.63	.16-1.0
Crayfish (composite)	4	.22	.24-.72
East Fork Poplar Creek Mile 4.0			
Bluegill	5	.89	.20-1.2
Redbreast sunfish	2	.67	.64-.70
Green sunfish	1	.52	.52
Warmouth	1	.96	.96
Rock bass	1	1.0	1.0
Yellow perch	1	.93	.93
White sucker	2	.97	.54-1.4
Black redhorse	1	.57	.57
Gizzard shad (composite)	1	.12	.12
Snapping turtle	4	.95	.41-1.4
Crayfish (composite)	1	.29	.29
Bear Creek Mile 0.4			
Bluegill	2	.59	.52-.66
Redbreast sunfish	2	U	U
Rock bass	10	.31	.17-.43
White sucker	4	.38	.24-.49
Northern hog sucker	3	.23	.17-.27
Frog	1	U	U
Crayfish (composite)	1	U	U

TABLE 4 (CONTINUED)

INSTREAM CONTAMINANT STUDY - TASK 4
MERCURY CONCENTRATIONS IN FISH AND OTHER AQUATIC ORGANISMS

Sampling Location Species	Number of Fish	Mercury Concentrations (mg/kg) Mean	Range
Poplar Creek Mile 0.2			
Channel catfish	10	.14	U-.42
Largemouth bass	10	.50	.24-1.3
Bluegill	10	.38	.18-.82
Smallmouth buffalo	7	.93	.13-1.7
Striped bass - hybrid	3	.04	U-.12
White bass	1	U	U
Sauger	2	.84	.37-1.3

*U - Below minimum detection amount of 0.10 mg/kg

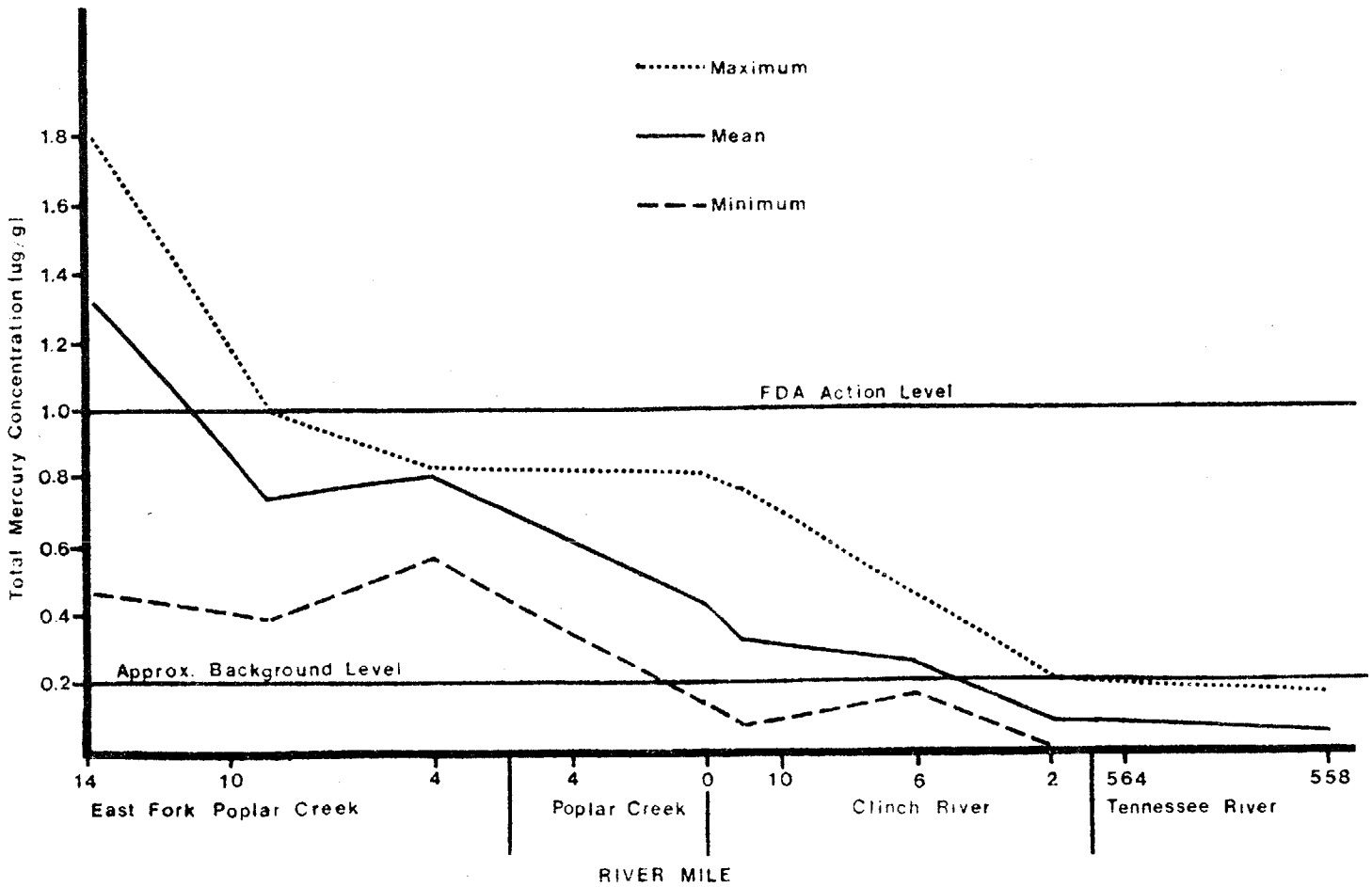

Figure 2. Mean upper limit mean, and mean lower limit of mercury concentrations in all species of fish from stream reaches below New Hope Pond.

TABLE 5

INSTREAM CONTAMINANT STUDY - TASK 4
MERCURY CONCENTRATIONS IN SUPPLEMENTAL FISH FLESH SAMPLES

Sampling Location Species	Number of Composites	Mercury Concentration (mg/kg) Mean	Range
EFPC Mile 13.8			
Common carp	2	.24	.21-.27
Bluegill	1	1.1	1.1
EFPC Mile 1.7			
Common carp	2	.88	.82-.93
Bluegill	2	.63	.60-.65
Bear Creek Mile 1.2			
Rock bass	1	.35	.35
Northern hog sucker	2	.31	.25-.37
Poplar Creek Mile 13.8			
Common carp	1	.52	.52
Golden redhorse	1	.15	.15
Bluegill	1	.27	.27
Redbreast sunfish	1	U	U
Poplar Creek Mile 0.2			
Common carp	2	.18	.12-.24
Bluegill	2	.37	.28-.46
Melton Hill Dam			
Common carp	2	.14	.11-.16
Bluegill	1	U	U
Redbreast sunfish	1	U	U
Clinch River Mile 6.8			
Common carp	2	.34	.21-.47
Bluegill	2	.14	.13-.14

U - Below minimum detection limit of 0.10 mg/kg.

Analysis of fish tissue samples collected for the Oak Ridge National Laboratory at some of the same sites and at additional locations in the same streams reveal similar results (Appendix I - Table 3). Total mercury levels were highest at upper East Fork Poplar Creek stations with values decreasing downstream (Table 5). A similar trend was reported by Van Winkle et al. (7) for mercury concentrations in bluegill flesh from East Fork Poplar Creek.

4.2 ORGANIC POLLUTANTS

4.2.1 ORGANIC PRIORITY POLLUTANTS OTHER THAN PCBs

Results of the 50 fish flesh samples analyzed for organic priority pollutants other than PCBs are given in Appendix II - Table 1. Only 6 fish (12 percent of those analyzed) were found to contain measurable priority pollutant organics other than PCBs, and only one of these contained more than one compound (Table 6). The remaining samples showed no organic priority pollutants above the detection limit (Appendix I). Detection limit values are followed by either a "U" indicating no evidence of parameter presence, or by an "M" indicating evidence of parameter presence which could not be quantified below the detection limit.

The six priority pollutant organic compounds detected in fish flesh samples are: Di-n-butyl phthalate; 4,4-DDD; 4,4-DDE; bis (2-Ethylhexyl) phthalate; Aldrin; and chloroform. The concentrations of each of these

TABLE 6

INSTREAM CONTAMINANT STUDY - TASK 4
ORGANIC PRIORITY POLLUTANTS (EXCEPT PCB's) IN FISH FLESH SAMPLES

Sampling Location	Fish Species	Organic Compound	Concentration mg/kg
McCoy Branch	Yellow bullhead	Di-n-butyl phthalate	1.30
	Channel catfish	4,4-DDD	0.01
EFPC Mile 13.8	Largemouth bass	bis(2-Ethylhexyl) phthalate	1.20
	Carp*	Aldrin	0.02
	Carp*	4,4-DDE	0.04
White Oak Creek Mile 0.2	Channel catfish	Chloroform	0.02
	Channel catfish	Chloroform	0.02

*Same fish sample

compounds only slightly exceeded the detection limit value. There were no obvious spatial trends in the location of fish with detectable organic compounds, since only three disassociated sites were involved (i.e., Melton Hill Reservoir, White Oak Creek in upper Watts Bar Reservoir, and East Fork Poplar Creek immediately below New Hope Pond).

4.2.2 PCBs

Concentrations of PCBs were measured in fish flesh samples from 146 individuals representing 9 species (Appendix II - Table 2). Sixteen of these individuals (13 channel catfish and 3 common carp) had levels above the FDA action level of 2.0 mg/kg (49 Fed. Reg., 100:21514-21520) for total PCBs in fish flesh (Table 7). These fish came from the stations at East Fork Poplar Creek Mile 13.8, White Oak Creek Mile 0.2, Clinch River Miles 11.0 and 23.1, and Poplar Creek Mile 0.2.

Of 22 channel catfish and 5 yellow bullhead flesh samples from three stations above Melton Hill Dam, only two channel catfish had detectable PCB levels (Table 7). One of these fish, collected in the McCoy Branch area, measured 1.0 mg/kg total PCBs and the other, from the Melton Hill Dam area, measured 4.7 mg/kg. This latter fish was captured immediately adjacent to the face of the dam and could have been transported from below the dam during navigation lock operations. This hypothesis appears plausible considering the low PCB values attained in other channel catfish from Melton Hill Reservoir and the relatively high values observed in channel catfish collected from stations below the dam.

TABLE 7

INSTREAM CONTAMINANT STUDY - TASK 4
TOTAL PCB'S** IN FISH FLESH SAMPLES FROM 16 SITES IN THE
VICINITY OF OAK RIDGE, TENNESSEE

Sample Site	Species	Individuals 1	2	3	4	5	6	7	8	9	10	Mean
Scarboro Creek	Channel catfish	U	U	U	U	U	U	U	U	U	U	-
McCoy Branch	Channel catfish	U	1.0	U	U	U	U	U	U	U		0.1
	Yellow bullhead	U										-
Melton Hill Dam	Channel catfish	U	U	4.7*								1.6
	Yellow bullhead	U	U	U	U							-
White Oak Creek Mile 0.2	Channel catfish	3.0*	2.4	2.2	5.6*	2.7	3.5*	2.8	2.8			3.1*
	Black bullhead	U	U									-
White Oak Lake	Common carp	U	0.2	0.6	U	1.0	U	U	0.4			0.3
Clinch River Mile 11.0	Channel catfish	1.1	1.5	0.3	2.1	0.9	0.4	1.7	0.7	0.5	U	0.9
Clinch River Mile 6.0	Channel catfish	0.4	0.6	1.1	0.2	0.6	0.5	0.6	1.6	0.8	1.0	0.7
Clinch River Mile 2.0	Channel catfish	0.3	0.4	0.9	0.6	0.7	1.5	0.6	0.7	0.7	U	0.6
Emory River Mile 1.0	Channel catfish	0.6	1.0	0.8	1.4	0.9	U	U	0.5	0.3	U	0.6
TRM 572	Channel catfish	U	0.3	U	0.2	0.2	0.5	U	0.4	0.4	0.3	0.2
TRM 558	Channel catfish	1.3	0.2	U	0.6	1.4	1.1	0.8	0.5	0.3	U	0.6
EFPC Mile 13.8	Bluegill	U	U									-
	Largemouth bass	U	0.5	0.9								0.5
	Common carp	3.1*	3.7*	2.0								2.9
EFPC Mile 8.8	Rock bass	U	U	U	U	U	U	U	U	U	U	-
EFPC Mile 4.0	Channel catfish	0.6										0.6
	Spotted sucker	U										-
	Northern hog sucker	U										-
Bear Creek Mile 0.4	Rock bass	U	U	U	U	U	U	U	U	U	0.2	Trace
Poplar Creek Mile 0.2	Channel catfish	U	U	2.1	U	U	U	0.7	1.8	2.5	3.4*	1.1

U - undetectable level
* - above FDA action level
** - Total concentrations obtained by summing detectable levels.

All eight channel catfish sampled from White Oak Creek Mile 0.2 (mouth of White Oak Creek approximately two river miles below Melton Hill Dam) had PCB levels above the FDA action level of 2.0 mg/kg (Table 7). Concentrations ranged from 2.2 to 5.6 mg/kg with a mean of 3.1 mg/kg.

No channel catfish were captured in White Oak Lake; therefore, common carp were substituted. PCB levels in these common carp ranged from not detectable to 1.0 mg/kg. PCBs are lipid soluble and species such as catfish with high lipid contents bioconcentrate them to a higher level than those with low lipid content (7). Due to the shift in species analyzed and variations in bioconcentration factors between species, it is not certain whether the source of the PCBs in lower White Oak Creek originated in the White Oak Creek watershed or from downstream sources.

Channel catfish collected from stations located below the mouth of White Oak Creek reveal progressively decreasing levels of PCBs in tissues (Figure 3). Mean total PCB values range from 0.9 mg/kg at CRM 11.0 (maximum of 2.1) to 0.6 mg/kg at CRM 2.0 and Tennessee River Mile (TRM) 558. PCB values in channel catfish flesh from the Emory River Mile 1.0 site also average 0.6 mg/kg. Due to proximity to the lower Clinch, these fish could be traversing between the lower Emory River and Clinch River areas.

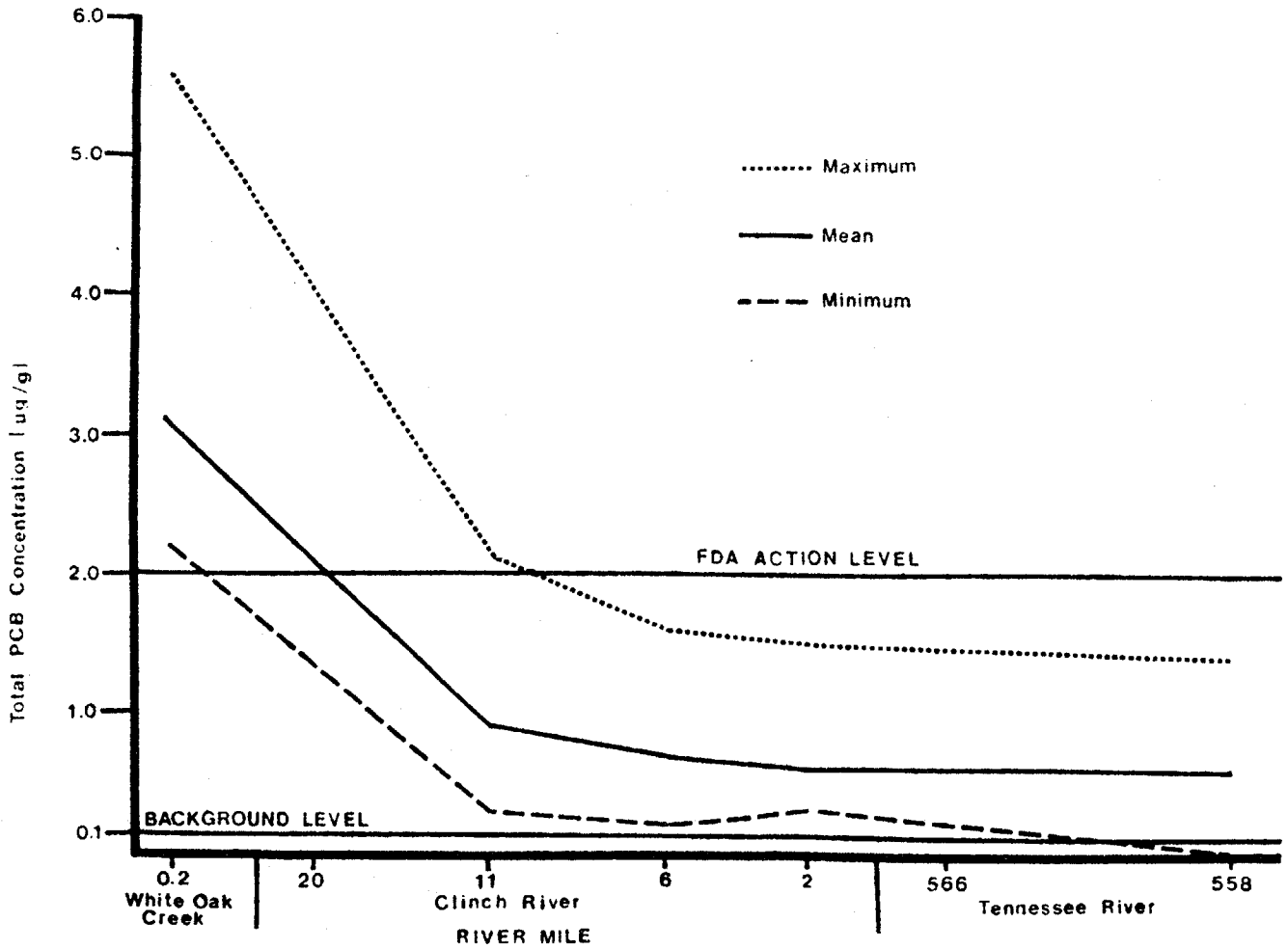

Figure 3. Maximum, mean, and minimum total PCB concentrations in fish in stream reaches below White Oak Creek.

PCB levels in channel catfish in the Tennessee River arm of Watts Bar Reservoir (TRM 572) approximately four river miles above the confluence with the Clinch arm average only 0.2 mg/kg. These results suggest that the PCB source is located in the upper section of the Clinch River arm of Watts Bar Reservoir or one of the tributary streams in this area.

Due to limited species availability in East Fork Poplar Creek, several species were used for tissue analyses. Of the fish collected at EFPCM 13.8, the three common carp had a mean PCB concentration of 2.8 mg/kg; the three largemouth bass 0.5 mg/kg; and the two bluegill had undetectable levels. All three common carp had levels above 2.0 mg/kg. PCBs in rock bass from EFPCM 8.8 and BCM 0.2 stations were not detectable in the flesh samples. All fish samples from EFPCM 4.0 (one channel catfish, one spotted sucker, and one northern hog sucker) had PCB concentrations less than 1.0 mg/kg.

Poplar Creek (mile 0.2) channel catfish tissue samples ranged from not detectable to 3.4 mg/kg with a mean of 1.1 mg/kg. Three individuals tested exceeded 2.0 mg/kg. Variability in PCB levels at this station (Table 7) may be a result of variable uptake by a resident population exposed to a localized source; the mixing of immigrants with high levels with less affected Poplar Creek residents; or the mixing of immigrants with low levels with more affected Poplar Creek residents. Because

different species were used at the East Fork Poplar Creek, Bear Creek, and Poplar Creek sites, no trends in the distribution of PCBs in these streams were apparent.

4.2.3 OTHER ORGANICS

As a supplement to the organic analyses specified in the Instream Contaminant Study Workplan (1), an interpretive analysis was conducted on tissue samples for other organic compounds which produced significant peaks during the gas chromatograph/mass spectrometer analysis. This search resulted in the identification of 32 additional (nonpriority pollutant) organic compounds. These compounds and their estimated concentrations and percent probability of a positive match with a reference spectrum of that compound are given in Appendix II - Table 3. Little information is available regarding the health significance of these compounds due to ingestion of fish flesh, but several of the compounds are naturally occurring in fish.

4.3 METABOLITES

Numerous aquatic organisms have a natural mechanism which alters contaminants they assimilate from the environment to nontoxic forms. These new compounds or metabolites may be more harmful to human health than the parent compound (8). For this reason, fish tissues of some individuals were analyzed for metabolites. The results of these analyses are presented in Appendix II - Table 4.

4.4 RADIONUCLIDES

Radionuclide results for fish samples are given in Appendix III. Concentrations of selected radionuclides were identified in samples of fish taken from the Clinch River, East Fork Poplar Creek, White Oak Lake, lower White Oak Creek, and Bear Creek. A summary of maximum levels is presented in Table 8 along with maximum concentrations reported by TVA in samples collected from the Tennessee River. Also included in Table 8 is a listing of reporting levels suggested by the Nuclear Regulatory Commission (NRC) for radioactivity concentrations in environmental samples taken in the vicinity of nuclear power plants. Although these levels apply only to facilities licensed by the NRC, they are included here for comparison.

