

Data Report for Residues of Organic Chemicals and Four Metals
in Edible Tissues and Whole Fish for Fish Taken from the Buffalo River, New York

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ABSTRACT

The Buffalo River has a history of chemical inputs from a variety of industrial and municipal sources. Chemical residues remain in sediments and contribute to use impairments for a variety of purposes. A sediment dredging project is proposed to remove contaminants and to restore some of the beneficial uses. As a prerequisite for the dredging project, assessments of chemical residue concentrations in fish are necessary for Human Health Risk Assessment and for an Ecological Risk Assessment. This report provides the chemical residue data necessary for these risk assessments. Further, this information provides a portion of the baseline from which to assess the efficacy of the dredging project.

Due to the variety of potential sources of chemical residues to the Buffalo River and Harbor, the area was divided into four zones in an effort to provide, where possible, associations of chemical residues in fish with residues from point or sediment sources. The data is provided by zone for each analyte.

Chemical residues were examined in edible portions of fish and in the whole body of those same fish. Species analyzed that may be consumed by humans included brown bullhead, carp, largemouth bass, pumpkinseed and yellow perch. A limited number of samples of forage fish were also analyzed and include bluntnose minnows and round goby. Chemical analytes examined include polychlorinated biphenyls (PCBs) expressed as Aroclors, organochlorine pesticides, four metals (arsenic, cadmium, lead and mercury), chlorinated dibenzo-*p*-dioxins (PCDDs) and dibenzofurans (PCDFs), polynuclear aromatic hydrocarbons (PAHs) and brominated diphenyl ethers (BDEs).

It is not the intent of this report to provide any interpretation of the data for the risk assessments. Those assessments are the purview of other authorities. This report does contain some highlights of the data.

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INTRODUCTION

The International Joint Commission, on behalf of the governments of Canada and the United States, defined water quality objectives for waters shared by the two countries within the Great Lakes Water Quality Agreement, as amended in 1987. Within the Agreement, 14 beneficial uses have been defined. If an area is found to have at least one beneficial use that is impaired, it may result in the area being declared an Area of Concern. The Buffalo River is among the 42 Areas of Concern within the Great Lakes basin and was designated in 1987. The Buffalo River declaration was due to a number of beneficial use impairments (BUI) caused by historic and on-going discharges of a wide variety of chemicals or by physical alterations of the ecosystem. Some of the BUIs are:

- restrictions on fish consumption;
- fish tumors and deformities;
- degradation of fish populations;
- degradation of benthos;
- possible tainting of fish flavor;
- possible bird or animal deformities or reproductive problems;
- loss of fish and wildlife habitat; and
- restrictions on dredging activities.

Many of the industries discharging those chemicals are no longer operating. However, the BUIs due to chemical residuals may still be present but require reassessment (BNRiverkeeper, 2005). The cessation of discharges has caused improvements in water quality sufficient to permit habitation of the waters by a greater array of fish species or by previously present species but in greater abundance. These fish are sought by anglers for recreation and/or consumption. However, health advisories recommending restrictions on consumption of fish continue to be in place (Table 1; NYSDOH, 2009). The basis for the health advisories is the presence of excessive concentrations of polychlorinated biphenyls (PCBs), although organochlorine pesticides, mercury, cadmium and lead have also been examined in historical assessments.

A Buffalo River Remedial Action Plan (RAP) was developed by a consortium of agencies, academia and the public. The goal of the RAP is “to restore and maintain the chemical, physical, and biological integrity of the Buffalo River ecosystem in accordance with the Great Lakes Water Quality Agreement”. Among the recommendations for reducing chemical exposures to fish, wildlife and humans, the RAP recommended the remediation of contaminated sediments and inactive hazardous waste sites, and control of point and non-point sources of pollutants. Among the pollutants within the ecosystem are PCBs, PAHs, heavy metals and a variety of industrial organic compounds (NYSDEC, 1989). In a 2005 status report on progress in meeting the goal and objectives of the RAP, it was noted that planning for removal of contaminated sediments was on-going, remediation of 45 inactive hazardous waste sites within the drainage basin was approaching completion, non-point source abatement in the upper drainage basin was being implemented, and track down of illegal connections or illicit

discharges to the 33 combined sewer overflows was being planned (BNRiverkeeper, 2005).

As noted previously, planning for removal of contaminated sediments from the Buffalo River and Harbor is actively being conducted. As part of the planning process, an Ecological Risk Assessment (ERA) and a Human Health Risk Assessment (HHRA) must be conducted to assess actual or potential impacts of chemical residues present in the river and harbor. These risk assessments support three sediment assessment projects, i.e.,

- a project supported by the Great Lakes Legacy Act administered through the U. S. Environmental Protection Agency's Great Lakes National Program Office (EPA-GLNPO);
- a "312 Feasibility Study" pursuant to an agreement with the U. S. Army Corps of Engineers - Buffalo District; and
- the "Upper Buffalo River Remedial Investigation/Feasibility Study (RI/FS)" for the dredging project as required by EPA-GLNPO.

The data generated pursuant to this project provides the pre-dredging baseline data to be used for assessing one measure of efficacy of dredging at post-remediation.

In addition to the data needs for remedial purposes, the chemical residue information included in this report will:

- a) aid the re-evaluation of several BUIs which were the basis for designation of the Buffalo River Area of Concern;
- b) provide for an expanded evaluation of chemical residues to now include chlorinated dioxins and furans [PCDD/Fs], polynuclear aromatic hydrocarbons [PAHs], brominated diphenyl ethers [BDEs], and arsenic in fish;
- c) provide for an assessment of an expanded array of fish species which have been exposed to chemical residues;
- d) provide a basis for a limited assessment of temporal changes in chemical residues; and
- e) provide a basis for considering the pursuit of a natural resource damage claim for injuries to natural resources in or along the Buffalo River.

METHODS

Field and laboratory methods

This project required the cooperative efforts of several agencies and laboratories which are enumerated below.

In this study, the river was divided into the inner harbor and four sections in an attempt to represent zones potentially impacted by various industries located along the river (Figure 1). The four zones are described below.

Zone 1	The Buffalo (City) Ship Canal south of the Michigan Street bridge; approximately 1.6 km
Zone 2	Buffalo River from the Michigan Street bridge upstream to approximately 1.3 km upstream of the bridge on Ohio Street; approximately 2.4 km
Zone 3	Buffalo River from approximately 1.3 km upstream of the Ohio Street bridge to the bridge at South Park Avenue; approximately 3.8 km
Zone 4	Bridge at South Park Avenue to the Route 62 bridge upstream of the junction of Buffalo Creek and Cazenovia Creek; approximately 1.6 km

Fish were collected by the U. S. Fish and Wildlife Service (coordinated by the Amherst, NY office) by use of electrofishing. All fish were measured, weighed, an individual tag was applied (Table 2), and placed individually in food grade plastic bags. Fish were kept on ice until frozen the same day. The samples were transported under chain of custody to the NYS Department of Environmental Conservation's (the Department) analytical laboratory at the Hale Creek Field Station in Gloversville, NY.

Staff at the Department's laboratory prepared all samples for chemical analyses. Initial sample preparations were dependent on the species of fish. Bluntnose minnows (*Pimephales notatus*) and round goby (*Neogobius melanostomus*), both representing forage fish species, were composited and ground whole. Carp (*Cyprinus carpio*), pumpkinseed (*Lepomis gibbosus*), largemouth bass (*Micropterus salmoides*) and yellow perch (*Perca flavescens*) were prepared by excising standard filets (scales removed) and reserving the remaining carcass. The weight of the standard filets and the carcass were individually weighed and the individual weights recorded. Brown bullhead (*Ameiurus nebulosus*) were prepared by removing the skin, excising filets and reserving the remaining carcass. As with other edible fish, the edible portion (filets) were weighed and recorded. The bullhead skin plus remaining carcass were combined and weighed, and the weight was recorded as the carcass weight. Table 2 presents the length, whole weight of

the fish as measured in the field, the weight of the filet or edible tissue, the weight of the remaining carcass, and the total weight of the samples following preparation in the laboratory. Some sample mass loss (e.g., liquids) is expected during the preparation of samples but efforts were made to retain as much of the original sample material as possible. Each sample was ground three times, homogenized, placed in labeled containers and frozen in a locked freezer until ready for taking aliquots, sample shipment where necessary, and chemical analysis.

Chemical analyses were conducted by a total of five analytical laboratories. The analyses were conducted on aliquots of appropriate samples distributed by the Department's laboratory under a continuing chain of custody. Aliquots of ground fish were placed in individual chemically clean I-Chem jars, labeled and refrozen. Samples were shipped to participating laboratories in a frozen state in styrofoam shipping containers or in ice chests which were packed with dry ice. Shipments were via Federal Express with overnight delivery to the receiving laboratory. All samples were received in a frozen condition by the laboratories. The participating laboratories conducted a variety of differing analyses. The participating laboratories, the analyte classes determined, and the fish species on which analyses were conducted are summarized in Table 3.

Overall, the chemical analytical methods employed can be summarized as follows:

<u>Analyte group</u>	<u>Analytical methods</u>
PCBs, organochlorine pesticides	NYSDEC OC1.105 (Appendix A); EPA SOP C-91, as amended (Appendix B)
Mercury	EPA Method 245.6
Arsenic, cadmium, lead	EPA SOP C-112 (an ICP/MS method)
Chlorinated dioxins/furans	EPA Method 1613B, or EPA Method 8290
Polynuclear aromatic hydrocarbons	Extraction by EPA Method 3540C followed by EPA Method 8270C-SIM,
Brominated diphenyl ethers	EPA Draft Method 1614, or extraction by EPA Method 3541 followed by EPA Method 8270C-SIM
Lipid	Gravimetric
Moisture	Gravimetric

Standard quality control measures were employed including analysis of blanks, duplicate samples, spiked matrix samples and where required by the method, laboratory control samples, radio-labeled surrogate standards and internal standards. Chemical residue concentrations reported for PAHs, PCDD/Fs, and PBDEs were adjusted by the laboratory for recovery of surrogate compounds.

Whole fish concentrations of each analyte were calculated where both the edible flesh and the remaining carcass of those fish were analyzed. The concentration (conc) in whole fish was calculated using the following formula:

$$\text{Whole fish concentration} = \{[\text{conc}(\text{RC}) \times \text{wt}(\text{RC})] + [\text{conc}(\text{SF}) \times \text{wt}(\text{SF})]\} \div [\text{wt}(\text{RC}) + \text{wt}(\text{SF})],$$

where RC = remaining carcass, SF = standard filet, and wt = weight. For computations, where one concentration is greater than the detection limit and one is below the detection limit, one-half the detection limit was used for the concentration below the detection limit. Where both analyte concentrations are below the detection limit, the largest detection limit is reported.

Data analysis

The data is reported by compound groups for individual fish species, and zones of the Buffalo River. Where analyses for an analyte group have been conducted by two laboratories, the data have been reported separately by laboratory due to differences in analytical methods, the analytes reported, detection limits, data quality, or other possible factors. While this method of data presentation may introduce confusion, it is believed that this method of data of presentation will produce the most accurate representation of the information as reported by each laboratory and will offer the user of this data the greatest latitude in their evaluation and use of the data.

The data summary conventions used to summarize Buffalo River chemical residue data follows. This summary includes the methods employed for handling qualified data, but it should be noted that not all of the five laboratories have used US Environmental Protection Agency conventions for the meaning of data qualifiers. Where the meaning of qualifiers appears to be the same but a differing qualifier notation is applied, the data so qualified will be handled in a manner believed to be consistent.

- When a concentration is below the method detection limit (MDL) or method reporting limit (MRL) or limit of detection (LOD), as indicated by a less than (<) sign, the MDL or MRL is reported and one-half the MDL, MRL or LOD may be used for computations.
- If all values for an analyte in a species and location are less than the MDL, MRL or LOD, the largest reported MDL, MRL or LOD is given as the mean.
- When a concentration is between the MDL or MRL and the estimated quantitation limit (EQL) or reporting limit (RL), a “J” qualifier is noted and the reported value is used for statistical computations. The J qualified value is assumed to represent the best estimate

of the analyte concentration observed. No J qualifiers have been applied to calculated concentrations, e.g., whole body analyte concentrations, means and standard deviations but they would be implicit.

- One laboratory used an “A” qualifier for nearly all detections of chlorinated dioxins and dibenzofurans in carp and brown bullhead. The A qualifier indicates the concentrations reported are lower than the lowest method calibration limit. This qualifier is similar to a J qualifier. The qualifier has been removed from the data as reported here and the data have been accepted for use.

- Blank contamination, noted by a “B” qualifier in the data tables, has been reported for some analytes. The sample value may be similar to the blank value, therefore, the analyte in the tissue sample may or may not be present, or the analyte may be present but at a concentration less than the reported value. The reported value may be biased high. The reported value is used for computations as a conservative approach to assessing the presence or absence of the analyte.

- Various other qualifiers have been reported by the laboratories. Analyte concentrations accompanied by the following qualifiers have been used as reported. While the qualifier describes a potential bias, there is no basis given for using an alternative value. The reported value, as qualified, is used as provided for statistical computations.

- K The analyte identification is acceptable; the reported value may be biased high.
- L The analyte identification is acceptable; the reported value may be biased low.
- Q A quantitative interference was present; the reported value may be an underestimate.
- DPE Polychlorinated diphenyl ether is present for some chlorinated dioxins and dibenzofurans. The concentrations reported may be false positives or an overestimation of the analyte concentration.
- V The qualifier indicates the 2,3,7,8-TCDF concentration has been confirmed by an alternative method. The data is accepted as provided.
- N2 The qualifier indicates separate analyses of the extracts were conducted for five highly brominated diphenyl ethers (BDEs 203, 206, 207, 208 and 209). There is no basis for changing values based on this qualifier. The qualifier was removed for reporting here and the original concentrations as reported were accepted.
- X The reported value may be biased high due to interfering compounds.

- An “E” qualifier or an asterisk (*) qualifier indicates either an interference may be present or the chromatographic peak falls outside the acceptable retention time window (possibly due to the interference). The reported concentration is an estimated maximum possible concentration, however, the concentration and the identity of the compound(s)

cannot be verified. In the case of chlorinated dioxins and furans, an interference by polychlorinated diphenyl ethers is most often the cause for applying an E qualifier. Because interferences cannot be removed with the analytical methods employed, E qualified values are not reported or used for computations. The detection limit was substituted for E qualified data.

- A “P” qualifier was applied to surrogate standards for BDE analyses where the recovery of a radio-labeled surrogate standard is outside acceptance limits. Application of the P qualifier occurs most often with BDE-209, and rarely other surrogate standards. No modifications of original reported data were made. The qualifier was removed for reporting here.

- No estimation is made for missing values. Only reported values, including MDL values as handled above, are used in computations.

2,3,7,8-TCDD toxic equivalents (TEQs) for chlorinated dioxins and furans were computed using toxicity equivalency factors (TEFs) for humans and mammals as adopted by the World Health Organization (Van den Berg *et al.*, 2005), and for birds and fish the TEFs provided in Van den Berg *et al.* (1998) were used (Table 4). Where concentrations were less than the detection limit, human/mammalian TEQs were computed using substituted values of zero and one-half the detection limit. A value of zero was substituted for non-detects when computing TEQs for birds and fish.

PAH potency equivalent concentrations (PECs) for carcinogenic PAHs were calculated using the potency equivalency factors of Nisbet and LaGoy (1992). Other potency factors are available but the factors of Nisbet and LaGoy (1992) produce the greatest PECs. From a human health evaluation standpoint, the resulting PECs may overestimate PAH potency but ultimately will produce the most conservative evaluation of potential PAH carcinogenicity. Some alternative PAH potency equivalency factors schemes have been included in Table 5.

Lastly, BDE data for largemouth bass were obtained via subcontract with a laboratory not originally intended to receive the samples. The laboratory employed EPA Method 8270C-SIM for BDE analysis; Method 8270C-SIM is a semi-volatile organic compound method not approved for BDE analyses. The method lacks sufficient sensitivity for the concentrations of BDEs present and does not eliminate possible interferences sufficiently. Further, the laboratory experienced radio-labeled surrogate recoveries that were frequently outside control limits on the fish samples, particularly for BDE-47C₁₃, although recoveries were acceptable for blanks and laboratory control samples. Therefore, the reliability of the data is in question due to possible chemical interferences and questionable surrogate recovery. The laboratory’s analytical report states concentrations of BDE-47 and BDE-99 may be biased high. Further, the detection limits for the 17 BDE congeners determined were elevated by as much as three orders of magnitude above desired detection limits. Only five BDEs (47, 99, 100, 153, 154) produced reportable concentrations. The data obtained are for information purposes only (Table 29).

Uncertainty

Uncertainty in analyte concentration is obvious for data with qualifiers indicating potential high or low bias (K, L, Q and DPE qualifiers) but the uncertainty has been accepted since the information is judged to be the best estimate of concentration currently available. J qualified data has inherent uncertainty since the true concentration lies between the MDL and the EQL but a more precise concentration is uncertain; the value given is considered the best estimate of the concentration and, therefore, the value is used for computations. A similar action was taken for A qualified data due to its similarity with J qualified data. Uncertainty exists for data with an E qualifier due to the known presence of interfering compounds in unknown quantity, however, the estimated concentration is judged to be unacceptable due to the interference; the MDL is also given and used for computations. Concentrations with a B qualifier for possible blank contamination are uncertain since the source of contamination cannot be determined and the amount of contamination of the sample, if any, is unknown but likely. For conservative treatment of the data, the values as given for data with a B qualifier are accepted but with the implicit knowledge that the analyte may indeed be absent from the sample. For this data report, the alternatives of arbitrarily assigning the detection limit or zero have been rejected.

The presence of many non-detects and the statistical treatment of these values introduces uncertainty. A non-detect indicates the true concentration is known to be range from zero to the reported detection limit but, if the analyte is present, the concentration cannot be quantified accurately by the analytical method employed. Assignment of one-half the detection limit introduces an arbitrary value for which there is no certainty that it approximates a true concentration within the potential range of the non-detect. Therefore, while the computed mean concentration may place the mean concentration in the ballpark of the actual mean concentration, the computed mean concentration lacks precision and may be somewhat higher or lower than the actual value. In addition, the real standard deviation has the potential of being substantially different than the value given.

Helsel (2005) provides alternative methods for determining with greater probability more precise statistical values where non-detects are present in combination with detected concentrations. Those methods are dependent on having sufficient sample numbers, the form or probable form of the distribution of concentrations (e.g., normal, log-normal), and the relative number of non-detects for each analyte and sample type. In this data set, there were insufficient numbers of samples to employ the methods of Helsel (2005) when individual species are examined for a specific analyte within a specific zone of the river. However, in some cases, combining the data for all zones for a species and analyte could produce a large enough sample size to offer the ability to employ at least one of the methods described by Helsel (2005). Further, Helsel (2005) offers means of developing additional information from a data set, particularly when all values for an analyte are reported as non-detect. Where possible, the methods of Helsel (2005) need exploration with these data sets.

RESULTS and DISCUSSION

Overview

The analytical data are reported by analyte groups for edible tissues, the remaining carcass and the calculated whole fish concentrations in the following groups of tables. Reporting is for each of these analytes is by zone within the river/harbor. Each table contains the mean and standard deviation, where it can be calculated, plus the individual raw data values. Where differing laboratories analyzed the same species (but different samples), individual tables are given for each laboratory (exception is for PCBs, organochlorine pesticides and metals where differing labs analyzed metals and the organic compounds). The tables may have several parts which are labeled A, B, etc. after the table number.

<u>Tables</u>	<u>Analyte group(s)</u>
8 - 14	Polychlorinated biphenyls, organochlorine pesticides, lipids, moisture, arsenic, cadmium, lead and mercury
15 - 18	Chlorinated 2,3,7,8-substituted dioxins and furans (PCDD/Fs)
21 - 25	Polynuclear aromatic hydrocarbons (PAHs)
27 - 32	Brominated diphenyl ethers (BDEs)

Summaries of 2,3,7,8-TCDD toxic equivalent concentrations are found in Table 19 for humans and mammals and Table 20 for birds and fish. Summaries of PAH potency equivalent concentrations are found in Table 26.

This report is not meant to make judgments on the edibility of fish for humans or for the acceptability of fish for consumption by wildlife or other fish. As one reference, some regulatory limits or possible criteria for comparative purposes are provided in Table 32. However, judgements about the human health or environmental implications of these data will be the venue of other authorities.

Pertinent comments on each analyte group are provided below.

Data comparability for PCBs and organochlorine pesticides

The presence of excessive concentrations of PCBs in fish was the principal cause for health advice to people to restrict their consumption of fish from the Buffalo River (Table 1). As a consequence, it is particularly important that data quality for PCBs is assured. Two indicators of data quality for PCBs, and organochlorine pesticides, are available. Table 6 provides a

comparison of PCB and organochlorine pesticides data for carp collected in 2004 and for this study in 2007. Since no actions were taken to change contaminant loads within the river in the time between collections, concentrations of the various analytes would be expected to be similar, just as they are. More direct evidence of data comparability is presented in Table 7. Subsamples of select carp and yellow perch were analyzed by both the NYSDEC and USEPA laboratories. In general, the analytical results for PCBs and p,p'-DDE are in overall good agreement. However, for *trans*-nonachlor, the data suggests either a low bias for the DEC laboratory, a high bias for the USEPA laboratory, or the true values may be between the values reported by the two laboratories. The analytical results were significantly correlated (Figure 2) for all three analytes. Concentrations of other organochlorine pesticides were near or below detection limits for all compounds.

Lipids

Lipid concentrations were greatest in carp (average of 11.7 % in edible tissues) and least in yellow perch (average of 0.71 % in edible tissues). Average lipids in pumpkinseed, largemouth bass and brown bullhead were 1.17 %, 1.58 %, and 1.93 %, respectively, in edible tissues. The high lipid levels in carp in relation to the other species of fish is normal.

Polychlorinated biphenyls

The quantitation of PCBs as Aroclor mixtures is a matter of professional judgment. As noted above, two laboratories analyzed PCBs and quantified PCB mixtures differently. The NYSDEC's Hale Creek Field Station quantified Aroclor 1242 and Aroclors 1254/1260 combined. The USEPA Edison, NJ laboratory quantified seven Aroclor mixtures. Aroclors 1254 and/or 1260 were found in most carp but Aroclors 1016, 1221, 1232, 1248 and 1262 were not reported in any sample. Aroclor 1242 was often reported by the NYSDEC laboratory but was not reported as detected in carp by the USEPA lab. For this effort, total PCBs is the most consistent and reliable means to quantify PCBs.

The average (\pm standard deviation) concentrations of PCBs in the edible portions of five species over all locations were:

<u>Species</u>	<u>n</u>	<u>Mean \pm SD</u>
Carp	14	1048 \pm 804 ng/g
Brown bullhead	9	142 \pm 79.5 ng/g
Largemouth bass	20	132 \pm 83.9 ng/g
Pumpkinseed	12	104 \pm 109 ng/g
Yellow perch	8	46.1 \pm 29.3 ng/g

PCBs are lipophilic, therefore, across species they were highly correlated ($r = 0.999$, $p < 0.001$) with lipid content. In carp, total PCBs exceeded 500 ng/g in 10 of 14 samples (71 %), and three

of the 14 (21 %) carp exceeded 2000 ng/g total PCBs; and the maximum total PCB was 2700 ng/g. Only two other samples - both brown bullhead - of edible fish exceeded 500 ng/g total PCB. Greatest PCB concentrations were generally found in Zone 1, the most downstream location.

Whole fish total PCB concentrations were greater than filet concentrations in all species except carp. Carp whole fish:filet total PCB ratios were approximately 1:1 whereas the four other species had whole fish:filet ratios approximating 3:1. Average whole body total PCB concentrations for all locations were:

<u>Species</u>	<u>n</u>	<u>Mean ± SD</u>
Carp	14	1039 ± 695 ng/g
Brown bullhead	9	321 ± 170 ng/g
Largemouth bass	20	371 ± 158 ng/g
Pumpkinseed	12	283 ± 233 ng/g
Yellow perch	8	355 ± 251 ng/g.

Organochlorine pesticides

DDT and metabolites, particularly p,p'-DDE and p,p'-DDD, were the most prominent of the organochlorine pesticides present in Buffalo River fish. As with PCBs, carp contained the greatest p,p'-DDE and p,p'-DDD concentrations with maximum concentrations appearing in Zone 1, the most downstream location. Total DDT values in standard filets exceeded 100 ng/g in 50 % of carp but in none of the other species samples. The maximum total DDT value was 320 ng/g (non-detects for four of the six analytes were assigned zero).

The average concentrations (ng/g wet weight) of the two primary DDT analytes in standard filets for all locations were:

<u>Species</u>	<u>n</u>	<u>p,p'-DDE Mean ± SD</u>	<u>p,p'-DDD Mean ± SD</u>
Carp	14	98.7 ± 67.0	45.7 ± 46.7
Brown bullhead	9	6.20 ± 3.30	2.08 ± 1.23
Largemouth bass	20	6.16 ± 2.48	2.16 ± 3.08
Pumpkinseed	12	3.05 ± 1.81	1.38 ± 0.72
Yellow perch	8	1.50 ± 1.07	1.13 ± 0.35*

* More than 80 % of values were below the detection limit of 2 ng/g.

Similarly, the whole body concentrations (ng/g wet weight) of these analytes were:

<u>Species</u>	<u>n</u>	<u>p,p'-DDE</u> <u>Mean ± SD</u>	<u>p,p'-DDD</u> <u>Mean ± SD</u>
Carp	14	96.3 ± 54.5	40.8 ± 39.2
Brown bullhead	9	15.5 ± 10.8	5.45 ± 4.68
Largemouth bass	20	20.4 ± 7.96	5.45 ± 3.04
Pumpkinseed	12	9.68 ± 3.70	4.08 ± 1.48
Yellow perch	8	13.8 ± 5.55	5.63 ± 3.38

The o,p'-DDT compounds were generally below detection limits. Whole fish: filet ratios for p,p'-DDE and p,p'-DDD were generally about 3:1 for all species except carp where the ratio was 1:1.

All other organochlorine pesticides (mirex, photomirex, hexachlorobenzene (HCB), chlordane and metabolites, heptachlor and its epoxide, aldrin, hexachlorocyclohexanes (HCH), dieldrin, methoxychlor, endrin and its aldehyde, and the endosulfans) examined were generally either not detected or concentrations approximated their detection limits.

Metals

Arsenic concentrations were greatest in carp (400 ng/g or less) and least in brown bullhead (about 50 ng/g or less); other species have intermediate levels. No strong differences in concentration between edible tissues and whole fish were apparent, although whole fish tended to contain somewhat greater arsenic concentrations. Arsenic was not analytically speciated, thus the contributions of various forms of arsenic to total arsenic concentrations are not known.

Cadmium levels were usually less than 20 ng/g, and often less than detectable levels. Carp were an exception with cadmium values approaching 100 ng/g in some whole fish.

Lead concentrations were generally less than 100 ng/g in edible portions of all fish and frequently less than 20 ng/g. In contrast, lead concentrations in whole fish were three to ten times greater than edible tissues due primarily to its accumulation in bone. No distinct species differences were apparent either for concentrations in edible tissues or in whole fish although largemouth bass tended to have some of the lowest lead concentrations.

Mercury concentrations were greatest in largemouth bass (300 ng/g or less) and least in brown bullhead, pumpkinseed and yellow perch (100 ng/g or less). Carp contained 200 ng/g mercury or less. There were no distinct differences in mercury levels between edible tissues and the whole fish, likely due to the affinity of mercury to proteins. No spatial differences were apparent in mercury levels.

Chlorinated dibenzo-*p*-dioxins and dibenzofurans

Concentrations of the 17 chlorinated dioxins and furans may be characterized as low (Tables 15 through 18). Three of the four major analytes contributing to dioxin-like activity (2,3,7,8,-TCDD, 1,2,3,7,8-PeCDD, and 2,3,4,7,8-PeCDF) all had concentrations generally less than 1.0 pg/g. Samples of carp contained levels of 2,3,7,8,-TCDF of 7 pg/g or less while other species had less than 1.0 pg/g TCDF. Concentrations of each dioxin or furan were generally similar in both the filet and whole fish.

Concentrations of dioxins and furans in the fish were converted to 2,3,7,8-TCDD toxic equivalent (TEQ) concentrations using toxicity equivalency factors (TEFs) in Table 4 for humans and mammals, and differing TEFs for birds and fish as well. All TEQs for humans and mammals (Table 19) were generally less than 2.5 pg/g for all species of fish analyzed and for each of the two portions of fish analyzed. TEQs were computed for birds and fish using whole fish concentrations since the entire fish may be consumed by piscivorous wildlife or fish. For birds TEQs were about 7.0 pg/g for carp but less than 1.0 for other species of fish. Similarly, TEQs for fish were less than 3.0 pg/g in carp and 1.0 pg/g or less for other species of fish (Table 20). TEQs excluding and including detection limit consideration differed little in most cases.

Polynuclear aromatic hydrocarbons

PAHs were analyzed by two laboratories and each laboratory produced data for differing sets of PAH analytes. Pace Analytical Services Inc. produced data for 34 PAHs or PAH groups whereas SGS Environmental Services, Inc. produced a more restricted data set for 18 PAHs, primarily potentially carcinogenic PAHs. Consequently, the data are presented separately for each laboratory in this report (Tables 21 through 25).

With few exceptions, concentrations of many PAHs can be characterized as generally low. Indeed, several of the potentially carcinogenic PAHs were seldom, if ever, detected in the samples analyzed. These latter analytes include:

Benzo(*a*)pyrene,
Dibenzo(*a,h*)anthracene,
Benzo(*a*)anthracene,
Benzo(*b*)fluoranthene,
Benzo(*k*)fluoranthene,
Benzo(*g,h,i*)perylene, and
Indeno(1,2,3-*c,d*)pyrene.

Bluntnose minnows (Table 21) contain most of the potentially carcinogenic PAHs (indeed, most of the PAHs examined) although concentrations were generally less than 2.0 ng/g. This is in contrast to their general absence in the other species examined. However, benzo(*a*)pyrene was detected on one largemouth bass (Table 24D, Zone 4) at 6.0 ng/g in the carcass which translated

to 4.7 ng/g in whole fish, and one bass from Zone 2 (Table 24A) at 0.2 ng/g in whole fish. Dibenzo(*a,h*)anthracene was found in one carp from Zone 1, the Buffalo Ship Canal, at 3.2 ng/g in whole fish (Table 23A).

Other highlights for PAHs in Buffalo River fish are listed below.

- PAH concentrations in carp were greatest at downstream locations. Overall ranking is Zone 1 >> Zone 3 = Zone 4. Carp from Zone 1 had substantially elevated concentrations of naphthalene, 1-methylnaphthalene, 2-methylnaphthalene, acenaphthene, acenaphthylene, fluorene and phenanthrene. Indeed, in one fish naphthalene was 1100 ng/g in edible tissue and over 1000 ng/g in the whole fish. The concentrations of these analytes are one to two orders of magnitude greater than in fish from the other zones (Figure 3).

- The single brown bullhead from Zone 1 (Table 22) had the greatest PAHs concentrations which were a factor of three greater than upstream locations.

- Pumpkinseed contain low levels of all analytes with concentrations generally less than 5.0 ng/g and most analytes less than 2.0 ng/g. Contrary to other species, 2-methylnaphthalene was at its greatest concentration in Zone 4.

- Elevated detection limits in one laboratory's analyses of largemouth bass (Tables 24C and 24D) have disguised probable presence of PAHs in some bass as evidenced by Tables 24A and 24B.

Potency equivalency concentrations (PECs) were computed for potentially carcinogenic PAHs using potency equivalency factors (PEFs) of Nesbit LaGoy (1992) although other PEF schemes are available. The PEFs available are designed for human health assessments only. The factors of Nesbit and LaGoy (1992) were used since they produce the greatest PECs of the alternative PEFs available. The logic is that if the greatest PECs that can be produced do not cause a human health or environmental concern regarding consumption of fish, neither will other PEF schemes. Other PEF schemes have much lower PEF values (generally 1.0 or less) for dibenzo(*a,h*)anthracene. Using a lower PEF of 1.0 for dibenzo(*a,h*)anthracene would reduce the PECs by about 60 percent where one-half the detection limits were included in PEC computations.

When only detected analytes are considered, the PEC for carp (whole fish) in Zone 1 averaged 6.7 ng/g, bluntnose minnows averaged 2.4 ng/g, and all other species (including carp from Zone 4) were less than 1.0 ng/g (Table 26). However, when non-detects are included, the PECs increased by one to two orders of magnitude in most cases. This is due to two primary factors: 1) the high PEF value (i.e., 5.0) for dibenzo(*a,h*)anthracene, and 2) elevated detection limits.

Brominated diphenyl ethers

BDEs were analyzed by two laboratories, Pace and Columbia. Pace provided data for 50 BDE congeners although coelutions of congeners resulted in quantitation of 47 peaks (Tables 27, 28, 29 and 31). Columbia quantified 17 BDE congeners in largemouth bass (Table 30). However, note that due to analytical quality concerns enumerated previously, data in Table 30 are for informational purposes only. Since there were differing numbers of BDE congeners analyzed, the question was raised about whether the lesser number of BDE congeners would reasonably estimate total available BDEs in the samples. Using the larger data set, a comparison of the total BDE concentrations calculated using the two arrays of congeners showed that total BDE concentrations by the smaller Columbia array would yield about 94 percent of the total BDE concentrations produced by the Pace array (Table 32). The analyses by Columbia did not quantitate five BDE congeners (49, 51, 105, 119/120, 155) that contributed at least one percent of the total BDE concentration in at least one fish. Total BDE concentrations in edible tissues of pumpkinseed ranged from about 5200 ng/g to 9300 ng/g, in brown bullhead from 7400 ng/g to 29,100 ng/g, and in carp from 18,600 ng/g to 54,100 ng/g. Whole fish total BDE concentrations were greater than edible tissue total BDE concentrations by factors of 1.9 for brown bullhead and 2.7 for pumpkinseed, but were essentially equivalent (factor of 1.04) for carp.

Fifteen BDE congeners (13 BDE chromatographic peaks due to coelution) comprised at least one percent of the total BDE concentrations in at least one fish. BDE-47 and BDE-99 were dominant with lesser quantities of BDE-100, BDE-153, BDE-154 and BDE-28/33 contributing significantly to the total concentration (Table 32). However, the BDE pattern for the four fish species differs. Carp and bluntnose minnows are dominated by BDE-47 whereas brown bullhead and pumpkinseed have shared dominance by BDE-47 and BDE-99 (Figure 4). Relative contributions of the BDE congeners were similar for edible tissues and whole fish within each species.

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Chemical analyses were provided by:

New York State Department of Environmental Conservation
Hale Creek Field Station, Analytical Services Unit
182 Steele Avenue Extension
Gloversville, NY 12078

US Environmental Protection Agency
2890 Woodbridge Avenue
Edison, NJ 08837-3679

Pace Analytical Services, Inc.
1700 Elm Street
Minneapolis, MN 55414

SGS Environmental Services Inc. (formerly Paradigm Analytical Laboratories, Inc.)
5500 Business Drive
Wilmington, NC 28405

Columbia Analytical Services, Inc.
1317 South 13th Avenue
Kelso, WA 98626

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Table 1: History of health advisories for fish in the Buffalo River and Buffalo Harbor.

Water	Species	Health Advice	DOH ¹ News Release Date		Cause
			Initiated	Rescinded	
Buffalo River	Carp	Eat no more than one meal per month; women of childbearing age and children under 15 years of age should not eat carp	11/15/1984	7/13/1987	PCB
	Carp	Eat none	7/13/1987		PCB
	All other fish species	Women of childbearing age and children under 15 years of age should not eat any fish from this water	11/15/1984		PCB
Buffalo Harbor	Carp	Eat none	6/21/1988		PCB
	All other fish species	Women of childbearing age and children under 15 years of age should not eat any fish from this water	6/21/1988		PCB

¹ DOH = New York State Department of Health. Health advisories not rescinded remain in effect (NYSDOH, 2009).

Table 2: Fish sample descriptions for fish collected from the Buffalo River, October 2007.

Tag No.	DEC Lab No.	Species	Zone	Length (mm)	Weight (g)			
					Field	Edible tissue	Carcass	Lab Whole ^{&}
416	07-0036-H	Round goby	Inner Harbor	#-	20	-	-	20
437	07-0037-H	Round goby	Inner Harbor	#-	16	-	-	16
346	07-0038-H	Round goby	Inner Harbor	#-	8.0	-	-	8.0
339	07-0039-H	Largemouth bass	1	450	1500	613.15	929.77	1543
327	07-0040-H	Largemouth bass	1	315	325	184.37	277.58	462
386	07-0041-H	Largemouth bass	1	295	450	135.48	169.90	305
311	07-0042-H	Largemouth bass	1	290	350	135.06	195.17	330
305	07-0043-H	Largemouth bass	1	300	430	173.07	257.21	430
371	07-0044-H	Brown bullhead	1	230	270	38.32	113.25	152
389	07-0045-H	Brown bullhead	1	362	520	134.04	453.49	588
380	07-0046-H	Pumpkinseed	1	135	50	17.10	25.18	42.3
334	07-0047-H	Pumpkinseed	1	128	40	14.85	20.34	35.2
332	07-0048-H	Pumpkinseed	1	136	45	17.28	22.77	40.1
343	07-0049-H	Pumpkinseed	1	130	42	13.95	21.29	35.2
387	07-0050-H	Pumpkinseed	1	127	33	13.47	21.88	35.4
379	07-0051-H	Carp	1	689	6180	2220	3860	6080
388	07-0052-H	Carp	1	768	7350	2670	4520	7190
352	07-0053-H	Carp	1	653	4500	1510	2735	4245
314	07-0054-H	Carp	1	670	4900	1775	2970	4745
373	07-0055-H	Carp	1	621	3700	1700	1770	3470
396	07-0056-H	Yellow perch	1	195	90	27.70	49.14	76.8
398 A	07-0057-H	Bluntnose minnow	2	#-		-	-	73
398 B	07-0058-H	Bluntnose minnow	2	#-		-	-	73

Tag No.	DEC Lab No.	Species	Zone	Length (mm)	Weight (g)			
					Field	Edible tissue	Carcass	Lab Whole ^{&}
385	07-0059-H	Pumpkinseed	2	169	100	34.52	57.11	91.6
378	07-0060-H	Pumpkinseed	2	155	70	25.80	40.99	66.78
344	07-0061-H	Pumpkinseed	2	172	92	30.64	58.42	89.1
341	07-0062-H	Pumpkinseed	2	132	46	15.02	26.84	41.9
384	07-0063-H	Pumpkinseed	2	132	40	13.93	23.64	37.6
399	07-0064-H	Largemouth bass	2	367	872	299.08	494.4	793
394	07-0065-H	Largemouth bass	2	315	532	192.61	291.48	484
377	07-0066-H	Largemouth bass	2	282	352	122.01	211.82	334
392	07-0067-H	Largemouth bass	2	301	428	158.60	258.06	417
330	07-0068-H	Largemouth bass	2	290	404	158.61	220.55	379
333	07-0069-H	Yellow perch	2	210	104	34.84	65.43	100.3
390	07-0070-H	Yellow perch	2	169	60	24.81	29.6	54.4
391	07-0071-H	Brown bullhead	2	253	226	46.66	164.57	211
376	07-0072-H	Brown bullhead	2	240	202	49.86	136.78	187
441	07-0073-H	Bluntnose minnow	3	#-	84	-	-	84
443	07-0074-H	Pumpkinseed	3	122	32	10.41	20.04	30.4
428	07-0075-H	Pumpkinseed	3	137	47.5	16.25	27.03	43.3
454	07-0076-H	Pumpkinseed	3	154	72.5	28.05	41.66	69.77
442	07-0077-H	Pumpkinseed	3	160	97	30.88	52.61	83.5
439	07-0078-H	Pumpkinseed	3	164	95	28.93	51.30	80.2
430	07-0079-H	Largemouth bass	3	302	225	155.71	233.12	389
427	07-0080-H	Largemouth bass	3	280	360	124.76	222.23	347
435	07-0081-H	Largemouth bass	3	220	330	139.05	178.68	318
444	07-0082-H	Largemouth bass	3	319	500	242.8	345.35	588
382	07-0083-H	Largemouth bass	3	206	140	44.32	73.41	118
426	07-0084-H	Yellow perch	3	159	41.5	14.05	27.81	41.9
445	07-0085-H	Yellow perch	3	203	100	36.96	61.39	98.4

Tag No.	DEC Lab No.	Species	Zone	Length (mm)	Weight (g)			
					Field	Edible tissue	Carcass	Lab Whole ^{&}
433	07-0086-H	Yellow perch	3	219	135	49.28	58.35	107.6
432	07-0087-H	Yellow perch	3	176	64	28.17	33.34	61.5
372	07-0088-H	Yellow perch	3	161	49	19.11	35.06	54.2
438	07-0089-H	Brown bullhead	3	290	290	63.22	203.57	268
431	07-0090-H	Brown bullhead	3	238	195	53.62	116.86	170
440	07-0091-H	Brown bullhead	3	220	156	34.17	102.9	137
434	07-0092-H	Brown bullhead	3	265	225	53.6	152.25	206
436	07-0093-H	Brown bullhead	3	275	329	71.34	208.86	280
338	07-0094-H	Carp	3	615	3300	1570	1710	3280
308	07-0095-H	Carp	3	618	4050	1610	2270	3880
381	07-0096-H	Carp	3	580	3200	1550	1660	3210
383	07-0097-H	Carp	3	632	4150	1810	2140	3950
410	07-0098-H	Carp	4	652	5000	2070	2720	3790
403	07-0099-H	Carp	4	615	3800	1150	2380	3530
405	07-0100-H	Carp	4	750	6290	2120	3900	6020
406	07-0101-H	Carp	4	684	4810	1940	2660	4600
414	07-0102-H	Carp	4	602	3300	1610	1560	3170
407	07-0103-H	Pumpkinseed	4	135	48	17.29	26.74	44.0
417	07-0104-H	Pumpkinseed	4	141	55	23.02	28.13	51.2
411	07-0105-H	Pumpkinseed	4	135	47	16.58	26.15	42.7
412	07-0106-H	Pumpkinseed	4	130	48	16.11	28.31	44.4
408	07-0107-H	Pumpkinseed	4	151	72	36.51	42.24	78.8
419	07-0108-H	Largemouth bass	4	299	390	158.65	231.35	390
415	07-0109-H	Largemouth bass	4	271	250	87.05	155.02	242
409	07-0110-H	Largemouth bass	4	294	410	135.63	257.83	394
402	07-0111-H	Largemouth bass	4	280	310	108.16	181.28	289
418	07-0112-H	Largemouth bass	4	295	320	125.16	190.73	316

Composite of whole fish. The number of fish in each round goby sample are: 07-0036-H 6 fish; 07-0037-H 4 fish; 07-0038-H 5 fish.

The number of fish in each bluntnose minnow sample are: 07-0057-H 22 fish; 07-0058-H 23 fish; 07-0073-H 54 fish.

& Field recorded whole weights differ slightly from whole weights recorded here.

Table 3: Laboratories conducting chemical analysis of fish tissues from the Buffalo River, and the species and analyte groups analyzed.

<u>Laboratory</u>	<u>Fish species</u>	<u>Analytes</u>
NYS Dept. of Environmental Conservation Hale Creek Field Station 182 Steele Avenue Extension Gloversville, NY 12078	Brown bullhead Largemouth bass Pumpkinseed Yellow perch Bluntnose minnows Round goby	PCBs, organochlorine pesticides, lipids, moisture
	All species	Mercury
U. S. Environmental Protection Agency 2890 Woodbridge Avenue Edison, NY 08837-3679	Carp	PCBs, organochlorine pesticides, lipids, moisture
	All species	Arsenic, cadmium, lead
Pace Analytical Services, Inc. 1700 Elm Street, Suite 200 Minneapolis, MN 55414	Bluntnose minnows Brown bullhead Carp Pumpkinseed	PAHs, BDEs, PCDD/Fs, lipids
	Largemouth bass	PAHs
SGS Environmental Services, Inc. ¹ 5500 Business Drive Wilmington, NC 28405	Brown bullhead	PCDD/Fs
	Carp	PAHs, PCDD/Fs
	Largemouth bass	PAHs
Columbia Analytical Services ² 1317 South 13 th Avenue Kelso, WA 98626	Largemouth bass	BDEs

¹ Formerly: Paradigm Analytical Laboratories, Inc.

² Subcontractor to SGS Environmental Services, Inc.

Table 4: 2,3,7,8-TCDD toxicity equivalency factors (TEFs)

<u>Dioxin or Furan</u>	<u>TEF</u>		
	<u>Humans/ Mammals</u> ¹	<u>Birds</u> ²	<u>Fish</u> ²
2,3,7,8-TCDD	1	1	1
1,2,3,7,8-PeCDD	1	1	1
1,2,3,4,7,8-HxCDD	0.1	0.05	0.5
1,2,3,6,7,8-HxCDD	0.1	0.01	0.01
1,2,3,7,8,9-HxCDD	0.1	0.1	0.01
1,2,3,4,6,7,8-HpCDD	0.01	<0.001	0.001
OCDD	0.0003	0.0001	<0.0001
2,3,7,8-TCDF	0.1	1	0.05
1,2,3,7,8-PeCDF	0.03	0.1	0.05
2,3,4,7,8-PeCDF	0.3	1	0.5
1,2,3,4,7,8-HxCDF	0.1	0.1	0.1
1,2,3,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,7,8,9-HxCDF	0.1	0.1	0.1
2,3,4,6,7,8-HxCDF	0.1	0.1	0.1
1,2,3,4,6,7,8-HpCDF	0.01	0.01	0.01
1,2,3,4,7,8,9-HpCDF	0.01	0.01	0.01
OCDF	0.0003	0.0001	<0.0001

¹ Van den Berg *et al.* (2006).

² Van den Berg *et al.* (1998).

Table 5: Polycyclic aromatic hydrocarbon (PAH) Potency Equivalency Factors (PEFs).

PAH	Potency relative to:				
	Benzo(a)pyrene				2,3,7,8-TCDD ¹
	Nesbit & LaGoy, 1992	NYSDEC/ NYSDOH, 2006	Bolger <i>et al.</i> , 1996	USEPA, 2002	Barron <i>et al.</i> , 2004
Dibenz(a,h)anthracene	5	1	1.05 ²	1	0.000272
Benzo(a)pyrene	1	1	1	1	0.00024375
Benzo(a)anthracene	0.1	0.1	0.014	0.1	0.0002
Benzo(b)fluoranthene	0.1	0.1	0.11	0.1	0.000166
Benzo(k)fluoranthene	0.1	0.01	0.07	0.01	0.00128
Indeno(1,2,3-c,d)pyrene	0.1	0.1	0.25	0.1	0.00188
Anthracene	0.01				NR ³
Benzo(g,h,i)perylene	0.01		0.03		0.0000102
Chrysene	0.01	0.01	0.013	0.001	0.0000659
Acenaphthene	0.001				NR
Acenaphthylene	0.001				NR
Fluoranthene	0.001		0.02		0.000000002
Fluorene	0.001				NR
2-Methylnaphthalene	0.001				NR
Naphthalene	0.001				NR
Phenanthrene	0.001				NR
Pyrene	0.001		0.13		0.000000385
1-Methylnaphthalene					NR
2-Methylphenanthrene					0.0000395
Benzo(e)pyrene					0.000027
Perylene					0.0000233

¹ Proposed fish potency factors (FPF) relative to 2,3,7,8-TCDD.

² Originally reported as 4.05, but corrected in Field *et al.* (1999).

³ NR = Not reactive (inactive) in assay system.

Table 6: Comparison of lipid, polychlorinated biphenyl and organochlorine pesticide concentrations in edible tissues of carp taken from the Buffalo River in April 2004 and October 2007.

Parameter	Concentration (ng/g wet weight)			
	April 2004 ¹		October 2007 ²	
	Mean ± SD	Min. – Max.	Mean ± SD	Min. – Max.
n	15		14	
Length (mm)	616 ± 70	471 – 747	654 ± 55	580 - 768
Weight (g)	5779 ± 2722	1740 – 11350	4609 ± 1256	3200 - 7350
Moisture (%)	71.36 ± 5.57	59.35 – 77.97	66.8 ± 7.64	53 - 78
Lipid (%)	10.12 ± 6.83	2.66 – 25.32	11.73 ± 6.49	1.6 - 23
Aroclor 1016	nd ³		<210	<23 - <210
Aroclor 1221	nd		<210	<23 - <210
Aroclor 1232	nd		<210	<23 - <210
Aroclor 1242	324 ± 322	20 - 950	<210	<23 - <210
Aroclor 1248	nd		<210	<23 - <210
Aroclor 1254	see below		476 ± 314	98 - 1000
Aroclor 1260	see below		572 ± 527	120 - 1700
Aroclor 1262	nd		<210	<23 - <210
Aroclor 1254/1260	759 ± 362	252 - 1292	see above	
Total PCB (DL=0)	1083 ± 547	296 – 2127	1041 ± 808	218 - 2700
p,p'-DDE	57 ± 38	11 - 136	98.7 ± 67.0	22 - 210
p,p'-DDD	19 ± 26	24 - 102	45.7 ± 46.7	<3.8 - 130
p,p'-DDT	6.2 ± 5.1	<2 - 16	<38	<3.8 - <38
o,p'-DDE	<5	<5 - <5	<19	<1.9 - <19
o,p'-DDD	<5	<5 - <5	<19	<1.9 - <19
o,p'-DDT	<5	<5 - <5	<19	<1.9 - <19
Oxychlordane	10 ± 8.8	<5 - 25	<19	<1.9 - <19
cis-Chlordane	9.4 ± 5.9	<5 - 17	<19	<1.9 - <19
trans-Chlordane	<5	<5 - <5	<19	<1.9 - <19
cis-Nonachlor	3.2 ± 1.5 ⁴	<5 - 6.5	6.9 ± 4.4 ⁴	<2.3 - <19 (16) ⁵
trans-Nonachlor	7.6 ± 4.1	<5 - 14	24.8 ± 17.6 ⁴	<7.5 - 60
Mirex	<2	<2 - <2	nd	
Photomirex	<5	<5 - <5	nd	
HCB	2.6 ± 2.4	<2 - 9.6	<19	<1.9 - <19
Dieldrin	nd		<38	<3.8 - <38
Aldrin	<5	<5 - <5	<19	<1.9 - <19
Heptachlor	<5	<5 - <5	<19	<1.9 - <19
Heptachlor epoxide	<5	<5 - <5	<19	<1.9 - <19
Endrin	nd		<38	<3.8 - <38
Endrin aldehyde	nd		<38	<3.8 - <38
Methoxychlor	nd		<190	<19 - <190
α-HCH	<5	<5 - <5	<19	<1.9 - <19
β-HCH	<5	<5 - <5	<19	<1.9 - <19
γ-HCH	<5	<5 - <5	<19	<1.9 - <19
-HCH	<5	<5 - <5	<19	<1.9 - <19

<u>Parameter</u>	<u>Concentration (ng/g wet weight)</u>			
	<u>April 2004¹</u>		<u>October 2007²</u>	
	<u>Mean ± SD</u>	<u>Min. – Max.</u>	<u>Mean ± SD</u>	<u>Min. – Max.</u>
Endosulfan I	nd		4.9 ± 2.5 ⁴	<2.3 - <19 (2.0) ⁵
Endosulfan II	nd		<38	<3.8 - <38
Endosulfan sulfate	nd		<38	<3.8 - <38

¹ Analyses performed by NYSDEC, Gloversville, NY.

² Analyses performed by USEPA, Edison, NJ.

³ nd = Not determined.

⁴ 80% or more of values were below detection limits.

⁵ Greatest detected concentration where the detected value is less than the largest detection limit.

Table 7: Comparison of two laboratories analytical results (ng/g wet weight) for lipids, PCBs and organochlorine pesticides in carp and yellow perch samples¹ from the Buffalo River in October 2007.

DEC ID No.	Lipid (%)		Total PCB		p,p'-DDE		<i>trans</i> -nonachlor	
	NYSDEC	USEPA	NYSDEC	USEPA	NYSDEC	USEPA	NYSDEC	USEPA
07-0051-H	26.65	21	1472	2020	171	190	25	60
07-0051-RC	18.09	15	1066	1180	124	120	18	35
07-0052-H	13.65	9.8	2030	2210	155	190	9.08	28
07-0052-RC	12.93	7.8	1997	1650	152	140	8.74	14
07-0053-H	13.92	13	1582	1830	163	170	9	23
07-0053-RC	21.02	11	2006	1480	205	140	11	21
07-0095-H	13.46	11	849	830	48.6	50	12.2	21
07-0095-RC	21.44	8.9	1182	550	67.9	44	17.1	19
07-0097-H	20.27	14	1086	780	54.3	77	11.7	31
07-0097-RC	18.99	9.7	1060	540	52.7	49	11.5	21
07-0100-H	2.34	1.6	644	650	46.4	46	5.32	9
07-0100-RC	4.67	5.7	1227	2250	91.6	150	10.1	29
07-0056-RC	3.34	2.7	341	300	29	24	<5	<1.9
07-0069-RC	4.40	3.5	906	1050	29	36	7	17

¹ Samples 07-0056-RC and 07-0069-RC are yellow perch; all other samples are carp.

Table 8: PCB, organochlorine pesticide and metal concentrations in whole bluntnose minnows and round gobies taken from the Buffalo River; October 2007.

Parameter	Concentration (ng/g wet weight) in:		
	Bluntnose minnow		Round goby
	Zone 2	Zone 3	Inner Harbor
n	45/2 ^a	54/1 ^a	15/3 ^a
Tag No.	398A, 398B	441	416, 437, 346
DEC ID No.	07-0057-H 07-0058-H	07-0073-H	07-0036-H 07-0037-H 07-0038-H
Lab ID No. (for As, Cd, Pb)	AK00275 AK00276	AK00277	AK00278 AK00279 AK00280
Moisture (%)	77.32 ^b 77.21, 77.42	76.39	79.00 ± 2.05 ^b 81.38, 77.94, 77.70
Lipid (%)	4.035 4.03, 4.04	2.46	2.19 ± 0.72 1.42, 2.30, 2.85
Aroclor 1242	197 180, 213	94.6	76.0 ± 53.5 28.5, 65.5, 134
Aroclor 1254/1260	229 217, 241	90.0	66.8 ± 23.8 41.2, 88.2, 71.1
p,p'-DDE	16.4 15.4, 17.4	5.14	6.22 ± 2.54 3.66, 8.74, 6.26
p,p'-DDD	5.46 5.07, 5.85	<2	3.24 ± 1.95 <2, 4.56, 4.16
p,p'-DDT	2.33 2.15, 2.50	<2	All <2
o,p'-DDE	Both <5	<5	All <5
o,p'-DDD	Both <5	<5	All <5
o,p'-DDT	Both <5	<5	All <5
Mirex	Both <2	<2	All <2
Photomirex	Both <5	<5	All <5
HCB	Both <2	<2	All <2

Parameter	Concentration (ng/g wet weight) in:		
	Bluntnose minnow		Round goby
	Zone 2	Zone 3	Inner Harbor
Oxychlordanes	Both <5	<5	All <5
<i>trans</i> -chlordanes	Both <5	<5	All <5
<i>cis</i> -chlordanes	Both <5	<5	All <5
<i>trans</i> -nonachlor	Both <5	<5	All <5
<i>cis</i> -nonachlor	Both <5	<5	All <5
Heptachlor	Both <5	<5	All <5
Heptachlor epoxide	Both <5	<5	All <5
Aldrin	Both <5	<5	All <5
α -HCH	Both <5	<5	All <5
β -HCH	Both <5	<5	3.81 \pm 2.26 <5, <5, 6.42
γ -HCH	Both <5	<5	All <5
Metals			
Arsenic	205 210, 200	140	143 \pm 37.9 100, 170, 160
Cadmium	19 19, 19	9.0	6.67 \pm 0.58 7.0, 7.0, 6.0
Lead	870 810, 930	480	137 \pm 54.0 82, 140, 190
Mercury	28.4 31.7, 25.3	20.5	19.5 \pm 7.50 19.4, 27.0, 12.0

^a Total number of fish/number of sample composites analyzed.

^b For the remainder of the column, weighted averages are given based on the number of fish in each composite sample.

Table 9A: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of brown bullhead taken from the Buffalo River; October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	2			2		
Tag No.	371, 389			391, 376		
DEC ID No.	07-0044-H 07-0045-H	07-0044-RC 07-0045-RC	07-0044 07-0045	07-0071-H 07-0072-H	07-0071-RC 07-0072-RC	07-0071 07-0072
Lab ID No. (As, Cd, Pb only)	AK00281 AK00283	AK00282 AK00284	nc ¹	AK00285 AK00287	AK00286 AK00288	nc
Moisture (%)	80.01 82.09, 77.93	68.90 73.92, 63.88	71.40 75.80, 67.00	80.01 80.55, 79.47	68.15 65.89, 70.40	70.95 69.20, 72.70
Lipid (%)	2.15 1.20, 3.10	8.92 2.11, 15.72	7.34 1.87, 12.80	2.25 2.72, 1.78	7.76 9.77, 5.74	6.45 8.22, 4.67
Aroclor 1242	45.0 29, 61	35.4 45, 25.7	126 40.8, 212	51.5 53, 50	114 117, 111	98.8 103, 94.5
Aroclor 1254/1260	101 95, 106	321 175, 466	269 154, 384	63.5 48, 79	199 146, 251	165 124, 205
p,p'-DDE	9.37 7.24, 11.5	33.8 14.9, 52.7	28.1 12.9, 43.3	5.73 5.07, 6.39	18.6 16.1, 21.1	15.4 13.7, 17.1
p,p'-DDD	3.86 3.23, 4.48	13.6 6.96, 20.3	11.4 6.0, 16.7	2.50 2.41, 2.58	8.14 8.15, 8.12	6.76 6.93, 6.58
p,p'-DDT	<2 <2, <2	3.21 <2, 5.42	2.82 <2, 4.64	Both <2	Both <2	Both <2

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
o,p'-DDE	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
o,p'-DDD	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
o,p'-DDT	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
Mirex	Both <2	Both <2	Both <2	Both <2	Both <2	Both <2
Photomirex	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
HCB	<2 <2, <2	2.10 <2, 3.2	1.85 <2, 2.70	Both <2	Both <2	Both <2
Oxychlordane	<5 <5, <5	5.76 <5, 9.01	5.01 <5, 7.52	Both <5	Both <5	Both <5
<i>trans</i> -chlordane	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
<i>cis</i> -chlordane	<5 <5, <5	7.65 <5, 12.8	6.45 <5, 10.4	Both <5	Both <5	Both <5
<i>trans</i> -nonachlor	<5 <5, <5	7.10 <5, 11.7	6.05 <5, 9.59	Both <5	Both <5	Both <5
<i>cis</i> -nonachlor	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
Heptachlor	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
Heptachlor epoxide	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
Aldrin	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
α -HCH	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
β -HCH	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
γ -HCH	Both <5	Both <5	Both <5	Both <5	Both <5	Both <5
Metals						
Arsenic	18 16, 20	46.5 44, 49L ²	39.7 36.9, 42.4	28.5 25, 32	70.0 83, 57	60.3 70.3, 50.2
Cadmium	<4.8 <4.7, <4.8	5.45 5.3, 5.6L	4.71 4.54, 4.87	<5.0 <4.9, <5.0	7.0 6.0, 8.0	5.87 5.22, 6.52
Lead	8.25 9.3, 7.2	145 150, 140	112 110, 114	48.5 16, 81	305 430, 180	246 339, 153
Mercury	43.4 27.5, 59.2	25.5 7.67, 43.3	29.8 12.6, 46.9	92.3 41.6, 143	48.7 13.6, 83.8	59.6 19.8, 99.4

¹ na = Not applicable.