Cesium 137 levels exceeded the maximum concentrations reported in Tennessee River fish samples in twenty of the samples analyzed. However, only three samples exceeded the NRC reporting levels. Six samples from White Oak Lake and East Fork Poplar Creek contained either cesium 134 or cobalt 60 at concentrations exceeding levels reported in the Tennessee River, but none exceeded the NRC reporting levels. Samples from lower White Oak Creek contained strontium 90 concentrations which approached or exceeded the maximum levels reported in samples taken from the Tennessee River.

In summary, radioactivity concentrations in fish samples collected in Bear Creek were consistent with those reported in the Tennessee River. Samples from the Clinch River, East Fork Poplar Creek, and White Oak Lake contained concentrations typically higher than those found in Tennessee

TABLE 8

INSTREAM CONTAMINANT STUDY - TASK 4
SIGNIFICANT MAXIMUM CONCENTRATIONS FOR RADIOISOTOPES IN FISH FLESH SAMPLES - pCi/g, DRY WEIGHT

Analysis/Isotope	NRC Reporting Level[a]	Tennessee River[b]	Lower Limit of Detection[c]	Clinch River	East Fork Poplar Creek	White Oak Lake	White Oak Embayment	Bear Creek
Gross Alpha	d	5	0.1	.07	.9	.05	.07	.02
Gross Beta	d	45	0.1	64	74	76	40	29
Sr-89	d	1.2	0.5	.1	.2	.2	-1.6[e]	f
Sr-90	d	0.3	0.1	.01	.06	.25	1.3	f
Gamma Spectral Analysis[g]								
Co-60	40	.03	.01	-	.03	.12	.07	-
Cs-134	4	-	.08	-	.11	.04	-	-
Cs-137	8	.2	.02	18	2.6	26	9.7	.4
K-40	d	20	1.00	18	22	17	14	18

a - Reporting levels for radioactivity concentrations in environmental samples as outlined in Draft NUREG-0472, Rev. 3, Standard Radiological Effluent Technical Specifications For Pressurized Water Reactors, January 1983.
b - Maximum concentrations reported by TVA in fish samples collected from the Tennessee River from 1981-1983.
c - Lower limit of detection as determined by the method developed by Pasternack and Harley and described in HASL-300 and Nucl. Instr. Methods 91. 533-40 (1971).
d - No reporting level given.
e - Negative value is an artifact of counting statistics and does not infer a negative activity.
f - Analysis not performed.
g - Dash indicates isotope not identified in gamma spectral analysis.

River fish. However, these levels, were generally lower than the reporting levels suggested by the NRC for radioactivity levels in fish flesh samples taken from the vicinity of nuclear power plants, with only 8 percent of the samples exceeding these levels.

4.5 SPECIES OCCURRENCE AND ABUNDANCE

A total of 241 fish, including 18 species and one hybrid sunfish, were collected during the quantitative sampling of 100 m sections of the East Fork Poplar Creek and Bear Creek (Table 9). Only two species (redbreast sunfish and bluegill) were collected from all four stations. The hybrid sunfish collected at EFPCM 8.8 appeared to be a bluegill x green sunfish cross.

Relative abundance estimates of fish (number/sample run) in 100 m sections of East Fork Poplar Creek suggested greater densities in the upper reaches of the stream (Table 9). The stations at miles 8.8 and 13.8 had significantly ($P > 0.01$) greater numbers of fish than at mile 4.0. Normally, fish densities are much greater near the mouth of a stream and decrease in an upstream direction to a low in the headwater areas. As suggested by Van Winkle et al. (6), the West End Sewage Treatment Plant located at EFPCM 8.0 could be affecting the distribution and abundance of fish in East Fork Poplar Creek. Additionally, some fish may be coming over the dam of New Hope Pond, immediately above the upstream sampling station, resulting in higher densities in this area. Fish densities at Bear Creek Mile 0.8 were considerably higher than at any of the East Fork Poplar Creek stations (Table 9).

TABLE 9

INSTREAM CONTAMINANT STUDY - TASK 4
RELATIVE ABUNDANCE OF FISH IN EAST FORK POPLAR CREEK AND BEAR CREEK
BASED ON NUMBERS CAPTURED IN TWO CONSECUTIVE SAMPLES OF 100 M SECTIONS

Species	East Fork Poplar Creek						Bear Creek	
	Mile 4.0		Mile 8.8		Mile 13.8		Mile 0.4	
	# Captured	#/Run	# Captured	#/Run	# Captured	#/Run	# Captured	#/Run
Gizzard shad	-	-	1	0.5	42	21.0	-	-
Central stoneroller	-	-	5	2.5	1	0.5	13	6.5
Common carp	-	-	2	1.0	4	2.0	-	-
Rosefin shiner	-	-	-	-	-	-	16	8.0
Striped shiner	-	-	2	1.0	5	2.5	18	9.0
Blacknose dace	-	-	1	0.5	-	-	12	6.0
Creek chub	-	-	-	-	-	-	6	3.0
White sucker	-	-	-	-	-	-	6	3.0
Northern hog sucker	-	-	-	-	-	-	5	2.5
Spotted sucker	1	0.5	-	-	-	-	-	-
Yellow bullhead	1	0.5	-	-	-	-	-	-
Channel catfish	1	0.5	-	-	-	-	-	-
Rock bass	1	0.5	2	1.0	-	-	19	9.5
Redbreast sunfish	3	1.5	27	13.5	6	3.0	5	2.5
Warmouth	-	-	1	0.5	-	-	-	-
Bluegill	3	1.5	11	5.5	2	1.0	1	0.5
Hybrid sunfish	-	-	3	1.5	-	-	-	-
Stripetail darter	-	-	-	-	-	-	8	4.0
Tennessee snubnose darter	-	-	-	-	-	-	5	2.5
Totals	10	5.0	55	27.5	62	31.0	114	57.0

A total of 24 species of fish were collected from East Fork Poplar Creek sites during quantitative, qualitative, and contaminant analysis sampling at each site (Table 11). No darter species and only a limited number of minnow species were found in East Fork Poplar Creek. Pflieger (10) noted that both of these fish groups require clean, unpolluted water.

Fish species likely to be consumed by humans made up from 19 to 90 percent of the fish collected within the 100 m study areas at the four stream sites (Table 10). The sites with the highest densities of "edible" fish were those in East Fork Poplar Creek above the sewage treatment plant. This is the section of East Fork Poplar Creek most accessible by the public.

Collections in Bear Creek resulted in the capture of 15 species of fish (Table 11). Five minnow and three darter species were collected from this stream.

4.6 QUALITY CONTROL

4.6.1 CONTROL CHARTS

Intralaboratory control charts for all parameters analyzed (with the exception of organic priority pollutants) were maintained as described in Section 3.4.1. Duplicate and spiked samples were either within the

TABLE 10

INSTREAM CONTAMINANT STUDY - TASK 4
PERCENT OCCURRENCE OF FISH SPECIES COLLECTED FROM 100 M STUDY SECTIONS OF EAST FORK POPLAR CREEK AND BEAR CREEK

Species	East Fork Poplar Creek			Bear Creek
	Mile 4.0	Mile 8.8	Mile 13.8	Mile 0.4
Gizzard shad	-	2	68	-
Central stoneroller	-	9	2	11
Common carp	-	4	6	-
Rosefin shiner	-	-	-	14
Striped shiner	-	4	8	16
Blacknose dace	-	2	-	11
Creek chub	-	-	-	5
White sucker	-	-	-	5
Northern hog sucker	-	-	-	4
Spotted sucker	10	-	-	-
Yellow bullhead	10	-	-	-
Channel catfish	10	-	-	-
Rock bass	10	4	-	17
Redbreast sunfish	30	49	10	4
Warmouth	-	2	-	-
Bluegill	30	20	3	1
Hybrid sunfish	-	5	-	-
Stripetail darter	-	-	-	7
Tennessee snubnose darter	-	-	-	4

TABLE 11

INSTREAM CONTAMINANT STUDY - TASK 4
FISH SPECIES AND OTHER AQUATIC ANIMALS COLLECTED FROM
EAST FORK POPLAR CREEK AND BEAR CREEK

	East Fork Poplar Creek			Bear Creek
	Mile 13.8	Mile 8.8	Mile 4.0	Mile 0.4
Fish				
Gizzard shad	x	x	x	x
Central stoneroller	x	x	x	x
Common carp	x	x		
Rosefin shiner				x
Emerald shiner			x	
Striped shiner	x	x	x	x
Bullhead minnow			x	
Blacknose dace		x		x
Creek chub	x			x
White sucker		x	x	x
Northern hog sucker			x	x
Spotted sucker			x	
Black redhorse			x	
Golden redhorse	x			
Yellow bullhead			x	
Channel catfish			x	
Rock bass		x	x	x
Redbreast sunfish	x	x	x	x
Green sunfish	x	x	x	
Warmouth	x	x	x	
Bluegill	x	x	x	x
Hybrid sunfish		x		
Largemouth bass	x			
Stripetail darter				x
Tennessee snubnose darter				x
Yellow perch			x	
Logperch				x
Freshwater drum		x		
Banded sculpin			x	x
Frogs				
Pickerel frog	x			
Green frog	x			x
Bullfrog	x			
Others				
Snapping turtle	x	x	x	x
Crayfish	x	x	x	x

"control limits" or when "out-of-control" situations occurred, all the samples within that batch were reanalyzed.

4.6.2 REFERENCE SAMPLES

Reference samples were inserted into the analytical stream for those parameters where reference material was available) as described in Section 3.4.2. These samples were periodically analyzed to assess the accuracy of the analytical measurements. The results of these analyses are tabulated in Appendix IV - Table 1.

Although the 95 percent confidence interval of the mean recovery for many of the parameters does not encompass 100 percent, no significant bias was exhibited for any parameter with the exception of silver. There was no explanation for this high bias since recoveries on all other laboratory spikes and reference samples were excellent.

4.6.3 LABORATORY DUPLICATES

Blind laboratory duplicates were prepared and inserted into the analytical stream as indicated in Section 3.4.3.2. Results on these duplicate samples are summarized in Appendix IV - Table 2.

The mean relative standard deviation calculated from the results on the blind laboratory duplicates ranges from a low of 5.4 for pesticide results to a high of 72.6 for lead. The mean RSD for all tissue measurements

is 28.7. The high RSD's for the duplicate results on the metal analyses is caused both by the difficulty in obtaining a homogeneous sample from a whole fish fillet and also because most of the metal results are near the detection limit of the method. This is substantiated by the fact that of the 243 duplicate pairs analyzed, 149 pairs have concentrations which were less than the method detection limit.

4.6.4 EPA SPLIT SAMPLES

Split samples for nonradiological analyses were prepared and shipped to the EPA Region IV laboratory and split samples for radiological analyses were shipped to the EPA Eastern Environmental Radiation Facility (EERF) as indicated in Section 3.4.4. Results on the split samples are listed in and summarized in Appendix IV - Tables 3 to 6 for nonradiological analyses and in Table 7 for radiological analyses.

The overall agreement between EPA and TVA for split sample analyses on the tissue samples is excellent, especially considering the difficulty encountered in obtaining a homogeneous sample. The only parameters which show a significant bias are selenium and total PCB. In both cases EPA results are consistently higher than TVA values. The high bias obtained by EPA on the selenium results was caused by EPA analyzing the samples by atomic emission instead of atomic absorption graphite furnace technique. Selenium analysis by atomic emission is subject to a positive bias caused by spectral interferences. The difference between the two laboratories

for the total PCB results is probably caused by the methods used to interpret and calculate the PCB results from the GC chromatograms. Since PCB is a mixture of compounds, its presence causes a multipeak response by the gas chromatograph. Multiple chromatographic response makes interpretation and calculations difficult. To add to this problem, the Oak Ridge fish samples contained a mixture of the arochlors 1254 and 1260. These two PCB arochlors produce overlapping responses on the gas chromatograph. Since these chromatographs require interpretation by a chemist to obtain the quantitative results, it is possible that a bias exists between the two laboratories in making these interpretations.

TVA did not detect any of the volatile organic compounds for the samples split with EPA. EPA did, however, report concentrations for several volatile compounds in three of the four samples they analyzed. Only the results reported by EPA on sample number B01131 (see Table 4) would have been at a concentration high enough for TVA to detect. TVA's reexamination of the spectrum for this sample confirmed the absence of the compounds in the split sample analyzed by TVA.

The only major discrepency in the split tissue samples for pesticides analyses is EPA's report of presumptive evidence of concentrations of chlorodane compared to TVA's results of less than the method detection

limit. The presence of the PCB in the sample which produces a multipeaked response on the chromatograms precluded TVA from making a positive identification of chlordane in the tissue samples. The presence of PCBs in the tissue samples also affects the reliability of results for the other pesticide compounds reported by TVA, since it is difficult to differentiate pesticide compounds (such as DDT) from a PCB isomer.

One fish sample was split with EPA's EERF for radiological analysis. The results are presented in Appendix IV - Table 7. With the exception of cesium 137, agreement between the two laboratories was acceptable. The cesium 137 concentration reported by EERF was approximately seven times that reported by TVA, but was within the range of values found in other fish samples collected during this study.

4.6.5 CONCLUSIONS

The overall results of the quality control program laboratories were excellent and within the requirements of this study. The EPA-TVA split data did, however, reveal two areas where caution should be exercised in interpreting the data. Since EPA split results for PCBs in tissue were an average of 1.4 times greater than the TVA values, a "safety factor" should be incorporated when applying the FDA limit for PCBs in fish. Significant

levels of PCBs in the fish tissue also complicated the interpretation of GC chromatograms for the presence of pesticides. Therefore, caution should be taken when utilizing the pesticide values on tissue samples in which PCB is also present.

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APPENDIX I

INSTREAM CONTAMINANT STUDY - TASK IV

METALS DATA

TABLE 1

SELECTED METALS RESULTS

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 3 MELTON HILL DAM CRM 23.5

FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	UNK	4.400	0.04	0.012	0.050J	0.500U	0.050J	0.100U	2.000U
BLUEGILL	FMALE	5.600	0.12	0.006	0.070	0.700	0.030J	0.100U	1.000U
BLUEGILL	UNK	4.800	0.06	0.008	0.040	0.600	0.030U	0.100U	1.000U
BLUEGILL	MALE	6.000	0.15	0.005	0.060	0.300	0.020U	0.100U	1.000U
BLUEGILL	FMALE	5.400	0.11	0.008	0.070	0.300U	0.030U	0.100U	1.000U
BLUEGILL	MALE	6.900	0.19	0.005	0.030	0.200U	0.020J	0.100U	1.000U
BLUEGILL	MALE	5.500	0.13	0.005	0.030	0.200U	0.020U	0.100U	1.000U
BLUEGILL	UNK	4.400	0.07	0.012	0.080	0.500U	0.050U	0.100U	2.000U
BLUEGILL	MALE	7.600	0.28	0.002U	0.080	0.200U	0.020J	0.140	1.000U
LARGEMOUTH BASS	MALE	12.5	0.85	0.003	0.020U	0.200U	0.020U	0.100	1.000U
LARGEMOUTH BASS	MALE	13.7	1.05	0.005	0.030	0.200U	0.020U	0.160	1.000U
LARGEMOUTH BASS	FMALE	11.7	0.74	0.002U	0.020U	0.200U	0.020U	0.210	1.000U
LARGEMOUTH BASS	MALE	13.2	0.85	0.002U	0.020	0.200U	0.020U	0.290	1.000U
LARGEMOUTH BASS	FMALE	15.9	2.36	0.002U	0.020U	0.200U	0.020U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	15.9S	2.36S	0.002U	0.020J	0.200U	0.020J	0.190	1.000U
LARGEMOUTH BASS	MALE	11.5	0.71	0.004	0.090	0.200U	0.020U	0.160	1.000U
LARGEMOUTH BASS	MALE	12.9	0.96	0.005	0.090	0.200U	0.020U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	13.6	0.96	0.006	0.030	0.200U	0.020J	0.230	1.000U
LARGEMOUTH BASS	MALE	14.4	1.61	0.006	0.040	0.200U	0.020U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	17.2	2.75	0.004	0.020	0.200U	0.020J	0.100U	1.000U
LARGEMOUTH BASS	FMALE	17.2S	2.75S	0.002U	0.040	0.200U	0.020U	0.130	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 5 EAST FORK POPLAR CREEK 8.8 FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	FMALE	5.000	0.09	0.003U	0.030U	0.300U	0.030U	0.510	1.000U
BLUEGILL	MALE	4.800	0.07	0.150	0.140	0.300U	0.030J	0.580	1.000U
BLUEGILL	MALE	5.500	0.14	0.012	0.100	0.300U	0.020U	0.950	1.000U
BLUEGILL	MALE	5.500	0.11	0.019	0.020	0.300U	0.020J	0.840	1.000U
BLUEGILL	FMALE	5.600	0.12	0.008	0.020J	0.300U	0.020	0.910	1.000U
BLUEGILL	MALE	6.600	0.21	0.010	0.020J	0.300U	0.020U	1.000	1.000U
CRAYFISH		.	0.06	1.500	0.420	0.300U	0.020J	0.620	1.000U
REDBREAST	FMALE	4.200	0.06	0.014	0.030U	0.200U	0.030U	0.930	1.000U
REDBREAST	FMALE	5.400	0.14	0.005	0.020U	0.200U	0.020J	1.400	1.000U
REDBREAST	FMALE	5.800	0.17	0.005	0.020U	0.200U	0.020J	0.810	1.000U
REDBREAST	MALE	6.400	0.18	0.004	0.020U	0.200	0.020J	1.200	1.000U
REDBREAST	FMALE	5.400	0.13	0.003	0.020U	0.200U	0.020U	1.000	1.000U
REDBREAST	MALE	6.100	0.16	0.002U	0.020U	0.200U	0.020U	0.990	1.000U
REDBREAST	MALE	6.000	0.15	0.002U	0.020U	0.200U	0.020U	0.950	1.000U
REDBREAST	MALE	6.500	0.19	0.003	0.030	0.200U	0.020U	0.960	1.000U
REDBREAST	MALE	6.500	0.20	0.002U	0.020	0.200U	0.020J	0.740	1.000U
REDBREAST	MALE	6.600	0.19	0.003	0.020U	0.200U	0.020U	0.650	1.000U
SNAPPING TURTLE		.	8.44	0.008	0.080	0.300U	0.020U	1.000	1.000U
SNAPPING TURTLE		.	8.44S	0.014	0.050	0.300U	0.020U	1.100	1.000U
SNAPPING TURTLE		.	1.54	0.013	0.080	0.300U	0.020U	0.540	1.000U
SNAPPING TURTLE		.	5.24	0.005	0.030	0.300U	0.020U	0.620	1.000U
SNAPPING TURTLE		.	3.94	0.002U	0.110	0.300U	0.020J	0.840	1.000U
SNAPPING TURTLE		.	2.14	0.011	0.070	0.300U	0.020U	0.160	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 6 EAST FORK POPLAR CREEK 4.0

FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	MALE	5.900	0.22	0.002	0.040	0.300U	0.020U	1.000	1.000U
BLUEGILL	FMALE	4.600	0.11	0.003	0.090	0.400	0.030U	1.200	1.000U
BLUEGILL	UNK	4.300	0.06	0.007	0.120	0.300U	0.030U	0.870	1.000U
BLUEGILL	MALE	6.900	0.31	0.002U	0.040	0.500U	0.020U	0.200	2.000U
BLUEGILL	MALE	6.900S	0.31S	0.002	0.030	0.200U	0.200U	0.100U	1.000U
BLUEGILL	FMALE	5.900	0.16	0.002U	0.040	0.500U	0.020U	1.200	2.000U
BLACK REDHORSE	FMALE	15.6	1.48	0.002U	0.060	0.300U	0.020U	0.570	1.000U
CRAYFISH		.	0.05	0.030	0.400	0.200U	0.100U	0.290	1.000
GREEN SUNFISH	MALE	4.200	0.07	0.005U	0.190	0.500U	0.050U	0.520	2.000U
GISSARD SHAD		.	0.06C	0.002	0.070	0.300U	0.020U	0.120	1.000U
REDBREAST	FMALE	5.300	0.12	0.002U	0.030	0.200U	0.020U	0.620	1.000U
REDBREAST	MALE	5.100	0.10	0.003U	0.040	0.300U	0.030U	0.640	1.000U
REDBREAST	FMALE	4.700	0.08	0.003U	0.050	0.300U	0.040	0.700	1.000U
ROCKBASS	FMALE	7.100	0.26	0.004	0.040	0.200U	0.020U	1.000	1.000U
SNAPPING TURTLE		.	0.67C	0.012	0.030	0.200U	0.020U	1.400	1.000U
SNAPPING TURTLE		.	18.06	0.015	0.030	0.200U	0.020	1.100	1.000U
SNAPPING TURTLE		.	11.45	0.004	0.020	0.200U	0.050	0.880	1.000U
SNAPPING TURTLE		.	11.45S	0.006	0.030	0.200U	0.020	0.630	1.000U
SNAPPING TURTLE		.	7.05	0.002U	0.030	0.200U	0.020U	0.410	1.000U
WARMOUTH	MALE	6.300	0.23	0.004	0.040	0.200U	0.020U	0.960	1.000U
WHITE SUCKER	FMALE	15.7	1.45	0.002	0.030	0.200U	0.020U	1.400	1.000U
WHITE SUCKER	UNK	7.600	0.21	0.005	0.040	0.200U	0.020U	0.540	1.000U
YELLOW PERCH	FMALE	6.700	0.11	0.004	0.070	0.300U	0.020U	0.930	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 7 BEAR CREEK MILE 0.4 FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	MALE	5.700	0.11	0.033	0.020J	0.400U	0.100	0.660	2.000U
BLUEGILL	MALE	5.700	0.15	0.020	0.020U	0.200U	0.100	0.520	1.000U
CRAYFISH		.	0.09	1.500	0.340	0.200U	0.200	0.100U	1.000M
GREEN FROG		.	0.18	0.170	0.320	0.200U	0.100U	0.100U	1.000M
NORTH HOGSUCKER	FMALE	8.600	0.32	0.018	0.020	0.200U	0.200	0.270	1.000U
NORTH HOGSUCKER	FMALE	8.200	0.25	0.060	0.020J	0.200U	0.100	0.260	1.000U
NORTH HOGSUCKER	FMALE	6.900	0.17	0.040	0.020J	0.200U	0.200	0.170	1.000U
REDBREAST	FMALE	4.800	0.09	0.020	0.080	0.400U	0.100J	0.100U	2.000U
REDBREAST	UNK	4.800	0.08	0.020	0.260	0.200U	0.100U	0.100U	1.000U
ROCKBASS	FMALE	5.000	0.09	0.025	0.400	0.200U	0.500	0.340	1.000U
ROCKBASS	FMALE	6.500	0.21	0.038	0.540	0.200U	0.400	0.290	1.000U
ROCKBASS	FMALE	5.900	0.17	0.008	0.180	0.200U	0.400	0.240	1.000U
ROCKBASS	MALE	6.400	0.19	0.013	0.008	0.200U	0.200	0.170	1.000U
ROCKBASS	FMALE	6.800	0.27	0.018	0.150	0.200U	0.200	0.380	1.000U
ROCKBASS	FMALE	7.000	0.29	0.015	0.120	0.200U	0.100	0.500	1.000U
ROCKBASS	MALE	6.900	0.27	0.010	0.080	0.200U	0.100	0.250	1.000U
ROCKBASS	MALE	7.900	0.36	0.018	0.150	0.200U	0.200	0.300	1.000U
ROCKBASS	MALE	7.700	0.37	0.020	0.220	0.200U	0.200	0.430	1.000U
WHITE SUCKER	MALE	10.9	0.57	0.060	0.020J	0.200U	0.100U	0.400	1.000U
WHITE SUCKER	FMALE	9.000	0.55	0.020	0.020U	0.200U	0.100	0.490	1.000U
WHITE SUCKER	MALE	9.800	0.42	0.014	0.040	0.200U	0.100J	0.240	1.000U
WHITE SUCKER	FMALE	9.100	0.28	0.010	0.020U	0.200U	0.100U	0.400	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 9 WHITE OAK LAKE

FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	FMALE	6.100	0.16	0.002	0.020J	0.200U	0.200	0.100U	1.000U
BLUEGILL	FMALE	6.400	0.20	0.002	0.020J	0.200U	0.100U	0.540	1.000U
BLUEGILL	FMALE	6.500	0.22	0.002U	0.020J	0.200U	0.100	0.320	1.000U
BLUEGILL	FMALE	7.400	0.29	0.002U	0.020	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	7.900	0.31	0.004	0.060	0.200U	0.200	0.100U	1.000U
BLUEGILL	FMALE	6.200	0.15	0.002U	0.020	0.200U	0.100J	0.100U	1.000U
BLUEGILL	FMALE	7.600	0.29	0.002U	0.020	0.200U	0.100J	0.100J	1.000U
BLUEGILL	FMALE	7.600	0.35	0.004	0.020	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	7.100	0.35	0.002U	0.360	0.200U	0.100	0.200	1.000U
BLUEGILL	MALE	6.800	0.25	0.010	0.020U	0.200U	0.100J	0.560	1.000U
BLACK BULLHEAD	MALE	10.6	0.62	0.006	0.020U	0.200U	0.200	0.100U	1.000U
BLACK BULLHEAD	MALE	12	1.06	0.002U	0.040	0.400	0.200	0.110	1.000U
CHANNEL CATFISH	MALE	19.9	2.16	0.002U	0.100	0.200M	0.200	0.140	1.000U
CHANNEL CATFISH	MALE	24.3	5.95	0.002U	0.020J	0.200U	0.200	0.160	1.000U
CHANNEL CATFISH	MALE	24.3S	5.95S	0.008	0.020J	0.200U	0.200	0.120	1.000U
CHANNEL CATFISH	FMALE	19.8	3.30	0.006	0.020J	0.200U	0.300	0.100U	1.000U
CHANNEL CATFISH	MALE	19.7	3.01	0.006	0.170	0.400	0.300	0.100U	1.000U
CHANNEL CATFISH	FMALE	19.3	2.70	0.004	0.070	0.500	0.200	0.100U	1.000U
CHANNEL CATFISH	MALE	19.1	2.60	0.004	0.350	0.200U	0.300	0.110	1.000U
CHANNEL CATFISH	MALE	17.4	1.78	0.002U	0.020J	0.200U	0.300	0.100	1.000U
CHANNEL CATFISH	MALE	16.5	1.40	0.002U	0.020J	0.200U	0.300	0.100U	1.000U
HYBRID BASS	FMALE	19.6	4.05	0.002U	0.020J	0.200U	0.300	0.120	1.000U
LARGEMOUTH BASS	FMALE	11.2	0.88	0.006	0.020	0.200U	0.300	0.100U	1.000U
LARGEMOUTH BASS	MALE	12	1.01	0.002U	0.020U	0.200U	0.300	0.160	1.000U
LARGEMOUTH BASS	FMALE	11.9	0.75	0.002	0.140	0.200U	0.200	0.140	1.000U
LARGEMOUTH BASS	FMALE	15.7	2.05	0.006	0.020J	0.200U	0.200	0.360	1.000U
LARGEMOUTH BASS	FMALE	11	0.64	0.012	0.040	0.200U	0.400	0.100U	1.000U
STRIPED BASS	FMALE	20.7	4.36	0.002U	0.040	0.200U	0.100J	0.140	1.000U
STRIPED BASS	FMALE	16.7	1.89	0.002U	0.020U	0.200U	0.200	0.120	1.000U
STRIPED BASS	FMALE	17.9	2.47	0.002U	0.020U	0.200U	0.100	0.150	1.000U
STRIPED BASS	MALE	21.5	4.57	0.040	0.040	0.200U	0.200	0.100U	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 12 CLINCH RIVER 11.0 FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	FMALE	6.300	0.17	0.002U	0.020U	0.200U	0.200	0.120	1.000U
BLUEGILL	MALE	6.800	0.22	0.002U	0.040	0.200U	0.200	0.200	1.000U
BLUEGILL	FMALE	6.200	0.16	0.002U	0.020U	0.200U	0.100	0.400	1.000U
BLUEGILL	MALE	6.100	0.18	0.002U	0.020U	0.200U	0.100	0.140	1.000U
BLUEGILL	FMALE	6.300	0.19	0.016	0.020U	0.200U	0.100	0.250	1.000U
BLUEGILL	MALE	6.200	0.18	0.002U	0.020U	0.200U	0.200	0.150	1.000U
BLUEGILL	FMALE	6.600	0.19	0.002U	0.020U	0.200U	0.200	0.100U	1.000U
BLUEGILL	FMALE	7.200	0.25	0.006	0.080	0.200U	0.200	0.100U	1.000U
BLUEGILL	MALE	6.900	0.26	0.002U	0.020U	0.200U	0.300	0.170	1.000U
BLUEGILL	MALE	7.200	0.23	0.004	0.040	0.200U	0.200	0.160	1.000U
LARGEMOUTH BASS	FMALE	19.2	4.25	0.002U	0.020U	0.200U	0.100J	0.560	1.000U
LARGEMOUTH BASS	FMALE	19	3.86	0.002U	0.020U	0.200U	0.100U	0.520	1.000U
LARGEMOUTH BASS	FMALE	15.9	2.14	0.002U	0.080	0.200M	0.100U	0.190	1.000U
LARGEMOUTH BASS	FMALE	14.7	1.61	0.006	0.020	0.200U	0.400	0.240	1.000U
LARGEMOUTH BASS	MALE	11.6	0.62	0.008	0.020J	0.200U	0.200	0.580	1.000U
LARGEMOUTH BASS	MALE	18.7	3.24	0.002U	0.140	0.200U	0.100U	0.320	1.000U
LARGEMOUTH BASS	FMALE	17.8	3.30	0.002U	0.020J	0.200M	0.100	0.200	1.000U
LARGEMOUTH BASS	FMALE	15.3	2.16	0.002U	0.020U	0.200U	0.100U	0.270	1.000U
LARGEMOUTH BASS	FMALE	13.6	1.44	0.002U	0.020U	0.200U	0.200	0.240	1.000U
LARGEMOUTH BASS	MALE	12.1	0.71	0.002U	0.040	0.200U	0.200	0.240	1.000U
SMALLMOUTH BUFFALO	FMALE	20	4.52	0.002U	0.140	0.200U	0.100J	0.920	1.000U
SMALLMOUTH BUFFALO	FMALE	20.2	4.93	0.002U	0.020U	0.200U	0.100	1.200	1.000U
SMALLMOUTH BUFFALO	FMALE	11.8	0.88	0.002U	0.020	0.200U	0.300	0.100U	1.000U
SMALLMOUTH BUFFALO	MALE	21.3	5.53	0.002U	0.020J	0.200U	0.100	0.370	1.000U
SMALLMOUTH BUFFALO	MALE	23.2	7.40	0.002U	0.060	0.200U	0.100U	0.460	1.000U
SMALLMOUTH BUFFALO	MALE	16	2.03	0.018	0.100	0.200U	0.100U	0.100U	1.000U
SMALLMOUTH BUFFALO	UNK	14.4	1.95	0.010	0.020U	0.200U	0.100U	0.160	1.000
SMALLMOUTH BUFFALO	UNK	11.6	0.88	0.004	0.020J	0.200U	0.100J	0.100U	1.000U
SMALLMOUTH BUFFALO	MALE	24.4	7.85	0.002U	0.080	0.200U	0.100	1.100	1.000U
SMALLMOUTH BUFFALO	MALE	22.6	7.05	0.004	0.020J	0.200U	0.100	0.400	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,9,10 REPORTED IN APPENDIX I - TABLE 2

STATION 13 CLINCH RIVER 6.0

FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	MALE	6.800	0.20	0.012	0.020	0.200U	0.100U	0.200	1.000U
BLUEGILL	UNK	7.400	0.20	0.013	0.030	0.200U	0.100J	0.330	1.000U
BLUEGILL	FMALE	5.500	0.11	0.013	0.060	0.200U	0.100U	0.140	1.000U
BLUEGILL	FMALE	5.500	0.11	0.016	0.020U	0.200U	0.100U	0.170	1.000U
BLUEGILL	FMALE	5.500	0.13	0.003	0.100	0.200U	0.200U	0.240	1.000M
BLUEGILL	MALE	5.900	0.16	0.009	0.020	0.200U	0.100J	0.150	1.000U
BLUEGILL	FMALE	5.700	0.11	0.020	0.030U	0.200U	0.100U	0.240	1.000U
BLUEGILL	MALE	6.000	0.14	0.024	0.100	0.200U	0.100J	0.120	1.000U
BLUEGILL	MALE	5.700	0.13	0.008	0.060	0.200U	0.100U	0.130	1.000U
BLUEGILL	MALE	6.200	0.17	0.002U	0.020U	0.200U	0.100U	0.200	1.000U
LARGEMOUTH BASS	FMALE	21.1	5.42	0.008	0.020J	0.200U	0.100J	0.560	1.000M
LARGEMOUTH BASS	MALE	18.2	3.61	0.012	0.020U	0.200U	0.200	0.260	1.000U
LARGEMOUTH BASS	FMALE	20	4.98	0.014	0.020	0.200U	0.100J	0.470	1.000U
LARGEMOUTH BASS	MALE	20.2	4.63	0.002U	0.220	0.200U	0.100U	0.440	1.000U
LARGEMOUTH BASS	FMALE	17.6	3.52	0.010	0.040	0.200U	0.100	0.220	1.000U
LARGEMOUTH BASS	MALE	17.1	2.64	0.002U	0.140	0.200U	0.100U	0.240	1.000U
LARGEMOUTH BASS	MALE	14.9	2.03	0.010	0.100	0.200U	0.100J	0.220	1.000U
LARGEMOUTH BASS	MALE	14.7	1.43	0.009	0.060	0.200U	0.200	0.280	1.000U
LARGEMOUTH BASS	MALE	11.7	0.79	0.004	0.820	0.200U	0.100J	0.200	1.000U
LARGEMOUTH BASS	MALE	11.5	0.68	0.006	0.020U	0.200U	0.100U	0.220	1.000M

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 14 CLINCH RIVER 2.0 FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	FMALE	7.000	0.23	0.002U	0.020U	0.200U	0.100J	0.100U	1.000U
BLUEGILL	MALE	6.700	0.21	0.008	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	6.700	0.20	0.002	0.020U	0.200U	0.100J	0.120	1.000U
BLUEGILL	FMALE	6.500	0.17	0.006	0.020J	0.200U	0.100U	0.130	1.000U
BLUEGILL	FMALE	6.300	0.16	0.004	0.080	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	5.900	0.15	0.004	0.040U	0.200U	0.200J	0.100U	1.000U
BLUEGILL	FMALE	6.100	0.14	0.004U	0.040	0.200U	0.200U	0.100U	1.000U
BLUEGILL	MALE	6.200	0.20	0.016	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	6.000	0.19	0.003	0.030J	0.200U	0.100J	0.100U	1.000U
BLUEGILL	FMALE	6.500	0.18	0.004	0.020J	0.200U	0.100J	0.100U	1.000U
LARGEMOUTH BASS	MALE	17.4	3.96	0.003	0.020U	0.200U	0.100U	0.100U	1.000U
LARGEMOUTH BASS	MALE	14.3	1.66	0.002U	0.020J	0.200U	0.200	0.130	1.000U
LARGEMOUTH BASS	FMALE	11.6	0.90	0.002U	0.020U	0.200U	0.100	0.130	1.000U
LARGEMOUTH BASS	MALE	11.7	0.88	0.002U	0.140	0.200U	0.100U	0.100	1.000U
LARGEMOUTH BASS	FMALE	12.2	1.03	0.002	0.100	0.200U	0.100U	0.140	1.000U
LARGEMOUTH BASS	FMALE	12.9	1.32	0.002U	0.040	0.200U	0.200	0.100U	1.000U
LARGEMOUTH BASS	FMALE	14.4	1.52	0.002U	0.020J	0.200U	0.100U	0.260	1.000U
LARGEMOUTH BASS	FMALE	13.3	1.35	0.008	0.120	0.200U	0.200	0.170	1.000U
LARGEMOUTH BASS	MALE	12.1	0.88	0.006	0.060	0.200U	0.100U	0.100	1.000U
LARGEMOUTH BASS	MALE	12.7	1.05	0.006	0.040	0.200U	0.200	0.100U	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 15 EMORY RIVER MILE 1.0 FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	MALE	7.000	0.25	0.016	0.020U	0.200U	0.100U	0.100J	1.000U
BLUEGILL	MALE	6.800	0.24	0.003	0.020U	0.200U	0.100U	0.150	1.000U
BLUEGILL	MALE	7.300	0.30	0.002	0.020U	0.200U	0.100J	0.120	1.000U
BLUEGILL	MALE	6.200	0.19	0.014	0.020J	0.200U	0.100J	0.100U	1.000U
BLUEGILL	MALE	6.000	0.17	0.009	0.030U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	5.900	0.16	0.004	0.020	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	6.000	0.15	0.021	0.020J	0.200U	0.400J	0.100U	1.000U
BLUEGILL	FMALE	6.200	0.15	0.020	0.020U	0.200U	0.100U	0.200	1.000U
BLUEGILL	MALE	5.900	0.15	0.021	0.030J	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	5.800	0.12	0.011	0.070	0.200U	0.100J	0.100U	1.000U
LARGEMOUTH BASS	MALE	12.7	0.94	0.004	0.020U	0.200U	0.100U	0.200	1.000U
LARGEMOUTH BASS	FMALE	15.9	2.61	0.014	0.020U	0.200U	0.100U	0.180	1.000U
LARGEMOUTH BASS	FMALE	14.1	1.46	0.004	0.020	0.200U	0.100U	0.220	1.000U
LARGEMOUTH BASS	FMALE	20.4	4.54	0.002U	0.080	0.200U	0.100U	0.320	1.000U
LARGEMOUTH BASS	FMALE	15.8	1.99	0.009	0.060	0.200U	0.100U	0.200	1.000U
LARGEMOUTH BASS	MALE	14.9	1.92	0.013	0.360	0.200U	0.100J	0.170	1.000U
LARGEMOUTH BASS	FMALE	12.4	1.05	0.004	0.080	0.200U	0.100U	0.170	1.000U
LARGEMOUTH BASS	FMALE	11.8	0.88	0.002U	0.400	0.200U	0.100	0.100U	1.000U
LARGEMOUTH BASS	FMALE	11.9	0.79	0.002U	0.040	0.200U	0.100J	0.140	1.000U
LARGEMOUTH BASS	FMALE	11.9	0.74	0.002	0.160	0.200U	0.100U	0.240	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 16 TENNESSEE RIVER MILE 572.0

FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	FMALE	6.500	0.14	0.002U	0.060	0.200U	0.100J	0.170	1.000U
BLUEGILL	MALE	6.000	0.15	0.004	0.040J	0.200U	0.100J	0.100U	1.000U
BLUEGILL	MALE	6.100	0.16	0.004	0.380	0.200U	0.200J	0.100U	1.000U
BLUEGILL	MALE	7.000	0.22	0.004	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	6.500	0.20	0.002U	0.040	0.200M	0.100J	0.100U	1.000U
BLUEGILL	MALE	6.300	0.18	0.003	0.060	0.200U	0.100J	0.100U	1.000U
BLUEGILL	MALE	7.100	0.26	0.006	0.020J	0.200U	0.100J	0.100U	1.000U
BLUEGILL	MALE	6.300	0.19	0.002U	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	6.700	0.23	0.008	0.020J	0.200U	0.100J	0.100U	1.000U
BLUEGILL	MALE	6.000	0.17	0.002U	0.040	0.200U	0.100U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	21	5.99	0.008	0.020U	0.200U	0.100U	0.450	1.000U
LARGEMOUTH BASS	MALE	17.9	3.70	0.002U	0.020U	0.200U	0.100U	0.220	1.000U
LARGEMOUTH BASS	FMALE	19.6	5.77	0.008	0.080	0.200U	0.100U	0.200	1.000U
LARGEMOUTH BASS	FMALE	17.7	3.96	0.010	0.020U	0.200U	0.100J	0.160	1.000U
LARGEMOUTH BASS	MALE	15.1	2.24	0.002	0.160	0.200U	0.100J	0.100U	1.000U
LARGEMOUTH BASS	MALE	12.1	0.90	0.002U	0.900	0.200U	0.300	0.100	1.000M
LARGEMOUTH BASS	FMALE	18.8	4.36	0.010	0.020U	0.200U	0.100J	0.190	1.000U
LARGEMOUTH BASS	MALE	15.4	2.14	0.006	0.040	0.200U	0.100	0.120	1.000U
LARGEMOUTH BASS	FMALE	13.1	1.32	0.004	0.260	0.200U	0.100U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	16.1	2.86	0.002U	0.080	0.200U	0.200	0.140	1.000U
PADDEL FISH	UNK	21.9	0.99	0.010	0.640	0.200U	0.100J	0.100U	1.000M
SAUGER	MALE	20.3	3.11	0.002U	0.020J	0.200U	0.100J	0.300	1.000U
SAUGER	MALE	16.2	1.23	0.002U	0.060	0.200U	0.100J	0.300	1.000U

APPENDIX I - TABLE 1
SELECTED METAL RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
STATIONS 1,2,4,8,10 REPORTED IN APPENDIX I - TABLE 2