² L = Possibly biased low.

Table 9B: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of brown bullhead taken from the Buffalo River; October 2007.

Parameter	Concentration (ng/g wet weight) in:		
	Zone 3		
	Edible tissues	Carcass	Calculated whole fish
n	5		
Tag No.	438, 431, 440, 434, 436		
DEC ID No.	07-0089-H 07-0090-H 07-0091-H 07-0092-H 07-0093-H	07-0089-RC 07-0090-RC 07-0091-RC 07-0092-RC 07-0093-RC	07-0089 07-0090 07-0091 07-0092 07-0093
Lab ID No. (As, Cd, Pb only)	AK00289 AK00291 AK00293 AK00295 AK00297	AK00290 AK00292 AK00294 AK00296 AK00298	na ¹
Moisture (%)	81.70 ± 1.79 84.24, 79.90, 81.67, 82.52, 80.15	74.88 ± 2.14 78.26, 73.09, 75.37, 74.62, 73.05	76.64 ± 1.72 79.30, 75.40, 77.00, 76.60, 74.90
Lipid (%)	1.71 ± 1.03 0.41, 2.86, 1.29, 1.30, 2.67	3.99 ± 1.93 1.16, 4.39, 3.28, 6.34, 4.80	3.39 ± 1.57 0.978, 3.92, 2.79, 5.02, 4.26
Aroclor 1242	37.2 ± 2.14 10, 61, 29, 29, 57	87.4 ± 30.1 41, 87, 86, 124, 99	74.4 ± 25.1 33.5, 79, 71.8, 99.2, 88.4
Aroclor 1254/1260	114 ± 94.7 <30, 138, 213, <30, 191	282 ± 211 165, 196, 628, 94, 326	240 ± 178 132, 178, 525, 73.4, 292
p,p'-DDE	5.12 ± 3.56 <2, 9.49, 5.09, 2.29, 7.71	8.67 ± 6.69 <2, 2.05, 15.6, 11.5, 13.2	10.6 ± 2.46 7.01, 12.0, 13.0, 9.1, 11.8
p,p'-DDD	1.21 ± 0.47 <2, 2.05, <2, <2, <2	3.05 ± 1.24 <2, 3.08, 3.27, 4.34, 3.58	2.57 ± 0.93 <2, 2.76, 2.70, 3.47, 2.93
p,p'-DDT	All <2	All <2	All <2
o,p'-DDE	All <5	All <5	All <5
o,p'-DDD	All <5	All <5	All <5
o,p'-DDT	All <5	All <5	All <5
Mirex	All <2	All <2	All <2
Photomirex	All <5	All <5	All <5
HCB	All <2	All <2	All <2

Parameter	Concentration (ng/g wet weight) in:		
	Zone 3		
	Edible tissues	Carcass	Calculated whole fish
Oxychlordane	All <5	All <5	All <5
<i>trans</i> -chlordane	All <5	All <5	All <5
<i>cis</i> -chlordane	All <5	All <5	All <5
<i>trans</i> -nonachlor	All <5	All <5	All <5
<i>cis</i> -nonachlor	All <5	All <5	All <5
Heptachlor	All <5	All <5	All <5
Heptachlor epoxide	All <5	All <5	All <5
Aldrin	All <5	All <5	All <5
α -HCH	All <5	All <5	All <5
β -HCH	All <5	All <5	All <5
γ -HCH	All <5	All <5	All <5
Metals			
Arsenic	15.8 ± 5.9 11, 26, 14, 13, 15	34.8 ± 5.81 26, 42, 34, 35, 37	29.8 ± 5.31 22.3, 37.1, 29.0, 29.3, 31.4
Cadmium	<5.0 <4.5, <5.0, <4.9, <4.3, <4.9	4.31 ± 1.90 6.0, 6.0, <4.7, <4.4, 5.0	3.80 ± 1.38 5.09, 4.91, <4.9, <4.4, 4.35
Lead	22.5 ± 32.9 81, 13, <4.9, 9.0, 7.0	222 ± 138 410, 130, 130, 110, 330	171 ± 112 331, 93.5, 98.3, 83.6, 248
Mercury	143 ± 101 120, 118, 134, 33.2, 308	72.8 ± 63.2 34.6, 63.3, 83.2, 8.91, 174	90.9 ± 72.2 54.6, 80.7, 95.9, 15.2, 208

¹ na = Not applicable.

Table 10A: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	5			4		
Tag No.	379, 388, 352, 314, 373			338, 308, 381, 383		
DEC ID No.	07-0051-H 07-0052-H 07-0053-H 07-0054-H 07-0055-H	07-0051-RC 07-0052-RC 07-0053-RC 07-0054-RC 07-0055-RC	07-0051 07-0052 07-0053 07-0054 07-0055	07-0094-H 07-0095-H 07-0096-H 07-0097-H	07-0094-RC 07-0095-RC 07-0096-RC 07-0097-RC	07-0094 07-0095 07-0096 07-0097
Lab ID No.	AL02665 AL02667 AL02669 AL02643 AL02645	AL02666 AL02668 AL02670 AL02644 AL02646	na ¹	AL02647 AL02649 AL02651 AL02653	AL02648 AL02650 AL02652 AL02654	na
Moisture (%)	63.0 ± 4.9 58, 69, 64, 66, 58	61.0 ± 2.8 59, 63, 65, 59, 59	61.7 ± 3.2 58.6, 65.2, 64.6, 61.6, 58.5	64.8 ± 10.0 77, 67, 53, 62	59.0 ± 4.8 62, 60, 52, 62	61.5 ± 7.2 69.2, 62.9, 51.8, 62.0
Lipid (%)	15.6 ± 4.3 21, 9.8, 13, 17, 17	13.6 ± 4.1 15, 7.8, 11, 18, 16	14.3 ± 4.0 17.2, 8.54, 11.7, 17.6, 16.5	12.8 ± 8.2 3.2, 11, 23, 14	12.7 ± 6.3 10, 8.9, 22, 9.7	12.7 ± 6.86 6.75, 9.77, 22.5, 11.7
Aroclor 1016	<210 <210, <110, <120, <190, <160	<170 <140, <86, <120, <170, <150	<210 <210, <110, <120, <190, <160	<230 <40, <110, <230, <120	<230 <100, <89, <230, <110	<230 <110, <110, <230, <120
Aroclor 1221	<210 <210, <110, <120, <190, <160	<170 <140, <86, <120, <170, <150	<210 <210, <110, <120, <190, <160	<230 <40, <110, <230, <120	<230 <100, <89, <230, <110	<230 <110, <110, <230, <120
Aroclor 1232	<210 <210, <110, <120, <190, <160	<170 <140, <86, <120, <170, <150	<210 <210, <110, <120, <190, <160	<230 <40, <110, <230, <120	<230 <100, <89, <230, <110	<230 <110, <110, <230, <120
Aroclor 1242	<210 <210, <110, <120, <190, <160	<170 <140, <86, <120, <170, <150	<210 <210, <110, <120, <190, <160	<230 <40, <110, <230, <120	<230 <100, <89, <230, <110	<230 <110, <110, <230, <120
Aroclor 1248	<210 <210, <110, <120, <190, <160	<170 <140, <86, <120, <170, <150	<210 <210, <110, <120, <190, <160	<230 <40, <110, <230, <120	<230 <100, <89, <230, <110	<230 <110, <110, <230, <120

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Aroclor 1254	722 ± 186 720, 810, 980, 600, 500	580 ± 138 420, 550, 800, 580, 550	631 ± 139 530, 647, 864, 587, 526	538 ± 329 220, 460, 1000, 470	550 ± 280 530, 390, 950, 330	542 ± 288 382, 419, 974, 394
Aroclor 1260	862 ± 488 1300, 1400, 850, 320, 440	658 ± 304 760, 1100, 680, 330, 420	733 ± 366 957, 1211, 740, 326, 430	638 ± 713 170, 370, 1700, 310	610 ± 621 570, 160, 1500, 210	620 ± 654 379, 247, 1597, 256
Aroclor 1262	<210 <210, <110, <120, <190, <160	<170 <140, <86, <120, <170, <150	<210 <210, <110, <120, <190, <160	<230 <40, <110, <230, <120	<230 <100, <89, <230, <110	<230 <110, <110, <230, <120
p,p'-DDE	155 ± 40.8 190, 190, 170, 130, 97	123 ± 23.6 120, 140, 140, 130, 83	135 ± 27.4 146, 159, 151, 130, 89.9	92.0 ± 80.9 31, 50, 210, 77	98.3 ± 72.4 100, 44, 200, 49	95.1 ± 73.8 67.0, 46.5, 205, 61.8
p,p'-DDD	100 ± 25.7 98, 130, 120, 89, 65	79.0 ± 18.6 57, 88, 97, 92, 61	87.0 ± 18.9 72.0, 104, 105, 90.9, 63.0	22.3 ± 24.7 <6.4, <18, 58, 19	29.5 ± 25.5 <16, <14, 54, 49	21.6 ± 23.0 <16, <18, 55.9, 13.6
p,p'-DDT	<34 <34, <18, <19, <30, <26	<28 <22, <14, <19, <28, <12	<34 <34, <18, <19, <30, <26	<38 <6.4, <18, <38, <19	<36 <16, <14, <36, <18	<38 <16, <18, <38, <19
o,p'-DDE	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
o,p'-DDD	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
o,p'-DDT	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
Mirex	nd ^b	nd	nd	nd	nd	nd
Photomirex	nd	nd	nd	nd	nd	nd
HCB	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
Oxychlordanes	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19L <3.2L, <9.1L, <19L, <9.4L	<18L <8.0L, <7.1L, <18L, <8.8L	<38 <16, <18, <38, <19
trans-chlordane	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
cis-chlordane	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
<i>trans</i> -nonachlor	34.2 ± 14.9 60, 28, 23, 33, 27	24.6 ± 8.14 35, 14, 21, 30, 23	28.2 ± 9.93 44.1, 19.2, 21.7, 31.1, 25.0	29.4 ± 20.5 8.7, 21, 57, 31	30.5 ± 17.8 25, 19, 57, 21	29.9 ± 18.4 17.2, 19.8, 57.0, 25.6
<i>cis</i> -nonachlor	10.7 ± 4.45 <17, 16, 15, <15, <13	7.63 ± 4.21 <11, 15, <9.3, <14, <12	9.25 ± 3.53 <17, 15.4, 8.33, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
Heptachlor	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
Heptachlor epoxide	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
Aldrin	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
α-BHC	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
β-BHC	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
γ-BHC	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
-BHC	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
Dieldrin	<34 <34, <18, <19, <30, <26	<28 <22, <14, <19, <28, <12	<34 <34, <18, <19, <30, <26	<38 <6.4, <18, <38, <19	<36 <16, <14, <36, <18	<38 <16, <18, <38, <19
Methoxychlor	<170 <170, <88, <93, <150, <130	<140 <110, <68, <93, <140, <120	<170 <170, <88, <93, <150, <130	<190 <32, <91, <190, <94	<180 <80, <71, <180, <88	<190 <80, <91, <190, 94
Endrin	<34 <34, <18, <19, <30, <26	<28 <22, <14, <19, <28, <12	<34 <34, <18, <19, <30, <26	<38 <6.4, <18, <38, <19	<36 <16, <14, <36, <18	<38 <16, <18, <38, <19
Endrin aldehyde	<34 <34, <18, <19, <30, <26	<28 <22, <14, <19, <28, <12	<34 <34, <18, <19, <30, <26	<38L <6.4L, <18L, <38L, <19L	<36L <16L, <14L, <36L, <18L	<38 <16, <18, <38, <19

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Endosulfan I	<17 <17, <8.8, <9.3, <15, <13	<14 <11, <6.8, <9.3, <14, <12	<17 <17, <8.8, <9.3, <15, <13	<19 <3.2, <9.1, <19, <9.4	<18 <8.0, <7.1, <18, <8.8	<38 <16, <18, <38, <19
Endosulfan II	<34 <34, <18, <19, <30, <26	<28 <22, <14, <19, <28, <12	<34 <34, <18, <19, <30, <26	<38 <6.4, <18, <38, <19	<36 <16, <14, <36, <18	<38 <16, <18, <38, <19
Endosulfan sulfate	<34 <34, <18, <19, <30, <26	<28 <22, <14, <19, <28, <12	<34 <34, <18, <19, <30, <26	<38 <6.4, <18, <38, <19	<36 <16, <14, <36, <18	<38 <16, <18, <38, <19
Metals						
Arsenic	382 ± 90.1 530, 310, 370, 390, 310	314 ± 44.5 290, 320, 260, 380, 320	338 ± 39.5 378, 316, 299, 384, 315	160 ± 121 53J ⁴ , 65J, 300, 220	135 ± 56.9 110J, 70J, 200, 160	148 ± 86.8 82.7, 67.9, 245, 198
Cadmium	11.5 ± 5.97 22J, 10, 6.9J, 9.8, 9.0J	100 ± 78.2 220, 130, 86, 30J, 36J	67.3 ± 52.3 148, 85.8, 57.9, 22.4, 22.8	10.8 ± 15.0 4.9J, <4.4, 33, <4.4	78.0 ± 128 18, 12, 270, 12	45.7 ± 72.9 11.7, 7.93, 155, 8.33
Lead	9.16 ± 6.69 5.0J, 5.5J, 7.0J, 7.3K ⁵ , 21K	133 ± 99.4 68K, 130, 300, 48K, 120	85.8 ± 64.9 45.0, 83.8, 196, 32.8, 71.5	15.1 ± 10.1 30K, 12, 9.1, 9.1	263 ± 92.2 330, 160, 350, 210	150 ± 42.8 186, 98.6, 185, 132
Mercury	141 ± 40.4 102, 185, 177, 141, 98.7	68.5 ± 19.1 58.0, 76.5, 90.7, 76.1, 41.4	96.3 ± 23.8 74.1, 117, 121, 100, 69.5	144 ± 21.8 162, 112, 148, 152	77.9 ± 20.6 98.8, 56.3, 91.8, 64.8	108 ± 21.5 129, 79.4, 119, 105

¹ na = Not applicable or not analyzed.

² L = Possibly biased low.

³ nd = Not determined.

⁴ J = Estimated value.

⁵ K = Possible biased high.

Table 10B: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:		
	Zone 4		
	Edible tissues	Carcass	Calculated whole fish
n	5		
Tag No.	410, 403, 405, 406, 414		
DEC ID No.	07-0098-H 07-0099-H 07-0100-H 07-0101-H 07-0102-H	07-0098-RC 07-0099-RC 07-0100-RC 07-0101-RC 07-0102-RC	07-0098 07-0099 07-0100 07-0101 07-0102
Lab ID No.	AL02655 AL02657 AL02659 AL02661 AL02663	AL02656 AL02658 AL02660 AL02662 AL02664	na ¹
Moisture (%)	72.2 ± 5.6 65, 78, 77, 68, 73	67.6 ± 7.5 62, 74, 77, 60, 65	69.6 ± 6.43 63.3, 75.3, 77.0, 63.4, 69.1
Lipid (%)	7.04 ± 4.62 13, 3.3, 1.6, 9.4, 7.9	8.16 ± 2.75 7.2, 5.9, 5.7, 12, 10	7.77 ± 2.94 9.71, 5.05, 4.26, 10.9, 8.93
Aroclor 1016	<120 <120, <29, <23, <120, <94	<120 <120, <57, <61, <110, <120	<120 <120, <57, <61, <120, <120
Aroclor 1221	<120 <120, <29, <23, <120, <94	<120 <120, <57, <61, <110, <120	<120 <120, <57, <61, <120, <120
Aroclor 1232	<120 <120, <29, <23, <120, <94	<120 <120, <57, <61, <110, <120	<120 <120, <57, <61, <120, <120
Aroclor 1242	<120 <120, <29, <23, <120, <94	<120 <120, <57, <61, <110, <120	<120 <120, <57, <61, <120, <120
Aroclor 1248	<120 <120, <29, <23, <120, <94	<120 <120, <57, <61, <110, <120	<120 <120, <57, <61, <120, <120
Aroclor 1254	182 ± 129 410, 110, 140, 150, 98	210 ± 147 160, 150, 450, 230, <120J	204 ± 104 268, 137, 341, 196, 79.3
Aroclor 1260	230 ± 160 180, 140, 510, 200, 120	510 ± 727 <120J, 250, 1800, 300, 140	412 ± 526 112, 214, 1346, 258, 130
Aroclor 1262	<120 <120, <29, <23, <120, <94	<120 <120, <57, <61, <110, <120	<120 <120, <57, <61, <120, <120
p,p'-DDE	47.4 ± 25.5 90, 38, 46, 41, 22	63.8 ± 49.5 40, 40, 150, 60, 29	58.3 ± 33.5 61.6, 39.3, 113, 52.0, 25.4

Parameter	Concentration (ng/g wet weight) in:		
	Zone 4		
	Edible tissues	Carcass	Calculated whole fish
p,p'-DDD	9.78 ± 7.90 23, 7.0, <3.8, <19, <15	9.40 ± 5.42 <19, <9.2, <9.8, 18, <20	10.0 ± 4.87 15.3, 5.38, <9.8, 14.4, <20
p,p'-DDT	<19 <19, <4.7, <3.8, <19, <15	<20 <19, <9.2, <9.8, <17, <20	<20 <19, <9.2, <9.8, <19, <20
o,p'-DDE	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
o,p'-DDD	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
o,p'-DDT	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
Mirex	nd ³	nd	nd
Photomirex	nd	nd	nd
HCB	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
Oxychlorane	<9.5 <9.5L ² , <2.3L, <1.9, <9.4, <7.5	<9.9 <9.5L, <4.6L, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
trans-chlordane	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
cis-chlordane	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
trans-nonachlor	11.7 ± 11.1 31, 10, 9.0, <9.4, <7.5	21.0 ± 11.7 14, 23, 29, 34, <9.9	17.7 ± 7.25 21.3, 18.8, 22.0, 21.6, <9.9
cis-nonachlor	4.67 ± 2.83 <9.5, <2.3, 9.0, <9.4, <7.5	9.07 ± 11.2 <9.5, <4.6, 29, <8.7, <9.9	6.18 ± 4.61 <9.5, <4.6, 14.2, <9.4, <9.9
Heptachlor	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
Heptachlor epoxide	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
Aldrin	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
α-BHC	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
β-BHC	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
γ-BHC	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
-BHC	<9.5 <9.5, <2.3, <1.9, <9.4, <7.5	<9.9 <9.5, <4.6, <4.9, <8.7, <9.9	<9.9 <9.5, <4.6, <4.9, <9.4, <9.9
Dieldrin	<19 <19, <4.7, <3.8, <19, <15	<20 <19, <9.2, <9.8, <17, <20	<20 <19, <9.2, <9.8, <19, <20

Parameter	Concentration (ng/g wet weight) in:		
	Zone 4		
	Edible tissues	Carcass	Calculated whole fish
Methoxychlor	<95 <95, <23, <19, <94, <75	<99 <95, <46, <49, <87, <99	<99 <95, <46, <49, <94, <99
Endrin	<19 <19, <4.7, <3.8, <19, <15	<20 <19, <9.2, <9.8, <17, <20	<20 <19, <9.2, <9.8, <19, <20
Endrin aldehyde	<19L <19L, <4.7L, <3.8L, <19L, <15L	<20L <19L, <9.2L, <9.8L, <17L, <20L	<20L <19L, <9.2L, <9.8L, <19L, <20L
Endosulfan I	3.27 ± 1.63 <9.5, <2.3, 2.0, <9.4, <7.5	4.65 ± 2.69 <9.5, <4.6, 8.9, <8.7, <9.9	4.63 ± 1.49 <9.5, <4.6, 6.47, <9.4, <9.9
Endosulfan II	<19 <19, <4.7, <3.8, <19, <15	<20 <19, <9.2, <9.8, <17, <20	<20 <19, <9.2, <9.8, <19, <20
Endosulfan sulfate	<19 <19, <4.7, <3.8, <19, <15	<20 <19, <9.2, <9.8, <17, <20	<20 <19, <9.2, <9.8, <19, <20
Metals			
Arsenic	113 ± 62.0 180, 70, 80, 54J ⁴ , 180	108 ± 55.6 160, 94, 41J, 75, 170	110 ± 57.6 169, 86.2, 54.7, 66.1, 175
Cadmium	5.30 ± 2.42 4.9J, 4.8J, 8.7, <4.0, 6.1J	33.2 ± 20.8 23, 31, 43, 6.8J, 62J	20.8 ± 11.0 15.2, 22.5, 30.9, 4.78, 30.5
Lead	32.7 ± 38.1 21, 100, 15, 21, 6.7	142 ± 29.5 160, 110, 170, 110, 160	95.3 ± 17.6 99.9, 107, 115, 72.5, 82.1
Mercury	150 ± 91.6 163, 142, 298, 77.4, 71.4	71.4 ± 38.2 71.0, 77.6, 131, 46.8, 30.8	102 ± 55.2 111, 98.6, 190, 59.7, 51.4

¹ na = Not applicable or not analyzed.

² L = Possibly biased low.

³ nd = Not determined.

⁴ J = Estimated value.

⁵ K = Possible biased high.

Table 11A: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of largemouth bass taken from the Buffalo River; October 2007

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	5			5		
Tag No.	339, 327, 386, 311, 305			399, 394, 377, 392, 330		
DEC ID No.	07-0039-H 07-0040-H 07-0041-H 07-0042-H 07-0043-H	07-0039-RC 07-0040-RC 07-0041-RC 07-0042-RC 07-0043-RC	07-0039 07-0040 07-0041 07-0042 07-0043	07-0064-H 07-0065-H 07-0066-H 07-0067-H 07-0068-H	07-0064-RC 07-0065-RC 07-0066-RC 07-0067-RC 07-0068-RC	07-0064 07-0065 07-0066 07-0067 07-0068
Lab ID No. (As, Cd, Pb only)	AK00323 AK00325 AK00327 AK00329 AK00331	AK00324 AK00326 AK00328 AK00330 AK00332	na ¹	AK00333 AK00335 AK00337 AK00339 AK00341	AK00334 AK00336 AK00338 AK00330 AK00342	na
Moisture (%)	77.66 ± 1.88 74.68, 77.22, 77.90, 79.28, 79.20	70.94 ± 1.75 68.49, 71.00, 72.94, 72.19, 70.08	73.70 ± 1.74 70.90, 73.50, 75.20, 75.10, 73.80	78.47 ± 2.09 82.09, 77.63, 76.99, 77.27, 78.38	71.17 ± 0.60 70.32, 71.70, 71.80, 71.03, 70.98	74.00 ± 0.56 74.80, 74.10, 73.70, 73.30, 74.1
Lipid (%)	2.07 ± 1.13 4.06, 1.87, 1.62, 1.43, 1.35	6.52 ± 2.09 10.19, 5.52, 5.74, 4.99, 6.16	4.70 ± 1.72 7.75, 4.06, 3.92, 3.54, 4.23	1.41 ± 0.18 1.30, 1.61, 1.35, 1.58, 1.20	5.43 ± 0.73 5.39, 5.84, 4.41, 6.35, 5.14	3.86 ± 0.50 3.85, 4.16, 3.29, 4.53, 3.49
Aroclor 1242	46.4 ± 34.9 108, 33, 22, 37, 32	127 ± 40.1 111, 113, 87, 133, 193	102 ± 35.8 147, 81.1, 58.2, 93.8, 128	42.2 ± 24.8 75, 62, 25, 30, 19	174 ± 84.7 293, 223, 83, 158, 114	123 ± 62.0 211, 159, 61.8, 109, 74.3

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Aroclor 1254/1260	129 ± 106 314, 95, 56, 70, 109	360 ± 183 338, 272, 234, 278, 680	282 ± 137 410, 201, 155, 193, 451	84.8 ± 42.9 132, 130, 66, 52, 44	355 ± 140 512, 503, 254, 266, 239	250 ± 103 369, 355, 185, 184, 157
p,p'-DDE	29.5 ± 35.2 4.13, 8.64, 4.32, 7.16, 8.55	26.1 ± 15.1 8.64, 23.5, 19.4, 29.3, 49.5	24.7 ± 11.4 39.9, 17.6, 12.7, 20.3, 33.1	6.97 ± 3.31 11.0, 9.40, 5.10, 4.58, 3.40	14.1 ± 9.44 4.38, 3.64, 20.5, 23.8, 18.3	20.1 ± 8.14 31.5, 25.7, 14.9, 16.5, 12.1
p,p'-DDD	5.07 ± 5.48 14.7, 3.70, <2, 2.73, 3.22	12.3 ± 4.53 14.7, 10.6, 6.25, 11.4, 18.3	9.03 ± 3.78 13.3, 7.85, 3.93, 7.86, 12.2	1.56 ± 0.79 2.68, 2.13, <2, <2, <2	7.49 ± 2.44 10.6, 8.27, 6.10, 8.28, 4.18	5.21 ± 1.79 7.62, 5.83, 4.23, 5.50, 2.85
p,p'-DDT	2.21 ± 2.20 6.07, 2.00, <2, <2, <2	6.87 ± 2.05 9.58, 6.20, 4.69, 5.48, 8.42	4.97 ± 2.01 8.18, 4.52, 3.06, 3.65, 5.44	1.44 ± 0.61 2.20, 2.02, <2, <2, <2	5.62 ± 2.22 8.38, 7.56, 4.51, 4.38, 3.27	4.01 ± 1.60 6.05, 5.36, 3.23, 3.09, 2.32
o,p'-DDE	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDD	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDT	All <5	All <5	All <5	All <5	All <5	All <5
Mirex	All <2	All <2	All <2	All <2	All <2	All <2
Photomirex	All <5	All <5	All <5	All <5	All <5	All <5
HCB	All <2	All <2	All <2	All <2	1.75 ± 0.70 <2, 2.20, <2, 2.05, 2.48	1.47 ± 0.45 <2, 1.76, <2, 1.61, 1.97
Oxychlorthane	All <5	4.25 ± 2.46 6.12, <5, <5, <5, 7.64	3.55 ± 1.48 4.68, <5, <5, <5, 5.58	All <5	4.98 ± 3.47 9.70, 7.70, <5, <5, <5	3.96 ± 2.04 6.69, 5.63, <5, <5, <5

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
<i>trans</i> -chlordane	All <5	All <5	All <5	All <5	All <5	All <5
<i>cis</i> -chlordane	All <5	3.30 ± 1.79 6.51, <5, <5, <5, <5	2.98 ± 1.08 4.92, <5, <5, <5, <5	All <5	4.67 ± 2.19 <5, 7.58, <5, 5.75, 5.03	3.81 ± 1.32 <5, 5.56, <5, 4.51, 3.97
<i>trans</i> -nonachlor	All <5	3.53 ± 2.31 7.67, <5, <5, <5, <5	3.12 ± 1.40 5.62, <5, <5, <5, <5	All <5	4.42 ± 2.92 <5, 9.09, <5, 5.49, <5	3.66 ± 1.76 <5, 6.47, <5, 4.34 , <5
<i>cis</i> -nonachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor epoxide	All <5	All <5	All <5	All <5	All <5	All <5
Aldrin	All <5	All <5	All <5	All <5	All <5	All <5
α-HCH	All <5	All <5	All <5	All <5	All <5	All <5
β-HCH	All <5	All <5	All <5	All <5	All <5	All <5
γ-HCH	All <5	All <5	All <5	All <5	All <5	All <5
Metals						
Arsenic	168 ± 102 61, 190, 110, 330, 150	250 ± 122 110, 310, 130, 380, 320	220 ± 112 90.5, 262, 121, 360, 264	155 ± 61.8 83, 100, 214, 230, 190	224 ± 77.7 140, 150, 240, 320, 270	197 ± 71.4 119, 130, 214, 286, 237
Cadmium	2.78 ± 1.08 4.7, <4.8, <4.6, <4.7 <4.3	5.22 ± 3.56 11, 5.0, 5.5, <4.7, <4.5	4.23 ± 2.54 8.50, 3.96, 4.09, <4.7, <4.5	<4.7 <4.7, <4.6, <4.5, <4.2, <4.2	2.88 ± 1.30 5.2, <4.5, <4.5, <4.4, <5.0	2.68 ± 0.82 4.13, <4.6, <4.5, <4.4, <5.0

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Lead	7.10 ± 4.72 6.6, 6.0, <4.6, 15, 5.6	12.9 ± 4.25 11, 16, 6.5, 17, 14	10.5 ± 4.20 9.25, 12.0, 4.64, 16.2, 10.6	7.32 ± 3.50 11, 10, 6.4, <4.2, 7.1	31.6 ± 11.1 45, 34, 37, 16, 26	22.3 ± 8.17 32.2, 24.5, 25.8, 10.7, 18.1
Mercury	160 ± 65.4 269, 144, 93.0, 139, 154	99.7 ± 48.3 183, 87.4, 59.9, 74.5, 93.9	124 ± 54.4 217, 110, 74.7, 101, 118	259 ± 43.9 334, 254, 222, 248, 235	133 ± 39.7 190, 148, 84.0, 133, 112	182 ± 40.5 244, 190, 134, 177, 164

¹ na = Not applicable.

Table 11B: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of largemouth bass taken from the Buffalo River; October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	5			5		
Tag No.	430, 427, 435, 444, 382			419, 415, 409, 402, 418		
DEC ID No.	07-0079-H 07-0080-H 07-0081-H 07-0082-H 07-0083-H	07-0079-RC 07-0080-RC 07-0081-RC 07-0082-RC 07-0083-RC	07-0079 07-0080 07-0081 07-0082 07-0083	07-0108-H 07-0109-H 07-0110-H 07-0111-H 07-0112-H	07-0108-RC 07-0109-RC 07-0110-RC 07-0111-RC 07-0112-RC	07-0108 07-0109 07-0110 07-0111 07-0112
Lab ID No. (As, Cd, Pb only)	AK00343 AK00345 AK00347 AK00349 AK00351	AK00344 AK00346 AK00348 AK00350 AK00352	na ¹	AK00353 AK00355 AK00357 AK00359 AK00361	AK00354 AK00356 AK00358 AK00360 AK00362	na
Moisture (%)	78.41 ± 0.64 78.07, 77.83, 78.61, 78.12, 79.43	70.85 ± 1.55 68.33, 72.30, 71.89, 70.73, 71.01	73.82 ± 0.98 72.20, 74.30, 74.80, 73.80, 74.00	77.41 ± 1.72 77.77, 75.79, 76.59, 76.69, 80.22	71.26 ± 1.93 74.45, 70.56, 71.44, 69.33, 70.53	73.58 ± 1.48 75.80, 72.50, 73.10, 72.20, 74.30
Lipid (%)	1.23 ± 0.42 1.75, 1.25, 1.52, 0.89, 0.74	5.43 ± 0.94 7.05, 5.25, 5.17, 4.92, 4.75	3.87 ± 0.60 4.83, 3.81, 3.57, 3.93, 3.23	1.63 ± 0.39 1.51, 1.86, 1.63, 1.06, 2.08	5.76 ± 1.13 5.27, 7.04, 6.37, 4.09, 6.01	2.96 ± 5.18 3.74, 5.18, 4.73, 2.96, 4.45
Aroclor 1242	43.2 ± 26.0 57, 76, 48, 24, 11	240 ± 157 262, 499, 168, 178, 93	164 ± 111 180, 347, 115, 114, 62.0	22.8 ± 5.63 22, 26, 15, 21, 30	77.7 ± 28.5 87, 77, 47, 57, 120	56.6 ± 18.6 60.6, 58.7, 35.9, 43.6, 84.3

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Aroclor 1254/1260	83.4 ± 47.0 109, 82, 141, 70, <30	438 ± 141 553, 488, 467, 492, 192	297 ± 98.6 375, 342, 324, 318, 125	74.4 ± 26.8 79, 69, 54, 52, 118	296 ± 83.4 297, 282, 257, 212, 434	211 ± 58.7 208, 205, 187, 152, 309
p,p'-DDE	5.46 ± 3.25 8.71, 4.48, 8.61, 4.50, <2	29.2 ± 11.2 45.3, 25.6, 28.0, 32.7, 14.4	19.7 ± 7.60 30.6, 18.0, 19.5, 21.1, 9.33	5.91 ± 1.22 5.92, 7.14, 5.03, 4.39, 7.08	23.5 ± 3.91 21.9, 28.7, 23.2, 18.2, 25.3	16.9 ± 2.96 15.4, 21.0, 16.9, 13.1, 18.1
p,p'-DDD	All <2	6.16 ± 2.33 8.99, 7.98, 4.84, 5.72, 3.26	4.12 ± 1.47 5.79, 5.47, 3.16, 3.77, 2.40	All <2	4.95 ± 1.61 3.97, 4.93, 4.70, 3.50, 7.63	3.45 ± 0.96 2.76, 3.52, 3.42, 2.57, 5.00
p,p'-DDT	1.27 ± 0.60 <2, <2, 2.34, <2, <2	6.58 ± 2.26 7.87, 8.50, 7.24, 6.54, 2.76	4.47 ± 1.44 5.12, 5.80, 5.09, 4.25, 2.09	All <2	3.94 ± 1.82 2.13, 6.27, 3.09, 2.73, 5.47	2.84 ± 1.15 1.67, 4.38, 2.37, 2.09, 3.70
o,p'-DDE	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDD	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDT	All <5	All <5	All <5	All <5	All <5	All <5
Mirex	All <2	All <2	All <2	All <2	All <2	All <2
Photomirex	All <5	All <5	All <5	All <5	All <5	All <5
HCB	All <2	2.67 ± 0.38 3.35, <2, <2, <2, <2	1.28 ± 0.63 2.41, <2, <2, <2, <2	All <2	All <2	All <2
Oxychlorthane	All <5	7.15 ± 4.37 7.82, 14.2, 5.59, 5.64, <5	5.35 ± 2.83 5.69, 9.99, 4.23, 4.34, <5	All <5	All <5	All <5

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
<i>trans</i> -chlordane	All <5	All <5	All <5	All <5	All <5	All <5
<i>cis</i> -chlordane	All <5	5.64 ± 2.11 7.97, <5, 5.53, 7.12, 5.08	4.36 ± 1.25 5.78, <5, 4.20, 5.21, 4.10	All <5	5.11 ± 2.51 8.13, 6.05, 6.37, <5, <5	4.13 ± 1.54 5.84, 4.77, 5.03, <5, <5
<i>trans</i> -nonachlor	All <5	3.59 ± 2.45 7.97, <5, <5, <5, <5	3.16 ± 1.47 5.78, <5, <5, <5, <5	All <5	3.55 ± 1.44 <5, 5.07, <5, <5, 5.20	3.16 ± 0.90 <5, 4.15, <5, <5, 4.13
<i>cis</i> -nonachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor epoxide	All <5	All <5	All <5	All <5	All <5	All <5
Aldrin	All <5	All <5	All <5	All <5	All <5	All <5
α-HCH	All <5	All <5	All <5	All <5	All <5	All <5
β-HCH	All <5	All <5	All <5	All <5	All <5	All <5
γ-HCH	All <5	All <5	All <5	All <5	All <5	All <5
Metals						
Arsenic	136 ± 56.4 100, 120, 88, 140, 230	194 ± 99.1 120, 160, 110, 230, 350	171 ± 82.6 112, 146, 100, 193, 304	116 ± 67.0 170, 130K ² , <4.8, 160K, 120K	383 ± 514 153 ± 40.4 (4) 170, 170K, 93J ³ , 180K, 1300J	279 ± 313 140 ± 52.8 (4) 170, 156, 61.7, 173, 832

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Cadmium	<4.7 <4.3, <4.1, <4.2, <4.7, <4.3	<5.0 <3.7, <5.0, <4.2, <4.0, <5.0	<5.0 <4.3, <5.0, <4.2, <4.7, <5.0	7.92 ± 2.09 5.0J, 10J, 7.4J, 9.9J, 7.3J	43.6 ± 59.5 17.0 ± 1.03 (4) 15J, 17J, 17J, 19K, 150J	29.6 ± 35.7 13.7 ± 2.01 (4) 10.9, 14.5, 13.7, 15.6, 93.4
Lead	5.63 ± 3.26 <4.3, 4.5, 11, 5.1, 5.4	28.8 ± 19.8 22, 14, 17, 63, 28	19.5 ± 11.4 14.0, 10.6, 14.4, 39.1, 19.4	8.58 ± 2.59 7.9J, 8.2, 13J, 6.2, 7.6	60.6 ± 13.0 67, 45, 72J, 48, 71	40.9 ± 8.65 43.0, 31.8, 51.6, 32.4, 45.9
Mercury	197 ± 44.6 215, 158, 240, 232, 142	117 ± 32.6 156, 85.4, 122, 140, 82.5	150 ± 37.7 180, 112, 173, 178, 105	200 ± 57.8 188, 209, 182, 289, 130	98.4 ± 26.4 76.5, 123, 78.4, 131, 83.2	136 ± 35.6 122, 154, 114, 190, 102

¹ na = Not applicable.

² K = Possibly biased high.

³ J = Estimated concentration.

Table 12A: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of pumpkinseed taken from the Buffalo River; October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	3			3		
Tag No.	334, 343, 387			378, 341, 384		
DEC ID No.	07-0047-H 07-0049-H 07-0050-H	07-0047-RC 07-0049-RC 07-0050-RC	07-0047 07-0049 07-0050	07-0060-H 07-0062-H 07-0063-H	07-0060-RC 07-0062-RC 07-0063-RC	07-0060 07-0062 07-0063
Lab ID No. (As, Cd, Pb only)	AK00299 AK00301 AL00303	AK00300 AK00302 AK00304	na ¹	AK00305 AK00307 AK00309	AK00306 AK00308 AK00310	na
Moisture (%)	81.63 ± 0.40 81.40, 82.09, 81.04	72.81 ± 1.52 71.17, 74.17, 73.09	76.33 ± 0.97 75.50, 77.40, 76.10	80.76 ± 1.16 80.67, 79.65, 81.96	71.59 ± 1.28 71.34, 70.45, 72.97	74.93 ± 1.25 74.90, 73.70, 76.20
Lipid (%)	1.27 ± 0.38 1.66, 0.91, 1.25	4.13 ± 1.00 5.12, 3.12, 4.15	2.98 ± 0.71 3.66, 2.25, 3.04	1.34 ± 0.51 0.89, 1.89, 1.23	5.04 ± 0.19 5.05, 4.85, 5.22	3.65 ± 0.19 3.44, 3.78, 3.74
Aroclor 1242	60.7 ± 56.8 126, 22.7, 33.4	239 ± 176 427, 77.3, 214	167 ± 124 300, 55.7, 145	45.6 ± 33.1 19.9, 83.0, 34.0	195 ± 79.2 146, 286, 152	139 ± 63.9 97.3, 213, 108
Aroclor 1254/1260	117 ± 132 270, 44, 37.8	364 ± 361 780, 176, 135	262 ± 263 565, 124, 97.8	76.9 ± 76.3 34.8, 165, 31.0	287 ± 192 250, 495, 117	209 ± 150 167, 376, 85
p,p'-DDE	3.86 ± 1.97 5.98, 2.07, 3.54	12.7 ± 4.11 17.0, 8.81, 12.4	9.15 ± 3.08 12.3, 6.15, 9.01	4.17 ± 2.49 3.27, 6.98, 2.26	18.4 ± 8.10 24.7, 21.3, 9.29	13.1 ± 5.53 16.4, 16.1, 6.68
p,p'-DDD	2.00 ± 0.99 2.98, <2, 2.01	7.72 ± 1.98 9.66, 5.70, 7.81	5.42 ± 1.51 6.84, 3.84, 5.59	1.53 ± 0.92 <2, 2.60, <2	7.25 ± 1.01 7.67, 7.98, 6.10	5.11 ± 0.92 5.09, 6.04, 4.21

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
p,p'-DDT	All <2	2.08 ± 1.87 4.24, <2, <2	1.62 ± 1.08 2.87, <2, <2	1.49 ± 0.85 <2, 2.47, <2	3.45 ± 2.75 2.93, 6.42, <2	2.73 ± 2.06 2.18, 5.00, <2
o,p'-DDE	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDD	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDT	All <5	All <5	All <5	All <5	All <5	All <5
Mirex	All <2	All <2	All <2	All <2	All <2	All <2
Photomirex	All <5	All <5	All <5	All <5	All <5	All <5
HCB	All <2	All <2	All <2	All <2	All <2	All <2
Oxychlordane	All <5	5.60 ± 5.37 11.8, <5, <5	4.29 ± 3.10 7.87, <5, <5	All <5	6.43 ± 4.68 <5, 11.6, 5.19	5.01 ± 3.00 <5, 8.33, 4.19
<i>trans</i> -chlordane	All <5	All <5	All <5	All <5	All <5	All <5
<i>cis</i> -chlordane	All <5	All <5	All <5	All <5	All <5	All <5
<i>trans</i> -nonachlor	All <5	All <5	All <5	All <5	All <5	All <5
<i>cis</i> -nonachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor epoxide	All <5	All <5	All <5	All <5	All <5	All <5
Aldrin	All <5	All <5	All <5	All <5	All <5	All <5
α-HCH	All <5	All <5	All <5	All <5	All <5	All <5
β-HCH	All <5	All <5	All <5	All <5	All <5	All <5

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
γ -HCH	All <5	All <5	All <5	All <5	All <5	All <5
Metals						
Arsenic	100 \pm 19.5 100, 120, 81	213 \pm 87.3 190, 310, 140	168 \pm 60.6 152, 235, 117	85.0 \pm 21.8 70, 110, 75	213 \pm 50.3 220, 260, 160	165 \pm 39.1 162, 206, 128
Cadmium	3.83 \pm 1.42 4.6, <9.4, <4.4	9.40 \pm 3.65 13, 9.5, 5.7	6.86 \pm 3.04 9.45, 7.61, 3.52	<4.8 <4.8, <4.4, <4.8	5.70 \pm 3.87 10, 4.6, <5.0	4.44 \pm 2.36 7.07, 3.74, <5.0
Lead	20.7 \pm 9.5 21, 30, 11	117 \pm 37.1 99, 93, 160	77.7 \pm 18.4 66.1, 68.1, 98.9	18.3 \pm 3.2 22, 17, 16	167 \pm 23.1 180, 180, 140	111 \pm 15.1 119, 121, 93.9
Mercury	36.2 \pm 17.1 21.7, 31.9, 55.1	24.4 \pm 16.3 12.9, 17.3, 43.1	29.1 \pm 16.3 16.6, 23.1, 47.6	75.9 \pm 29.6 92.4, 41.7, 93.5	49.6 \pm 27.5 45.9, 24.1, 78.8	59.5 \pm 27.2 63.9, 30.4, 84.2

¹ na = Not applicable.

Table 12B: Polychlorinated biphenyl (Aroclor), organochlorine pesticide and metal concentrations in tissues of pumpkinseed taken from the Buffalo River; October 2007^a.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	3			3		
Tag No.	443, 428, 454			407, 411, 412		
DEC ID No.	07-0074-H 07-0075-H 07-0076-H	07-0074-RC 07-0075-RC 07-0076-RC	07-0074 07-0075 07-0076	07-0103-H 07-0105-H 07-0106-H	07-0103-RC 07-0105-RC 07-0106-RC	07-0103 07-0105 07-0106
Lab ID No. (As, Cd, Pb only)	AK00311 AK00313 AK00315	AK00312 AK00314 AK00316	na ¹	AK00317 AK00319 AK00321	AK00318 AK00320 AK00322	na
Moisture (%)	81.30 ± 1.05 82.50, 80.83, 80.56	72.91 ± 0.94 73.52, 73.39, 71.83	76.07 ± 0.65 76.70, 76.10, 75.40	80.90 ± 0.83 80.20, 80.68, 81.81	73.13 ± 0.81 73.45, 72.21, 73.73	76.13 ± 0.60 76.20, 75.50, 76.70
Lipid (%)	1.11 ± 0.22 1.30, 1.17, 0.87	3.97 ± 0.78 4.55, 3.08, 4.29	2.90 ± 0.54 3.44, 2.36, 2.91	0.94 ± 0.16 1.00, 0.76, 1.07	3.92 ± 0.27 3.78, 3.75, 4.23	2.79 ± 0.26 2.69, 2.59, 3.09
Aroclor 1242	33.3 ± 8.3 36, 40, 24	126 ± 28.7 150, 94.0, 133	91.3 ± 1.87 111, 73.7, 89.2	16.7 ± 5.10 21, 11, 18	47.3 ± 7.64 54, 39, 49	35.7 ± 0.67 41.1, 28.2, 37.8
Aroclor 1254/1260	50.0 ± 16.5 51, 33, 66	250 ± 192 213, 79, 458	173 ± 120 158, 61.7, 300	All <30	77.7 ± 11.0 84, 84, 65	53.7 ± 5.89 56.9, 57.3, 46.9
p,p'-DDE	2.58 ± 0.64 3.32, 2.18, 2.23	12.0 ± 4.59 14.9, 6.67, 14.3	8.47 ± 3.12 11.0, 4.98, 9.44	1.94 ± 0.90 2.79, <2, <2	11.9 ± 2.15 13.6, 12.6, 9.47	8.08 ± 1.30 9.36, 8.01, 6.77
p,p'-DDD	All <2	3.98 ± 0.86 4.88, 3.16, 3.90	2.88 ± 0.62 3.56, 2.35, 2.74	All <2	4.07 ± 0.40 4.41, 4.16, 3.63	2.90 ± 0.20 3.07, 2.94, 2.68

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
p,p'-DDT	All <2	2.22 ± 1.06 2.75, <2, 2.92	1.77 ± 0.67 2.16, <2, 2.15	All <2	All <2	All <2
o,p'-DDE	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDD	All <5	All <5	All <5	All <5	All <5	All <5
o,p'-DDT	All <5	All <5	All <5	All <5	All <5	All <5
Mirex	All <2	All <2	All <2	All <2	All <2	All <2
Photomirex	All <5	All <5	All <5	All <5	All <5	All <5
HCB	All <2	1.39 ± 0.67 <2, <2, 2.16	1.23 ± 0.40 <2, <2, 1.69	All <2	All <2	All <2
Oxychlordane	All <5	3.43 ± 1.61 5.29, <5, <5	3.11 ± 1.06 4.34, <5, <5	All <5	All <5	All <5
<i>trans</i> -chlordane	All <5	All <5	All <5	All <5	All <5	All <5
<i>cis</i> -chlordane	All <5	All <5	All <5	All <5	All <5	All <5
<i>trans</i> -nonachlor	All <5	All <5	All <5	All <5	All <5	All <5
<i>cis</i> -nonachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor	All <5	All <5	All <5	All <5	All <5	All <5
Heptachlor epoxide	All <5	All <5	All <5	All <5	All <5	All <5
Aldrin	All <5	All <5	All <5	All <5	All <5	All <5
α-HCH	All <5	All <5	All <5	All <5	All <5	All <5

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
β -HCH	All <5	All <5	All <5	All <5	All <5	All <5
γ -HCH	All <5	All <5	All <5	All <5	All <5	All <5
Metals						
Arsenic	143 \pm 56.9 80, 160, 190	247 \pm 85.0 150, 310, 280	208 \pm 71.2 126, 254, 244	61.0 \pm 9.54 67, 50, 66	103 \pm 5.77 100, 100, 110	145 \pm 93.8 87.1, 253, 94.1
Cadmium	5.02 \pm 3.69 <7.3, <4.4, 9.2	6.58 \pm 4.38 6.5, <4.5, 11	6.03 \pm 4.05 5.53, <4.5, 10.3	<5.0 <5.0, <4.8, <5.0	10.7 \pm 5.56 6.4, 8.8, 17	7.63 \pm 3.60 4.87, 6.32, 11.7
Lead	42.3 \pm 29.4 75, 18, 34	290 \pm 199 520, 180, 170	201 \pm 145 368, 119, 115	13.1 \pm 7.79 7.7, 22, 9.5	310 \pm 87.2 270, 410, 250	197 \pm 54.9 167, 260, 163
Mercury	135 \pm 37.9 101, 129, 176	101 \pm 43.0 58.0, 100, 144	114 \pm 42.2 72.8, 111, 157	117 \pm 16.1 98.9, 129, 124	56.7 \pm 41.4 53.5, 55.3, 61.4	79.8 \pm 7.30 71.4, 84.0, 84.1

¹na = Not applicable.

Table 13: Polychlorinated biphenyl (Aroclor) and organochlorine pesticide concentrations in yellow perch taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	1			2			5		
Tag No.	396			333, 390			426, 445, 433, 432, 372		
DEC ID No.	07-0056-H	07-0056-RC	07-0056	07-0069-H 07-0070-H	07-0069-RC 07-0070-RC	07-0069 07-0070	07-0084-H 07-0085-H 07-0086-H 07-0087-H 07-0088-H	07-0084-RC 07-0085-RC 07-0086-RC 07-0087-RC 07-0088-RC	07-0084 07-0085 07-0086 07-0087 07-0088
Moisture (%)	80.28	73.19	75.75	77.02 74.53, 79.51	72.02 71.69, 72.34	74.14 72.68, 75.61	78.32 ± 2.15 74.65, 79.44, 78.44, 80.13, 78.98	73.17 ± 2.09 75.25, 72.89, 69.99, 74.86, 72.84	75.31 ± 1.24 75.05, 75.35, 73.86, 77.27, 75.01
Lipid (%)	0.54	3.34	2.33	0.94 0.86, 1.01	6.83 4.40, 9.26	4.34 3.17, 5.51	0.66 ± 0.40 1.34, 0.46, 0.64, 0.32, 0.53	4.31 ± 2.24 3.00, 5.18, 7.87, 3.03, 2.49	2.80 ± 1.19 2.44, 3.41, 4.56, 1.79, 1.80
Aroclor 1242	13	93	64	31.5 40, 23	311 379, 243	202 261, 143	22.6 ± 11.5 42, 17, 20, 12, 22	151 ± 84.5 108, 189, 283, 88, 89	98.2 ± 45.2 86, 124, 163, 53, 65
Aroclor 1254/1260	<30	248	164	45.0 75, <30	389 527, 251	257 370, 143	<30 <30, <30, <30, <30, <30	231 ± 99.4 176, 302, 371, 153, 155	144 ± 53.5 122, 194, 208, 90, 106
p,p'-DDE	<2	29	19	3.0 4, 2	28.5 29, 28	18.0 20, 16	<2 <2, <2, <2, <2, <2	17.8 ± 9.4 13, 27, 29, 10, 10	11.0 ± 5.1 9, 17, 16, 6, 7
p,p'-DDD	<2	12	8	1.5 2, <2	15 15, 15	10.0 11, 9	<2 <2, <2, <2, <2, <2	5.0 ± 2.3 4, 7, 8, 3, 3	3.4 ± 1.4 3, 5, 5, 2, 2
p,p'-DDT	<2	4.0	3	<2 <2, <2	5.5 7, 4	4.0 5, 3	<2 <2, <2, <2, <2, <2	2.8 ± 1.6 2, 4, 5, <2, 2	2.2 ± 0.8 2, 3, 3, <2, 2

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
o,p'-DDE	<5	<5	<5	<5 <5, <5	4.75 <5, 7	3.75 <5, 5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
o,p'-DDD	nd ¹	nd	nd	nd	nd	nd	nd	nd	nd
o,p'-DDT	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
Mirex	<2	<2	<2	<2 <2, <2	<2 <2, <2	<2 <2, <2	<2 <2, <2, <2, <2, <2	<2 <2, <2, <2, <2, <2	<2 <2, <2, <2, <2, <2
Photomirex	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
HCB	<2	<2	<2	<2 <2, <2	<2 <2, <2	<2 <2, <2	<2 <2, <2, <2, <2, <2	<2 <2, <2, <2, <2, <2	<2 <2, <2, <2, <2, <2
Oxychlordan	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
<i>trans</i> -chlordan	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
<i>cis</i> -chlordan	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	3.4 ± 2.0 <5, <5, 7, <5, <5	3.0 ± 1.1 <5, <5, 5, <5, <5
<i>trans</i> -nonachlor	<5	<5	<5	<5 <5, <5	4.75 7, <5	3.75 5, <5	<5 <5, <5, <5, <5, <5	3.9 ± 2.0 <5, 5, 7, <5, <5	3.3 ± 1.2 <5, 4, 5, <5, <5
<i>cis</i> -nonachlor	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
Heptachlor	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Heptachlor epoxide	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
Aldrin	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
α -BHC	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
β -BHC	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
γ -BHC	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
-BHC	<5	<5	<5	<5 <5, <5	<5 <5, <5	<5 <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5	<5 <5, <5, <5, <5, <5
Dieldrin	nd	nd	nd	nd	nd	nd	nd	nd	nd
Methoxychlor	nd	nd	nd	nd	nd	nd	nd	nd	nd
Endrin	nd	nd	nd	nd	nd	nd	nd	nd	nd
Endrin aldehyde	nd	nd	nd	nd	nd	nd	nd	nd	nd
Endosulfan I	nd	nd	nd	nd	nd	nd	nd	nd	nd
Endosulfan II	nd	nd	nd	nd	nd	nd	nd	nd	nd
Endosulfan sulfate	nd	nd	nd	nd	nd	nd	nd	nd	nd

¹ nd = Not determined.

Table 14: Metal concentrations in tissues of yellow perch taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	1			2			5		
Tag No.	396			333, 390			426, 445, 433, 432, 372		
DEC ID No.	07-0056-H	07-0056-RC	07-0056	07-0069-H 07-0070-H	07-0069-RC 07-0070-RC	07-0069 07-0070	07-0084-H 07-0085-H 07-0086-H 07-0087-H 07-0088-H	07-0084-RC 07-0085-RC 07-0086-RC 07-0087-RC 07-0088-RC	07-0084 07-0085 07-0086 07-0087 07-0088
Lab ID No.	AK00410	AK00411	na ¹	AK00412 AK00414	AK00413 AK00415	na	AK00416 AK00418 AK00420 AK00422 AK00424	AK00417 AK00419 AK00421 AK00423 AK00425	na
Arsenic	110	64.0	80.6	46.5 42, 51	160 100, 220	111 78.8, 143	14.0 ± 11.7 32, 9.1J ² , <4.4, 7.9J, 19J	41.8 ± 16.5 63, 32J, 35J, 55J, 24J	30.2 ± 13.5 52.5, 22.8, 20.0, 33.4, 22.2
Cadmium	<4.1	4.3	3.49	<4.8 <3.9, <4.8	5.45 6.0, 4.9	4.18 4.59, 3.76	2.84 ± 1.08 <4.7, <4.6, <4.4, 5.0J, <4.7	7.24 ± 3.73 <4.6, 5.6J, 6.7J, 9.6J, 12J	5.49 ± 2.52 <4.7, 4.36, 4.64, 7.49, 8.59
Lead	29.0	58.0	47.6	8.45 8.1, 8.8	94.0 150, 38	62.8 101, 24.7	10.3 ± 7.90 11, <4.6, 23K ³ , 9.9J, 5.4K	219 ± 104 290, 97K, 220J, 140, 350	140 ± 71.2 196, 64.3, 130, 80.4, 228
Mercury	67.7	38.7	49.2	61.6 72.8, 50.4	43.9 49.1, 38.6	50.7 57.3, 44.0	103 ± 21.0 125, 110, 68.1, 104, 106	53.4 ± 11.3 70.8, 53.0, 41.4, 45.8, 55.9	72.6 ± 12.6 88.9, 74.4, 53.6, 72.5, 73.5

¹ na = Not applicable.

² J = Estimated value.

³ K = Possibly biased high.

Table 15: Chlorinated dibenzo-*p*-dioxin and dibenzofuran concentrations in whole body composite samples of bluntnose minnows taken from the Buffalo River, October 2007.

Parameter	Concentration (pg/g wet weight)		
	Zone 2		Zone 3
	Mean	Values	
n	2 composites		1 composite
Tag No.	398A, 398B		441
DEC ID No.	07-0057-H, 07-0058-H		07-0073-H
Contract Lab ID No.	892415-060, 892415-061		892415-003
2,3,7,8-TCDD	0.16	0.16J, 0.16J ¹	<0.076
1,2,3,7,8-PeCDD	0.16	0.24J, <0.14	<0.12
1,2,3,4,7,8,-HxCDD	0.16	0.21B ² J, 0.11BJ	<0.070
1,2,3,6,7,8-HxCDD	0.17	0.30BJ, <0.064	0.098BJ
1,2,3,7,8,9-HxCDD	0.093	<0.13, 0.12BJ	0.11BJ
1,2,3,4,6,7,8-HpCDD	1.3	1.3BJ, 1.2BJ	0.78BJ
1,2,3,4,6,7,8,9-OCDD	9.0	8.6BJ, 9.3BJ	5.9BJ
2,3,7,8-TCDF	0.63	0.67BJ, 0.60BJ	0.58BJ
1,2,3,7,8-PeCDF	0.25	0.36BJ, 0.13BJ	<0.12
2,3,4,7,8-PeCDF	0.28	0.33BJ, 0.22BJ	0.11BJ
1,2,3,4,7,8-HxCDF	0.75	<0.079, 0.11BJ	<0.066
1,2,3,6,7,8-HxCDF	<0.054	<0.054, <0.041	<0.068
2,3,4,6,7,8-HxCDF	0.18	0.20BJ, 0.16BJ	<0.052
1,2,3,7,8,9-HxCDF	0.072	<0.049, 0.12BJ	<0.062
1,2,3,4,6,7,8-HpCDF	<0.15	<0.075, <0.15	<0.073
1,2,3,4,7,8,9-HpCDF	<0.28	<0.28, <0.064	<0.11
1,2,3,4,6,7,8,9-OCDF	1.4	1.4BJ, 1.4BJ	0.91BJ
∑TCDD	0.23	0.16J, 0.29J	<0.076
∑PeCDD	0.16	0.24J, <0.14	<0.12
∑HxCDD	0.38	0.51BJ, 0.24BJ	0.21BJ
∑HpCDD	2.4	2.4BJ, 2.4BJ	1.7BJ
∑TCDF	0.89	0.67BJ, 1.1	1.2

Parameter	Concentration (pg/g wet weight)		
	Zone 2		Zone 3
	Mean	Values	
\sum PeCDF	2.9	3.6J, 2.2BJ	1.6BJ
\sum HxCDF	1.5	1.2BJ, 1.8BJ	0.58BJ
\sum HpCDF	<0.18	<0.18, <0.11	<0.093
2,3,7,8-TCDD toxic equivalent concentrations			
TEQ _{mammalian} (DL = 0)	0.515	0.66, 0.37	0.12
TEQ _{mammalian} (½DL)	0.565	0.68, 0.45	0.24
TEQ _{avian} (DL = 0)	1.26	1.47, 1.05	0.71
TEQ _{fish} (DL=0)	0.575	0.75, 0.40	0.096

¹ J = Value between method detection limit and quantitation limit.

² B = Blank detection below quantitation level; sample value similar to blank value.