STATION 17 TENNESSEE RIVER MILE 558.0

FISH SPECIES	SEX	LENGTH (INCHES)	WEIGHT (POUNDS)	CADMIUM (MG/KG)	CHROMIUM (MG/KG)	SILVER (MG/KG)	ARSENIC (MG/KG)	MERCURY (MG/KG)	NICKEL (MG/KG)
BLUEGILL	FMALE	6.100	0.14	0.028	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	6.600	0.18	0.055	0.020	0.200U	0.100U	0.180	1.000U
BLUEGILL	FMALE	5.900	0.13	0.024	0.020U	0.200U	0.100U	0.100	1.000U
BLUEGILL	FMALE	5.700	0.13	0.002U	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	6.000	0.15	0.016	0.020	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	5.900	0.15	0.004	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	6.200	0.16	0.002	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	6.300	0.18	0.002U	0.020U	0.200U	0.100U	0.100U	1.000U
BLUEGILL	FMALE	6.000	0.13	0.004	0.040	0.200U	0.100U	0.100U	1.000U
BLUEGILL	MALE	6.000	0.14	0.004	0.380	0.200U	0.100U	0.150	1.000U
LARGEMOUTH BASS	MALE	13.9	1.32	0.006	0.020U	0.200U	0.200	0.120	1.000U
LARGEMOUTH BASS	MALE	12.9	1.08	0.002U	0.020U	0.200U	0.100U	0.100U	1.000U
LARGEMOUTH BASS	MALE	11.6	0.81	0.002U	0.120	0.200U	0.200	0.100U	1.000U
LARGEMOUTH BASS	FMALE	11.9	0.86	0.011	0.020U	0.200U	0.100U	0.140	1.000U
LARGEMOUTH BASS	FMALE	12.1	0.99	0.002U	0.020U	0.200U	0.100U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	12.1	0.99	0.002U	0.200	0.200U	0.200	0.100U	1.000U
LARGEMOUTH BASS	MALE	14.6	1.48	0.002U	0.020U	0.200U	0.100U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	17.2	2.97	0.002U	0.020U	0.200U	0.200	0.130	1.000U
LARGEMOUTH BASS	FMALE	17.5	3.09	0.002U	0.080	0.200U	0.100U	0.100U	1.000U
LARGEMOUTH BASS	FMALE	17.1	2.56	0.002U	0.980	0.200U	0.100U	0.120	1.000U

TABLE 2

PRIORITY POLLUTANT METALS RESULTS

APPENDIX I - TABLE 2
PRIORITY POLLUTANT METALS RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
SCARBORO CREEK EMBAYMENT CRM 41.2

METALS	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
WEIGHT (POUNDS)	1.250	0.810	0.350	0.300	0.360	0.260	0.380	0.670	0.420	0.470
LENGTH (INCHES)	15.900	14.000	10.700	10.200	10.900	10.000	10.800	12.900	10.700	11.500
ANTIMONY (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000M	1.000U	1.000U	1.000U	1.000U	1.000U
ARSENIC (MG/KG)	0.100	0.100	0.100	0.100	0.100U	0.100U	0.100U	0.100	0.100U	0.100U
BERYLLIUM (MG/KG)	0.020	0.020U	0.040	0.050	0.020	0.020	0.040	0.040	0.040	0.020
CADMIUM (MG/KG)	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.008	0.002U	0.002U	0.002U
CHROMIUM (MG/KG)	0.040	0.100	0.160	0.150	0.060	0.030	0.040	0.050	0.020	0.040
COPPER (MG/KG)	0.580	0.900	1.800	0.660	0.420	0.240	0.600	0.460	0.480	0.400
LEAD (MG/KG)	0.490	0.250	0.190	0.100	0.100	0.410	0.070	0.040	0.080	0.070
MERCURY (MG/KG)	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
NICKEL (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U
SELENIUM (MG/KG)	0.390	0.340	0.900	0.860	0.910	0.980	0.940	0.770	0.720	0.840
SILVER (MG/KG)	0.200U	0.200U	0.200U	0.200U	0.200M	0.200U	0.200U	0.200U	0.200U	0.200U
THALLIUM (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000M	1.000M	1.000M	1.000M	1.000U	1.000M
ZINC (MG/KG)	8.000	6.300	7.800	6.800	7.900	7.800	7.100	7.100	7.500	7.200

APPENDIX I - TABLE 2
PRIORITY POLLUTANT METALS RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
MCCOY BRANCH EMBAYMENT CRM 37.3

METALS	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	YELLOW BULLHEAD
WEIGHT (POUNDS)	0.560	16.000	0.610	0.450	0.670	0.760	0.700	1.070	0.330	0.590
LENGTH (INCHES)	12.600	32.300	12.600	11.600	12.200	12.800	12.600	14.100	10.600	10.000
ANTIMONY (MG/KG)	1.000M	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U
ARSENIC (MG/KG)	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100	0.100U	0.100U
BERYLLIUM (MG/KG)	0.020U	0.020U	0.020U	0.020U	0.020U	0.020U	0.020U	0.020U	0.020	0.020
CADMIUM (MG/KG)	0.032	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.002
CHROMIUM (MG/KG)	0.040	0.050	0.080	0.100	0.100	0.110	0.110	0.360	0.140	0.040
COPPER (MG/KG)	0.720	0.100U	0.100U	0.100U	0.100U	0.100U	0.540	1.000	1.100	0.740
LEAD (MG/KG)	0.500	0.090	0.060	1.600	0.040	0.060	0.020	0.140	0.020	0.960
MERCURY (MG/KG)	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
NICKEL (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U
SELENIUM (MG/KG)	0.540	0.180	0.660	0.720	0.640	0.600	0.670	0.410	0.730	0.720
SILVER (MG/KG)	0.200M	0.200U	0.200U	0.200U	0.200U	0.200U	0.200U	0.200U	0.200U	0.200M
THALLIUM (MG/KG)	1.000M	1.000U	3.000	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	3.800
ZINC (MG/KG)	7.700	6.700	5.800	6.800	6.400	5.200	5.800	8.000	5.600	8.200

APPENDIX I - TABLE 2
PRIORITY POLLUTANT METALS RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
EAST FORK POPLAR CREEK 13.8

METALS	BLUEGILL 5 FISH COMPOSITE	BLUEGILL 5 FISH COMPOSITE	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	CARP	CARP	CARP	CARP
WEIGHT (POUNDS)	.	.	0.520	0.590	0.610	0.870	.	.	7.330	2.370
LENGTH (INCHES)	.	.	10.200	10.700	11.400	11.900	.	.	23.000	17.700
ANTIMONY (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U
ARSENIC (MG/KG)	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100J	0.100U	0.100U
BERYLLIUM (MG/KG)	0.100U	0.100U	0.020U	0.020U	0.020U	0.020U	0.100U	0.100U	0.020U	0.020U
CADMIUM (MG/KG)	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U
CHROMIUM (MG/KG)	0.070	0.020U	0.130	0.020J	0.020U	0.020U	0.030	0.123	0.020U	0.040
COPPER (MG/KG)	0.600	0.600	0.100U	0.100U	0.320	0.100U	1.000	0.900	0.500	0.220
LEAD (MG/KG)	0.020U	0.020U	0.070	0.070	0.050	0.040	0.060	0.060	0.120	0.290
MERCURY (MG/KG)	0.540	0.820	0.800	1.200	1.200	1.500	0.270	0.210	1.300	1.300
NICKEL (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U
SELENIUM (MG/KG)	0.300	0.500	0.260	0.360	0.130	0.370	0.400	0.300	0.690	0.860
SILVER (MG/KG)	0.200U	0.200U	0.200U	0.200J	0.200U	0.200U	0.200U	0.200J	0.200U	0.200U
THALLIUM (MG/KG)	1.000U	1.000U	1.000U	1.000J	1.000U	1.000U	1.000U	1.000J	1.000U	1.000U
ZINC (MG/KG)	6.500	6.200	6.700	7.100	5.200	7.500	8.000	14.000	12.000	6.500

APPENDIX I - TABLE 2
PRIORITY POLLUTANT METALS RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
POPLAR CREEK 0.2

METALS	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
WEIGHT (POUNDS)	1.490	2.330	0.950	1.780	0.980	1.410	1.200	4.020	1.480	2.350
LENGTH (INCHES)	16.500	19.200	14.300	17.700	14.500	17.200	15.700	21.900	15.500	18.500
ANTIMONY (MG/KG)	1.000	1.000U	1.000U	1.000U	1.000M	1.000M	1.000U	1.000M	1.000M	1.000M
ARSENIC (MG/KG)	0.100U	0.100U	0.100U	0.100U	0.100	0.200	0.200	0.100U	0.200	0.200
BERYLLIUM (MG/KG)	0.020	0.020	0.040	0.020U	0.020U	0.020U	0.020U	0.020U	0.020U	0.020U
CADMIUM (MG/KG)	0.002U	0.002U	0.002U	0.002U	0.002U	0.002U	0.016	0.002U	0.002U	0.002U
CHROMIUM (MG/KG)	0.020	0.290	0.020U	0.150	0.090	0.020U	0.020U	0.020U	0.240	0.040
COPPER (MG/KG)	0.280	0.300	0.280	0.920	0.480	0.320	4.100	0.380	0.400	0.620
LEAD (MG/KG)	0.020	0.190	0.030	0.030	0.070	0.140	0.360	0.020U	0.040	0.190
MERCURY (MG/KG)	0.100U	0.180	0.420	0.360	0.100U	0.110	0.100U	0.100U	0.100U	0.310
NICKEL (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U
SELENIUM (MG/KG)	0.320	0.160	0.120	0.170	0.460	0.240	0.370	0.250	0.200	0.170
SILVER (MG/KG)	0.200U	0.200M	0.200U	0.200	0.200U	0.200M	0.200U	0.200U	0.200M	0.200M
THALLIUM (MG/KG)	1.000M	1.000M	1.000U	1.000U	1.000U	1.000U	1.000	1.000M	1.000M	1.000
ZINC (MG/KG)	6.300	6.300	5.500	7.700	6.800	5.700	9.300	5.700	6.600	6.400

APPENDIX I - TABLE 2
PRIORITY POLLUTANT METALS RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
WHITE OAK CREEK EMBAYMENT 0.2

METALS	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	BLACK BULLHEAD	BLACK BULLHEAD
WEIGHT (POUNDS)	2.160	5.950	3.300	3.010	2.700	2.600	1.780	1.400	0.620	1.060
LENGTH (INCHES)	19.900	24.300	19.800	19.700	19.300	19.100	17.400	16.500	10.600	12.000
ANTIMONY (MG/KG)	1.000M	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000M	1.000U	1.000U
ARSENIC (MG/KG)	0.200	0.200	0.300	0.300	0.200	0.300	0.300	0.300	0.200	0.200
BERYLLIUM (MG/KG)	0.020U	0.020	0.020U	0.020U	0.020U	0.020U	0.020U	0.020U	0.040	0.020
CADMIUM (MG/KG)	0.002U	0.002U	0.006	0.006	0.004	0.004	0.002U	0.002U	0.006	0.002U
CHROMIUM (MG/KG)	0.100	0.020U	0.020U	0.170	0.070	0.350	0.020U	0.020U	0.020U	0.040
COPPER (MG/KG)	0.400	0.280	0.240	10.000	0.260	3.300	0.260	2.300	0.360	0.420
LEAD (MG/KG)	0.180	0.200	0.020U	0.500	0.160	0.290	0.020U	0.090	0.120	0.080
MERCURY (MG/KG)	0.140	0.160	0.100U	0.100U	0.100U	0.110	0.100	0.100U	0.100U	0.110
NICKEL (MG/KG)	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U	1.000U
SELENIUM (MG/KG)	0.240	0.190	0.240	0.320	0.410	0.260	0.330	0.230	0.020U	0.060
SILVER (MG/KG)	0.200M	0.200U	0.200U	0.400	0.500	0.200U	0.200U	0.200U	0.200U	0.400
THALLIUM (MG/KG)	1.000M	1.000U	1.000U	1.000U	1.000M	1.000U	1.000U	1.000U	1.000U	1.000U
ZINC (MG/KG)	7.800	7.900	5.700	11.000	6.900	9.500	6.600	6.500	5.400	4.900

TABLE 3

ORNL SUPPLEMENTAL SAMPLE RESULTS

APPENDIX I - TABLE 3
ORNL SUPPLEMENTAL SAMPLE RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

	TC-99 (PCI/G)	TC-99 COUNTING ERROR (PCI/G)	ANTINOMY (MG/KG)	ARSENIC (MG/KG)	BERYLLIUM (MG/KG)	CADMIUM (MG/KG)	COPPER (MG/KG)	LEAD (MG/KG)	MERCURY (MG/KG)
MELTON HILL DAM - CRM 23.5									
BLUEGILL	0.079	0.084	1.00U	0.10U	0.10U	0.002U	0.20	0.71	0.1U
CARP	0.170	0.100	1.00U	0.10U	0.10U	0.002U	0.20	0.04	0.1
CARP	0.140	0.086	1.00U	0.10U	0.10U	0.002U	0.20	0.04	0.1
REDBREAST	0.100	0.081	1.00U	0.10U	0.10U	0.002U	0.20J	0.05	0.1U
EAST FORK POPLAR CREEK MILE 13.8									
BLUEGILL	0.220	0.092	1.00U	0.10U	0.10U	0.002U	0.60	0.02U	0.5
BLUEGILL	0.230	0.092	1.00U	0.10U	0.10U	0.002U	0.60	0.02U	0.8
BLUEGILL	0.270	0.160	1.00U	0.10U	0.10U	0.002U	0.80	0.23	1.1
CARP	1.400	0.190	1.00U	0.10U	0.10U	0.002U	1.00	0.06	0.2
CARP	0.490	0.110	1.00U	0.10U	0.10J	0.002U	0.90	0.06	0.2
POPLAR CREEK MILE 0.2									
BLUEGILL	0.130	0.084	1.00U	0.10U	0.10U	0.002U	0.20U	0.05	0.2
BLUEGILL	0.210	0.140	1.00U	0.10U	0.10U	0.002U	0.30	0.03	0.4
CARP	0.490	0.110	1.00U	0.10	0.10U	0.002U	1.40	0.02	0.2
CARP	0.270	0.110	1.00U	0.30	0.10U	0.002U	1.10	0.05	0.1
POPLAR CREEK CONTROL MILE 13.8									
BLUEGILL	0.140	0.092	1.00U	0.10U	0.10U	0.002U	0.40	0.03	0.2
CARP	0.170	0.092	1.00	0.10U	0.10U	0.002U	1.60	0.07	0.5
REDBREAST	0.190	0.100	1.00U	0.10U	0.10U	0.002U	0.90	0.10	0.1U
EAST FORK POPLAR CREEK MILE 1.7									
BLUEGILL	0.490	0.110	1.00U	0.10U	0.10U	0.002U	2.00	0.15	0.6
BLUEGILL	0.270	0.081	1.00U	0.10U	0.10U	0.002U	0.32	0.12	0.6
CARP	0.350	0.110	1.00U	0.10U	0.10U	0.002U	0.40	0.03	0.9
CARP	0.570	0.110	1.00U	0.10U	0.10J	0.002U	0.70	0.06	0.8
BEAR CREEK MILE 1.2									
ROCKBASS	0.140	0.084	1.00U	0.10U	0.10U	0.002U	0.20J	0.03	0.3

APPENDIX I - TABLE 3
ORNL SUPPLEMENTAL SAMPLE RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

	SELENIUM (MG/KG)	SILVER (MG/KG)	THALLIUM (MG/KG)	ZINC (MG/KG)
MELTON HILL DAM - CRM 23.5				
BLUEGILL	1.000	0.20U	1.00U	8.60
CARP	1.800	0.20U	1.00U	9.50
CARP	1.000	0.20U	1.00U	8.70
REDBREAST	0.700	0.20U	1.00U	5.80
EAST FORK POPLAR CREEK MILE 13.8				
BLUEGILL	0.300	0.20U	1.00U	6.50
BLUEGILL	0.500	0.20U	1.00U	6.20
BLUEGILL	0.400	0.20U	1.00U	6.90
CARP	0.400	0.20U	1.00U	8.00
CARP	0.300	0.20U	1.00U	14.00
POPLAR CREEK MILE 0.2				
BLUEGILL	0.500	0.20U	1.00U	8.20
BLUEGILL	0.500	0.20U	1.00U	8.50
CARP	0.300	0.20U	1.00U	16.00
CARP	0.200	0.20U	1.00U	15.00
POPLAR CREEK CONTROL MILE 13.8				
BLUEGILL	0.400	0.20U	1.00U	7.30
CARP	0.700	0.20U	1.00U	8.50
REDBREAST	0.700	0.20U	1.00U	12.00
EAST FORK POPLAR CREEK MILE 1.7				
BLUEGILL	0.400	0.20U	1.00U	7.00
BLUEGILL	0.200	0.20U	1.00U	5.80
CARP	0.600	0.20U	1.00U	8.20
CARP	0.600	0.20U	1.00U	7.40
BEAR CREEK MILE 1.2				
ROCKBASS	0.100	0.20U	1.00U	4.40

APPENDIX II

INSTREAM CONTAMINANT STUDY - TASK IV

ORGANICS DATA

TABLE 1

PRIORITY POLLUTANT RESULTS
PESTICIDE, ACID EXTRACTABLE, VOLATILE,
AND BASE/NEUTRAL COMPOUNDS)

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
SCARBORO CREEK EMBAYMENT CRM 41.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
PESTICIDES										
WEIGHT (POUNDS)	1.250	0.810	0.350	0.300	0.360	0.260	0.380	0.670	0.420	0.470
LENGTH (INCHES)	15.900	14.000	10.700	10.200	10.900	10.000	10.800	12.900	10.700	11.500
ALDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ALPHA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
BETA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
GAMA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
DELTA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
CHLORDANE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.100U	0.100U	0.100U
4,4-DDT (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
4,4-DDE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.040R
4,4-DDD (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.040R	0.010U	0.040R
DIELDIM (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ALPHA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
BETA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDOSULFAN SULFATE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDRIN ALDEHYDE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.020R	0.010U	0.020R
HEPTACHLOR (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
HEPTACHLOR (EXPOXIDE) (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
TOKAPHENE (MG/KG)	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
SCARBORO CREEK EMBAYMENT CRM 41.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
BASE NEUTRAL EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	1.250	0.810	0.350	0.300	0.360	0.260	0.380	0.670	0.420	0.470
LENGTH (INCHES)	15.900	14.000	10.700	10.200	10.900	10.000	10.800	12.900	10.700	11.500
ACENAPHTHYENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
ACENAPHTHYIENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
ANTHRACENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BENZIDINE (MG/KG)	6.500U	3.400U	9.000U	16.000U	13.000U	2.400U	5.000U	3.400U	5.000U	5.000U
BENZO(A)ANTHRACENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BENZO(A)PYRENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
3,4-BENZOFLUORANTHENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BENZO(GHI)PERYLENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BENZO(K)FLUORANTHENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BIS(2-CHLOROETHOXY)METHANE (MG/K	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BIS(2-CHLOROETHYL) ETHER (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BIS(2-CHLOROISOPROPYL) ETHER (MG	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
BIS(2-ETHYL-HEXYL)PHTHALATE (MG/	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
4-BROMOPHENYL PHENYL ETHER (MG/K	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
N-BUTYL BENZYL PHTHALATE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
2-CHLORONAPHTHALENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
4-CHLOROPHENYL PHENYL ETHER (MG/	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
CHRYSENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
DIBENZO(AJH) ANTHRACENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
1,2-DICHLOROBENZENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
1,4-DICHLOROBENZENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
3,3-DICHLOROBENZIDINE (MG/KG)	3.200U	1.700U	4.500U	8.200U	6.500U	1.200U	2.500U	1.700U	2.500U	2.500U
DIETHYL PHTHALATE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
DIMETHYL PHTHALATE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
DI-N-BUTYL PHTHALATE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000M	0.670U	1.000U	1.000U
2,4-DINITROTOLUENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
2,6-DINITROTOLUENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
DI-N-OCTYL PHTHALATE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
1,2-DIPHENYLHYDRAZINE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
FLUORANTHENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
FLUORENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
HEXACHLOROBENZENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
HEXACHLOROBUTADIENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
HEXACHLOROCYCLO-PENTADIENE (MG/K	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
HEXACHLOROETHANE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
INDENO(1,2,3-CD)PYRENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
ISOPHORONE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
NOPHTHALENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
NITROBENZENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
N-NITROSODIMETHYLAMINE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
N-NITROSODI-N-PROPYLAMINE (MG/KG	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
N-NITROSODIPHENYLAMINE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
PHENANTHRENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
PYRENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
1,2,4-TRICHLOROBENZENE (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
SCARBORO CREEK EMBAYMENT CRM 41.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
VOLATILE COMPOUNDS										
WEIGHT (POUNDS)	1.250	0.810	0.350	0.300	0.360	0.260	0.380	0.670	0.420	0.470
LENGTH (INCHES)	15.900	14.000	10.700	10.200	10.900	10.000	10.800	12.900	10.700	11.500
ACROLEIN (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ACRYLONITRILE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TOLUENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ETHYLBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050M	0.050M	0.050U	0.050U	0.050U	0.050U
CARBON TETRACHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,1-TRICLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2-TRICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2,2-TETROCHLOROETHANE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050M	0.050U
CHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
2-CHLOROETHYL ETHER (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROPROPANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,3-DICHLOROPROPENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYLENECHLORIDE (MG/KG)	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.480R
METHYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYL BROMIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BROMOFORM (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
DICHLOROBROMOMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROFLUOROMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050M	0.050R	0.050U	0.050U
DICHLORODIFLUOROMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLORODIBROMAMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TETRACHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
VINYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-TRANS-DICHLOROETHLENE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BIS(CHLOROMETHYL)ETER (MG/KG)/	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
SCARBORO CREEK EMBAYMENT CRM 41.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
ACID EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	1.250	0.810	0.350	0.300	0.360	0.260	0.380	0.670	0.420	0.470
LENGTH (INCHES)	15.900	14.000	10.700	10.200	10.900	10.000	10.800	12.900	10.700	11.500
2-CHLOPHENOL (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
4,4-DICHLOROPHENOL (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
2,4-DIMETHYIPHENOL (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
4,6-DINTROPHENOL (MG/KG)	6.500U	3.400U	9.000U	16.000U	13.000U	2.400U	5.000U	3.400U	5.000U	5.000U
2,4-DINTROPHENOL (MG/KG)	13.000U	6.700U	18.000U	33.000U	26.000U	4.800U	10.000U	6.700U	10.000U	10.000U
2-NITROPHENOL (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
4-NITROPHENOL (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
P-CHLORO-M-CKESOL (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U
PHENOL (MG/KG)	•	•	•	•	•	•	•	•	•	•
2,4,6-TRICHLOROPHENOL (MG/KG)	1.300U	0.670U	1.800U	3.300U	2.600U	0.480U	1.000U	0.670U	1.000U	1.000U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
MCCOY BRANCH EMBAYMENT CRM 37.3