Table 16A: Chlorinated dibenzo-*p*-dioxin and dibenzofuran concentrations in tissues of brown bullhead taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body
n	1			2			3		
Tag No.	389			391, 376			438, 434, 436		
DEC ID No.	07-0045-H	07-0045-RC	07-0045	07-0071-H 07-0072-H	07-0071-RC 07-0072-RC	07-0071 07-0072	07-0089-H 07-0092-H 07-0093-H	07-0089-RC 07-0092-RC 07-0093-RC	07-0089 07-0092 07-0093
Lab ID No.	892415-079	892415-080	na ¹	892415-081 892415-083	892415-082 892415-084	na	892415-085 892415-087 892415-089	892415-086 892415-088 892415-090	na
2,3,7,8-TCDD	<0.044	<0.046	<0.046	<0.97 <0.097, <0.083	0.13 <0.053, 0.23J	0.11 <0.097, 0.18	0.053 ± 0.039 <0.044, <0.073, 0.097	0.073 ± 0.067 <0.070, <0.066, 0.15J	0.071 ± 0.060 <0.070, <0.073, 0.14
1,2,3,7,8-PeCDD	0.24BJ	0.67B ² J ³	0.53	<0.12 <0.12, <0.080	0.295 0.30BJ, 0.29BJ	0.24 0.25, 0.22	0.11 ± 0.086 <0.056, 0.20J, 0.10J	0.090 ± 0.096 <0.069, <0.068, 0.20J	0.094 ± 0.069 <0.069, 0.077, 0.17
1,2,3,4,7,8,-HxCDD	0.11BJ	0.69BJ	0.33	<0.060 <0.047, <0.060	0.12 0.19BJ, <0.092	0.10 0.15, <0.092	<0.32 <0.32, <0.074, <0.048	<0.077 <0.059, <0.055, <0.077	<0.32 <0.32, <0.074, <0.077
1,2,3,6,7,8-HxCDD	0.32J	0.95J	0.81	<0.082 <0.072, <0.082	0.36 0.47J, 0.24J	0.28 0.37, 0.19	0.086 ± 0.050 0.11J, 0.12J, <0.057	0.25 ± 0.051 0.21J, 0.24J, 0.31J	0.21 ± 0.025 0.19, 0.21, 0.24
1,2,3,7,8,9-HxCDD	<0.059	0.32J	0.25	<0.70 <0.070, <0.069	0.11 0.16J, <0.10	0.090 0.13, <0.10	0.034 ± 0.013 0.045J, <0.071, <0.040	0.10 ± 0.001 0.10J, 0.099J, 0.10J	0.083 ± 0.004 0.087, 0.082, 0.080

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body
1,2,3,4,6,7,8-HpCDD	0.66BJ	1.6BJ	1.38	0.57 0.54BJ, 0.60BJ	0.90 1.1BJ, 0.70BJ	0.83 0.98, 0.67	0.66 ± 0.83 0.34BJ, <0.057, 1.6BJ	1.01 ± 1.39 0.43BJ, <0.022, 2.6J	0.93 ± 1.24 0.41, <0.057, 2.35
1,2,3,4,6,7,8,9-OCDD	3.9BJ	3.7BJ	3.74	3.75 3.4BJ, 4.1BJ	3.5 4.6BJ, 2.4BJ	3.60 4.34, 2.85	1.97 ± 0.31 1.9BJ, 1.7J, 2.3J	1.90 ± 0.62 1.7BJ, 1.4J, 2.6J	1.91 ± 0.54 1.75, 1.48, 2.52
2,3,7,8-TCDF	0.58BJ	1.2V ⁴	1.06	0.30 0.31BJ, 0.28BJ	<0.092 <0.059, <0.092	0.10 0.092, 0.11	0.22 ± 0.064 0.15BJ, 0.27BJ, 0.25BJ	0.22 ± 0.075 0.21BJ, 0.30BJ, 0.15BJ	0.22 ± 0.059 0.20, 0.29, 0.18
1,2,3,7,8-PeCDF	0.21BJ	0.37BJ	0.33	0.30 0.32BJ, <0.056	0.11 0.18BJ, <0.067	0.12 0.21, <0.067	<0.091 <0.034, <0.091, <0.036	0.068 ± 0.023 <0.093, 0.093BJ, 0.065BJ	0.038 ± 0.010 <0.093, 0.081, 0.053
2,3,4,7,8-PeCDF	0.35BJ	0.93BJ	0.80	<0.059 <0.059, <0.046	0.47 0.54BJ, 0.40BJ	0.37 0.43, 0.30	0.086 ± 0.057 0.14BJ, <0.054, 0.18BJ	0.27 ± 0.076 0.20BJ, 0.25BJ, 0.35BJ	0.23 ± 0.069 0.19, 0.19, 0.31
1,2,3,4,7,8-HxCDF	<0.041	<0.062	<0.062	<0.064 <0.064, <0.049	0.12 0.20BJ, <0.067	0.10 0.16, <0.067	0.038 ± 0.027 0.069BJ, <0.047, <0.043	<0.067 <0.067, <0.053, <0.044	0.030 ± 0.010 0.042, <0.053, <0.044
1,2,3,6,7,8-HxCDF	<0.041	<0.12	<0.12	<0.093 <0.073, <0.093	<0.065 <0.048, <0.065	<0.093 <0.071, <0.093	<0.047 <0.037, <0.047, <0.032	<0.062 <0.062, <0.047, <0.047	<0.062 <0.062, <0.047, <0.047
2,3,4,6,7,8-HxCDF	0.19J	0.44J	0.38	<0.11 <0.053, <0.11	0.17J, <0.077	0.10 0.14, <0.11	0.11 ± 0.088 <0.033, 0.13J, 0.19J	0.15 ± 0.064 0.22J, 0.12J, 0.10J	0.14 ± 0.029 0.17, 0.12, 0.12
1,2,3,7,8,9-HxCDF	<0.063	<0.094	<0.094	<0.082 <0.082, <0.080	<0.10 <0.045, <0.10	<0.10 <0.082, <0.10	<0.059 <0.037, <0.059, <0.035	<0.066 <0.043, <0.049, <0.066	<0.066 <0.043, <0.059, <0.066

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body
1,2,3,4,6,7,8-HpCDF	<0.059	<0.12	<0.12	<0.079 <0.079, <0.058	<0.19 <0.11, <0.19	<0.19 <0.11, <0.19	0.16 ± 0.22 <0.068, 0.42BJ, <0.057	<0.15 <0.15, <0.062, <0.076	0.081 ± 0.046 <0.15, 0.13 <0.076
1,2,3,4,7,8,9-HpCDF	<0.10	<0.14	<0.14	<0.12 <0.12, <0.12	<0.23 <0.10, <0.23	<0.23 <0.12, <0.23	<0.11 <0.061, <0.11, <0.084	<0.14 <0.14, <0.12, <0.10	<0.14 <0.14, <0.12, <0.10
1,2,3,4,6,7,8,9-OCDF	0.6BJ	0.56BJ	0.57	17.0 33, 1.0BJ	1.01 0.82BJ, 1.2BJ	4.54 7.94, 1.14	0.38 ± 0.29 0.50BJ, <0.10, 0.60BJ	0.48 ± 0.076 0.57BJ, 0.45BJ, 0.43BJ	0.046 ± 0.10 0.55, 0.35, 0.47
∑TCDD	<0.044	<0.046	<0.046	<0.097 <0.097, <0.053	0.25 <0.053, 0.23J	0.11 <0.097, 0.18	<0.097 <0.044, <0.073, <0.097	0.073 ± 0.067 <0.070, <0.066, 0.15J	0.071 ± 0.060 <0.070, <0.073, 0.14
∑PeCDD	<0.011	0.67BJ	0.53	<0.12 <0.12, <0.085	0.30 0.30BJ, 0.29BJ	0.24 0.25, 0.23	0.11 ± 0.086 <0.056, 0.20BJ, 0.10BJ	0.090 ± 0.096 <0.069, <0.068, 0.20BJ	0.094 ± 0.069 <0.069, 0.077, 0.17
∑HxCDD	0.43BJ	1.7BJ	1.41	<0.70 <0.063, <0.070	0.53 0.82BJ, 0.24BJ	0.42 0.65, 0.18	0.10 ± 0.070 0.16BJ, 0.12BJ, <0.048	0.35 ± 0.051 0.31BJ, 0.34BJ, 0.41BJ	0.29 ± 0.021 0.27, 0.28, 0.31
∑HpCDD	1.2BJ	2.0BJ	1.82	1.15 1.0BJ, 1.3BJ	1.35 1.6BJ, 1.1BJ	1.31 1.47, 1.15	1.06 ± 0.73 0.76BJ, 0.53BJ, 1.9BJ	1.32 ± 1.40 0.81BJ, 0.25BJ, 2.9BJ	1.26 ± 1.23 0.80, 0.32, 2.65
∑TCDF	1.7	3.4	3.01	0.88 0.66J, 1.1J	0.74 0.97, 0.51BJ	0.79 0.90, 0.67	0.25 ± 0.020 0.23BJ, 0.27BJ, 0.25BJ	0.45 ± 0.27 0.68BJ, 0.52BJ, 0.15BJ	0.40 ± 0.20 0.57, 0.45, 0.18
∑PeCDF	1.2BJ	2.0J	1.82	0.31 0.48BJ, 0.13BJ	4.25 2.3J, 6.2	3.24 1.90, 4.57	0.14 ± 0.035 0.14BJ, 0.11BJ, 0.18BJ	0.76 ± 0.65 0.65BJ, 0.44BJ, 0.086BJ	0.52 ± 0.17 0.53, 0.35, 0.69

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body	Edible tissues	Carcass	Calculated whole body
$\sum Hx$ CDF	2.0BJ	5.1	4.39	0.82 0.54BJ, 1.1BJ	4.05 2.2BJ, 5.9J	3.23 1.84, 4.61	0.77 ± 0.078 0.73BJ, 0.72BJ, 0.86BJ	1.12 ± 0.77 2.0BJ, 0.59BJ, 0.77BJ	1.04 ± 0.58 1.70, 0.62, 0.79
$\sum Hp$ CDF	<0.079	<0.13	<0.13	<0.10 <0.10, <0.088	<0.21 <0.10, <0.21	<0.21 <0.10, <0.21	0.163 ± 0.223 <0.065, 0.42BJ, <0.071	<0.15 <0.15, <0.089, <0.088	0.086 ± 0.049 <0.15, 0.14, <0.088
2,3,7,8-TCDD toxic equivalent concentrations									
TEQ _{mammalian} (DL = 0)	0.48	1.30	1.11	0.465 0.057, 0.036	0.635 0.60, 0.67	0.491 0.481, 0.500	0.218 ± 0.119 0.084, 0.26, 0.31	0.280 ± 0.234 0.14, 0.15, 0.55	0.329 ± 0.185 0.127, 0.371, 0.489
TEQ _{mammalian} (½DL)	0.51	1.34	1.15	0.180 0.20, 0.16	0.665 0.63, 0.70	0.546 0.536, 0.555	0.270 ± 0.095 0.16, 0.32, 0.33	0.337 ± 0.193 0.22, 0.23, 0.56	0.320 ± 0.159 0.206, 0.253, 0.501
TEQ _{avian} (DL = 0)	1.25	2.94	2.55	0.310 0.34, 0.28	0.925 0.93, 0.92	0.775 0.801, 0.748	0.480 ± 0.175 0.30, 0.49, 0.65	0.633 ± 0.225 0.44, 0.58, 0.88	0.595 ± 0.210 0.407, 0.556, 0.821
TEQ _{fish} (DL = 0)	0.54	1.09	0.964	0.235 0.032, 0.015	0.750 0.78, 0.72	0.573 0.615, 0.531	0.212 ± 0.118 0.086, 0.23, 0.32	0.283 ± 0.231 0.14, 0.16, 0.55	0.265 ± 0.197 0.127, 0.178, 0.491

¹ na = Not applicable.

² B = Blank detection below quantitation level; sample value similar to blank value.

³ J = Value between method detection limit and quantitation limit.

⁴ V = Verified by alternative method.

Table 16B: Chlorinated dibenzo-*p*-dioxin and dibenzofuran concentrations in tissues of brown bullhead taken from the Buffalo River, October 2007.

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	1			2		
Tag No.	371			431, 440		
DEC ID No.	07-0044-H	07-0044-RC	07-0044	07-0090-H 07-0091-H	07-0090-RC 07-0091-RC	07-0090 07-0091
Contract Lab ID No.	G996-1-41D	G996-1-42D	na ¹	G996-1-43D G996-1-45D	G996-1-44D G996-1-46F	na
Lipids (%)	0.51	1.43	1.19	0.98 1.14, 0.82	2.77 3.89, 1.64	2.23 3.02, 1.44
2,3,7,8-TCDD	<0.293	<0.196	<0.293	<0.455 <0.192, <0.445	0.252 <0.212, 0.259	0.178 <0.212, 0.250
1,2,3,7,8-PeCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	0.271 <0.491, 0.296	0.294 <0.500, 0.338
1,2,3,4,7,8,-HxCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
1,2,3,6,7,8-HxCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	0.280 <0.491, 0.314	0.301 <0.500, 0.351
1,2,3,7,8,9-HxCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
1,2,3,4,6,7,8-HpCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	0.537 <0.491, 0.829	0.494 <0.500, 0.738

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
1,2,3,4,6,7,8,9-OCDD	2.69	2.00	2.17	2.99 1.47, 4.50	3.51 5.02, 1.99	3.26 3.90, 2.62
2,3,7,8-TCDF	<0.268	<0.197	<0.268	<0.338 <0.220, <0.338	0.328 0.401, 0.254	0.271 0.309, 0.233
1,2,3,7,8-PeCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
2,3,4,7,8-PeCDF	<0.842	0.229	0.277	<0.926 <0.500, <0.926	0.486 0.393, 0.578	0.449 0.348, 0.549
1,2,3,4,7,8-HxCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
1,2,3,6,7,8-HxCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
2,3,4,6,7,8-HxCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
1,2,3,7,8,9-HxCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
1,2,3,4,6,7,8-HpCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	0.419 0.503, 0.334	0.395 0.423, 0.366
1,2,3,4,7,8,9-HpCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
1,2,3,4,6,7,8,9-OCDF	<1.68	<0.971	<1.68	<1.85 <0.999, <1.85	0.556 0.778, 0.334	0.586 0.690, 0.481

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
\sum TCDD	<0.293	<0.196	<0.293	<0.445 <0.192, <0.445	0.183 <0.212, 0.259	0.178 <0.212, 0.250
\sum PeCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	0.271 <0.491, 0.296	0.294 <0.500, 0.338
\sum HxCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.491 <0.491, 0.314	0.301 <0.500, 0.351
\sum HpCDD	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	0.735 0.640, 0.829	0.628 0.517, 0.738
\sum TCDF	<0.268	<0.197	<0.268	<0.338 <0.220, <0.338	0.328 0.401, 0.254	0.271 0.309, 0.233
\sum PeCDF	<0.842	0.229	0.277	<0.926 <0.500, <0.926	0.564 0.393, 0.735	0.508 0.348, 0.667
\sum HxCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	<0.623 <0.491, <0.623	<0.926 <0.500, <0.926
\sum HpCDF	<0.842	<0.485	<0.842	<0.926 <0.500, <0.926	0.692 1.05, 0.334	0.582 0.798, 0.366
2,3,7,8-TCDD toxic equivalent concentrations						
TEQ _{mammalian} (DL = 0)	0.000807	0.0693	0.0518	0.000896 0.000441, 0.00135	0.482 0.165, 0.798	0.356 0.113, 0.599
TEQ _{mammalian} (½DL)	1.03	0.604	0.710	0.906 0.622, 1.19	0.849 0.700, 0.997	0.858 0.675, 1.04
TEQ _{avian} (DL= 0)	0.000269	0.229	0.171	0.000299 0.000147, 0.00045	1.10 0.800, 1.39	0.794 0.548, 1.04

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
TEQ _{fish} (DL = 0)	<0.000269	0.115	0.0853	<0.00045 <0.000147, <0.00045	0.633 0.402, 0.864	0.463 0.276, 0.649

¹ na = Not applicable.

Table 17A: Chlorinated dibenzo-*p*-dioxin and dibenzofuran concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	3			3		
Tag No.	379, 388, 314			410, 405, 406		
DEC ID No.	07-0051-H 07-0052-H 07-0054-H	07-0051-RC 07-0052-RC 07-0054-RC	07-0051 07-0052 07-0054	07-0098-H 07-0100-H 07-0101-H	07-0098-H 07-0100-H 07-0101-H	07-0098 07-0100 07-0101
Contract Lab ID No.	892415-091 892415-093 892415-095	892415-092 892415-094 892415-096	na ¹	892415-097 892415-099 892415-101	892415-098 892415-100 892415-102	na
2,3,7,8-TCDD	0.69 ± 0.45 1.2, 0.41J, 0.45J ²	0.77 ± 0.55 1.4, 0.36J, 0.56J	0.74 ± 0.51 1.33, 0.38, 0.52	0.42 ± 0.17 0.52J, 0.22J, 0.52J	0.28 ± 0.21 0.38J, <0.071, 0.42J	0.33 ± 0.20 0.44, 0.10, 0.46
1,2,3,7,8-PeCDD	0.88 ± 0.78 1.6J, <0.099, 1.0J	1.29 ± 0.82 2.1J, 0.46J, 1.3J	1.14 ± 0.81 1.92, 0.31, 1.19	0.33 ± 0.33 <0.085, 0.26J, 0.69J	0.40 ± 0.32 0.57J, <0.067, 0.61J	0.36 ± 0.27 0.34, 0.11, 0.64
1,2,3,4,7,8,-HxCDD	0.72 ± 0.37 1.1J, 0.36J, 0.7J	0.70 ± 0.59 1.2J, <0.091, 0.86J	0.71 ± 0.51 1.16, 0.16, 0.80	0.22 ± 0.31 <0.070, <0.071, 0.58J	0.33 ± 0.25 0.50J, <0.084, 0.46J	0.28 ± 0.23 0.30, <0.084, 0.51
1,2,3,6,7,8-HxCDD	2.46 ± 1.29 3.1J, 0.98J, 3.3J	2.85 ± 1.65 3.7J, 0.94J, 3.9J	2.70 ± 1.52 3.48, 0.95, 3.68	0.99 ± 0.54 1.3J, 0.37J, 1.3J	0.74 ± 0.62 1.1J, <0.063, 1.1J	0.84 ± 0.60 1.19, 0.15, 1.18
1,2,3,7,8,9-HxCDD	0.41 ± 0.33 0.63J, <0.078, 0.57J	0.59 ± 0.34 0.88J, 0.22J, 0.68J	0.53 ± 0.33 0.79, 0.15, 0.64	0.28 ± 0.13 0.35J, 0.13J, 0.35J	0.23 ± 0.08 0.30J, 0.15J, 0.23J	0.25 ± 0.095 0.32, 0.14, 0.28
1,2,3,4,6,7,8-HpCDD	5.97 ± 2.86 6.2, 3.0J, 8.7	7.20 ± 4.07 7.7, 2.9J, 11	6.73 ± 3.60 7.15, 2.94, 10.1	3.17 ± 1.47 4.3J, 1.5B ³ J, 3.7J	3.10 ± 1.11 4.1J, 1.9BJ, 3.3J	3.14 ± 1.25 4.19, 1.76, 3.47
1,2,3,4,6,7,8,9-OCDD	10.5 ± 4.82 15, 5.4J, 11	15.0 ± 7.55 22, 7.0J, 16	13.3 ± 6.53 19.4, 6.41, 14.1	6.77 ± 0.67 7.2J, 6.0J, 7.1J	7.33 ± 2.56 10, 4.9J, 7.1J	7.06 ± 1.75 8.79, 5.29, 7.10

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
2,3,7,8-TCDF	5.80 ± 3.72 10V, 2.9V, 4.5V ⁴	7.00 ± 5.41 13V, 2.5V, 5.5V	6.56 ± 4.79 11.9, 2.65, 5.13	0.96 ± 0.52 1.4V, 0.38BJ, 1.1V	0.91 ± 0.28 1.2V, 0.64BJ, 0.88J	0.94 ± 0.37 1.29, 0.55, 0.97
1,2,3,7,8-PeCDF	0.66 ± 0.23 0.93J, 0.56BJ, 0.5BJ	0.74 ± 0.71 1.5J, <0.20, 0.62J	0.71 ± 0.52 1.29, 0.27, 0.58	0.29 ± 0.18 0.38BJ, <0.16, 0.4BJ	0.27 ± 0.09 0.27BJ, 0.18BJ, 0.35BJ	0.28 ± 0.12 0.32, 0.14, 0.37
2,3,4,7,8-PeCDF	2.17 ± 1.15 3.5J, 1.5J, 1.5J	2.40 ± 1.32 3.9J, 1.4J, 1.9J	2.31 ± 1.25 3.75, 1.44, 1.75	0.50 ± 0.47 0.99J, 0.47BJ, <0.095	0.82 ± 0.15 0.87J, 0.65J, 0.93J	0.69 ± 0.20 0.92, 0.59, 0.56
1,2,3,4,7,8-HxCDF	0.46 ± 0.19 0.68J, 0.35BJ, 0.35BJ	0.25 ± 0.19 <0.12, 0.25BJ, 0.43BJ	0.33 ± 0.064 0.29, 0.29, 0.40	0.13 ± 0.16 <0.076, <0.086, 0.31BJ	0.23 ± 0.17 0.35BJ, <0.070, 0.30BJ	0.19 ± 0.13 0.22, <0.086, 0.30
1,2,3,6,7,8-HxCDF	<0.076 <0.076, <0.070, <0.076	<0.14 <0.14, <0.067, <0.070	<0.14 <0.14, <0.070, <0.076	<0.086 <0.057, <0.086, <0.072	<0.071 <0.045, <0.066, <0.071	<0.086 <0.057, <0.086, <0.072
2,3,4,6,7,8-HxCDF	0.52 ± 0.21 0.74J, 0.33J, 0.50J	0.34 ± 0.33 0.68J, 0.30J, <0.064	0.41 ± 0.26 0.70, 0.31, 0.21	0.28 ± 0.12 0.37J, 0.15J, 0.32J	0.45 ± 0.12 0.39J, 0.38J, 0.59J	0.39 ± 0.090 0.38, 0.30, 0.48
1,2,3,7,8,9-HxCDF	<0.19 <0.19, <0.099, <0.078	<0.15 <0.15, <0.094, <0.091	<0.19 <0.19, <0.099, <0.091	0.07 ± 0.03 <0.098, <0.093, 0.10J	<0.063 <0.030, <0.063, <0.062	0.052 ± 0.007 <0.098, <0.093, 0.060
1,2,3,4,6,7,8-HpCDF	<0.15 <0.14, <0.13, <0.15	<0.13 <0.13, <0.075, <0.079	<0.15 <0.14, <0.13, <0.15	<0.077 <0.077, <0.064, <0.077	<0.12 <0.10, <0.10, <0.12	<0.12 <0.10, <0.10, <0.12
1,2,3,4,7,8,9-HpCDF	0.29 ± 0.33 0.67J, <0.13, <0.24	0.13 ± 0.11 0.25J, <0.097, <0.16	0.20 ± 0.18 0.40, <0.13, <0.24	<0.18 <0.18, <0.13, <0.14	0.09 ± 0.04 <0.16, <0.11, 0.14	0.088 ± 0.023 <0.18, <0.13, 0.11
1,2,3,4,6,7,8,9-OCDF	0.39 ± 0.29 <0.12, 0.59BJ, 0.53BJ	0.42 ± 0.33 <0.080, 0.58BJ, 0.64BJ	0.41 ± 0.31 <0.12, 0.58, 0.60	0.46 ± 0.18 0.45BJ, 0.64BJ, <0.57BJ	0.34 ± 0.28 <0.049, 0.45BJ, 0.54BJ	0.35 ± 0.16 0.21, 0.52, 0.32

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
\sum TCDD	0.69 ± 0.45 1.2, 0.41J, 0.45J	0.77 ± 0.55 1.4, 0.36J, 0.56J	0.74 ± 0.51 1.33, 0.38, 0.52	0.42 ± 0.17 0.52J, 0.22J, 0.52J	0.28 ± 0.21 0.38J, <0.071, 0.42J	0.33 ± 0.20 0.44, 0.10, 0.46
\sum PeCDD	0.98 ± 0.93 1.9J, <0.099, 1.0J	1.42 ± 1.03 2.5J, 0.46J, 1.3J	1.26 ± 0.99 2.28, 0.31, 1.19	0.33 ± 0.33 <0.085, 0.26BJ, 0.69J	0.44 ± 0.36 0.57J, <0.067, 0.71J	0.38 ± 0.30 0.34, 0.11, 0.70
\sum HxCDD	3.73 ± 2.15 5.4, 1.3BJ, 4.5J	4.17 ± 2.57 5.8, 1.2BJ, 5.5	4.01 ± 2.41 5.65, 1.24, 5.13	1.50 ± 0.92 1.7J, 0.49BJ, 2.3J	1.28 ± 0.98 1.9J, 0.15BJ, 1.8J	1.36 ± 0.95 1.81, 0.27, 2.01
\sum HpCDD	6.43 ± 2.91 6.7, 3.4BJ, 9.2	7.87 ± 4.31 8.2, 3.4BJ, 12	7.35 ± 3.81 7.65, 3.40, 11.0	3.73 ± 1.44 4.8B, 2.1BJ, 4.3BJ	3.67 ± 1.27 4.8B, 2.3BJ, 3.9BJ	3.70 ± 1.32 4.80, 2.23, 4.07
\sum TCDF	10.7 ± 8.06 20, 6.3, 5.8	12.0 ± 7.17 20, 6.1, 10	11.5 ± 7.42 20.0, 6.17, 8.43	2.17 ± 0.76 2.5, 1.3, 2.7	3.27 ± 0.51 3.4, 3.7, 2.7	2.85 ± 0.16 3.01, 2.85, 2.70
\sum PeCDF	8.50 ± 8.23 18, 3.8J, 3.7J	9.78 ± 8.87 20, 4.4, 4.9	9.31 ± 8.65 19.3, 4.18, 4.45	2.57 ± 0.46 2.3J, 3.1J, 2.3J	3.13 ± 0.83 2.2J, 3.4J, 3.8J	2.90 ± 0.57 2.24, 3.29, 3.17
\sum HxCDF	2.43 ± 1.53 4.2J, 1.5BJ, 1.6BJ	1.93 ± 0.61 2.6J, 1.4BJ, 1.8BJ	2.12 ± 0.93 3.18, 1.44, 1.73	1.14 ± 0.74 1.9BJ, 0.42BJ, 1.1BJ	1.39 ± 0.64 1.9BJ, 0.68BJ, 1.6BJ	1.29 ± 0.66 1.90, 0.59, 1.39
\sum HpCDF	0.36 ± 0.30 0.67BJ, <0.13, 0.33BJ	0.12 ± 0.11 0.25BJ, <0.086, <0.12	0.18 ± 0.19 0.40, <0.13, 0.16	<0.13 <0.13, <0.099, <0.11	0.41 ± 0.60 <0.13, 1.1BJ, <0.13	0.29 ± 0.38 <0.13, 0.73, <0.13
2,3,7,8-TCDD toxic equivalent concentrations						
TEQ _{mammalian} (DL = 0)	3.33 ± 2.11 5.58, 1.40, 3.00	4.05 ± 2.55 6.75, 1.69, 3.70	3.78 ± 2.39 6.32, 1.58, 3.44	1.21 ± 0.465 1.22, 0.74, 1.67	1.23 ± 0.774 1.65, 0.34, 1.71	1.19 ± 0.674 1.46, 0.424, 1.69
TEQ _{mammalian} (½DL)	3.35 ± 2.09 5.59, 1.46, 3.01	4.06 ± 2.55 6.77, 1.71, 3.71	3.80 ± 2.38 6.34, 1.62, 3.45	1.25 ± 0.463 1.31, 0.76, 1.68	1.27 ± 0.725 1.65, 0.43, 1.72	1.25 ± 0.617 1.50, 0.546, 1.70
TEQ _{avian} (DL= 0)	9.82 ± 6.10 16.7, 5.05, 7.71	11.7 ± 8.22 20.8, 4.81, 9.52	11.0 ± 7.44 19.3, 4.90, 8.84	2.30 ± 0.853 3.03, 1.36, 2.50	2.52 ± 1.01 3.19, 1.36, 3.02	2.43 ± 0.938 3.12, 1.36, 2.80

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
TEQ _{fish} (DL = 0)	3.45 ± 2.18 5.84, 1.58, 2.93	4.09 ± 2.62 6.90, 1.71, 3.65	3.85 ± 2.46 6.51, 1.66, 3.38	1.20 ± 0.456 1.16, 0.76, 1.67	1.47 ± 0.928 2.12, 0.41, 1.89	1.35 ± 0.707 1.71, 0.533, 1.80

¹ na = Not applicable.

² J = Value between method detection limit and quantitation limit.

³ B = Blank detection below quantitation level; sample value similar to blank value.

⁴ V = Result verified by confirmation analysis.