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	YELLOW BULLHEAD
PESTICIDES										
WEIGHT (POUNDS)	0.560	16.000	0.610	0.670	0.760	1.070	0.330	. .	. .	0.590
LENGTH (INCHES)	12.600	32.300	12.600	12.200	12.800	14.100	10.600	. .	. .	10.000
ALDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
ALPHA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
BETA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
GAMA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
DELTA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
CHLORDANE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
4,4-DDT (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
4,4-DDE (MG/KG)	0.010U	0.040R	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
4,4-DDD (MG/KG)	0.010U	0.100	0.010U	0.060R	0.010U	0.010U	0.010U	. .	. .	0.010U
DIELDIM (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
ALPHA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
BETA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
ENDOSULFAN SULFATE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
ENDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
ENDRIN ALDEHYDE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
HEPTACHLOR (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
HEPTACHLOR (EXPOXIDE) (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	. .	. .	0.010U
TOXAPHENE (MG/KG)	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	. .	. .	0.500U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
MCCOY BRANCH EMBAYMENT CRM 37.3

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	YELLOW BULLHEAD
BASE NEUTRAL EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	0.560	16.000	0.610	0.460	0.570	0.760	1.070	0.330	. .	0.590
LENGTH (INCHES)	12.600	32.300	12.600	11.600	12.200	12.800	14.100	10.600	. .	10.000
ACENAPHTHYENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
ACENAPHTHYIENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
ANTHRACENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BENZIDINE (MG/KG)	3.400U	3.400U	12.000U	5.000U	6.000U	3.400U	9.000U	2.100U	. .	5.000U
BENZO(A)ANTHRACENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BENZO(A)PYRENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
3,4-BENZOFLUORANTHENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BENZO(GHI)PERYLENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BENZO(K)FLUORANTHENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BIS(2-CHLOROETHOXY)METHANE (MG/K	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BIS(2-CHLOROETHYL) ETHER (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BIS(2-CHLOROISOPROPYL) ETHER (MG	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
BIS(2-ETHYL-HEXYL)PHTHALATE (MG/	0.670U	0.670M	2.400M	1.000M	1.200M	0.670U	1.800U	0.410U	. .	1.000M
4-BROMOPHENYL PHENYL ETHER (MG/K	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
N-BUTYL BENZYL PHTHALATE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
2-CHLORONAPHTHALENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
4-CHLOROPHENYL PHENYL ETHER (MG/	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
CHRYSENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
DIBENZO(AJH) ANTHRACENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
1,2-DICHLOROBENZENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
1,4-DICHLOROBENZENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
3,3-DICHLOROBENZIDINE (MG/KG)	1.700U	1.700U	6.000U	2.500U	3.000U	1.700U	4.500U	1.000U	. .	2.500U
DIETHYL PHTHALATE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
DIMETHYL PHTHALATE (MG/KG)	0.670U	0.670M	2.400M	1.000M	1.200M	0.670U	1.800U	0.410U	. .	1.000U
DI-N-BUTYL PHTHALATE (MG/KG)	0.570U	0.670M	2.400M	1.000M	1.200M	0.670U	1.800U	0.410U	. .	1.300
2,4-DINITROTOLUENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
2,6-DINITROTOLUENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
DI-N-OCTYL PHTHALATE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
1,2-DIPHENYLHYDRAZINE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
FLUORANTHENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
FLUORENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
HEXACHLOROBENZENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
HEXACHLOROBUTADIENE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
HEXACHLOROCYCLO-PENTADIENE (MG/K	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
HEXACHLOROETHANE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
INDENO(1,2,3-CD)PYRENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
ISOPHORONE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
NOPHTHALENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
NITROBENZENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
N-NITROSODIMETHYLAMINE (MG/KG)	0.570U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
N-NITROSODI-N-PROPYLAMINE (MG/KG	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
N-NITROSODIPHENYLAMINE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
PHENANTHRENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
PYRENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U
1,2,4-TRICHLOROBENZENE (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	. .	1.000U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
MCCOY BRANCH EMBAYMENT CRM 37.3

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	YELLOW BULLHEAD
ACID EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	0.560	16.000	0.610	0.460	0.670	0.760	1.070	0.330	•	0.590
LENGTH (INCHES)	12.600	32.300	12.600	11.600	12.200	12.800	14.100	10.600	•	10.000
2-CHLOPHENOL (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	•	1.000U
4,4-DICHLOROPHENOL (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	•	1.000U
2,4-DIMETHYIPHENOL (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	•	1.000U
4,6-DINTROPHENOL (MG/KG)	3.400U	3.400U	12.000U	5.000U	6.000U	3.400U	9.000U	2.100U	•	5.000U
2,4-DINTROPHENOL (MG/KG)	6.700U	6.700U	24.000U	10.000U	12.000U	6.700U	18.000U	4.100U	•	10.000U
2-NITROPHENOL (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	•	1.000U
4-NITROPHENOL (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	•	1.000U
P-CHLORO-M-CKESOL (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	•	1.000U
PHENOL (MG/KG)	•	•	•	•	•	•	•	•	•	•
2,4,6-TRICHLOROPHENOL (MG/KG)	0.670U	0.670U	2.400U	1.000U	1.200U	0.670U	1.800U	0.410U	•	1.000U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
MCCOY BRANCH EMBAYMENT CRM 37.3

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	YELLOW BULLHEAD
VOLATILE COMPOUNDS										
WEIGHT (POUNDS)	0.560	16.000	0.610	0.460	0.670	0.760	0.700	1.070	0.330	0.590
LENGTH (INCHES)	12.600	32.300	12.600	11.600	12.200	12.800	12.600	14.100	10.600	10.000
ACROLEIN (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ACRYLONITRILE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TOLUENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ETHYLBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CARBON TETRACHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,1-TRICLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2-TRICHLOROETHANE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2,2-TETROCHLOROETHANE (M	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
2-CHLOROETHYL ETHER (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROPROPANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,3-DICHLOROPROPENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYLENECHLORIDE (MG/KG)	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U
METHYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYL BROMIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BROMOFORM (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
DICHLOROBROMOMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROFLUOROMETHANE (MG/K	0.050U	0.050R	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
DICHLORODIFLUOROMETHANE (MG/	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLORODIBROMAMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TETRACHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
VINYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-TRANS-DICHLOROETHLENE (M	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BIS(CHLOROMETHYL)ETER (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
EAST FORK POPLAR CREEK 13.8

	BLUEGILL 5 FISH COMPOSITE	BLUEGILL 5 FISH COMPOSITE	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS		CARP	CARP	CARP		CARP	
PESTICIDES													
WEIGHT (POUNDS)	.	.	0.590	0.610	0.870	.	.	2.600	3.380	.	.	.	.
LENGTH (INCHES)	.	.	10.700	11.400	11.900	.	.	21.100	19.700	.	.	.	.
ALDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.020	0.010J	.	.	.	.
ALPHA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.010U	0.010U	.	.	.	.
BETA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010J	.	.	.	.
GAMA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.010U	0.010U	.	.	.	.
DELTA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010U	.	.	.	.
CHLORDANE (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010U	.	.	.	.
4,4-DDT (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.010U	0.010J	.	.	.	.
4,4-DDE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.040	0.060R	.	.	.	.
4,4-DDD (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010U	.	.	.	.
DIELDIM (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010J	.	.	.	.
ALPHA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.010U	0.010U	.	.	.	.
BETA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010U	.	.	.	.
ENDOSULFAN SULFATE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.010U	0.010U	.	.	.	.
ENDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.010U	0.010U	.	.	.	.
ENDRIN ALDEHYDE (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010U	.	.	.	.
HEPTACHLOR (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	.	.	0.010U	0.010J	.	.	.	.
HEPTACHLOR (EXPOXIDE) (MG/KG)	0.010U	0.010U	0.010U	0.010J	0.010U	.	.	0.010U	0.010U	.	.	.	.
TOXAPHENE (MG/KG)	0.500U	0.500U	0.500U	0.500J	0.500U	.	.	0.500U	0.500U	.	.	.	.

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
EAST FORK POPLAR CREEK 13.8

	BLUEGILL 5 FISH COMPOSITE	BLUEGILL 5 FISH COMPOSITE	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	CARP	CARP	CARP	CARP
BASE NEUTRAL EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	.	.	0.520	0.590	0.610	0.870	7.330	2.370	2.600	3.380
LENGTH (INCHES)	.	.	10.200	10.700	11.400	11.900	23.000	17.700	21.100	19.700
ACENAPHTHYENE (MG/KG)	0.830J	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
ACENAPHTHYIENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
ANTHRACENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BENZIDINE (MG/KG)	4.200U	4.200U	5.000U	5.000U	3.400U	3.400U	5.000U	5.000U	3.400U	3.400U
BENZO(A)ANTHRACENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BENZO(A)PYRENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
3,4-BENZOFLUORANTHENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BENZO(GHI)PERYLENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BENZO(K)FLUORANTHENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BIS(2-CHLOROETHOXY)METHANE (MG/K	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BIS(2-CHLOROETHYL) ETHER (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BIS(2-CHLOROISOPROPYL) ETHER (MG	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
BIS(2-ETHYL-HEXYL)PHTHALATE (MG/	0.830U	0.830U	1.200	1.000M	0.670M	0.670M	1.000M	1.000U	0.670M	0.670M
4-BROMOPHENYL PHENYL ETHER (MG/K	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
N-BUTYL BENZYL PHTHALATE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
2-CHLORONAPHTHALENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
4-CHLOROPHENYL PHENYL ETHER (MG/	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
CHRYSENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
DIBENZO(AJH) ANTHRACENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
1,2-DICHLOROBENZENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
1,4-DICHLOROBENZENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
3,3-DICHLOROBENZIDINE (MG/KG)	2.100U	2.100U	2.500U	2.500U	1.700U	1.700U	2.500U	2.500U	1.700U	1.700U
DIETHYL PHTHALATE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
DIMETHYL PHTHALATE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670M
DI-N-BUTYL PHTHALATE (MG/KG)	0.830U	0.830U	1.000M	1.000M	0.670M	0.670M	1.000M	1.000U	0.670M	0.670M
2,4-DINITROTOLUENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
2,6-DINITROTOLUENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
DI-N-OCTYL PHTHALATE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
1,2-DIPHENYLHYDRAZINE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
FLUOROANTHENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
FLUORENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
HEXACHLOROBENZENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
HEXACHLOROBUTADIENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
HEXACHLOROCYCLO-PENTADIENE (MG/K	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
HEXACHLOROETHANE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
INDENO(1,2,3-CD)PYRENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
ISOPHORONE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
NOPHTHALENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
NITROBENZENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
N-NITROSODIMETHYLAMINE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
N-NITROSODI-N-PROPYLAMINE (MG/KG	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
N-NITROSODIPHENYLAMINE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
PHENANTHRENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
PYRENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
1,2,4-TRICHLOROBENZENE (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
EAST FORK POPLAR CREEK 13.8

	BLUEGILL 5 FISH COMPOSITE	BLUEGILL 5 FISH COMPOSITE	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	CARP	CARP	CARP	CARP
ACID EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	.	.	0.520	0.590	0.610	0.870	7.330	2.370	2.600	3.380
LENGTH (INCHES)	.	.	10.200	10.700	11.400	11.900	23.000	17.700	21.100	19.700
2-CHLOPHENOL (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
4,4-DICHLOROPHENOL (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
2,4-DIMETHYIPHENOL (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
4,6-DINTROPHENOL (MG/KG)	4.200U	4.200U	5.000U	5.000U	3.400U	3.400U	5.000U	5.000U	3.400U	3.400U
2,4-DINTROPHENOL (MG/KG)	8.300U	8.300U	10.000U	10.000U	6.700U	6.700U	10.000U	10.000U	6.700U	6.700U
2-NITROPHENOL (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
4-NITROPHENOL (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U
P-CHLORO-M-CKESOL (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000J	0.670U	0.670U
PHENOL (MG/KG)	.	.	.	.	.	.	.	.	.	.
2,4,6-TRICHLOROPHENOL (MG/KG)	0.830U	0.830U	1.000U	1.000U	0.670U	0.670U	1.000U	1.000U	0.670U	0.670U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
EAST FORK POPLAR CREEK 13.8

	BLUEGILL 5 FISH COMPOSITE	BLUEGILL 5 FISH COMPOSITE	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	LARGEMOUTH BASS	CARP	CARP	CARP	CARP
VOLATILE COMPOUNDS										
WEIGHT (POUNDS)	.	.	0.520	0.590	0.610	0.870	7.330	2.370	2.600	3.380
LENGTH (INCHES)	.	.	10.200	10.700	11.400	11.900	23.000	17.700	21.100	19.700
ACROLEIN (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ACRYLONITRILE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TOLUENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ETHYLBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CARBON TETRACHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,1-TRICLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2-TRICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2,2-TETROCHLOROETHANE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050J	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
2-CHLOROETHYL ETHER (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROPROPANE (MG/KG)	0.050U	0.050U	0.050U	0.050J	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,3-DICHLOROPROPENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYLENECHLORIDE (MG/KG)	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U
METHYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYL BROMIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BROMOFORM (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050J	0.050U	0.050U
DICHLOROBROMOMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROFLUOROMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
DICHLORODIFLUOROMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLORODIBROMAMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TETRACHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
VINYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-TRANS-DICHLOROETHLENE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BIS(CHLOROMETHYL)ETER (MG/KG)	0.050U	0.050U	0.050U	0.050J	0.050U	0.050U	0.050U	0.050J	0.050U	0.050U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
POPLAR CREEK 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
PESTICIDES										
WEIGHT (POUNDS)	1.490	2.330	0.950	1.780	0.980	1.410	1.200	4.020	1.480	2.350
LENGTH (INCHES)	16.500	19.200	14.300	17.700	14.500	17.200	15.700	21.900	15.500	18.500
ALDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ALPHA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
BETA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
GAMA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
DELTA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
CHLORDANE (MG/KG)	0.100U	0.100U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
4,4-DDT (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.040R	0.010U	0.010U	0.010U	0.010U	0.010U
4,4-DDE (MG/KG)	0.020R	0.040R	0.040R	0.010U	0.020R	0.020R	0.040R	0.060R	0.010U	0.160R
4,4-DDD (MG/KG)	0.040R	0.010U	0.040R	0.010U	0.040R	0.060R	0.060R	0.100R	0.010U	0.220R
DIELDIM (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ALPHA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
BETA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDOSULFAN SULFATE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDRIN ALDEHYDE (MG/KG)	0.040R	0.040R	0.040R	0.010U	0.010U	0.040R	0.020R	0.040R	0.010U	0.080R
HEPTACHLOR (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
HEPTACHLOR (EXPOXIDE) (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.060R	0.010U	0.010U	0.020R	0.010U	0.010U
TOXAPHENE (MG/KG)	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
POPLAR CREEK 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
BASE NEUTRAL EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	1.490	2.330	0.950	1.780	0.980	1.410	1.200	4.020	1.480	2.350
LENGTH (INCHES)	16.500	19.200	14.300	17.700	14.500	17.200	15.700	21.900	15.500	18.500
ACENAPHTHYENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
ACENAPHTHYIENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
ANTHRACENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZIDINE (MG/KG)	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U
BENZO(A)ANTHRACENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZO(A)PYRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
3,4-BENZOFLUORANTHENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZO(GHI)PERYLENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZO(K)FLUORANTHENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-CHLOROETHOXY)METHANE (MG/K	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-CHLOROETHYL) ETHER (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-CHLOROISOPROPYL) ETHER (MG	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-ETHYL-HEXYL)PHTHALATE (MG/	0.670U	0.670M	0.670M	0.670U	0.670U	0.670U	0.670U	0.670U	0.670M	0.670U
4-BROMOPHENYL PHENYL ETHER (MG/K	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-BUTYL BENZYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
2-CHLORONAPHTHALENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4-CHLOROPHENYL PHENYL ETHER (MG/	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
CHRYSENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DIBENZO(AJH) ANTHRACENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,2-DICHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,4-DICHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
3,3-DICHLOROBENZIDINE (MG/KG)	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U
DIETHYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DIMETHYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DI-N-BUTYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670M	0.670U	0.670M	0.670M	0.670M	0.670U
2,4-DINITROTOLUENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
2,6-DINITROTOLUENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DI-N-OCTYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,2-DIPHENYLHYDRAZINE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
FLUORANTHENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
FLUORENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROBUTADIENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROCYCLO-PENTADIENE (MG/K	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROETHANE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
INDENO(1,2,3-CD)PYRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
ISOPHORONE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
NOPHTHALENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
NITROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-NITROSODIMETHYLAMINE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-NITROSODI-N-PROPYLAMINE (MG/KG	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-NITROSODIPHENYLAMINE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
PHENANTHRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
PYRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,2,4-TRICHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
POPLAR CREEK 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
ACID EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	1.490	2.330	0.950	1.780	0.980	1.410	1.200	4.020	1.480	2.350
LENGTH (INCHES)	16.500	19.200	14.300	17.700	14.500	17.200	15.700	21.900	15.500	18.500
2-CHLOPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4,4-DICHLOROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
2,4-DIMETHYIPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4,6-DINTROPHENOL (MG/KG)	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U
2,4-DINTROPHENOL (MG/KG)	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U
2-NITROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4-NITROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
P-CHLORO-M-CKESOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
PHENOL (MG/KG)	.	.	.	.	.	.	.	.	.	.
2,4,6-TRICHLOROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
POPLAR CREEK 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH
VOLATILE COMPOUNDS										
WEIGHT (POUNDS)	1.490	2.330	0.950	1.780	0.980	1.410	1.200	4.020	1.480	2.350
LENGTH (INCHES)	16.500	19.200	14.300	17.700	14.500	17.200	15.700	21.900	16.500	18.500
ACROLEIN (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ACRYLONITRILE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TOLUENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ETHYLBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050M	0.050M	0.050U	0.050U	0.050U	0.050U
CARBON TETRACHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,1-TRICLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2-TRICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2,2-TETROCHLOROETHANE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050M	0.050U
CHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
2-CHLOROETHYL ETHER (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROPROPANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,3-DICHLOROPROPENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYLENECHLORIDE (MG/KG)	0.450U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250R
METHYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYL BROMIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BROMOFORM (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
DICHLOROBROMOMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROFLUOROMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050M	0.050R	0.050U	0.050U
DICHLORODIFLUOROMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLORODIBROMAMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TETRACHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
VINYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-TRANS-DICHLOROETHLENE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BIS(CHLOROMETHYL)ETER (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
WHITE OAK CREEK EMBAYMENT 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	BLACK BULLHEAD	BLACK BULLHEAD
PESTICIDES										
WEIGHT (POUNDS)	2.160	5.950	3.300	3.010	2.700	2.600	1.780	1.400	0.620	1.060
LENGTH (INCHES)	19.900	24.300	19.800	19.700	19.300	19.100	17.400	16.500	13.600	12.000
ALDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ALPHA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
BETA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
GAMA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
DELTA-BHC (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
CHLORDANE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
4,4-DDT (MG/KG)	0.010U	0.020R	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
4,4-DDE (MG/KG)	0.080R	0.100R	0.040R	0.080R	0.060R	0.100R	0.060R	0.040R	0.010U	0.010U
4,4-DDD (MG/KG)	0.140R	0.140R	0.100R	0.180R	0.120R	0.160R	0.100R	0.010U	0.010U	0.010U
DIELDIM (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ALPHA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
BETA-ENDOSULFAN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDOSULFAN SULFATE (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDRIN (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
ENDRIN ALDEHYDE (MG/KG)	0.060R	0.060R	0.040R	0.100R	0.060R	0.080R	0.060R	0.010U	0.010U	0.010U
HEPTACHLOR (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
HEPTACHLOR (EXPOXIDE) (MG/KG)	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U	0.010U
TOXAPHENE (MG/KG)	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U	0.500U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
WHITE OAK CREEK EMBAYMENT 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	BLACK BULLHEAD	BLACK BULLHEAD
BASE NEUTRAL EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	2.160	5.950	3.300	3.010	2.700	2.600	1.780	1.400	0.620	1.060
LENGTH (INCHES)	19.900	24.300	19.800	19.700	19.300	19.100	17.400	16.500	13.600	12.000
ACENAPHTHYENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
ACENAPHTHYIENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
ANTHRACENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZIDINE (MG/KG)	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U
BENZO(A)ANTHRACENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZO(A)PYRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
3,4-BENZOFLUORANTHENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZO(GHI)PERYLENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BENZO(K)FLUORANTHENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-CHLOROETHOXY)METHANE (MG/K	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-CHLOROETHYL) ETHER (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-CHLOROISOPROPYL) ETHER (MG	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
BIS(2-ETHYL-HEXYL)PHTHALATE (MG/	0.670M	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4-BROMOPHENYL PHENYL ETHER (MG/K	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-BUTYL BENZYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
2-CHLORONAPHTHALENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4-CHLOROPHENYL PHENYL ETHER (MG/	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
CHRYSENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DIBENZO(AJH) ANTHRACENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,2-DICHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,4-DICHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
3,3-DICHLOROBENZIDINE (MG/KG)	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U	1.700U
DIETHYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DIMETHYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DI-N-BUTYL PHTHALATE (MG/KG)	0.670M	0.670M	0.670M	0.670U	0.670M	0.670U	0.670U	0.670U	0.670U	0.670U
2,4-DINITROTOLUENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
2,6-DINITROTOLUENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
DI-N-OCTYL PHTHALATE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,2-DIPHENYLHYDRAZINE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
FLUOROANTHENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
FLUORENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROBUTADIENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROCYCLO-PENTADIENE (MG/K	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
HEXACHLOROETHANE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
INDENO(1,2,3-CD)PYRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
ISOPHORONE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
NOPHTHALENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
NITROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-NITROSODIMETHYLAMINE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-NITROSODI-N-PROPYLAMINE (MG/KG	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
N-NITROSODIPHENYLAMINE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
PHENANTHRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
PYRENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
1,2,4-TRICHLOROBENZENE (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
WHITE OAK CREEK EMBAYMENT 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	BLACK BJLLHEAD	BLACK BULLHEAD
VOLATILE COMPOUNDS										
WEIGHT (POUNDS)	2.160	5.950	3.300	3.010	2.700	2.600	1.780	1.400	0.620	1.060
LENGTH (INCHES)	19.900	24.300	19.800	19.700	19.300	19.100	17.400	16.500	10.600	12.000
ACROLEIN (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ACRYLONITRILE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TOLUENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
ETHYLBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CARBON TETRACHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROBENZENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,1-TRICLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1-DICHLOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2-TRICHLOROETHANE (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,1,2,2-TETROCHLOROETHANE (M	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLOROETHANE (MG/(G)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
2-CHLOROETHYL ETHER (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-DICHLOROPROPANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,3-DICHLOROPROPENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYLENECHLORIDE (MG/KG)	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U	0.250U
METHYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
METHYL BROMIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BROMOFORM (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
DICHLOROBROMOMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROFLUOROMETHANE (MG/K	0.050U	0.050U	0.066R	0.050R	0.050R	0.050U	0.050U	0.050U	0.050U	0.050U
DICHLORODIFLUOROMETHANE (MG/	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
CHLORODIBROMAMETHANE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TETRACHIOROETHYLENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
TRICHLOROETHYIENE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
VINYL CHLORIDE (MG/KG)	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
1,2-TRANS-DICHLOROETHLENE (M	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U
BIS(CHLOROMETHYL)ETER (MG/KG	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U	0.050U

APPENDIX II - TABLE 1
PRIORITY POLLUTANT RESULTS
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
WHITE OAK CREEK EMBAYMENT 0.2

	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	CHANNEL CATFISH	BLACK BULLHEAD	BLACK BULLHEAD
ACID EXTRACTABLE COMPOUNDS										
WEIGHT (POUNDS)	2.160	5.950	3.300	3.010	2.700	2.600	1.780	1.400	0.620	1.060
LENGTH (INCHES)	19.900	24.300	19.800	19.700	19.300	19.100	17.400	16.500	13.600	12.000
2-CHLOPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4,4-DICHLOROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
2,4-DIMETHYIPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4,6-DINTROPHENOL (MG/KG)	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U	3.400U
2,4-DINTROPHENOL (MG/KG)	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U	6.700U
2-NITROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
4-NITROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
P-CHLORO-M-CKESOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U
PHENOL (MG/KG)	•	•	•	•	•	•	•	•	•	•
2,4,6-TRICHLOROPHENOL (MG/KG)	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U	0.670U

TABLE 2

POLYCHLORINATED BIPHENYL (PCB) RESULTS

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 1 SCARBORO CREEK

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	MALE	1.250	15.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.810	14.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.350	10.700	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.300	10.200	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.360	10.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.260	10.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	UNK	0.380	10.800	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	UNK	0.670	12.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	UNK	0.420	10.700	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.470	11.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 2 MCCOY BRANCH FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	UNK	0.560	12.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	16.000	32.300	0.010U	0.100U	0.100U	0.100U	0.100U	1.000	0.100U
CHANNEL CATFISH	MALE	0.610	12.600	0.010U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.670	12.200	0.010U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.760	12.800	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.070	14.100	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.070S	14.100S	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	UNK	0.330	10.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
YELLOW BULLHEAD	FMALE	0.590	10.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 3 MELTON HILL DAM CRM 23.5

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	MALE	0.940	14.400	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.590	12.700	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	2.800	20.800	0.100U	1.300	0.100U	0.100U	0.100U	3.400	0.100U
YELLOW BULLHEAD	FMALE	0.450	8.700	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
YELLOW BULLHEAD	FMALE	0.620	10.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
YELLOW BULLHEAD	FMALE	0.570	10.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
YELLOW BULLHEAD	FMALE	0.620	10.800	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 4 EAST FORK POPLAR CREEK 13.8

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CARP	FMALE	7.330S	23.000S	0.100U	1.100	0.100U	0.100U	0.100U	2.000	0.100U
CARP	MALE	2.600	21.100	0.100U	1.700	0.100U	0.100U	0.100U	2.000	0.100U
CARP	MALE	3.380	19.700	0.010U	0.660	0.100U	0.100U	0.100U	1.300	0.100U
LARGEMOUTH BASS	MALE	0.590	10.700	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
LARGEMOUTH BASS	MALE	0.610	11.400	0.100U	0.100U	0.100U	0.100U	0.100U	0.540	0.100U
LARGEMOUTH BASS	FMALE	0.870	11.900	0.100U	0.260	0.100U	0.100U	0.100U	0.660	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 5 EAST FORK POPLAR CREEK MILE 8.8

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
ROCKBASS	FMALE	0.410	8.400	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.260	7.100	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.230	6.800	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.410	7.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.330	7.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.340	7.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.340	7.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.430	8.100	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.260	6.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.230	6.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB), 1984
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 6 EAST FORK POPLAR CREEK MILE 4.0

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	FMALE	1.680	17.300	0.100U	0.300	0.100U	0.100U	0.100U	0.300	0.100U
NORTH HOGSUCKER	MALE	0.240	11.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
SPOTTED SUCKER	FMALE	0.980	13.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 7 BEAR CREEK MILE 0.4 FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG.KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
ROCKBASS	FMALE	0.090	5.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.210	6.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.170	5.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.210	6.700	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.190	6.400	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.270	6.800	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	FMALE	0.290	7.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.270	6.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.360	7.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
ROCKBASS	MALE	0.370	7.700	0.100U	0.200	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 8 POPLAR CREEK 0.2

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	MALE	1.490	16.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	2.330	19.200	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.950	14.300	0.100U	0.400	0.010U	0.010U	0.010U	1.700	0.100U
CHANNEL CATFISH	MALE	1.780	17.700	0.100U	0.100U	0.010U	0.010U	0.010U	0.010U	0.100U
CHANNEL CATFISH	UNK	0.980	14.500	0.100U	0.100U	0.010U	0.010U	0.010U	0.010U	0.100U
CHANNEL CATFISH	FMALE	1.410	17.200	0.100U	0.100U	0.010U	0.010U	0.010U	0.010U	0.100U
CHANNEL CATFISH	MALE	1.200	15.700	0.100U	0.100U	0.010U	0.010U	0.010U	0.650	0.100U
CHANNEL CATFISH	MALE	4.020	21.900	0.100U	0.400	0.100U	0.100U	0.100U	1.400	0.100U
CHANNEL CATFISH	MALE	4.020S	21.900S	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.480	16.500	0.100U	0.600	0.100U	0.100U	0.100U	1.900	0.100U
CHANNEL CATFISH	FMALE	2.350	18.500	0.100U	0.600	0.100U	0.100U	0.100U	2.800	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 9 WHITE OAK LAKE FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CARP	FMALE	3.040	18.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	FMALE	3.040S	18.600S	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	MALE	4.930	22.000	0.100U	0.200	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	MALE	4.930S	22.000S	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	MALE	4.490	21.500	0.100U	0.300	0.100U	0.100U	0.100U	0.300	0.100U
CARP	MALE	4.490S	21.500S	0.100U	0.300	0.100U	0.100U	0.100U	0.300	0.100U
CARP	MALE	1.730	15.200	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	FMALE	2.840	18.300	0.100U	1.000	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	FMALE	1.490	15.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	MALE	1.500	14.900	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	MALE	3.410	19.400	0.100U	0.400	0.100U	0.100U	0.100U	0.100U	0.100U
CARP	MALE	3.410S	19.400S	0.100U	0.400	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 10 WHITE OAK CREEK EMBAYMENT

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	MALE	2.160	19.900	0.100U	0.600	0.100U	0.100U	0.100U	2.400	0.100U
CHANNEL CATFISH	MALE	5.950	24.300	0.100U	0.400	0.100U	0.100U	0.100U	2.000	0.100U
CHANNEL CATFISH	MALE	5.950S	24.300S	0.100U	0.600	0.100U	0.100U	0.100U	3.000	0.100U
CHANNEL CATFISH	FMALE	3.300	19.800	0.100U	0.400	0.100U	0.100U	0.100U	1.800	0.100U
CHANNEL CATFISH	MALE	3.010	19.700	0.100U	2.000	0.100U	0.100U	0.100U	3.600	0.100U
CHANNEL CATFISH	FMALE	2.700	19.300	0.100U	0.700	0.100U	0.100U	0.100U	2.000	0.100U
CHANNEL CATFISH	MALE	2.600	19.100	0.100U	0.700	0.100U	0.100U	0.100U	2.800	0.100U
CHANNEL CATFISH	MALE	1.780	17.400	0.100U	0.600	0.100U	0.100U	0.100U	2.200	0.100U
CHANNEL CATFISH	MALE	1.400	16.500	0.100U	0.800	0.100U	0.100U	0.100U	2.000	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 12 CLINCH RIVER MILE 11.0

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	FMALE	1.580	15.900	0.100U	1.100	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	2.030	16.300	0.100U	0.800	0.100U	0.100U	0.100U	0.700	0.100U
CHANNEL CATFISH	FMALE	1.380	15.700	0.100U	0.300	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.570	17.300	0.100U	1.100	0.100U	0.100U	0.100U	1.000	0.100U
CHANNEL CATFISH	MALE	0.960	15.100	0.100U	0.900	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.780	13.600	0.100U	0.400	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.780	18.500	0.100U	0.500	0.100U	0.100U	0.100U	1.200	0.100U
CHANNEL CATFISH	MALE	1.650	17.000	0.100U	0.700	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.680	17.100	0.100U	0.500	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.170	15.400	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 13 CLINCH RIVER MILE 6.0

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	MALE	1.030	15.300	0.100U	0.400	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.840	13.200	0.100U	0.600	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.270	15.700	0.100U	0.500	0.100U	0.100U	0.100U	0.600	0.100U
CHANNEL CATFISH	MALE	1.090	15.500	0.100U	0.200	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.770	13.200	0.100U	0.400	0.100U	0.100U	0.100U	0.200	0.100U
CHANNEL CATFISH	FMALE	2.670	19.500	0.100U	0.500	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.660	12.600	0.100U	0.600	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.090	15.200	0.100U	0.600	0.100U	0.100U	0.100U	1.000	0.100U
CHANNEL CATFISH	FMALE	1.100	15.300	0.100U	0.800	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.120	15.200	0.100U	1.000	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 14 CLINCH RIVER MILE 2.0

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	MALE	2.530	19.600	0.100U	0.300	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	2.600	19.100	0.100U	0.400	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	2.600S	19.100S	0.100U	0.500	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	3.260	20.600	0.100U	0.400	0.100U	0.100U	0.100U	0.500	0.100U
CHANNEL CATFISH	MALE	3.260S	20.600S	0.100U	0.800	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	3.300	19.700	0.100U	0.600	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	3.300S	19.700S	0.100U	0.600	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.980	17.600	0.100U	0.400	0.100U	0.100U	0.100U	0.300	0.100U
CHANNEL CATFISH	FMALE	1.490	17.200	0.100U	0.600	0.100U	0.100U	0.100U	0.900	0.100U
CHANNEL CATFISH	MALE	1.540	15.900	0.100U	0.600	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.060	15.200	0.100U	0.700	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.110	14.700	0.100U	0.200	0.100U	0.100U	0.100U	0.500	0.100U
CHANNEL CATFISH	MALE	1.410	16.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 15 EMORY RIVER MILE 1.0

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	FMALE	0.950	14.800	0.100U	0.600	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.870	17.400	0.100U	0.500	0.100U	0.100U	0.100U	0.500	0.100U
CHANNEL CATFISH	FMALE	0.860	14.300	0.100U	0.300	0.100U	0.100U	0.100U	0.500	0.100U
CHANNEL CATFISH	FMALE	3.700	21.900	0.100U	0.500	0.100U	0.100U	0.100U	0.900	0.100U
CHANNEL CATFISH	FMALE	3.700S	21.900S	0.100U	0.500	0.100U	0.100U	0.100U	1.100	0.100U
CHANNEL CATFISH	MALE	2.910	20.500	0.100U	0.400	0.100U	0.100U	0.100U	0.500	0.100U
CHANNEL CATFISH	MALE	2.910S	20.500S	0.100U	0.400	0.100U	0.100U	0.100U	0.500	0.100U
CHANNEL CATFISH	MALE	0.510	12.500	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.000	14.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	3.810	20.900	0.100U	0.500	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.530	12.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.980	14.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.300	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 16 TENNESSEE RIVER MILE 572.0

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG.KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	FMALE	2.750	20.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.900	13.800	0.100U	0.300	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.050	15.000	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.990	14.400	0.100U	0.200	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	2.030	18.700	0.100U	0.200	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	0.760	14.700	0.100U	0.500	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.190	14.300	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.500	15.500	0.100U	0.400	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	2.560	19.900	0.100U	0.400	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.100	14.700	0.100U	0.300	0.100U	0.100U	0.100U	0.100U	0.100U

APPENDIX II - TABLE 2
POLYCHLORINATED BIPHENYL (PCB)
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY

STATION 17 TENNESSEE RIVER MILE 558.0

FISH SPECIES	SEX	WEIGHT (LBS.)	LENGTH (IN.)	PCB-1242 (MG/KG)	PCB-1254 (MG/KG)	PCB-1221 (MG/KG)	PCB-1232 (MG/KG)	PCB-1248 (MG/KG)	PCB-1260 (MG/KG)	PCB-1016 (MG/KG)
CHANNEL CATFISH	FMALE	3.300	20.600	0.100U	0.500	0.100U	0.100U	0.100U	0.700	0.100U
CHANNEL CATFISH	FMALE	3.300S	20.600S	0.100U	0.600	0.100U	0.100U	0.100U	0.600	0.100U
CHANNEL CATFISH	MALE	0.950	14.400	0.100U	0.200	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	0.750	13.700	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.760	16.900	0.100U	0.600	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	2.400	18.300	0.100U	0.800	0.100U	0.100U	0.100U	0.600	0.100U
CHANNEL CATFISH	FMALE	1.920	17.000	0.100U	0.700	0.100U	0.100U	0.100U	0.400	0.100U
CHANNEL CATFISH	FMALE	1.760	17.500	0.100U	0.400	0.100U	0.100U	0.100U	0.400	0.100U
CHANNEL CATFISH	MALE	2.250	18.300	0.100U	0.500	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	MALE	1.070	15.300	0.100U	0.300	0.100U	0.100U	0.100U	0.100U	0.100U
CHANNEL CATFISH	FMALE	1.010	14.600	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U	0.100U

TABLE 3

INSTREAM CONTAMINANT STUDY - TASK 4
OTHER ORGANIC COMPOUNDS DETECTED IN FISH FROM THE OAK RIDGE VICINITY

Scarboro Creek

Organic Compound	Channel catfish		Channel catfish		Channel catfish		Channel catfish		Channel catfish	
	%P*	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradecanoic acid	89	61	99	44			99	18	99	22
Pentadecenoic acid			84	121	84	81	84	180	85	284
Hexadecanoic acid	80	134	89	134	98	135	86	152	93	102
Octadecanoic acid	89	20	89	16	96	11	95	36	94	23
Ethyl ester of Eicosatetraenoic acid									60	8
Hexadecenoic acid	89	122					92	145		
Heptadecene carbonic acid			89	126						
Octadecenoic acid	87	126			88	54				
Heptadecenoic acid							86	23		
Cyclohexane, triethenyl							64	23		
Cholest-en-ol (3-beta)	95	24	93	30	95	12	92	86		
Dihydro purinone			60	13						
Pyridine carboxamide			78	8						
Heptadecane	93	7								
Dodecatriene	82	8								

	Channel catfish		Channel catfish		Channel catfish		Channel catfish		Channel catfish	
	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradecanoic acid	99	15	96	14	88	83	99	27	86	69
Pentadecenoic acid	84	240								
Hexadecanoic acid	86	79	86	100	98	51	89	118	83	166
Octadecanoic acid	95	26	95	27	96	33	93	26	95	42
Hexadecenoic acid			87	106			86	193	87	98
Heptadecene Carbonic acid			84	115						
Arachidonate, Methyl			78	8	78	25			78	17
Octadecenoic acid					88	145	87	161	87	153
Heptadecanoic acid					83	6			76	10
Heptadecenoic acid					79	6				
Cyclohexane, triethenyl					76	12				
Cholest-en-ol (3-beta)					92	63	95	26	95	59

TABLE 3 (CONTINUED)

INSTREAM CONTAMINANT STUDY - TASK 4
OTHER ORGANIC COMPOUNDS DETECTED IN FISH FROM THE OAK RIDGE VICINITY

Organic Compound	McCoy Branch Channel catfish %P*	ug/g	Channel catfish %P	ug/g	Channel catfish %P	ug/g	Channel catfish %P	ug/g	Channel catfish %P	ug/g
Tetradecanoic acid			99	17	78	4			75	25
Pentadecenoic acid					84	35				
Hexadecanoic acid	94	15	89	100			60	13	89	74
Octadecanoic acid	99	4	99	9	89	5			97	16
Ethyl ester of Eicos atetraenoic acid	84	2								
Hexadecenoic acid			91	43			87	36	95	133
Heptadecene carbonic acid	93	26	99	81	89	25	86	33	93	141
Arachidonate, methyl					78	2				
Octadecenoic acid	78	32								
Heptadecanoic acid			83	7						
Cholest-en-ol (3-beta)	95	4	93	12	94	5	95	4	95	15
Dihydro purinone			60	5						

	Channel catfish %P	ug/g	Channel catfish %P	ug/g	Channel catfish %P	ug/g	Yellow bullhead %P	ug/g
Tetradecanoic acid	96	5	95	22	99	36	93	18
Pentadecenoic acid							87	11
Hexadecanoic acid	81	30	87	183	93	105	83	97
Octadecanoic acid	95	4	96	29	86	11	97	19
Ethyl ester of Eicasateraenoic acid			88	77	83	6		
Hexadecenoic acid					89	109		
Heptadecene carbonic acid	89	26	93	71	93	90	89	73
Octadecenoic acid	89	64	84	51				
Heptadecanoic acid					70	7		
Cholest-en-ol (3-beta)	92	7	95	45	95	23	94	18
Dihydro purinone					52	6	52	6
Trivinyl cyclohexane	83	4						
Pentadecanoic acid					76	7		
Methyl cyclohexylmethyl							71	37

TABLE 3 (CONTINUED)

INSTREAM CONTAMINANT STUDY - TASK 4
OTHER ORGANIC COMPOUNDS DETECTED IN FISH FROM THE OAK RIDGE VICINITY

	East Fork Poplar Creek Mile 13.8									
	Common carp		Common carp		Common carp		Common carp		Common carp	
Organic Compound	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradeconoic acid			77	8			96	6		
Pentadecenoic acid							84	16		
Hexadecanoic acid	84	20	97	121	94	96	76	34	74	115
Octadecanoic acid			94	20	91	18				
Hexadecenoic acid							91	10		
Heptadecene carbonic acid	93	6	95	83	95	104			89	92
Arachidonate, methyl									87	8
Octadecenoic acid			78	44	79	59			79	94
Heptadecanoic acid					87	11			87	14
Heptadecenoic acid			67	24						
Cholest-en-ol (3-beta)	95	36	95	30	95	23	94	62	95	24
Heptadecane	93	4	93	9						
Dihydro pyrazolopyrimidinone					52	6				
Tetradecanal	87	81	91	20			90	75		
Hexyl furan							70	11		
Nonadienal							70	10		
Hydroxypyridine							52	7		
Dimethylbutyl cyclohexane	84	5								
Octadecenal	86	32								
Hexadecanal	83	14								
Cholestadiene	98	6								