Table 17B: Chlorinated dibenzo-*p*-dioxin and dibenzofuran concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	2			4		
Tag No.	352, 373			338, 308, 381, 383		
DEC ID No.	07-0053-H 07-0055-H	07-0053-RC 07-0055-RC	07-0053 07-0055	07-0094-H 07-0095-H 07-0096-H 07-0097-H	07-0094-RC 07-0095-RC 07-0096-RC 07-0097-RC	07-0094 07-0095 07-0096 07-0097
Contract Lab ID No.	G996-1-25F G996-1-27D	G996-1-26H G996-1-27D	na ¹	G996-1-29D G996-1-31D G996-1-33F G996-1-35D	G996-1-30G G996-1-32G G996-1-34D G996-1-36D	na
Lipid (%)	15.50 16.09, 14.91	22.93 25.51, 20.34	19.92 22.16, 17.68	20.95 ± 17.18 3.96, 14.28, 44.46, 21.07	21.44 ± 10.01 10.00, 23.44, 33.95, 18.38	21.35 ± 13.18 7.11, 19.64, 39.02, 19.61
2,3,7,8-TCDD	0.329 0.563, <0.191	<0.367 <0.224, <0.367	0.228 0.272, <0.367	0.727 ± 0.789 <0.174, <0.181, 1.71, 1.02 Q ²	0.579 ± 0.618 <0.232, 0.711, 1.40 Q, <0.178	0.659 ± 0.620 <0.232, 0.453, 1.55, 0.516
1,2,3,7,8-PeCDD	<0.494 <0.463, <0.494	0.650 1.00, <0.499	0.488 0.727, <0.499	<0.496 <0.482, <0.487, <0.496, <0.489	0.830 ± 0.713 <0.484, 1.16, 1.68, <0.477	0.564 ± 0.380 <0.484, 0.780, 0.989, <0.489
1,2,3,4,7,8,-HxCDD	<0.494 <0.463, <0.494	0.331 <0.498, 0.363	0.278 <0.498, 0.306	0.359 ± 0.229 <0.482, 0.702, <0.496, <0.489	0.539 ± 0.369 <0.484, 0.678, 0.999, <0.477	0.453 ± 0.243 <0.484, 0.688, 0.636, <0.489

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
1,2,3,6,7,8-HxCDD	1.82 1.90, 1.74	1.88 2.52, 1.24	1.89 2.30, 1.48	1.20 ± 0.68 <0.482, 1.30, 1.84, 1.42	0.979 ± 0.622 0.934, 1.77, <0.496, 0.965	1.12 ± 0.354 0.718, 1.57, 1.02, 1.17
1,2,3,7,8,9-HxCDD	0.906 <0.463, 1.58	1.18 1.46, 0.893	1.13 1.02, 1.23	0.527 ± 0.569 <0.482, <0.487, 1.38, <0.489	0.537 ± 0.402 0.366, <0.483, 1.13, 0.412	0.534 ± 0.479 0.306, <0.487, 1.25, 0.335
1,2,3,4,6,7,8-HpCDD	4.90 5.14, 4.66	6.41 9.02, 3.80	5.93 7.64, 4.22	3.90 ± 2.97 <0.482, 2.90, 5.43, 7.02	4.34 ± 1.05 2.91, 4.28, 4.82, 5.34	4.14 ± 1.94 1.63, 3.71, 5.11, 6.11
1,2,3,4,6,7,8,9-OCDD	10.6 9.02, 12.2	16.7 25.1, 8.38	14.9 19.4, 10.3	6.52 ± 4.27 2.45, 3.65, 11.7, 8.26	6.33 ± 2.26 4.78, 4.39, 9.30, 6.86	6.44 ± 3.21 3.66, 4.08, 10.5, 7.50
2,3,7,8-TCDF	3.77 2.21, 5.32	4.21 3.64, 4.78	4.09 3.13, 5.04	3.10 ± 3.47 0.459, 1.10, 8.10, 2.74	2.82 ± 2.64 0.874, 1.92, 6.71, 1.77	2.96 ± 3.01 0.675, 1.58, 7.38, 2.21
1,2,3,7,8-PeCDF	0.504 0.489, 0.518	0.450 0.549, 0.351	0.481 0.528, 0.433	0.578 ± 0.485 <0.482, <0.487, 1.27, 0.555	0.634 ± 0.409 0.263, 0.603, 1.21, 0.458	0.612 ± 0.432 0.252, 0.454, 1.24, 0.502
2,3,4,7,8-PeCDF	1.48 1.37, 1.58	1.64 2.07, 1.20	1.61 1.82, 1.39	2.12 ± 2.14 <0.482, 1.38, 5.20, 1.64	2.29 ± 1.94 0.944, 1.93, 5.13, 1.15	2.21 ± 2.02 0.608, 1.70, 5.16, 1.37
1,2,3,4,7,8-HxCDF	<0.494 <0.463, <0.494	0.844 <0.475, 1.45	0.549 <0.475, 0.861	1.56 ± 1.51 <0.482, 1.01, 3.73, 1.26	1.51 ± 1.51 <0.484, 1.60, 3.60, 0.606	1.54 ± 1.48 <0.484, 1.36, 3.66, 0.906

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
1,2,3,6,7,8-HxCDF	0.341 <0.463, 0.451	0.526 0.473, 0.578	0.486 0.455, 0.516	0.581 ± 0.494 <0.482, 0.550, 1.29, <0.489	0.680 ± 0.362 0.354, 0.775, 1.15, 0.442	0.639 ± 0.423 0.300, 0.682, 1.22, 0.352
2,3,4,6,7,8-HxCDF	<0.494 <0.463, <0.494	0.326 0.348, 0.303	0.292 0.307, 0.276	0.318 ± 0.151 <0.482, <0.487, 0.544, <0.489	0.320 ± 0.162 0.238, <0.483, 0.563, <0.477	0.320 ± 0.156 0.239, <0.487, 0.554, <0.489
1,2,3,7,8,9-HxCDF	<0.494 <0.463, <0.494	<0.499 <0.475, <0.499	<0.499 <0.475, <0.499	<0.496 <0.482, <0.487, <0.496, <0.489	<0.496 <0.484, <0.483, <0.496, <0.477	<0.496 <0.484, <0.487, <0.496, <0.489
1,2,3,4,6,7,8-HpCDF	0.569 0.890, <0.494	1.35 1.41, 1.28	1.00 1.23, 0.774	1.38 ± 1.21 <0.482, 0.924, 3.07, 1.28	0.968 ± 0.943 <0.484, 1.17, 2.22, <0.477	1.16 ± 1.03 <0.484, 1.07, 2.63, 0.716
1,2,3,4,7,8,9-HpCDF	<0.494 <0.463, <0.494	<0.499 <0.475, <0.499	<0.499 <0.475, <0.499	<0.496 <0.482, <0.487, <0.496, <0.489	<0.703 <0.484, <0.703, <0.496, <0.477	<0.703 <0.484, <0.703, <0.496, <0.489
1,2,3,4,6,7,8,9-OCDF	<0.988 <0.927, <0.988	1.40 2.30, <0.997	1.07 1.65, <0.997	<0.496 <0.964, <0.975, <0.992, <0.978	0.494 ± 0.050 0.445, <0.966, <0.991, 0.564	0.494 ± 0.028 0.463, <0.975, <0.992, 0.530
∑TCDD	34.5 3.39, 68.6 Q	89.2 100, 78.3	69.6 65.6, 73.5	54.6 ± 89.9 0.301, 0.932, 188 Q, 29.2 Q	98.2 ± 118 <0.232, 238, 153 Q, 1.65	81.1 ± 86.4 0.204, 140, 170, 14.3
∑PeCDD	2.57 1.32 Q, 3.82	5.11 8.25, 1.97 Q	4.33 5.78, 2.88	1.19 ± 1.77 <0.482, <0.487, 3.84, 0.450	2.54 ± 2.67 <0.484, 4.43, 5.24, <0.477	1.96 ± 2.07 <0.484, 2.69, 4.56, 0.335

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
\sum HxCDD	19.9 3.97, 35.9	60.3 94.3, 26.2 Q	46.6 62.2, 31.0	13.1 ± 20.4 <0.482, 2.00, 43.3, 6.66	13.2 ± 15.7 1.30, 15.7, 34.4, 1.38	13.3 ± 17.3 0.793, 10.0, 38.7, 3.80
\sum HpCDD	68.3 26.6, 110	77.1 89.0, 65.1	77.0 66.8, 87.1	16.9 ± 20.3 <0.482, 2.90, 44.3, 20.1	16.8 ± 16.7 3.79, 13.2, 41.2 Q, 9.07	17.0 ± 17.9 2.09, 8.93, 42.7, 14.1
\sum TCDF	2.91 22.6, 35.6	27.0 21.2, 32.8	28.0 21.7, 34.2	14.7 ± 14.5 0.047, 8.69, 34.2 Q, 16.0	11.0 ± 7.01 2.40, 13.2, 19.1 Q, 9.26	13.0 ± 10.1 1.96, 11.3, 26.4, 12.3
\sum PeCDF	2.70 32.9 DPE ³ , 21.0	11.9 9.73, 14.0 DPE	17.7 18.0, 17.4	13.0 ± 8.57 3.26 DPE, 11.1 DPE, 24.0 DPE, 13.8 DPE	8.77 ± 7.23 2.45, 3.52, 17.9, 11.2 DPE	10.7 ± 7.81 2.84, 6.67, 20.8, 12.4
\sum HxCDF	3.24 2.18, 4.29	4.44 3.53, 5.34 DPE	3.94 3.05, 4.83	3.83 ± 3.26 <0.482, 3.24, 8.15, 3.70	2.99 ± 2.65 1.08, 3.13, 6.69, 1.05	3.38 ± 2.87 0.678, 3.18, 7.39, 2.26
\sum HpCDF	1.88 1.37, 2.38	3.35 4.33, 2.37	2.83 3.28, 2.37	1.38 ± 1.21 <0.482, 0.924, 3.07, 1.28	0.968 ± 0.943 <0.484, 1.17, 2.22, <0.477	1.16 ± 1.03 <0.484, 1.07, 2.63, 0.716
2,3,7,8-TCDD toxic equivalent concentrations						
TEQ _{mammalian} (DL = 0)	2.47 3.49, 1.45	1.99 2.59, 1.38	2.16 2.91, 1.41	2.02 ± 2.20 0.047, 0.920, 5.09, 2.03	2.69 ± 2.58 0.598, 3.20, 6.14, 0.834	2.40 ± 2.29 0.334, 2.25, 5.63, 1.38
TEQ _{mammalian} (½DL)	3.29 3.83, 2.75	2.31 2.78, 1.84	2.72 3.15, 2.29	2.44 ± 2.10 0.630, 1.34, 5.39, 2.40	2.94 ± 2.40 1.03, 3.27, 6.20, 1.24	3.13 ± 2.25 0.839, 4.11, 5.81, 1.77

Parameter	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
TEQ _{avian} (DL= 0)	5.76 4.34, 7.17	6.64 7.03, 6.25	6.39 6.07, 6.70	7.69 ± 9.77 0.459, 2.69, 22.0, 5.60	6.74 ± 6.29 1.95, 6.08, 15.8, 3.12	7.24 ± 7.86 1.24, 4.67, 18.8, 4.26
TEQ _{fish} (DL = 0)	1.31 1.46, 1.16	1.85 2.39, 1.31	1.65 2.06, 1.24	2.22 ± 2.30 0.023, 1.28, 5.40, 2.16	3.03 ± 3.06 0.604, 3.57, 7.15, 0.810	2.67 ± 2.60 0.326, 2.62, 6.30, 1.43

¹ na = Not applicable.

² Q = Quantitative interference is present; analyte concentration may be underestimated.

³ DPE = Polychlorinated diphenyl ether interference; concentration may be a false positive or an overestimation of the analyte concentration.

Table 17C: Chlorinated dibenzo-*p*-dioxin and dibenzofuran concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter	Concentration (pg/g wet weight) in:		
	Zone 4		
	Edible tissues	Carcass	Calculated whole fish
n	2		
Tag No.	403, 414		
DEC ID No.	07-0099-H 07-0102-H	07-0099-RC 07-0102-RC	07-0099 07-0102
Contract Lab ID No.	G996-1-37D G996-1-39D	G996-1-38D G996-1-40D	na ¹
Lipids (%)	6.32 3.84, 8.79	11.04 6.51, 15.57	8.89 5.64, 12.13
2,3,7,8-TCDD	<0.210 <0.210, <0.175	<0.182 <0.168, <0.182	<0.210 <0.210, <0.182
1,2,3,7,8-PeCDD	0.348 0.306, 0.389	<0.477 <0.477, <0.467	0.286 0.260, 0.312
1,2,3,4,7,8,-HxCDD	0.417 <0.496, 0.586	0.540 <0.477, 0.841	0.480 <0.496, 0.711
1,2,3,6,7,8-HxCDD	0.459 <0.496, 0.669	0.832 0.737, 0.927	0.687 0.578, 0.796
1,2,3,7,8,9-HxCDD	<0.496 <0.496, <0.492	0.510 <0.477, 0.781	0.379 <0.496, 0.509
1,2,3,4,6,7,8-HpCDD	1.71 1.82, 1.60	2.09 1.80, 2.38	1.90 1.81, 1.98
1,2,3,4,6,7,8,9-OCDD	2.61 2.61, 2.60	4.29 3.38, 5.19	3.50 3.13, 3.87
2,3,7,8-TCDF	1.33 0.774, 1.89	1.662 0.844, 2.48	1.50 0.821, 2.18
1,2,3,7,8-PeCDF	0.198 0.159, 0.236	<0.477 <0.477, <0.467	0.224 0.213, 0.235
2,3,4,7,8-PeCDF	0.612 0.532, 0.692	0.777 0.553, 1.00	0.695 0.546, 0.844
1,2,3,4,7,8-HxCDF	0.321 <0.496, 0.393	0.413 0.302, 0.523	0.371 0.284, 0.457
1,2,3,6,7,8-HxCDF	<0.496 <0.496, <0.492	<0.477 <0.477, <0.467	<0.496 <0.496, <0.492

Parameter	Concentration (pg/g wet weight) in:		
	Zone 4		
	Edible tissues	Carcass	Calculated whole fish
2,3,4,6,7,8-HxCDF	<0.496 <0.496, <0.492	0.237 <0.477, 0.236	0.189 <0.496, 0.129
1,2,3,7,8,9-HxCDF	<0.496 <0.496, <0.492	<0.477 <0.477, <0.467	<0.496 <0.496, <0.492
1,2,3,4,6,7,8-HpCDF	0.411 0.413, 0.409	0.629 0.615, 0.643	0.537 0.549, 0.524
1,2,3,4,7,8,9-HpCDF	<0.496 <0.496, <0.492	<0.477 <0.477, <0.467	<0.496 <0.496, <0.492
1,2,3,4,6,7,8,9-OCDF	<0.983 <0.496, <0.983	0.629 <0.954, 0.781	0.556 <0.954, 0.634
∑TCDD	0.244 <0.210, 0.382	0.263 <0.168, 0.441	0.258 <0.210, 0.411
∑PeCDD	0.348 0.306, 0.389	<0.477 <0.477, <0.467	0.286 0.260, 0.312
∑HxCDD	1.00 <0.496, 1.76	1.64 0.737, 2.55	1.36 0.578, 2.15
∑HpCDD	1.71 1.82, 1.60	2.09 1.80, 2.38	1.90 1.81, 1.98
∑TCDF	1.87 0.774, 2.97	2.36 1.14, 3.57	2.15 1.02, 3.27
∑PeCDF	1.76 1.46, 2.06	1.69 0.969, 2.41	1.68 1.13, 2.23
∑HxCDF	0.321 <0.496, 0.393	1.21 1.03, 1.38	0.827 0.775, 0.879
∑HpCDF	0.411 0.413, 0.409	0.629 0.615, 0.643	0.537 0.549, 0.524
2,3,7,8-TCDD toxic equivalent concentrations			
TEQ _{mammalian} (DL = 0)	0.775 0.571, 0.978	0.645 0.379, 0.911	0.694 0.442, 0.945
TEQ _{mammalian} (½DL)	1.01 0.852, 1.15	1.06 0.831, 1.29	1.03 0.838, 1.22
TEQ _{avian} (DL = 0)	2.35 1.63, 3.07	2.57 1.44, 3.69	2.44 1.50, 3.38
TEQ _{fish} (DL = 0)	0.908 0.625, 1.19	0.757 0.364, 1.15	0.810 0.449, 1.17

¹ na = Not applicable.

Table 18A: Chlorinated dibenzo-*p*-dioxins and dibenzofuran concentrations in tissues of pumpkinseed taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	2			2		
Tag No.	380 332			385 344		
DEC ID No.	07-0046-H 07-0048-H	07-0046-RC 07-0048-RC	07-0046 07-0048	07-0059-H 07-0061-H	07-0059-RC 07-0061-RC	07-0059 07-0061
Lab ID No.	892415-063 892415-065	892415-064 892415-066	na ¹	892415-067 892415-069	892415-068 892415-070	na
2,3,7,8-TCDD	<0.61 <0.61, <0.35	<0.32 <0.32, <0.25	<0.61 <0.61, <0.35	<0.14 <0.14, <0.11	<0.077 <0.077, <0.054,	<0.14 <0.14, <0.11
1,2,3,7,8-PeCDD	<0.43 <0.43, <0.25	0.18 <0.29, 0.21B ² J ³	0.19 <0.43, 0.17	<0.11 <0.11, <0.088	<0.13 <0.055, <0.13	<0.13 <0.11, <0.13
1,2,3,4,7,8,-HxCDD	<0.47 <0.47, <0.21	<0.24 <0.24, <0.17	<0.47 <0.47, <0.21	<0.079 <0.053, <0.079	<0.050 <0.050, <0.048	<0.079 <0.053, <0.079
1,2,3,6,7,8-HxCDD	0.465 0.51BJ, 0.42BJ	<0.32 <0.32, <0.18	0.27 0.30, 0.23	<0.088 <0.057, <0.088	0.46 0.067J, <0.051	0.049 0.053, <0.088
1,2,3,7,8,9-HxCDD	<0.38 <0.38, <0.14	<0.27 <0.27, <0.16	<0.38 <0.38, <0.16	<0.083 <0.056, <0.083	<0.061 <0.061, <0.056	<0.083 <0.061, <0.083
1,2,3,4,6,7,8-HpCDD	3.50 4.5BJ, 2.5BJ	1.65 1.7BJ, 1.6BJ	2.41 2.83, 1.99	0.500 0.62BJ, 0.38BJ	0.400 0.47BJ, 0.33BJ	0.44 0.53, 0.35
1,2,3,4,6,7,8,9-OCDD	0.165 22BJ, 11BJ	9.95 11BJ, 8.9BJ	12.6 15.4, 9.79	2.80 3.5BJ, 2.1BJ	2.15 2.5BJ, 1.8BJ	2.39 2.88, 1.90

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
2,3,7,8-TCDF	0.40 <0.73, 0.44BJ	0.54 0.42BJ, 0.66BJ	0.49 0.40, 0.56	0.425 0.48BJ, 0.37BJ	0.485 0.48BJ, 0.49BJ	0.470 0.48, 0.45
1,2,3,7,8-PeCDF	<0.44 <0.44, <0.27	<0.31 <0.31, <0.17	<0.44 <0.44, <0.27	<0.11 <0.092, <0.11	<0.16 <0.080, <0.16	<0.16 <0.080, <0.16
2,3,4,7,8-PeCDF	<0.35 <0.35, <0.17	<0.34 <0.34, <0.16	<0.35 <0.35, <0.17	0.11 0.18BJ, <0.072	<0.11 <0.081, <0.11	0.074 0.093, <0.11
1,2,3,4,7,8-HxCDF	0.27 0.42BJ, <0.22	<0.18 <0.18, <0.18	0.17 0.22, <0.22	0.079 0.13BJ, <0.054	<0.039 <0.039, <0.031	0.044 0.061, <0.054
1,2,3,6,7,8-HxCDF	<0.37 <0.37, <0.26	<0.26 <0.26, <0.15	<0.37 <0.37, <0.26	<0.091 <0.091, <0.043	<0.047 <0.030, <0.047	<0.091 <0.091, <0.047
2,3,4,6,7,8-HxCDF	<0.34 <0.34, <0.27	<0.27 <0.27, <0.15	<0.34 <0.34, <0.27	<0.082 <0.082, <0.054	0.096 0.17J, <0.045	0.074 0.12, <0.054
1,2,3,7,8,9-HxCDF	<0.45 <0.45, <0.26	<0.24 <0.22, <0.24	<0.45 <0.45, <0.26	<0.079 <0.079, <0.067	<0.045 <0.045, <0.045	0.079 <0.079, <0.067
1,2,3,4,6,7,8-HpCDF	0.85 1.6BJ, <0.20	<0.23 <0.23, <0.21	0.41 0.72, <0.21	0.35 0.68BJ, <0.054	<0.15 <0.073, <0.15	0.18 0.28, <0.15
1,2,3,4,7,8,9-HpCDF	<0.54 <0.54, <0.28	<0.50 <0.50, <0.30	<0.54 <0.54, <0.30	<0.15 <0.15, <0.10	<0.15 <0.12, <0.15	<0.015 <0.015, <0.15
1,2,3,4,6,7,8,9-OCDF	<0.78 <0.78, <0.36	2.55 2.7BJ, 2.4BJ	1.60 1.76, 1.44	1.30 1.6BJ, 1.0BJ	1.1BJ, 0.85BJ	1.10 1.29, 0.90
∑TCDD	<0.61 <0.61, <0.35	<0.32 <0.32, <0.25	<0.61 <0.61, <0.35	<0.14 <0.14, <0.11	<0.077 <0.077, <0.054	<0.14 <0.14, <0.11

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Σ PeCDD	<0.43 <0.43, <0.25	0.18 <0.29, 0.21BJ	0.29 <0.43, 0.17	0.12 <0.11, 0.18BJ	<0.13 <0.055, <0.13	<0.11 <0.11, 0.10
Σ HxCDD	1.30 1.4BJ, 1.2BJ	0.38 <0.27, 0.63BJ	0.76 0.65, 0.87	<0.083 <0.055, <0.083	0.047 0.067BJ, <0.052	0.028 0.052, <0.083
Σ HpCDD	7.45 9.9BJ, 5.0BJ	3.60 3.7BJ, 3.5BJ	4.89 6.20, 3.57	1.22 1.5BJ, 0.94BJ	0.845 1.0BJ, 0.69BJ	0.99 1.19, 0.78
Σ TCDF	0.40 <0.73, 0.44BJ	0.54 0.42BJ, 0.66BJ	0.48 0.40, 0.56	0.425 0.48BJ, 0.37BJ	1.89 0.48BJ, 3.3	1.39 0.48, 2.29
Σ PeCDF	<0.40 <0.40, <0.22	<0.33 <0.33, <0.16	<0.40 <0.40, <0.22	0.790 0.18BJ, 1.4BJ	4.29 0.57BJ, 8.0	3.08 0.42, 5.73
Σ HxCDF	0.27 0.42BJ, <0.25	0.35 <0.22, 0.58BJ	0.31 0.24, 0.38	0.475 0.13BJ, 0.82BJ	0.310 0.17BJ, 0.45BJ	0.37 0.15, 0.58
Σ HpCDF	0.86 1.6BJ, <0.24	<0.36 <0.36, <0.26	0.43 0.75, <0.26	0.53 0.68BJ, <0.077	<0.15 <0.094, <0.15	0.18 0.29, <0.15
2,3,7,8-TCDD toxic equivalent concentrations						
TEQ _{mammalian} (DL = 0)	0.138 0.161, 0.114	0.179 0.0631, 0.295	0.160 0.103, 0.217	0.067 0.130, 0.0042	0.065 0.077, 0.053	0.067 0.097, 0.036
TEQ _{mammalian} (½DL)	0.693 0.872, 0.514	0.512 0.513, 0.511	0.585 0.658, 0.512	0.233 0.288, 0.177	0.177 0.172, 0.182	0.198 0.216, 0.180
TEQ _{avian} (DL = 0)	0.253 0.065, 0.44	0.645 0.42, 0.87	0.480 0.276, 0.684	0.525 0.68, 0.37	0.495 0.50, 0.49	0.509 0.568, 0.449
TEQ _{fish} (DL = 0)	0.049 0.068, 0.029	0.132 0.023, 0.24	0.095 0.041, 0.15	0.075 0.13, 0.019	0.033 0.041, 0.025	0.049 0.075, 0.023

¹ na = Not applicable. ² B = Blank detection below quantitation level; sample value similar to blank value. ³ J = Value between method detection limit and quantitation limit.

Table 18B: Chlorinated dibenzo-*p*-dioxins and dibenzofuran concentrations in tissues of pumpkinseed taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	2			2		
Tag No.	442 439			417 408		
DEC ID No.	07-0077-H 07-0078-H	07-0077-RC 07-0078-RC	07-0077 07-0078	07-0104-H 07-0107-H	07-0104-RC 07-0107-RC	07-0104 07-0107
Lab ID No.	892415-071 892415-073	892415-072 892415-074	na ¹	892415-075 892415-077	892415-076 892415-078	na
2,3,7,8-TCDD	<0.11 <0.11, <0.090	<0.089 <0.089, <0.088	<0.11 <0.11, <0.09	<0.088 <0.088, <0.057	0.20 <0.13, 0.17J	0.08 <0.13, 0.10
1,2,3,7,8-PeCDD	<0.16 <0.15, <0.16	<0.12 <0.12, <0.045	<0.16 <0.15, <0.16	<0.17 <0.17, <0.10	<0.13 <0.082, <0.13	<0.17 <0.17, <0.13
1,2,3,4,7,8,-HxCDD	<0.098 <0.098, <0.054	<0.10 <0.10, <0.049	<0.10 <0.10, <0.054	<0.10 <0.10, <0.047	<0.066 <0.063, <0.066	<0.10 <0.10, <0.066
1,2,3,6,7,8-HxCDD	0.073 <0.10, 0.096J ²	0.059 <0.10, 0.067J	0.064 <0.10, 0.077	<0.13 <0.13, <0.057	0.11 <0.047, 0.20J	0.093 <0.13, 0.12
1,2,3,7,8,9-HxCDD	<0.091 <0.091, <0.049	<0.093 <0.093, <0.051	<0.093 <0.093, <0.051	<0.11 <0.11, <0.061	0.070 0.11J, <0.058	0.60 0.090, <0.061
1,2,3,4,6,7,8-HpCDD	0.31 <0.080, 0.58B ³ J	0.16 <0.056, 0.29BJ	0.22 <0.080, 0.39	0.39 0.74BJ, <0.068	0.840 1.0BJ, 0.68BJ	0.63 0.88, 0.38
1,2,3,4,6,7,8,9-OCDD	3.60 3.8BJ, 3.4BJ	1.90 2.2BJ, 1.6BJ	2.52 2.79, 2.25	2.95 4.3BJ, 1.8BJ	5.20 5.7BJ, 4.7BJ	4.23 5.06, 3.39

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
2,3,7,8-TCDF	0.390 0.45BJ, 0.33BJ	0.680 0.68BJ, 0.68BJ	0.57 0.59, 0.55	0.20 <0.11, 0.35BJ	0.860 0.96J, 0.76J	0.57 0.56, 0.57
1,2,3,7,8-PeCDF	<0.13 <0.11, <0.13	0.12 <0.17, 0.15BJ	0.10 <0.17, 0.12	<0.074 <0.074, <0.061	0.14 0.21BJ, <0.13	0.098 0.13, <0.13
2,3,4,7,8-PeCDF	0.13 0.22BJ, <0.086	<0.084 <0.084, <0.029	0.077 0.11, <0.086	<0.14 <0.14, <0.10	0.15 0.24BJ, <0.11	0.11 0.16, <0.11
1,2,3,4,7,8-HxCDF	0.10 <0.053, 0.18BJ	<0.082 <0.082, <0.050	0.061 <0.082, 0.081	<0.075 <0.075, <0.047	0.96 0.16BJ, <0.066	0.067 0.10, <0.066
1,2,3,6,7,8-HxCDF	<0.063 <0.063, <0.063	<0.076 <0.076, <0.056	<0.076 <0.076, <0.063	<0.071 <0.071, <0.069	<0.39 <0.39, <0.076	<0.39 <0.39, <0.076
2,3,4,6,7,8-HxCDF	0.165 0.13J, 0.20J	<0.074 <0.074, <0.031	0.11 0.13, 0.082	0.094 0.16J, <0.057	0.093 0.14J, <0.092	0.098 0.15, <0.092
1,2,3,7,8,9-HxCDF	0.065 <0.072, 0.094BJ	<0.087 <0.087, <0.054	0.047 <0.087, 0.051	<0.094 <0.094, <0.071	<0.089 <0.043, <0.089	<0.094 <0.094, <0.089
1,2,3,4,6,7,8-HpCDF	0.48 <0.11, 0.90BJ	<0.15 <0.15, <0.085	0.21 <0.15, 0.35	0.66 <0.077, 0.57BJ	<0.10 <0.10, <0.10	0.17 <0.10, 0.29
1,2,3,4,7,8,9-HpCDF	<0.15 <0.15, <0.14	<0.22 <0.22, <0.18	<0.22 <0.22, <0.18	<0.11 <0.11, <0.10	<0.22 <0.22, <0.12	<0.22 <0.22, <0.12
1,2,3,4,6,7,8,9-OCDF	7.75 2.5BJ, 13J	0.710 0.76BJ, 0.66BJ	3.26 1.40, 5.11	1.0 2.0BJ, <0.073	3.80 1.3BJ, 6.3BJ	2.50 1.61, 3.39
∑TCDD	<0.11 <0.11, <0.090	<0.089 <0.089, <0.044	<0.11 <0.11, <0.09	<0.088 <0.088, <0.057	0.12 <0.13, 0.17J	0.08 <0.13, 0.10
∑PeCDD	0.94 <0.15, 1.8J	<0.12 <0.12, <0.045	0.37 <0.15, 0.66	<0.17 <0.17, <0.10	<0.13 <0.082, <0.13	<0.17 <0.17, <0.13

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Σ HxCDD	0.072 <0.096, 0.096BJ	0.036 <0.10, 0.067BJ	0.064 <0.10, 0.077	<0.11 <0.11, <0.055	0.155 0.11BJ, 0.20BJ	0.11 0.090, 0.12
Σ HpCDD	1.15 0.89BJ, 1.4BJ	0.555 0.48BJ, 0.63BJ	0.77 0.63, 0.91	1.05 1.7BJ, 0.40BJ	1.75 2.1BJ, 1.4BJ	1.43 1.92, 0.94
Σ TCDF	0.470 0.45BJ, 0.49BJ	1.75 2.1, 1.4	1.28 1.49, 1.07	0.26 <0.11, 0.46BJ	2.50 2.4, 2.6	1.48 1.35, 1.61
Σ PeCDF	0.705 0.41BJ, 1.0BJ	0.270 4.1J, 1.3BJ	1.96 2.73, 1.19	<0.10 <0.10, <0.081	0.63 1.2BJ, <0.12	0.37 0.68, <0.12
Σ HxCDF	0.300 0.13BJ, 0.47BJ	1.80 2.4BJ, 1.2BJ	1.25 1.56, 0.94	0.425 0.45BJ, 0.30BJ	1.45 1.3BJ, 1.6BJ	0.96 0.92, 1.00
Σ HpCDF	0.48 <0.13, 0.90BJ	<0.19 <0.19, <0.13	0.23 <0.19, 0.37	0.31 <0.093, 0.57BJ	<0.16 <0.16, <0.11	0.19 <0.16, 0.30
2,3,7,8-TCDD toxic equivalent concentrations						
TEQ _{mammalian} (DL = 0)	0.118 0.126, 0.110	0.0758 0.0688, 0.0828	0.0913 0.0899, 0.0926	0.0439 0.0253, 0.0412	0.252 0.227, 0.276	0.152 0.136, 0.167
TEQ _{mammalian} (½DL)	0.271 0.283, 0.259	0.185 0.221, 0.148	0.216 0.244, 0.188	0.185 0.212, 0.157	0.373 0.362, 0.383	0.286 0.294, 0.278
TEQ _{avian} (DL = 0)	0.535 0.68, 0.39	0.690 0.68, 0.70	0.634 0.680, 0.588	0.189 0.017, 0.36	1.11 1.26, 0.93	0.683 0.700, 0.665
TEQ _{fish} (DL = 0)	0.112 0.15, 0.074	0.038 0.034, 0.042	0.066 0.077, 0.055	0.124 0.017, 0.23	0.21 0.21, 0.21	0.204 0.118, 0.219

¹ na = Not applicable.