TABLE 3 (CONTINUED)

INSTREAM CONTAMINANT STUDY - TASK 4
OTHER ORGANIC COMPOUNDS DETECTED IN FISH FROM THE OAK RIDGE VICINITY

East Fork Poplar Creek Mile 13.8

Organic Compound	Largemouth bass		Largemouth bass		Largemouth bass		Largemouth bass		Bluegill		Bluegill	
	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradecanic acid	99	10	95	11	99	12	83	11				
Pentadecenoic acid	67	7										
Hexadecanoic acid	90	38	89	128	86	23	89	116	94	610	82	660
Octadecanoic acid			93	16	87	11	95	14	93	37	96	69
Ethyl ester of Eicosatetraenoic acid			79	13	83	14	86	9				
Hexadecenoic acid							89	30				
Heptadecene carbonic acid	78	10	84	67	87	68	87	49	89	160		
Octadecenoic acid			84	75	79	77	74	9			86	150
Cholest-en-ol (3-beta)	93	105	95	12	93	24	95	22	95	61	94	180
Pyridine carboxamide							86	6				
Dihydro pyrazolopyrimidinone					60	5						
Dodecatriene					65	6						
Dimethyl bicyclododecadiene					53	9						
Tetradecanal	89	54										
Methyl cyclopentenyl ethanone	76	6										

TABLE 3 (CONTINUED)

INSTREAM CONTAMINANT STUDY - TASK 4
OTHER ORGANIC COMPOUNDS DETECTED IN FISH FROM THE OAK RIDGE VICINITY

	Poplar Creek Mile 0.2									
Organic Compounds	Channel catfish		Channel catfish		Channel catfish		Channel catfish		Channel catfish	
	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradecanoic acid	99	37	95	16	99	15			99	21
Pentadecenoic acid	84	178	62	147	84	96	84	4		
Hexadecanoic acid	86	153	81	113	89	75			89	40
Octadecanoic acid	95	36	94	19	99	16			97	18
Hexadecenoic acid	92	145	93	80	96	44			88	25
Octadecenoic acid			81	55					87	83
Heptadecenoic acid	86	12							76	4
Cyclohexane, triethenyl	64	23								
Cholest-en-ol(3-beta)	92	86	93	47	92	35			93	37
Dihydro purinone			60	8			60	6	52	8
Pyridine carboxamide	53	10	79	11	70	12			55	6
Heptadecane									84	5
Tetradecanal									89	5
Benzenedicarboxylic acid, dibutyl ester									58	4

	Channel catfish		Channel catfish		Channel catfish		Channel catfish		Channel catfish	
	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradecanoic acid	99	23	96	93	96	30	99	30	99	18
Pentadecenoic acid			86	500			84	121	73	122
Hexadecanoic acid	89	76	76	280	86	102	83	125	86	93
Octadecanoic acid	96	10	96	73	95	14	99	21	99	21
Hexadecenoic acid	96	69					88	61		
Octadecenoic acid	87	108	87	420	83	161			93	32
Heptadecenoic acid	76	7								
Cholest-en-ol (3-beta)	95	37	95	98	95	35	92	49	89	30
Dihydro purinone	52	7			60	9			60	7
Pyridine carboxamide					59	12	76	12		
Heptadecane					89	16			89	7
Trivinyl cyclohexane			68	35						

TABLE 3 (CONTINUED)

INSTREAM CONTAMINANT STUDY - TASK 4
OTHER ORGANIC COMPOUNDS DETECTED IN FISH FROM THE OAK RIDGE VICINITY

Organic Compound	Whiteoak Creek Mile 0.2									
	Channel catfish		Channel catfish		Channel catfish		Channel catfish		Channel catfish	
	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradecanoic acid			98	41	99	19			91	29
Pentadecenoic acid	83	5					84	40		
Hexadecanoic acid	82	14	93	94	93	83	58	7	86	8
Octadecanoic acid			96	22	95	18	87	6	87	16
Hexadecenoic acid					90	34			86	112
Heptadecene carbonic acid					93	63				
Octadecenoic acid	85	35	89	251			75	30	87	100
Heptadecanoic acid					86	5				
Heptadecenoic acid	75	6								
Cholest-en-ol (3-beta)	87	7	89	27	93	43	95	6	87	41
Dihydro purinone			52	8	52	7			52	8
Pyridine carboxamide	53	2			93	12			65	12
Heptadecane							88	3		
bis (2-methyl propyl) benzenedicarboxylic acid	83	3								

	Channel catfish		Channel catfish		Channel catfish		Black bullhead		Black bullhead	
	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Tetradecanoic acid	99	34	86	2	99	26	99	11	99	7
Pentadecenoic acid					89	88				
Hexadecanoic acid	72	33			89	105	88	52	93	72
Octadecanoic acid	97	20	82	4	97	20	94	10	93	11
Hexadecenoic acid			96	28	89	9	96	48	93	38
Heptadecene carbonic acid	93	111	93	20	89	33	85	44	87	38
Octadecenoic acid	94	93			89	47				
Heptadecenoic acid					79	6				
Cholest-en-ol (3-beta)	93	53	93	6	95	38	89	27	95	21
Dihydro purinone					60	8	52	6	52	6
Pyridine carboxamide	93	11			93	7	93	6	93	4
Dihydro pyrazolopyrimidinone	52	8								
Decanoic acid							71	3		

TABLE 4

INSTREAM CONTAMINANT STUDY - TASK 4
RESULTS OF ANALYSIS OF FISH FROM OAK RIDGE PROJECT
FOR ORGANIC METABOLITES

Metabolite	Scarboro Creek				McCoy Branch				Whiteoak Creek Mile 0.2				EFPC Mile 13.8				Poplar Creek Mile 0.2			
	Channel catfish		Channel catfish		Catfish*		Channel catfish		Channel catfish		Channel cafish		Common carp		Common carp		Channel catfish		Channel catfish	
	%P**	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g	%P	ug/g
Methyl Benzenamine	97	140	97	140	97	115	97	170	97	125	96	93	97	130	97	135	97	80	97	137
Benzenemethanol					78	7														
Ethyl,-Methyl Pyridine					60	91	52	160	52	63	52	41								
Methyl Phenol	71	8	94	12													78	5		
Methyl Benzoic Acid							55	11												
Dimethyl Benzenamine	60	96											62	85	68	8	52	51	70	12
Trimethyl Benzenamine	70	12			60	7			56	7	87	10								
Methyl Cycloheptatriene			64	90																
Methyl Ester of Tetradecenoic Acid							95	61							89	7			95	88
Methyl Ester of Pentadecenoic Acid							99	10												
Methyl Ester of Hexanoic Acid			95	16																
Methyl Ester of Hexadecenoic Acid	93	42	97	41	94	27	96	185	94	23	92	32	93	31	94	34	94	37		
Methyl Ester of Octadecenoic Acid	92	35	91	31	96	23	99	100	96	18	98	15	97	10	95	23	95	15	94	56
Methyl Ester of Heptadecenoic Acid							90	22									96	5		
Methyl Ester of Eicosatetraenoic Acid							89	13												
Cyclohexane							66	28												

*Two channel catfish and one yellow bullhead flesh sample composite
**Probability of metabolite identification

APPENDIX III

INSTREAM CONTAMINANT STUDY - TASK IV

RADIONUCLIDE DATA*

*TC-99 results are included in Appendix I - Table 3.

APPENDIX III
RADIONUCLIDE DATA
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
TC-99 RESULTS ARE INCLUDED IN APPENDIX I - TABLE 3
(M DENOTES NEGATIVE VALUE)

	WEIGHT (LBS.)	ALPHA (PCI/G)	ALPHA COUNTING ERROR (PCI/G)	BETA (PCI/G)	BETA COUNTING ERROR (PCI/G)	K-40 (PCI/G)	K-40 COUNTING ERROR (PCI/G)	CS-137 (PCI/G)	CS-137 COUNTING ERROR (PCI/G)	B-214 (PCI/G)	BI-214 COUNTING ERROR (PCI/G)
IITE OAK LAKE											
.UEGILL	0.83	0.050	0.070	76.000	15.000	13.000	3.000	26.000	2.000	.	.
ıRP	.	0.000	0.020	18.000	4.000	14.000	2.000	5.700	0.500	0.300	0.100
.RP	2.95	0.010M	0.030	33.000	6.000	11.000	1.000	7.700	0.500	0.030	0.020
ıRGEMOUTH BASS	.	0.000	0.040	36.000	7.000	17.000	2.000	7.100	0.600	0.300	0.200
:ARBORO CREEK EMBAYMENT											
.UEGILL	1.07	0.000	0.070	49.000	10.000	15.000	3.000	0.150	0.060	.	.
IANNEL CATFISH	2.12	0.000	0.020	17.000	3.000	11.000	2.000	.	.	0.400	0.100
ıRGEMOUTH BASS	1.49	0.020	0.060	35.000	7.000	17.000	2.000	.	.	0.700	0.200
:COY BRANCH EMBAYMENT											
.UEGILL	0.98	0.040	0.060	26.000	5.000	15.000	2.000	.	.	.	.
IANNEL CATFISH	2.25	0.006	0.009	6.000	1.000	11.000	1.000	0.070	0.010	.	.
ıRGEMOUTH BASS	1.37	0.010	0.050	40.000	8.000	16.000	2.000	.	.	0.300	0.200
:LTON HILL DAM CRM 23.5											
.UEGILL	0.59	0.010M	0.050	40.000	8.000	15.000	2.000	0.150	0.060	0.200	0.100
IANNEL CATFISH	.	0.000	0.040	39.000	8.000	11.000	2.000	0.070	0.040	0.500	0.200
ıRGEMOUTH BASS	0.99	0.070	0.100	64.000	12.000	13.000	2.000	.	.	.	.
ıST FORK POPLAR CREEK 13.8											
.UEGILL	.	0.010M	0.040	21.000	4.000	18.000	3.000	1.000	0.100	0.900	0.200
ıRP	4.07	0.040	0.060	41.000	8.000	18.000	1.000	1.800	0.100	.	.
ıRGEMOUTH BASS	.	0.010M	0.040	30.000	6.000	12.000	3.000	2.600	0.300	.	.
:DBREAST	0.26	0.020M	0.090	56.000	11.000	14.000	3.000	0.420	0.080	0.500	0.200
ıST FORK POPLAR CREEK 8.8											
ARP	.	0.000	0.040	27.000	5.000	14.000	2.000	1.000	0.100	.	.

APPENDIX III
RADIONUCLIDE DATA
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
TC-99 RESULTS ARE INCLUDED IN APPENDIX I - TABLE 3
(M DENOTES NEGATIVE VALUE)

	WEIGHT (LBS.)	ALPHA (PCI/G)	ALPHA COUNTING ERROR (PCI/G)	BETA (PCI/G)	BETA COUNTING ERROR (PCI/G)	K-40 (PCI/G)	K-40 COUNTING ERROR (PCI/G)	CS-137 (PCI/G)	CS-137 COUNTING ERROR (PCI/G)	B-214 (PCI/G)	BI-214 COUNTING ERROR (PCI/G)
REDBREAST	0.59	0.020	0.020	12.000	2.000	14.000	2.000	0.120	0.050	0.200	0.100
ROCKBASS	.	0.000	0.060	30.000	6.000	14.000	2.000	0.460	0.090	0.300	0.200
EAST FORK POPLAR CREEK 4.0											
BLACK REDHORSE	.	0.000	0.060	14.000	3.000	16.000	3.000	0.600	0.100	0.400	0.200
CHANNEL CATFISH	.	0.030	0.060	17.000	3.000	15.000	3.000	1.700	0.300	.	.
SPOTTED SUCKER	.	0.900	0.700	74.000	15.000	22.000	5.000	2.200	0.400	2.600	0.800
BEAR CREEK MILE 0.4											
ROCKBASS	0.72	0.000	0.040	29.000	6.000	15.000	2.000	0.100	0.040	0.400	0.100
WHITE SUCKER	.	0.020	0.070	28.000	5.000	18.000	3.000	0.400	0.100	0.400	0.300
WHITE OAK CREEK EMBAYMENT											
BLUEGILL	0.30	0.010M	0.040	36.000	7.000	14.000	3.000	1.100	0.200	0.700	0.200
CHANNEL CATFISH	1.34	0.070	0.090	40.000	8.000	11.000	2.000	7.300	0.700	0.400	0.100
SMALLMOUTH BUFFALO	.	0.050	0.080	35.000	7.000	7.000	2.000	9.700	0.800	0.700	0.200
STRIPED BASS	.	0.010M	0.030	35.000	7.000	14.000	1.000	2.600	0.200	.	.
CLINCH RIVER MILE 11.0											
BLUEGILL	0.62	0.010M	0.060	45.000	9.000	14.000	3.000	0.340	0.600	.	.
CHANNEL CATFISH	2.75	0.010M	0.030	25.000	5.000	13.000	1.000	0.340	0.040	.	.
LARGEMOUTH BASS	.	0.000	0.040	44.000	9.000	16.000	3.000	0.800	0.100	0.500	0.200
LARGEMOUTH BASS	.	0.060	0.090	56.000	11.000	18.000	4.000	0.600	0.100	0.400	0.300

APPENDIX III
RADIONUCLIDE DATA
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
TC-99 RESULTS ARE INCLUDED IN APPENDIX I - TABLE 3
(M DENOTES NEGATIVE VALUE)

	WEIGHT (LBS.)	AC-228 (PCI/G)	AC-228 COUNTING ERROR (PCI/G)	CS-134	CS-134 COUNTING ERROR (PCI/G)	CO-60	CO-60 COUNTING ERROR (PCI/G)	SR-89	SR-89 COUNTING ERROR (PCI/G)	SR-90	SR-90 COUNTING ERROR (PCI/G)
E OAK LAKE											
	2.95	. .	.	0.040	0.050	0.120	0.020	0.200	0.300	0.250	0.080
ON HILL DAM CRM 23.5											
EMOUTH BASS	0.99	0.8000.4	0.400	.	.	.	.	.	.	.	.
FORK POPLAR CREEK 13.8											
GILL	.	. .	.	0.110	0.050	.	.	.	.	.	.
	4.07	. .	.	0.170	0.030	0.030	0.010	0.000	0.200	0.060	0.040
EMOUTH BASS	.	. .	.	0.240	0.080	.	.	.	.	.	.
FORK POPLAR CREEK 8.8											
	.	. .	.	0.120	0.040	.	.	0.200	0.100	0.000	0.020
FORK POPLAR CREEK 4.0											
NEL CATFISH	.	. .	.	0.270	0.080	.	.	.	.	.	.
CREEK MILE 0.4											
BASS	0.72	0.7000.4	0.400	.	.	.	.	.	.	.	.
E OAK CREEK EMBAYMENT											
LLMOUTH BUFFALO	.	. .	.	.	.	0.070	0.100	1.600	1.400M	1.300	0.300
IPED BASS	.	. .	.	.	.	0.050	0.020	.	.	.	.
NCH RIVER MILE 11.0											
NNEL CATFISH	2.75	. .	.	.	.	.	.	0.100	0.100	0.010	0.020

APPENDIX III
RADIONUCLIDE DATA
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
TC-99 RESULTS ARE INCLUDED IN APPENDIX I - TABLE 3
(M DENOTES NEGATIVE VALUE)

	WEIGHT (LBS.)	PB-214 (PCI/G)	PB-214 COUNTING ERROR (PCI/G)
WHITE OAK LAKE			
BLUEGILL	0.83	0.700	0.200
CARP	.	0.300	0.200
LARGEMOUTH BASS	.	0.400	0.100
SCARBORO CREEK EMBAYMENT			
CHANNEL CATFISH	2.12	0.400	0.100
LARGEMOUTH BASS	1.49	0.300	0.200
MCCOY BRANCH EMBAYMENT			
BLUEGILL	0.98	0.300	0.100
LARGEMOUTH BASS	1.37	0.300	0.100
MELTON HILL DAM CRM 23.5			
BLUEGILL	0.59	0.200	0.200
CHANNEL CATFISH	.	0.500	0.200
EAST FORK POPLAR CREEK 13.8			
BLUEGILL	.	0.900	0.300
LARGEMOUTH BASS	.	0.600	0.200
REDBREAST	0.26	0.400	0.200
EAST FORK POPLAR CREEK 8.8			
ROCKBASS	.	0.300	0.100
EAST FORK POPLAR CREEK 4.0			
BLACK REDHORSE	.	0.400	0.200

APPENDIX III
RADIONUCLIDE DATA
TASK 4 FISH ANALYSES
INSTREAM CONTAMINANT STUDY
TC-99 RESULTS ARE INCLUDED IN APPENDIX I - TABLE 3
(M DENOTES NEGATIVE VALUE)

	WEIGHT (LBS.)	PB-214 (PCI/G)	PB-214 COUNTING ERROR (PCI/G)
SPOTTED SUCKER	.	3.000	1.000
BEAR CREEK MILE 0.4			
ROCKBASS	0.72	0.400	0.200
WHITE SUCKER	.	0.900	0.200
WHITE OAK CREEK EMBAYMENT			
CHANNEL CATFISH	1.34	0.300	0.200
SMALLMOUTH BUFFALO	.	0.700	0.200
CLINCH RIVER MILE 11.0			
LARGEMOUTH BASS	.	0.400	0.200
LARGEMOUTH BASS	.	0.600	0.200

APPENDIX IV

INSTREAM CONTAMINANT STUDY - TASK IV

QUALITY CONTROL

FIGURE 1

Sample Collection, Shipping and Receiving

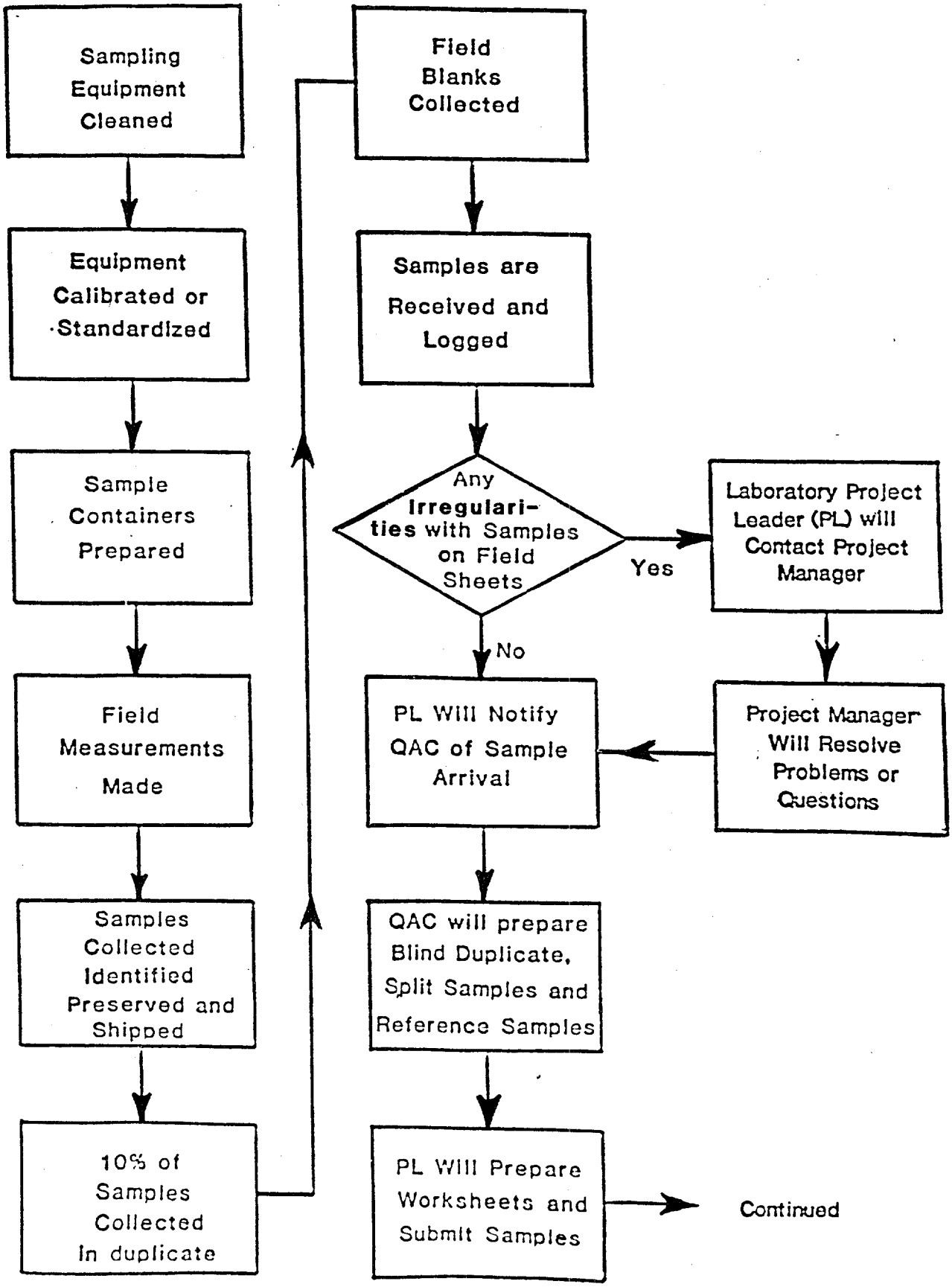
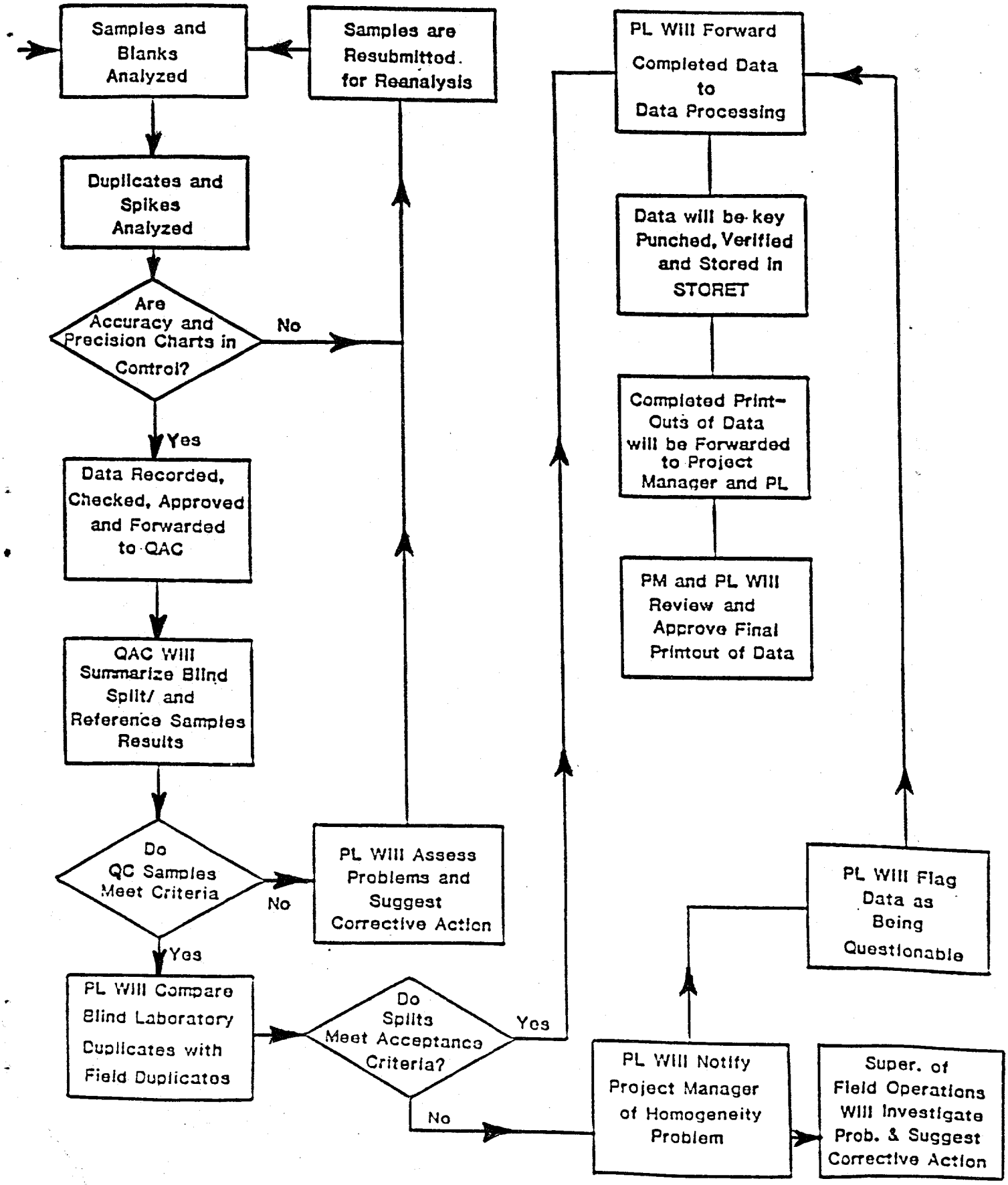


FIGURE 2

Laboratory Analysis and Data Reporting



APPENDIX IV

LABORATORY ANALYSIS PROCEDURES

1.0 Biota

1.1 Applicable Documents

1.1.1 "Extraction and Analysis of Priority Pollutants in Biological Tissue," Method PPB 12/83, U.S. Environmental Protection Agency, Environmental Services Division, Region IV, Analytical Support Branch, Athens, Georgia.

1.1.2 "Interim Methods for the Sampling and Analysis of Priority Pollutants in Sediments and Fish Tissues," EPA 60014-81-055, Environmental Protection Agency, Cincinnati, Ohio, October 1980.

1.1.3 Murphy, Phillip G., "Sulfuric Acid Cleanup of Animal Tissues for Analysis of Acid-Stable Chlorinated Hydrocarbon Residues," Journal of AOAC, 55, 1360-2 (1972).

1.1.4 "Methods for Use of Caged Molluses for In Situ Biomonitoring of Marine Sewage Discharges," EPA-60014-83-000, Environmental Protection Agency, Cincinnati, Ohio, May 1983.

1.1.5 "Preparation Procedure for Analysis of Fish for Metals," Personal Communication from William McDaniel, EPA, Region IV to David Varnell, July 1981.

1.1.6 "Procedures for Determination of Stable Elements and Radionuclides in Environmental Samples," Public Health Service Publication 999-RH-10, January 1965.

1.1.7 "Handbook of Radiochemical Analytical Methods," F. B. Johns, Editor, EPA 680/4-75-001, February 1975.

1.1.8 "Gross Alpha and Gross Beta Activity Determination," Procedure No. G-01, Laboratory Services, Tennessee Valley Authority, Muscle Shoals, AL, July 1984.

1.1.9 "Radiochemical Determination of Strontium-89, 90, in Environmental Samples," Procedure No. Sr-01, Laboratory Services, Tennessee Valley Authority, Muscle Shoals, AL, February 1985.

1.1.10 "Gamma Analysis of Environmental Samples," Procedure No. G-03, Laboratory Services, Tennessee Valley Authority, Muscle Shoals, AL, November 1980.

1.1.11 "Germanium Spectroscopy System Operating Procedures," Procedure No. OP-05, Laboratory Services, Tennessee Valley Authority, Muscle Shoals, AL, June 1984.

1.2 Summary of Methods

Parameter	Applicable Documents	Type of Analysis	Detection Limit
Digestion for Metals	1.15	HNO_3 - H_2O_2 Digestion	NA
Cadmium	1.1.2, pages 42-51	AA - Furnace	0.002 µg/g
Chromium	1.1.2, pages 42-51	AA - Furnace	0.02 µg/g
Silver	1.1.2, pages 42-51	ICP	0.2 µg/g
Arsenic	1.1.2, pages 42-51	AA - Furnace	0.1 µg/g
Antimony	1.1.2, pages 42-51	AA - Furnace	1 µg/g
Copper	1.1.2, pages 42-51	ICP	0.1 µg/g
Zinc	1.1.2, pages 42-51	ICP	0.1 µg/g
Beryllium	1.1.2, pages 42-51	ICP	0.02 µg/g
Thallium	1.1.2, pages 42-51	ICP	1 µg/g
Selenium	1.1.2, pages 42-51	AA - Furnace	0.1 µg/g
Nickel	1.1.2, pages 42-51	ICP	1 µg/g
Lead	1.1.2, pages 42-51	AA - Furnace	0.02 µg/g
Extractable Organics	1.1.1	Mechanical Dispersion GPC Cleanup, GC/MS	Various
Pesticides and PCB	1.1.1	Mechanical Dispersion, GPC Cleanup - GC/EC	Various
PCB	1.1.1 and 1.1.3	Mechanical Dispersion, Sulfuric Acid Cleanup, GC/EC	Various
Volatile Organics	1.1.2, pages 21-23	Purge and Trap, GC/MS	Various
Organic Metabolites	1.1.4, pages 14-15	GC/MS	Various
Gross Alpha	1.1.6; 1.1.8	Alpha Counting	0.1 pCi/g[a]
Gross Beta	1.1.6; 1.1.8	Beta Counting	0.1 pCi/g
Sr-89	1.1.7; 1.1.9	Ion Exchange Separation; Beta Counting	0.5 pCi/g
Sr-90	1.1.7; 1.1.9	Ion Exchange Separation; Beta Counting	0.1 pCi/g
Gamma-Emitting Radionuclides	1.1.10; 1.1.11	Gamma Spectral Analysis of Ge(Li) Spectra	0.07-0.74 pCi/g

APPENDIX IV - TABLES 1 to 7

QUALITY CONTROL RESULTS

TABLE I

Results of Reference Samples Analyzed With Fish Samples

Parameter	Number of Observations	Reference Concentration Range (μg/g)	Average % Recovery	Standard Deviation of % Recovery	95% Confidence Interval of the Mean % Recovery
Arsenic	27	2.43 - 115	90.0	13	90.0 ± 5.1
Beryllium	7	42	108	2.4	108 ± 2.2
Silver	20	56	183	62	183 ± 29
Cadmium	56	0.16 - 45	119	32	119 ± 8.6
Chromium	69	0.88 - 47	93.2	9.5	93.2 ± 2.3
Copper	22	2.21 - 193	103	3.1	103 ± 1.4
Mercury	21	0.95 - 55	83.2	16	83.2 ± 7.3
Nickel	19	0.54 - 52	78.8	10	78.8 ± 4.8
Lead	10	0.26 - 59	117	27	117 ± 19
Antimony	5	57	112	19	112 ± 24
Selenium	11	1.1 - 39	90.1	15	90.1 ± 10
Thallium	6	46	130	34	130 ± 36
Zinc	14	13.6 - 130	111	8.4	111 ± 4.8
PCB, Total	6	0.93 - 3.12	95	17	95 ± 17.0

TABLE 2

Results of Blind Laboratory Duplicates
of Fish Samples for Priority Pollutant Analysis

Parameter	Number of Samples	Number Having Detectable Concentration	Avg. % RSD *
Antimony	7	0	-
Arsenic	29	11	10.0
Beryllium	7	0	-
Cadmium	29	14	30.4
Chromium	31	21	46.5
Copper	7	5	24.1
Lead	7	5	72.6
Mercury	31	17	24.0
Nickel	29	0	-
Selenium	7	7	28.8
Silver	29	0	-
Thallium	7	0	-
Zinc	7	7	10.5
PCB, Total	8	6	9.7
Volatile Organics	4	0**	-
Extractable Organics	3	0**	-
Pesticides	1	1	5.4***

*All less than values were excluded.
**All compunds were less than the detection limit.
***Three compounds had detectable concentrations in both duplicates.

JWB:PS, 3-8-85
0156F
FOE 0064V

TABLE 3

Results of Fish Samples Split with EPA-Region IV, Athens, GA
Metals Analyses

PARAMETER	LAB #	LAB: EPA (mg/kg)	LAB: TVA (mg/kg)	% RELATIVE ERROR
Antimony	B00057	<0.4	<1	-
	B00888	<0.4	<1	-
	B01113	<0.4	<1	-
	B01132	<0.4	<1	-
	B01136	<0.4	<1	-
Beryllium	B00057	<0.1	<0.02	-
	B00888	<0.1	<0.02	-
	B01113	<0.1	<0.02	-
	B01132	<0.1	<0.02	-
	B01136	<0.1	<0.02	-
Copper	B00057	0.62	0.9	-36.8
	B00888	0.86	1.2	-33.0
	B01113	0.54	0.66	-20.0
	B01132	0.22	0.24	-8.7
	B01136	0.33	0.21	44.4
Lead	B00057	<0.3	0.06	-
	B00888	<0.3	0.14	-
	B01113	0.26	0.28	-7.4
	B01132	<0.3	<0.02	-
	B01136	<0.3	0.13	-
Selenium	B00057	0.29	0.26	10.9
	B00888	0.76	0.73	4.0
	B01113	0.47	0.40	16.1

JWB:PS, 3-4-85

PARAMETER	LAB #	LAB: EPA (mg/kg)	LAB: TVA (mg/kg)	% RELATIVE ERROR
	B01132	0.54	0.23	80.5
	B01136	0.49	0.30	48.1
Cadmium	B00057	<0.1	<0.002	-
	B00888	<0.1	<0.002	-
	B01113	<0.1	<0.002	-
	B01132	<0.1	<0.002	-
	B01136	<0.1	<0.002	-
	B05888	<0.1	0.10	-
	B05919	<0.1	0.008	-
	B06056	<0.1	0.003	-
	B06091	<0.1	0.030	-
	B06115	<0.1	0.011	-
	B07135	<0.2	<0.002	-
	B07137	<0.2	<0.002	-
	B07416	<0.2	0.006	-
	B07417	<0.2	<0.002	-
	B07429	<0.2	0.002	-
	B08414	<0.2	0.008	-
	B08415	<0.2	0.012	-
	B08416	<0.2	0.014	-
	B08427	<0.2	<0.002	-
	B08434	<0.1	0.016	-
Chromium	B00057	0.15	0.12	22.2
	B00888	0.1	<0.02	-
	B01113	0.11	0.04	93.3

PARAMETER	LAB #	LAB: EPA (mg/kg)	LAB: TVA (mg/kg)	% RELATIVE ERROR
Chromium	B01131	0.09	<0.02	-
	B01136	0.17	<0.02	-
	B05888	<0.1	0.04	-
	B05819	<0.1	0.04	-
	B06056	<0.1	0.03	-
	B06115	<0.1	0.06	-
	B07135	0.13	0.34	-95.7
	B07137	<0.1	0.08	-
	B07416	<0.1	0.02	-
	B07417	<0.1	<0.02	-
	B07429	<0.1	<0.02	-
	B08414	<0.1	<0.02	-
	B08415	<0.1	<0.02	-
	B08416	<0.1	0.02	-
	B08427	<0.1	0.08	-
	B08434	<0.1	<0.02	-
Nickel	B00057	<0.2	<1	-
	B00888	<0.2	<1	-
	B01113	<0.2	<1	-
	B01131	<0.2	<1	-
	B01136	<0.2	<1	-
	B05888	<0.2	<1	-
	B05919	<0.2	<1	-
	B06056	<0.2	<1	-
	B06091	<0.2	<1	-

PARAMETER	LAB #	LAB: EPA (mg/kg)	LAB: TVA (mg/kg)	% RELATIVE ERROR
Nickel	B06115	<0.2	<1	-
	B07135	<0.4	<1	-
	B07137	<0.4	<1	-
	B07416	<0.4	<1	-
	B07417	<0.4	<1	-
	B07429	<0.4	<1	-
	B08414	<0.4	<1	-
	B08415	<0.4	<1	-
	B08416	<0.4	<1	-
	B08427	<0.4	<1	-
	B08434	<0.4	<1	-
Silver	B00057	<0.1	<0.2	-
	B00888	<0.1	<0.2	-
	B01113	<0.1	<0.2	-
	B01131	<0.1	<0.2	-
	B01136	<0.1	<0.2	-
	B05888	<0.1	<0.2	-
	B05919	<0.1	<0.2	-
	B06056	<0.1	<0.2	-
	B06091	<0.1	<0.2	-
	B06115	<0.1	<0.3	-
	B07135	<0.2	<0.2	-
	B07137	<0.2	<0.2	-
	B07416	<0.2	<0.2	-
	B07417	<0.2	<0.2	-

PARAMETER	LAB #	LAB: EPA (mg/kg)	LAB: TVA (mg/kg)	% RELATIVE ERROR
Silver	B07429	<0.2	<0.2	-
	B08414	<0.2	<0.2	-
	B08415	<0.2	<0.2	-
	B08416	<0.2	<0.2	-
	B08427	<0.2	<0.2	-
	B08434	<0.1	<0.2	-
Mercury	B00057	0.23	0.21	9.1
	B00888	1.4	1.6	-13.3
	B01113	0.09	0.10	-10.5
	B01131	0.15	<0.1	-
	B01136	0.21	0.14	40.0
	B05888	0.67	0.38	55.2
	B05919	0.10	0.11	-9.5
	B06056	0.10	<0.1	-
	B06091	0.76	0.60	23.5
	B06115	1.2	1.0	18.2
	B07135	0.91	0.95	-4.3
	B07137	0.30	0.25	18.2
	B07416	0.15	<0.1	-
	B07417	0.16	0.16	0.0
	B07429	0.29	0.24	18.9
	B08414	0.54	0.56	-3.6
	B08415	0.25	0.26	-3.9
	B08416	0.48	0.47	2.1
	B08427	0.33	0.32	3.1
	B08434	0.29	<0.1	-

TABLE 4

Results of Fish Samples Split with EPA - Region IV
for Pesticide and PCB Analyses

Parameter	LAB #	LAB: EPA (mg/kg)***	LAB: TVA (mg/kg)***	% Relative Error
4,4'DDT	B00888	<0.2	0.12*	-
4,4'DDD	B00888	<0.2	0.12*	-
Heptachlor Epoxide	B00888	<0.03	0.04*	-
Chlordane	B00888	0.72**	<0.01	-
4,4'-DDE	B01113	0.02	<0.01	-
Chlordane	B01113	0.12**	<0.01	-
4,4'-DDE	B01131	0.059	0.06	-1.7
4,4'-DDD	B01131	<0.1	0.10*	-
Chlordane	B01131	0.23**	<0.1*	-
Endrin Aldehyde	B01131	<0.07	0.04*	-
Heptachlor Epoxide	B01131	<0.02	0.02*	-
4,4'-DDT	B01136	<0.3	0.01	-
4,4'-DDE	B01136	<0.3	0.11	-
4,4'-DDD	B01136	<0.3	0.14	-
Endrin Aldehyde	B01136	<0.2	0.06	-
Chlordane	B01136	0.41**	<0.01	-
PCB, Total	B04351	0.46	0.10	129.
	B04352	0.88	0.60	37.8
	B04385	1.69	0.85	66.1
	B04386	2.20	0.6	114.
	B04406	2.48	1.50	49.2
	B01131	0.74	1.8	-83.5
	B01136	2.3	3.0	-26.4
	B0888	2.9	3.1	-6.7
	B0113	0.77	<.1	-

*Results questionable because of presence of PCB's.
**Only presumptive evidence of the presence of the material.
***Only detectable concentrations listed.

JWB:PS, 3-1-85

0145F
FOE 0066V

TABLE 5

Results of Fish Samples Split with EPA-Region IV
for Volatile Organics Analyses

Parameter	LAB #	LAB: EPA (mg/kg)**	LAB: TVA (mg/kg)**	% Relative Error
Chloroform	B01113	0.004*	<0.050	-
Trichloroethylene	B01113	0.010*	<0.050	-
Benzene	B01113	0.010	<0.050	-
Chloroform	B01131	0.006*	<0.050	-
Trichloroethylene	B01131	0.020*	<0.050	-
Tetrachloroethylene	B01131	0.045	<0.050	-
Toluene	B01131	0.14	<0.050	-
Ethyl Benzene	B01131	0.030	<0.050	-
Chloroform	B01136	0.010*	<0.050	-
Trichloroethylene	B01136	0.01*	<0.050	-
Benzene	B01136	0.01*	<0.050	-

*Estimated value.
**Only detectable concentrations listed.

JWB:PS, 3-4-85
0148F
FOE 0067V

TABLE 6

Summary of TVA-EPA Split Fish Data

Parameter	Number of Samples	Number Having Detectable Concentration	Mean % RE	Ratio (EPA/TVA)
Antimony	5	0	-	-
Beryllium	5	0	-	-
Copper	5	5	-10.8	0.90
Lead	5	1	-7.4	0.93
Selenium	5	5	31.9	1.38
Cadmium	20	0	-	-
Chromium	20	3	6.6	1.07
Nickel	20	0	-	-
Mercury	20	16	8.9	1.09
Silver	20	0	-	-
Zinc	5	5	-4.2	0.96
Arsenic	20	0	-	-
PCB, Total	9	8	34.9	1.42
Extractable,Organic	4	0	-	-
Pesticides	See Appendix II - Table 4			
Volatile Organics	See Appendix II - Table 5			

*All less than values were excluded.

JWB:PS, 3-8-85
0157F
FOE 0068V

TABLE 7

Results of Fish Samples Split with EPA-EERF
for Radiological Analyses

Parameter	Units	LAB: EPA (EERF)	LAB: TVA (WARL)
Gross Alpha	pCi/g	-0.01 ± 0.05	0.04 ± 0.06
Gross Beta	pCi/g	32.3 ± 0.6	41 ± 8
Gamma Spectral Analysis			
Cs-137	pCi/g	12.1 ± 0.1	1.8 ± 0.1
Cs-134	pCi/g	0.05 ± 0.01	0.17 ± 0.03
Co-60	pCi/g	0.18 ± 0.02	0.03 ± 0.01
K-40	pCi/g	20.0 ± 0.6	18 ± 1