² J = Value between method detection limit and quantitation limit.

³ B = Blank detection below quantitation level; sample value similar to blank value.

Table 19: Human and mammalian 2,3,7,8-TCDD toxicity equivalent concentrations¹ (TEQs) based on chlorinated dibenzo-*p*-dioxins and dibenzofurans in fish taken from the Buffalo River, October 2007.

Species	Lab	n	Edible tissues		Whole fish	
			DL = 0	½DL	DL = 0	½DL
Brown bullhead	Pace	6	0.205 ± 0.176	0.280 ± 0.136	0.513 ± 0.325	0.534 ± 0.337
	SGS	3	<0.001	0.947 ± 0.292	0.255 ± 0.300	0.808 ± 0.201
Carp	Pace	6	2.27 ± 1.79	2.30 ± 1.78	2.49 ± 2.12	2.53 ± 2.09
	SGS	8	1.82 ± 1.69	2.29 ± 1.66	1.91 ± 1.73	2.50 ± 1.76
Pumpkinseed	Pace	8	0.089 ± 0.057	0.345 ± 0.240	0.117 ± 0.055	0.321 ± 0.172
Bluntnose minnows	Pace	3	na ²	na	0.383 ± 0.270	0.457 ± 0.220

¹ 2,3,7,8-TCDD toxicity equivalent factors of Van den Burg *et al.* (2005) were used in TEQ computations (see Table 4). Computations used either reportable concentrations only (DL = 0), or reportable concentrations plus one-half the detection limit (½DL). Individual sample TEQs can be found in Tables 15 through 18.

² na = Not applicable.

Table 20: 2,3,7,8-TCDD toxicity equivalent concentrations¹ (TEQs) for birds and fish based on chlorinated dibenzo-*p*-dioxins and dibenzofurans in fish taken from the Buffalo River, October 2007.

<u>Species</u>	<u>Lab</u>	<u>n</u>	<u>Birds</u>	<u>Fish</u>
Brown bullhead	Pace	6	0.981 ± 0.785	0.484 ± 0.307
	SGS	3	0.586 ± 0.436	0.337 ± 0.287
Carp	Pace	6	6.72 ± 6.68	2.60 ± 2.12
	SGS	8	5.83 ± 5.59	1.95 ± 1.91
Pumpkinseed	Pace	8	0.576 ± 0.147	0.095 ± 0.065
Bluntnose minnows	Pace	3	1.08 ± 0.381	0.415 ± 0.327

¹ 2,3,7,8-TCDD toxicity equivalent factors of Van den Burg *et al.* (1998) were used in TEQ computations (see Table 4). Only detected values were used; non-detects were assigned a zero value. Individual sample TEQs can be found in Tables 15 through 18.

Table 21: Polynuclear aromatic hydrocarbon concentrations in whole body composites of bluntnose minnows taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:	
	Zone 2	Zone 3
n	1 composite	1 composite
Tag No.	398B	441
DEC ID No.	07-0058-H	07-0073-H
Lab ID No.	892415-002	892415-003
Lipid (%)	4.30	2.48
Naphthalene	2.5	1.7
2-methylnaphthalene	3.4	2.2
C1-naphthalenes	5.2	3.3J ¹
1-methylnaphthalene	1.8J	1.1J
Biphenyl	0.67J	0.42J
2, 6-dimethylnaphthalene	0.99J	1.1J
C2-naphthalenes	0.99J	1.1J
C2-phenanthrenes	<0.26	<0.24
Fluoranthene	6.1	4.6
Pyrene	5.2	3.9
Benzo(a)anthracene	2.0	1.1J
Chrysene	2.9	1.8
Benzo(b)fluoranthene	2.5	1.5J
3, 6-dimethylphenanthrene	<0.26	<0.24
1-methylphenanthrene	0.32J	<0.27
C1-anthracenes	1.4J	0.76J
1-methylanthracene	0.66J	0.55J
2-methylanthracene	0.72J	0.21J
2-methylphenanthrene	0.94J	0.51J
Fluorene	0.97J	1.1J
C3-naphthalenes	0.67J	1.6J
2, 3, 5-trimethylnaphthalene	0.67J	1.6J
Acenaphthene	1.4J	1.5J

Parameter	Concentration (ng/g wet weight) in:	
	Zone 2	Zone 3
Acenaphthylene	0.99J	0.77J
C1-phenanthrene	1.3J	0.76J
Anthracene	1.5J	1.4J
Phenanthrene	3.9	3.4
Benzo(g,h,i)perylene	1.5J	1.0J
Indeno(1,2,3-c,d)pyrene	1.5J	0.97J
Dibenzo(a,h)anthracene	<0.48	<0.43
Perylene	0.75J	0.51J
Benzo(a)pyrene	2.3	1.1J
Benzo(e)pyrene	1.9	1.1J
Benzo(k)fluoranthene	2.6	1.2J
Benzo(a)pyrene potency equivalent concentrations ²		
PEC (DL =0)	3.243	1.638
PEC (½DL)	4.443	2.713
Surrogate standards		
Terphenyl-d14	44	42
2-Fluorobiphenyl	40	38
Nitrobenzene-d5	123	96

¹ J = Value below calibration range but greater than limit of detection.

² Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

Table 22: Polynuclear aromatic hydrocarbons in tissues of brown bullhead taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	1			2			3		
Tag No.	389			391, 376			438, 434, 436		
DEC ID No.	07-0045-H	07-0045-RC	07-0045	07-0071-H 07-0072-H	07-0071-RC 07-0072-RC	07-0071 07-0072	07-0089-H 07-0092-H 07-0093-H	07-0089-RC 07-0092-RC 07-0093-RC	07-0089 07-0092 07-0093
Lab ID No.	892415-036	892415-037	na ¹	892415-038 892415-040	892415-039 892415-041	na	892415-042 892415-044 892415-046	892415-043 892415-045 892415-047	na
Lipid (%)	3.33	12.7	10.55	2.49 3.47, 1.51	7.75 9.73, 5.77	6.49 8.36, 4.62	1.69 ± 1.16 0.36, 2.17, 2.53	3.86 ± 2.39 1.24, 5.94, 4.39	3.30 ± 2.04 1.03, 4.96, 3.92
Naphthalene	14	48	40.2	2.25 2.8, 1.7J ²	3.30 4.3, 2.3	3.06 3.97, 2.14	1.90 ± 0.557 1.4, 1.8J, 2.5	2.40 ± 0.781 1.9, 2.0, 3.3	2.28 ± 0.718 1.78, 1.95, 3.10
2-methylnaphthalene	4.8	17	14.2	2.60 3.2, 2.0J	4.75 6.0, 3.5	4.24 5.39, 3.09	2.20 ± 0.854 1.4J, 2.1J, 3.1	3.67 ± 1.44 2.6, 3.1, 5.3	3.30 ± 1.27 2.32, 2.84, 4.74
C1-naphthalenes	8.8	31	25.9	4.10 5.0J, 3.2J	7.65 9.8, 5.5	6.82 8.75, 4.88	3.33 ± 1.21 2.2J, 3.2J, 4.6	5.57 ± 2.15 3.9, 4.8, 8.0	5.00 ± 1.89 3.50, 4.38, 7.13
1-methylnaphthalene	4.0	14	11.7	1.45 1.8J, 1.1J	2.90 3.8, 2.0	2.56 3.36, 1.76	1.11 ± 0.385 0.73J, 1.1J, 1.5J	1.90 ± 0.721 1.3J, 1.7, 2.7	1.70 ± 0.630 1.16, 1.54, 2.39
Biphenyl	3.0	11	9.17	0.610 0.71J, 0.51J	1.16 1.6J, 0.72J	1.03 1.40, 0.663	0.398 ± 0.199 <0.37, 0.58J, 0.43J	0.607 ± 0.247 0.38J, 0.87, 0.57J	0.554 ± 0.231 0.334, 0.794, 0.534
2, 6-dimethylnaphthalene	3.1	12	9.96	1.43 2.1J, 0.75J	4.15 6.2, 2.1	3.52 5.30, 1.74	1.27 ± 0.379 1.0J, 1.1J, 1.7J	2.97 ± 0.643 2.5, 2.7, 3.7	2.54 ± 0.570 2.14, 2.28, 3.19
C2-naphthalenes	3.1	12	9.96	1.43 2.1J, 0.75J	4.15 6.2, 2.1	3.52 5.30, 1.74	1.27 ± 0.379 1.0J, 1.1J, 1.7J	2.97 ± 0.643 2.5, 2.7, 3.7	2.54 ± 0.570 2.14, 2.28, 3.19

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
C2-phenanthrenes	<0.24	0.67J	0.544	<0.37 <0.36, <0.37	0.455 0.79J, <0.24	0.421 0.656, <0.37	<0.36 <0.35, <0.36, <0.29	0.170 ± 0.087 <0.24, 0.27J, <0.24	0.189 ± 0.052 <0.35, 0.247, <0.29
Fluoranthene	11	51	41.8	3.05 4.7, 1.4J	9.90 19, 3.8	9.53 15.9, 3.15	2.57 ± 1.06 1.6J, 3.7, 2.4	5.10 ± 1.42 4.0, 6.7, 4.6	4.46 ± 1.30 3.43, 5.92, 4.04
Pyrene	4.7	21	17.3	2.45 3.7, 1.2J	9.90 16, 3.8	8.20 13.3, 3.10	2.43 ± 1.15 1.3J, 3.6, 2.4	4.93 ± 1.83 3.5, 7.0, 4.3	4.30 ± 1.62 2.98, 6.11, 3.82
Benzo(a)anthracene	<0.26	1.4J	1.11	<0.40 <0.40, <0.40	1.12 2.1, <0.26	0.940 1.68, <0.40	<0.40 <0.39, <0.40, <0.32	0.230 ± 0.087 0.27J, 0.29J, <0.26	0.226 ± 0.058 0.252, 0.267, <0.32
Chrysene	1.3J	5.8	4.77	0.505 0.80J, <0.42	2.62 4.5, 0.73J	2.14 3.69, 0.590	0.437 ± 0.240 <0.40, 0.68J, 0.43J	0.907 ± 0.341 0.69J, 1.3J, 0.73J	0.789 ± 0.306 0.574, 1.14, 0.654
Benzo(b)fluoranthene	<0.28	<0.28	<0.28	<0.43 <0.42, <0.43	1.17 2.2, <0.28	0.988 1.76, <0.43	<0.42 <0.41, <0.42, <0.34	<0.28 <0.28, <0.28, <0.28	<0.42 <0.41, <0.42, <0.34
3, 6-dimethylphenanthrene	<0.24	0.67J	0.544	<0.36 <0.36, <0.36	0.455 0.79J, <0.24	0.418 0.656, <0.36	<0.36 <0.35, <0.36, <0.29	0.170 ± 0.087 <0.24, 0.27J, <0.24	0.189 ± 0.052 <0.35, 0.247, <0.29
1-methylphenanthrene	0.40J	2.0	1.63	0.350 0.49J, <0.42	0.325 0.35J, 0.30J	0.328 0.381, 0.275	<0.41 <0.41, <0.41, <0.33	0.380 ± 0.118 0.28J, 0.51J, 0.35J	0.332 ± 0.088 0.262, 0.430, 0.303
C1-anthracenes	2.8J	13	10.7	1.16 2.0J, <0.65	4.20 6.8, 1.6J	3.51 5.75, 1.26	0.815 ± 0.547 <0.63, 1.4J, 0.73J	1.77 ± 0.643 1.5J, 2.5J, 1.3J	1.53 ± 0.593 1.22, 2.21, 1.15
1-methylanthracene	2.5	12	9.82	0.910 1.6J, <0.44	1.50 1.9, 1.1J	1.35 1.84, 0.863	0.622 ± 0.447 <0.43, 1.1J, 0.55J	1.39 ± 0.545 1.2J, 2.0, 0.96J	1.20 ± 0.499 0.967, 1.77, 0.856

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
2-methylanthracene	0.31J	1.7	1.38	0.253 0.39J, <0.23	2.73 4.9, 0.56J	2.18 3.91, 0.440	0.193 ± 0.091 <0.22, 0.29J, 0.18J	0.380 ± 0.082 0.31J, 0.47J, 0.36J	0.342 ± 0.071 0.289, 0.423, 0.314
2-methylphenanthrene	0.70J	3.5	2.86	0.490 0.76J, <0.44	1.28 2.1, 0.46J	1.10 1.81, 0.395	0.522 ± 0.420 <0.43, 1.0J, 0.35J	0.823 ± 0.244 0.73J, 1.1J, 0.64J	0.748 ± 0.280 0.608, 1.07, 0.566
Fluorene	15	55	45.8	1.44 2.1J, 0.78J	4.25 6.4, 2.1	3.60 5.46, 1.74	1.14 ± 0.456 0.63J, 1.5J, 1.3J	2.13 ± 0.462 1.6J, 2.4, 2.4	1.89 ± 0.448 1.37, 2.17, 2.12
C3-naphthalenes	2.8	11	9.12	1.47 2.3J, 0.63J	4.25 6.7, 1.8	3.61 5.73, 1.48	1.57 ± 0.306 1.3J, 1.5J, 1.9J	3.43 ± 0.551 3.8, 2.8, 3.7	2.97 ± 0.442 3.21, 2.46, 3.24
2, 3, 5-trimethylnaphthalene	2.8	11	9.12	1.47 2.3J, 0.63J	4.25 6.7, 1.8	3.61 5.73, 1.48	1.57 ± 0.306 1.3J, 1.5J, 1.9J	3.43 ± 0.551 3.8, 2.8, 3.7	2.97 ± 0.442 3.21, 2.46, 3.24
Acenaphthene	3.7	14	11.6	0.89 1.0J, 0.78J	3.35 4.4, 2.3	2.77 3.65, 1.89	0.833 ± 0.522 <0.54, 0.93J, 1.3J	1.87 ± 0.757 1.0J, 2.2, 2.4	1.61 ± 0.686 0.827, 1.87, 2.12
Acenaphthylene	7.9	30	24.9	0.845 1.5J, <0.38	2.85 4.6, 1.1J	2.39 3.92, 0.855	0.647 ± 0.515 <0.36, 1.2J, 0.56J	1.06 ± 0.118 1.0J, 1.2J, 0.99J	0.962 ± 0.209 0.806, 1.20, 0.881
C1-phenanthrene	1.1J	5.5	4.49	0.790 1.2J, <0.76	1.58 2.4J, 0.75J	1.40 2.14, 0.650	0.555 ± 0.387 <0.73, 1.0J, <0.60	1.23 ± 0.407 1.0J, 1.7J, 0.99J	1.06 ± 0.398 0.849, 1.52, 0.814
Anthracene	5.2	25	20.5	2.18 3.6, 0.76J	7.80 13, 2.6	6.50 10.9, 2.10	1.79 ± 1.01 0.78J, 2.8, 1.8J	3.83 ± 1.45 2.9, 5.5, 3.1	3.32 ± 1.29 2.40, 4.80, 2.77
Phenanthrene	20	79	65.5	4.65 7.0, 2.3J	12.0 20, 4.0	10.3 17.1, 3.54	3.77 ± 1.03 2.9, 4.9, 3.5	5.97 ± 1.08 5.5, 7.2, 5.2	5.42 ± 1.03 4.88, 6.60, 4.77
Benzo(g,h,i)perylene	<0.30	<0.30	<0.30	<0.46 <0.45, <0.46	<0.30 <0.30, <0.30	<0.46 <0.45, <0.46	0.325 ± 0.213 0.57J, <0.45, <0.36	<0.30 <0.30, <0.30, <0.30	0.218 ± 0.035 0.250, <0.45, <0.36

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Indeno(1,2,3-c,d)pyrene	<0.32	<0.32	<0.32	<0.49 <0.48, <0.49	<0.32 <0.32, <0.32	<0.49 <0.48, <0.49	<0.48 <0.47, <0.48, <0.38	<0.32 <0.32, <0.32, <0.32	<0.48 <0.47, <0.48, <0.38
Dibenzo(a,h)anthracene	<0.43	<0.43	<0.43	<0.67 <0.65, <0.67	<0.43 <0.43, <0.43	<0.67 <0.65, <0.67	<0.65 <0.64, <0.65, <0.52	<0.43 <0.43, <0.43, <0.43	<0.65 <0.64, <0.65, <0.52
Perylene	<0.24	<0.24	<0.24	<0.37 <0.36, <0.37	0.295 0.47J, <0.24	0.300 0.406, <0.37	<0.36 <0.35, <0.36, <0.29	<0.24 <0.24, <0.24, <0.24	<0.36 <0.35, <0.36, <0.29
Benzo(a)pyrene	<0.17	<0.17	<0.17	<0.26 <0.26, <0.26	0.993 1.9, <0.17	0.820 1.51, <0.26	0.158 ± 0.053 <0.25, <0.26, 0.22J	0.192 ± 0.113 0.18J, <0.17, 0.31J	0.205 ± 0.079 0.197, <0.26, 0.287
Benzo(e)pyrene	<0.27	<0.27	<0.27	<0.41 <0.41, <0.41	1.05 1.8, 0.30J	0.862 1.45, 0.274	<0.41 <0.40, <0.41, <0.32	0.328 ± 0.198 0.53J, <0.27, 0.32J	0.312 ± 0.127 0.452, <0.41, 0.279
Benzo(k)fluoranthene	<0.23	<0.23	<0.23	<0.36 <0.35, <0.36	1.06 2.0, <0.23	0.890 1.60, <0.36	<0.35 <0.34, <0.35, <0.28	0.167 ± 0.089 0.27J, <0.23, <0.23	0.187 ± 0.054 0.246, <0.35, <0.28
Benzo(a)pyrene potency equivalent concentrations ³									
PEC (DL = 0)	0.1461	nc ⁴	0.6250	0.0439 0.0700, 0.0178	nc	1.347 2.229, 0.4641	0.1122 ± 0.1284 0.0227, 0.0546, 0.2594	nc	0.2530 ± 0.1222 0.2974, 0.1148, 0.3468
PEC (½DL)	1.362	nc	1.827	1.911 1.910, 1.911	nc	2.909 3.880, 1.938	1.784 ± 0.1396 1.831, 1.894, 1.627	nc	1.864 ± 0.1288 1.941, 1.935, 1.715
Surrogate standards									
Terphenyl-d14	58	66	na	62.0 59, 65	67.0 68, 66	na	60.3 ± 2.08 58, 61, 62	59.7 ± 12.1 64, 46, 69	na

Parameter	Concentration (ng/g wet weight) in:								
	Zone 1			Zone 2			Zone 3		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
2-Fluorobiphenyl	59	57	na	65.0 67, 63	62.0 61, 63	na	58.0 ± 1.73 57, 57, 60	54.3 ± 10.8 59, 42, 62	na
Nitrobenzene-d5	86	81	na	83.0 78, 88	94.5 91, 98	na	80.7 ± 2.31 82, 78, 82	71.3 ± 19.9 78, 49, 87	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

Table 23A: Concentrations of polynuclear aromatic hydrocarbons in carp taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
n	3	3	3	3	3	3
Tag No.	379, 388, 374	379, 388, 374	379, 388, 374	410, 405, 406	410, 405, 406	410, 405, 406
DEC ID No.	07-0051-H 07-0052-H 07-0054-H	07-0051-RC 07-0052-RC 07-0054-RC	07-0051 07-0052 07-0054	07-0098-H 07-0100-H 07-0101-H	07-0098-RC 07-0100-RC 07-0101-RC	07-0098 07-0100 07-0101
Lab ID No.	892415-049 892415-051 892415-053	892415-050 892415-052 892415-054	na ¹	892415-055 892415-057 892415-059	892415-056 892415-058 892415-060	na
Lipid (%)	17.1 ± 5.27 23.1, 13.1, 15.2	16.4 ± 3.43 19.5, 12.7, 16.9	16.6 ± 4.01 20.8, 12.8, 16.3	11.4 ± 8.42 17.7, 1.81, 14.6	10.8 ± 5.77 15.3, 4.27, 12.7	11.1 ± 6.79 16.3, 3.40, 13.5
Naphthalene	493 ± 529 1100, 130, 250	467 ± 473 1000, 100, 300	476 ± 493 1037, 111, 281	7.3 ± 6.3 14, 1.5J ² , 6.4	6.1 ± 3.7 10, 2.7, 5.7	6.66 ± 4.74 11.7, 2.28, 6.00
2-methylnaphthalene	81.3 ± 69.6 160, 28, 56	78.3 ± 64.8 150, 24, 61	78.9 ± 67.2 154, 24.4, 58.4	7.3 ± 6.3 14, 1.6J, 6.2	6.0 ± 4.5 11, 2.2, 4.7	6.54 ± 5.26 12.3, 1.99, 5.33
C1-naphthalenes	154 ± 129 300, 53, 110	153 ± 123 290, 50, 120	154 ± 126 294, 51.1, 116	14.0 ± 11.6 26, 2.9J, 13	11.4 ± 7.9 20, 4.4, 9.9	12.6 ± 9.44 22.6, 3.87, 11.2
1-methylnaphthalene	70.3 ± 53.4 130, 27, 54	72.0 ± 53.0 130, 26, 60	71.4 ± 53.1 130, 26.4, 57.8	7.0 ± 5.8 13, 1.4J, 6.7	5.5 ± 3.6 9.3, 2.2, 5.1	6.20 ± 4.51 10.9, 1.92, 5.77
Biphenyl	23.3 ± 15.3 40J, 9.9, 20	21.6 ± 11.2 32, 9.7, 23	22.2 ± 12.6 34.9, 9.77, 21.9	1.5 ± 1.3 2.9, 0.37J, 1.3	1.3 ± 0.94 2.4, 0.62J, 1.0J	1.43 ± 1.08 2.62, 0.532, 1.13
2, 6-dimethylnaphthalene	13.8 ± 8.5 23J, 6.3, 12	12.4 ± 5.9 18, 6.3, 13	12.9 ± 6.75 19.8, 6.30, 12.6	4.9 ± 4.6 9.7, 0.65J, 4.3	4.1 ± 3.2 7.5, 1.2J, 3.6	4.45 ± 3.75 8.45, 1.01, 3.90
C2-naphthalenes	13.8 ± 8.5 23J, 6.3, 12	12.4 ± 5.9 18, 6.3, 13	12.9 ± 6.75 19.8, 6.30, 12.6	4.9 ± 4.6 9.7, 0.65J, 4.3	4.1 ± 3.2 7.5, 1.2J, 3.6	4.45 ± 3.75 8.45, 1.01, 3.90

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
C2-phenanthrenes	<7.9 <7.9, <0.24, <0.24	0.513 ± 0.681 1.3J, <0.24, <0.24	0.837 ± 1.24 2.27, <0.24, <0.24	0.57 ± 0.44 1.0J, <0.24, 0.60J	<0.24 <0.24, <0.24, 0.46J	0.380 ± 0.225 0.500, <0.24, 0.519
Fluoranthene	14.0 ± 1.7 16J, 13, 13	15.3 ± 2.3 14, 14, 18	14.8 ± 1.25 14.7, 13.6, 16.1	10.2 ± 7.5 15, 1.5J, 14	9.9 ± 6.4 15, 2.8, 12	10.0 ± 6.76 15.0, 2.34, 12.8
Pyrene	6.3 ± 0.90 7.3J, 5.8, 5.7	8.2 ± 2.34 5.5, 9.7, 9.4	9.82 ± 2.93 13.2, 8.25, 8.02	4.8 ± 3.6 6.3, 0.71J, 7.4	4.7 ± 3.1 6.6, 1.1J, 6.5	5.55 ± 1.96 6.47, 3.30, 6.88
Benzo(a)anthracene	2.14 ± 1.98 <8.8, 1.3J, 0.72J	1.41 ± 1.11 <0.26, 2.1, 2.0	2.57 ± 1.59 <8.8, 1.80, 1.52	<0.95 <0.95, 0.33J, 0.69J	1.0 ± 0.93 2.1, 0.39J, 0.63J	0.808 ± 0.532 1.40, 0.369, 0.655
Chrysene	2.24 ± 2.02 <9.1, 1.3J, 0.86J	1.35 ± 1.05 <0.27, 1.9, 2.0	2.60 ± 1.69 <9.1, 1.68, 1.57	1.3 ± 0.73 1.6J, 0.44J, 1.8	1.7 ± 1.2 3.0, 0.54J, 1.7	1.55 ± 0.958 2.39, 0.505, 1.74
Benzo(b)fluoranthene	<9.3 <9.3, <0.28, <0.28	0.420 ± 0.485 <0.28, <0.28, 0.98J	1.82 ± 2.47 <9.3, <0.28, 0.666	<0.28 <0.28, <0.28, <0.28	0.82 ± 1.02 2.0, <0.28, 0.31J	0.526 ± 0.586 1.20, <0.28, 0.238
3, 6-dimethylphenanthrene	<7.9 <7.9, <0.24, <0.24	0.513 ± 0.681 1.3J, <0.24, <0.24	0.837 ± 1.24 2.27, <0.24, <0.24	0.57 ± 0.44 1.0J, <0.24, 0.60J	<0.24 <0.24, <0.24, 0.46J	0.380 ± 0.225 0.500, <0.24, 0.519
1-methylphenanthrene	<9.2 <9.2, <0.24, <0.24	0.723 ± 1.02 1.9, <0.27, <0.27	1.05 ± 1.59 2.89, <0.27, <0.27	0.51 ± 0.29 0.44J, 0.27J, 0.83J	0.36 ± 0.39 <0.27, <0.27, 0.81J	0.423 ± 0.345 0.267, 0.183, 0.818
C1-anthracenes	4.13 ± 2.50 <14, 2.4, 3.0J	3.30 ± 2.78 <0.42, 5.6, 4.1	5.03 ± 1.74 <14, 4.41, 3.69	4.4 ± 3.7 8.2, 0.75J, 4.2	4.1 ± 2.8 7.1, 1.6J, 3.7	4.26 ± 3.15 7.58, 1.30, 3.91
1-methylanthracene	3.40 ± 1.25 <9.6, 2.4, 3.0	2.55 ± 2.11 <0.29, 3.4, 4.1	3.84 ± 0.894 <9.6, 3.03, 3.69	2.8 ± 2.4 5.2, 0.43J, 2.8	2.6 ± 1.6 4.1, 1.0J, 2.7	2.71 ± 1.89 4.58, 0.799, 2.74
2-methylanthracene	<5.0 <5.0, <0.15, <0.15	0.783 ± 1.23 <0.15, 2.2, <0.15	1.33 ± 1.21 <5.0, 1.41, <0.15	1.5 ± 1.4 3.0, 0.32J, 1.3J	1.5 ± 1.3 3.0, 0.56J, 1.0J	1.54 ± 1.31 3.00, 0.475, 1.13
2-methylphenanthrene	<9.6 <9.6, <0.29, <0.29	<0.29 <0.29, <0.29, <0.29	<9.6 <9.6, <0.29, <0.29	1.3 ± 0.83 1.7, 0.31J, 1.8	1.3 ± 0.70 1.8, 0.50J, 1.6J	1.29 ± 0.744 1.76, 0.433, 1.68
Fluorene	84.3 ± 51.6 140, 38, 75	93.0 ± 57.0 150, 36, 93	89.7 ± 54.7 146, 36.7, 86.3	5.8 ± 4.5 9.9, 0.99J, 6.4	5.1 ± 3.2 8.0, 1.6J, 5.6	5.38 ± 3.75 8.82, 1.39, 5.94

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
C3-naphthalenes	3.33 ± 1.10 <8.8, 2.2, 3.4	3.27 ± 0.87 3.5, 2.3, 4.0	3.29 ± 0.892 3.83, 2.26, 3.78	5.7 ± 4.7 10, 0.72J, 6.5	4.9 ± 3.1 7.8, 1.6J, 5.4	5.30 ± 3.76 8.75, 1.29, 5.86
2, 3, 5-trimethylnaphthalene	3.33 ± 1.10 <8.8, 2.2, 3.4	3.27 ± 0.87 3.5, 2.3, 4.0	3.29 ± 0.892 3.83, 2.26, 3.78	5.7 ± 4.7 10, 0.72J, 6.5	4.9 ± 3.1 7.8, 1.6J, 5.4	5.30 ± 3.76 8.75, 1.29, 5.86
Acenaphthene	34.0 ± 9.5 43J, 24, 35	32.0 ± 8.2 34, 23, 39	32.7 ± 8.08 37.3, 23.4, 37.5	8.7 ± 6.8 14, 1.1J, 11	7.0 ± 4.4 10, 2.0, 9.0	7.74 ± 5.33 11.7, 1.68, 9.84
Acenaphthylene	115 ± 84.4 210, 48, 88	119 ± 83.6 210, 46, 100	117 ± 83.8 210, 46.7, 95.5	3.6 ± 2.6 5.8, 0.68J, 4.2	3.2 ± 1.8 4.8, 1.3J, 3.6	3.39 ± 2.11 5.23, 1.08, 3.85
C1-phenanthrene	<17 <17, <0.50, <0.50	0.800 ± 0.952 1.9J, <0.50, <0.50	1.60 ± 2.34 4.31, <0.50, <0.50	1.7 ± 1.3 2.2J, <0.50, 2.6J	1.48 ± 1.11 1.8J, <0.50, 2.4J	1.57 ± 1.17 1.97, <0.50, 2.48
Anthracene	13.7 ± 3.1 17, 11, 13	14.7 ± 0.58 15, 14, 15	14.3 ± 1.40 15.7, 12.9, 14.3	5.3 ± 3.7 7.6, 1.0J, 7.2	4.7 ± 2.4 6.2, 1.9, 5.9	4.95 ± 2.92 6.81, 1.58, 6.45
Phenanthrene	57.0 ± 46.7 110, 22, 39	50.0 ± 29.6 81, 22, 47	52.5 ± 35.6 91.6, 22.0, 44.0	12.4 ± 8.9 19, 2.3, 16	11.2 ± 6.7 16, 3.6, 14	11.7 ± 7.56 17.3, 3.14, 14.8
Benzo(g,h,i)perylene	<10 <10, <0.30, <0.30	<0.48 <0.30, <0.30, <0.48	<10 <10, <0.30, <0.48	<0.32 <0.30, <0.30, <0.30	<1.1 <1.1, <0.30, <0.30	<1.1 <1.1, <0.30, <0.30
Indeno(1,2,3-c,d)pyrene	2.11 ± 2.95 <11, 0.67J, <0.32	<0.32 <0.32, <0.32, <0.32	2.00 ± 3.03 <11.0, 0.349, <0.32	<0.32 <0.32, <0.32, 0.61J	0.37 ± 0.36 0.78J, <0.32, <0.32	0.341 ± 0.176 0.512, <0.32, 0.350
Dibenzo(a,h)anthracene	<14 <14, <0.43, <0.43	1.81 ± 2.76 <0.43, <0.43, 5.0	3.48 ± 3.40 <14, <0.43, 3.21	<0.43 <0.43, <0.43, <0.43	<0.43 <0.43, <0.43, <0.43	<0.43 <0.43, <0.43, <0.43
Perylene	<8.0 <8.0, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<8.0 <8.0, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 0.41J, <0.24, <0.24	0.175 ± 0.095 0.285, <0.24, <0.24
Benzo(a)pyrene	<5.7 <5.7, <0.17, <0.17	0.390 ± 0.528 <0.17, <0.17, 1.0	1.20 ± 1.46 <5.7, <0.17, 0.658	<0.17 <0.17, <0.17, <0.17	0.79 ± 0.76 1.6J, 0.69J, <0.17	0.502 ± 0.431 0.945, 0.477, <0.17
Benzo(e)pyrene	1.73 ± 2.41 <9.0, 0.56J, <0.27	<0.27 <0.27, <0.27, <0.27	1.64 ± 2.48 <9.0, 0.293, <0.27	0.33 ± 0.34 0.72J, <0.27, <0.27	0.91 ± 0.86 1.9, 0.31J, 0.52J	0.665 ± 0.630 1.39, 0.248, 0.358

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissues	Carcass	Calculated whole fish	Edible tissues	Carcass	Calculated whole fish
Benzo(k)fluoranthene	<7.7 <7.7, <0.23, <0.23	0.350 ± 0.407 <0.23, <0.23, 0.82J	1.51 ± 2.04 <7.7, <0.23, 0.556	<0.23 0.28J, <0.23J, <0.23	0.54 ± 0.58 1.2J, <0.23, 0.31J	0.395 ± 0.354 0.802, 0.155, 0.228
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	1.123 ± 0.722 1.956, 0.7183, 0.6944	nc ⁴	6.759 ± 9.555 1.861, 0.6468, 17.77	0.1968 ± 0.1070 0.2180, 0.0808, 0.2916	nc	0.7930 ± 0.6417 1.517, 0.5675, 0.2944
PEC (½DL)	17.55 ± 20.91 41.70, 5.421, 5.522	nc	20.42 ± 20.04 41.65, 1.834, 17.79	1.403 ± 0.114 1.457, 1.272, 1.479	nc	1.909 ± 0.6057 2.597, 1.674, 1.456
Surrogate standards						
Terphenyl-d14	76.0 # ⁵ , 65, 87	83.0 #, 72, 94	na	85.0 ± 10.5 75, 84, 96	83.3 ± 11.2 71, 93, 86	na
2-Fluorobiphenyl	62.0 #, 59, 65	64.5 #, 63, 66	na	66.7 ± 1.53 67, 65, 68	62.0 ± 2.00 62, 64, 60	na
Nitrobenzene-d5	73.0 #, 84, 62	74.0 #, 85, 63	na	70.0 ± 2.65 73, 68, 69	59.7 ± 2.52 60, 62, 57	na

¹ na = No applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

⁵ # = Surrogate standard mistakenly not run; reported values are not adjusted for surrogate recovery.

Table 23B: Polynuclear aromatic hydrocarbon concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	2			4		
Tag No.	352, 373			338, 308, 381, 383		
DEC ID No.	07-0053-H 07-0055-H	07-0053-RC 07-0055-RC	07-0053 07-0055	07-0094-H 07-0095-H 07-0096-H 07-0097-H	07-0094-RC 07-0095-RC 07-0096-RC 07-0097-RC	07-0094 07-0095 07-0096 07-0097
Lab ID No.	G996-1-25D G996-1-27H	G996-1-26G G996-1-28F	na ¹	G996-1-29F G996-1-31F G996-1-33H G996-1-35F	G996-1-30F G996-1-32F G996-1-34F G996-1-36F	na
Acenaphthene	23.1 20.3, 25.9	17.1 <19.8, 24.2	19.3 13.6, 25.0	16.1 ± 12.7 <19.3, <19.5, <19.8, 35.2	13.7 ± 8.25 <18.5, <19.3, <19.8, 26.1	15.0 ± 10.4 <19.3, <19.5, <19.8, 30.5
Acenaphthylene	36.8 36.8, 36.7	22.0 <19.8, 34.1	27.5 19.5, 35.4	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Anthracene	8.38 6.86, <19.8	<19.9 <19.8, <19.9	9.36 8.82, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Benzo(a)anthracene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Benzo(a)pyrene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Benzo(<i>b</i>)fluoranthene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Benzo(<i>g,h,i</i>)perylene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Benzo(<i>k</i>)fluoranthene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Chrysene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Dibenzo(<i>a,h</i>)anthracene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Fluoranthene	8.51 7.12, <19.8	<19.9 <19.8, <19.9	9.43 8.91, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Fluorene	41.4 39.3, 43.4	32.5 25.3, 39.7	35.9 30.3, 41.5	12.5 ± 5.34 20.5, <19.5, <19.8, <19.6	19.4 ± 14.1 39.3, 19.5, <19.8, <19.1	16.4 ± 9.66 30.3, 15.5, <19.8, <19.6
Indeno(1,2,3- <i>c,d</i>)pyrene	<19.8 <5.81, <19.8	<19.9 <19.8, <19.9	<19.9 <19.8, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
1-Methylnaphthalene	27.2 27.2, 27.2	17.5 <19.8, 25.0	21.1 16.1, 26.1	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 3		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
2-Methylnaphthalene	26.5 28.0, 24.9	16.8 <19.8, 23.7	20.3 16.3, 24.3	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Naphthalene	121 135, 107	91.2 83.2, 99.2	103 102, 103	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Phenanthrene	24.9 22.7, 27.1	17.9 <19.8, 25.8	20.5 14.5, 26.4	17.0 ± 8.94 <19.3, 20.5, <19.8, 28.1	16.6 ± 8.08 <18.5, 23.2, <19.8, 23.9	17.3 ± 8.95 <19.3, 22.1, <19.8, 27.5
Pyrene	14.4 18.9, <19.8	<19.9 <19.8, <19.9	11.5 13.1, <19.9	<19.8 <19.3, <19.5, <19.8, <19.6	<19.8 <18.5, <19.3, <19.8, <19.1	<19.8 <19.3, <19.5, <19.8, <19.6
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	0.321 0.377, 0.265	nc ⁴	0.281 0.306, 0.256	0.0103 ± 0.0118 0.0205, 0.0205, 0.00, 0.00	nc	0.0315 ± 0.024 0.0303, 0.0376, 0.00, 0.0580
PEC (½DL)	41.5 19.0, 63.9	nc	64.0 63.7, 64.3	62.8 ± 0.79 62.1, 62.1, 63.7, 63.1	nc	62.9 ± 0.665 62.1, 62.8, 63.7, 63.1
Surrogate standards						
4-Terphenyl-d14	nc 199 ⁵ , # ⁶	nc #, #	na	nc #, #, #, #	nc #, #, #, #	na
2-Fluorobiphenyl	68.5 73, 64	71.5 69, 74	na	67.3 ± 5.12 72, 69, 60, 68	67.5 ± 4.20 73, 63, 66, 68	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

⁵ Exceeds quality control limit.

⁶ Surrogate omitted.

Table 23C: Polynuclear aromatic hydrocarbon concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:		
	Zone 4		
	Edible tissue	Carcass	Calculated whole fish
n	2		
Tag No.	403, 414		
DEC ID No.	07-0099-H 07-0102-H	07-0099-RC 07-0102-RC	07-0099 07-0102
Lab ID No.	G996-1-37F G996-1-39F	G996-1-38F G996-1-40F	na ¹
Acenaphthene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Acenaphthylene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Anthracene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Benzo(a)anthracene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Benzo(a)pyrene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Benzo(b)fluoranthene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Benzo(g,h,i)perylene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Benzo(k)fluoranthene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Chrysene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Dibenzo(a,h)anthracene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Fluoranthene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Fluorene	<19.8 <19.8, <19.7	23.6 <19.1, 37.7	16.8 <19.8, 23.6
Indeno(1,2,3-c,d)pyrene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
1-Methylnaphthalene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
2-Methylnaphthalene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7

Parameter	Concentration (ng/g wet weight) in:		
	Zone 4		
	Edible tissue	Carcass	Calculated whole fish
Naphthalene	<19.8 <19.8, <19.7	<19.1 <19.1, <18.7	<19.8 <19.8, <19.7
Phenanthrene	<19.8 <19.8, <19.7	27.1 <19.1, 44.7	18.5 <19.8, 27.0
Pyrene	<19.8 <19.8, <19.7	19.5 <19.1, 29.5	14.7 <19.8, 19.5
Benzo(a)pyrene potency equivalent concentrations ³			
PEC (DL = 0)	0.00 0.00, 0.00	nc ⁴	0.035 0.00, 0.0701
PEC (½DL)	63.6 63.7, 63.4	nc	63.6 63.7, 63.5
Surrogate standards			
4-Terphenyl-d14	nc # ⁶ , #	nc #, #	na
2-Fluorobiphenyl	61.5 58, 65	63.5 67, 60	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

⁵ Exceeds quality control limit.

⁶ Surrogate omitted.

Table 24A: Polynuclear aromatic hydrocarbon concentrations in tissues of largemouth bass taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	3			3		
Tag No.	339, 327, 305			399, 394, 392		
DEC ID No.	07-0039-H 07-0040-H 07-0043-H	07-0039-RC 07-0040-RC 07-0043-RC	07-0039 07-0040 07-0043	07-0064-H 07-0065-H 07-0067-H	07-0064-RC 07-0065-RC 07-0067-RC	07-0064 07-0065 07-0067
Lab ID No.	892415-020 892415-022 892415-024	892415-021 892415-023 892415-025	na ¹	892415-026 892415-028 892415-030	892415-027 892415-029 892415-031	na
Lipid (%)	2.48 ± 1.35 4.00, 2.04, 1.41	8.27 ± 3.16 11.9, 6.19, 6.71	5.96 ± 2.43 8.76, 4.53, 4.58	1.37 ± 0.33 1.49, 1.00, 1.63	5.33 ± 0.96 4.23, 5.77, 5.99	3.80 ± 0.568 3.20, 3.87, 4.33
Naphthalene	2.8 ± 0.68 3.6, 2.6, 2.3	8.3 ± 4.1 13, 6.2, 5.7	6.12 ± 2.73 9.26, 4.76, 4.34	2.0 ± 0.058 2.0, 2.0, 1.9	4.4 ± 0.56 3.8, 4.9, 4.5	3.46 ± 0.318 3.12, 3.75, 3.51
2-methylnaphthalene	2.0 ± 0.15 2.2, 1.9, 2.0	5.4 ± 1.3 6.9, 4.5, 4.9	4.08 ± 0.837 5.03, 3.46, 3.74	2.4 ± 0.12 2.3, 2.5, 2.5	5.8 ± 1.6 4.1, 7.1, 6.3	4.51 ± 0.970 3.42, 5.27, 4.85
C1-naphthalenes	3.4 ± 0.36 3.8, 3.1J, 3.3J ²	9.1 ± 2.5 12, 7.5, 7.9	6.84 ± 1.65 8.74, 5.74, 6.05	3.6 ± 0.17 3.4, 3.7, 3.7	9.0 ± 2.4 6.4, 11, 9.6	6.90 ± 1.46 5.27, 8.10, 7.34
1-methylnaphthalene	1.4 ± 0.21 1.6J, 1.2J, 1.3J	3.7 ± 1.1 4.9, 3.0, 3.1	2.75 ± 0.729 3.59, 2.28, 2.38	1.2 ± 0.058 1.1J, 1.2J, 1.2J	3.1 ± 0.68 2.3, 3.6, 3.3	2.33 ± 0.426 1.85, 2.65, 2.50
Biphenyl	0.94 ± 0.098 1.0J, 0.83J, 1.0J	3.0 ± 1.3 4.4, 2.0, 2.5	2.16 ± 0.793 3.05, 1.53, 1.90	0.33 ± 0.021 0.35J, 0.31J, 0.32J	0.92 ± 0.07 1.0J, 0.88, 0.87J	0.689 ± 0.057 0.755, 0.653, 0.660
2, 6-dimethylnaphthalene	0.99 ± 0.21 0.98J, 1.2J, 0.78J	3.0 ± 1.1 4.2, 2.8, 2.1	2.22 ± 0.677 2.92, 2.16, 1.57	0.90 ± 0.090 0.85J, 1.0J, 0.84J	2.9 ± 1.3 1.6J, 4.1, 3.0	2.12 ± 0.078 1.32, 2.87, 2.18
C2-naphthalenes	0.99 ± 0.21 0.98J, 1.2J, 0.78J	3.0 ± 1.1 4.2, 2.8, 2.1	2.22 ± 0.677 2.92, 2.16, 1.57	0.90 ± 0.090 0.85J, 1.0J, 0.84J	2.9 ± 1.3 1.6J, 4.1, 3.0	2.12 ± 0.078 1.32, 2.87, 2.18

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
C2-phenanthrenes	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24
Fluoranthene	2.1 ± 0.70 2.8, 2.0, 1.4J	6.8 ± 2.6 9.8, 5.5, 5.2	4.93 ± 1.82 7.02, 4.10, 3.67	0.99 ± 0.19 0.92J, 0.85J, 1.2J	3.1 ± 0.56 2.5, 3.6, 3.2	2.29 ± 0.033 1.91, 2.51, 2.44
Pyrene	0.79 ± 0.28 1.1J, 0.71J, 0.55J	2.3 ± 0.84 3.3, 1.9, 1.8	1.72 ± 0.621 2.43, 1.42, 1.30	0.81 ± 0.13 0.88J, 0.66J, 0.88J	2.7 ± 0.15 2.7, 2.8, 2.5	2.58 ± 1.16 3.92, 1.95, 1.88
Benzo(a)anthracene	<0.26 <0.26, <0.26, <0.26	<0.26 <0.26, <0.26, <0.26	<0.26 <0.26, <0.26, <0.26	<0.26 <0.26, <0.26, <0.26	<0.26 <0.26, <0.26, <0.26	<0.26 <0.26, <0.26, <0.26
Chrysene	<0.27 0.29J, <0.27, <0.27	0.63 ± 0.24 0.90J, 0.46J, 0.53J	0.453 ± 0.179 0.658, 0.330, 0.371	<0.27 <0.027, <0.27, <0.27	0.47 ± 0.02 0.49J, 0.45J, 0.46J	0.339 ± 0.016 0.356, 0.325, 0.336
Benzo(b)fluoranthene	<0.28 <0.28, <0.28, <0.28	<0.28 <0.28, <0.28, <0.28	<0.28 <0.28, <0.28, <0.28	<0.28 <0.28, <0.28, <0.28	<0.28 <0.28, <0.28, <0.28	<0.28 <0.28, <0.28, <0.28
3, 6-dimethylphenanthrene	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24
1-methylphenanthrene	<0.27 <0.27, <0.27, <0.27	0.37 ± 0.09 0.47J, 0.30J, 0.34J	0.276 ± 0.054 0.337, 0.234, 0.258	<0.27 <0.27, <0.27, <0.27	0.28 ± 0.13 <0.27, 0.39J, 0.32J	0.224 ± 0.080 <0.27, 0.289, 0.249
C1-anthracenes	<0.42 0.45J, <0.42, <0.42	1.5 ± 0.47 2.0J, 1.1J, 1.3J	0.996 ± 0.338 1.38, 0.745, 0.862	<0.42 <0.42, <0.42, <0.42	1.1 ± 0.29 0.75J, 1.2J, 1.3J	0.746 ± 0.176 0.547, 0.806, 0.884
1-methylanthracene	0.32 ± 0.16 0.45J, 0.35J, <0.29	1.1 ± 0.41 1.6J, 0.90J, 0.89J	0.815 ± 0.283 1.14, 0.680, 0.624	<0.29 <0.29, <0.29, <0.29	0.72 ± 0.12 0.58J, 0.76J, 0.82J	0.498 ± 0.075 0.416, 0.515, 0.563
2-methylanthracene	<0.15 <0.15, <0.15, <0.15	0.31 ± 0.07 0.33J, 0.23J, 0.36J	0.214 ± 0.041 0.229, 0.168, 0.246	<0.15 <0.15, <0.15, <0.15	0.36 ± 0.17 0.17J, 0.47J, 0.45J	0.251 ± 0.102 0.134, 0.313, 0.307
2-methylphenanthrene	<0.29 0.30J, <0.29, <0.29	0.47 ± 0.23 0.73J, 0.30J, 0.38J	0.361 ± 0.173 0.559, 0.238, 0.286	<0.29 <0.29, <0.29, <0.29	0.50 ± 0.17 0.35J, 0.47J, 0.69J	0.365 ± 0.107 0.273, 0.341, 0.482
Fluorene	3.0 ± 0.90 3.9, 2.9, 2.1	11.0 ± 4.4 16, 7.9, 9.0	7.78 ± 2.97 11.2, 5.90, 6.23	0.76 ± 0.12 0.64J, 0.88J, 0.77J	2.4 ± 0.96 1.7J, 3.5, 2.0	1.76 ± 0.614 1.30, 2.46, 1.53

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
C3-naphthalenes	0.65 ± 0.22 0.87J, 0.65J, 0.43J	2.0 ± 0.87 3.0, 1.6J, 1.4J	1.46 ± 0.607 2.15, 1.22, 1.01	0.57 ± 0.095 0.52J, 0.68J, 0.51J	2.1 ± 0.98 1.3J, 3.2, 1.8	1.51 ± 0.619 1.01, 2.20, 1.31
2, 3, 5-trimethylnaphthalene	0.65 ± 0.22 0.87J, 0.65J, 0.43J	2.0 ± 0.87 3.0, 1.6J, 1.4J	1.46 ± 0.607 2.15, 1.22, 1.01	0.57 ± 0.095 0.52J, 0.68J, 0.51J	2.1 ± 0.98 1.3J, 3.2, 1.8	1.51 ± 0.619 1.01, 2.20, 1.31
Acenaphthene	1.6 ± 0.62 2.2, 1.5J, 0.96J	5.1 ± 2.5 7.9, 3.3, 4.0	3.66 ± 1.71 5.63, 2.58, 2.78	0.57 ± 0.11 0.50J, 0.70J, 0.52J	2.3 ± 1.1 1.4J, 3.5, 1.9	1.61 ± 0.696 1.06, 2.39, 1.37
Acenaphthylene	1.6 ± 0.85 2.5, 1.4J, 0.83J	6.2 ± 4.2 11, 3.9, 3.6	4.34 ± 2.85 7.62, 2.90, 2.49	0.49 ± 0.021 0.51J, 0.47J, 0.48J	1.8 ± 0.35 1.5J, 2.2, 1.8	1.36 ± 0.134 1.26, 1.51, 1.30
C1-phenanthrene	<0.50 <0.50, <0.50, <0.50	0.84 ± 0.32 1.2J, 0.60J, 0.72J	0.604 ± 0.192 0.822, 0.460, 0.531	<0.50 <0.50, <0.50, <0.50	0.82 ± 0.20 0.60J, 0.87J, 1.0J	0.602 ± 0.124 0.468, 0.623, 0.714
Anthracene	1.3 ± 0.78 2.2, 1.1J, 0.68J	4.8 ± 3.0 8.2, 3.0, 3.1	3.40 ± 2.10 5.82, 2.24, 2.13	0.99 ± 0.10 0.90J, 0.97J, 1.1J	4.0 ± 1.1 2.9, 5.0, 4.2	2.86 ± 0.641 2.15, 3.40, 3.02
Phenanthrene	3.6 ± 1.1 4.6, 3.8, 2.4	10.4 ± 4.0 15, 8.8, 7.4	7.70 ± 2.86 10.9, 6.80, 5.39	2.0 ± 0.057 2.0, 1.9, 2.0	5.1 ± 1.0 4.1, 6.1, 5.1	3.89 ± 0.561 3.31, 4.43, 3.92
Benzo(g,h,i)perylene	<0.30 <0.30, <0.30, <0.30	<0.30 <0.30, <0.30, <0.30	<0.30 <0.30, <0.30, <0.30	<0.30 <0.30, <0.30, <0.30	<0.30 <0.30, <0.30, <0.30	<0.30 <0.30, <0.30, <0.30
Indeno(1,2,3-c,d)pyrene	<0.32 <0.32, <0.32, <0.32	<0.32 <0.32, <0.32, <0.32	<0.32 <0.32, <0.32, <0.32	<0.32 <0.32, <0.32, <0.32	0.43 ± 0.47 <0.32, <0.32, 0.98J	0.329 ± 0.293 <0.32, <0.32, 0.667
Dibenzo(a,h)anthracene	<0.43 <0.43, <0.43, <0.43	<0.43 <0.43, <0.43, <0.43	<0.43 <0.43, <0.43, <0.43	<0.43 <0.43, <0.43, <0.43	<0.43 <0.43, <0.43, <0.43	<0.43 <0.43, <0.43, <0.43
Perylene	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24	<0.24 <0.24, <0.24, <0.24
Benzo(a)pyrene	<0.17 <0.17, <0.17, <0.17	<0.17 <0.17, <0.17, <0.17	<0.17 <0.17, <0.17, <0.17	<0.17 <0.17, <0.17, <0.17	<0.17 0.27J, <0.17, <0.17	0.123 ± 0.066 0.200, <0.17, <0.17
Benzo(e)pyrene	<0.27 <0.27, <0.27, <0.27	<0.27 <0.27, <0.27, <0.27	<0.27 <0.27, <0.27, <0.27	<0.27 <0.27, <0.27, <0.27	<0.27 0.29J, <0.27, <0.27	0.167 ± 0.056 0.232, <0.27, <0.27

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Benzo(k)fluoranthene	<0.23 <0.23, <0.23, <0.23	<0.23 <0.23, <0.23, <0.23	<0.23 <0.23, <0.23, <0.23	<0.23 <0.23, <0.23, <0.23	<0.23 <0.23, <0.23, <0.23	<0.23 <0.23, <0.23, <0.23
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	0.0317 ± 0.0146 0.0478, 0.0278, 0.0193	nc ⁴	0.0788 ± 0.0391 0.1239, 0.0576, 0.0550	0.0198 ± 0.0015 0.0183, 0.0197, 0.0213	nc	0.1423 ± 0.0933 0.2444, 0.06152, 0.1211
PEC (½DL)	1.249 ± 0.0144 1.265, 1.245, 1.237	nc	1.295 ± 0.0390 1.340, 1.274, 1.271	1.170 ± 0.0015 1.169, 1.170, 1.172	nc	1.324 ± 0.0486 1.375, 1.278, 1.320
Surrogate standards						
Terphenyl-d14	57.7 ± 6.66 50, 62, 61	60.0 ± 3.6 56, 63, 61	na	61.7 ± 1.53 62, 63, 60	68.3 ± 9.3 79, 64, 62	na
2-Fluorobiphenyl	52.0 ± 12.2 38, 60, 58	58.7 ± 1.2 58, 60, 58	na	58.3 ± 3.79 61, 60, 54	61.3 ± 2.1 63, 59, 62	na
Nitrobenzene-d5	64.3 ± 14.2 48, 71, 74	81.3 ± 11.2 77, 94, 73	na	75.3 ± 11.2 85, 78, 63	93.7 ± 17.9 74, 98, 109	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

Table 24B: Polynuclear aromatic hydrocarbon concentrations in tissues of largemouth bass taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	1			1		
Tag No.	444			409		
DEC ID No.	07-0082-H	07-0082-RC	07-0082	07-0110-H	07-0110-RC	07-0110
Lab ID No.	892415-032	892415-033	na ¹	892415-034	892415-035	na
Lipid (%)	0.87	4.95	3.27	1.67	5.75	4.34
Naphthalene	1.5J ²	3.1	2.44	2.4	4.9	4.04
2-methylnaphthalene	1.8	4.2	3.21	2.9	5.9	4.87
C1-naphthalenes	2.7J	6.3	4.82	4.7	9.0	7.52
1-methylnaphthalene	0.83J	2.1	1.58	1.7	3.1	2.62
Biphenyl	<0.25	0.69J	0.457	0.34J	0.89J	0.700
2, 6-dimethylnaphthalene	1.1J	4.3	2.98	0.98J	2.8	2.17
C2-naphthalenes	1.1J	4.3	2.98	0.98J	2.8	2.17
C2-phenanthrenes	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Fluoranthene	1.2J	4.4	3.08	1.3J	4.2	3.20
Pyrene	0.92J	2.9	2.08	0.50J	1.4J	1.10
Benzo(a)anthracene	<0.26	<0.26	<0.26	<0.26	<0.26	<0.26
Chrysene	<0.27	0.48J	0.388	<0.27	0.59J	0.433
Benzo(b)fluoranthene	<0.28	<0.28	<0.28	<0.28	0.30J	0.245
3, 6-dimethylphenanthrene	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
1-methylphenanthrene	<0.27	0.39J	0.285	<0.27	<0.27	<0.27
C1-anthracenes	<0.42	1.3J	0.850	<0.42	1.5J	1.06
1-methylanthracene	<0.29	0.86J	0.565	<0.29	0.69J	0.502
2-methylanthracene	<0.15	0.39J	0.260	<0.15	0.82J	0.563
2-methylphenanthrene	<0.29	0.72J	0.483	<0.29	0.60J	0.443
Fluorene	0.79J	3.0	2.09	1.1J	3.4	2.61

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
C3-naphthalenes	1.0J	4.3	2.94	0.62J	2.0	1.52
2, 3, 5-trimethylnaphthalene	1.0J	4.3	2.94	0.62J	2.0	1.52
Acenaphthene	0.63J	<0.37	0.369	0.71J	2.5	1.88
Acenaphthylene	0.46J	<0.25	0.263	0.34J	1.2J	0.903
C1-phenanthrene	<0.50	1.1J	0.749	<0.50	0.60J	0.479
Anthracene	0.72J	4.0	2.65	0.41J	1.5J	1.12
Phenanthrene	2.1	6.7	4.80	2.7	7.8	6.04
Benzo(g,h,i)perylene	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Indeno(1,2,3-c,d)pyrene	<0.32	<0.32	<0.32	<0.32	<0.32	<0.32
Dibenzo(a,h)anthracene	<0.43	<0.43	<0.43	<0.43	<0.43	<0.43
Perylene	<0.24	<0.24	<0.24	<0.24	<0.24	<0.24
Benzo(a)pyrene	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Benzo(e)pyrene	<0.27	<0.27	<0.27	<0.27	0.34J	0.269
Benzo(k)fluoranthene	<0.23	<0.23	<0.23	<0.23	0.38J	0.288
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	0.01660	nc ⁴	0.04871	0.01605	nc	0.06897
PEC (½DL)	1.234	nc	1.265	1.233	nc	1.273
Surrogate standards						
Terphenyl-d14	59	60	na	61	60	na
2-Fluorobiphenyl	61	58	na	56	60	na
Nitrobenzene-d5	78	104	na	74	84	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used in computations.

⁴ nc = Not calculated.

Table 24C: Polynuclear aromatic hydrocarbon concentrations in tissues of largemouth bass taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	2			2		
Tag No.	386, 311			377, 330		
DEC ID No.	07-0041-H 07-0042-H	07-0041-RC 07-0042-RC	07-0041 07-0042	07-0066-H 07-0068-H	07-0066-RC 07-0068-RC	07-0066 07-0068
Lab ID No.	G996-1-1B G996-1-3B	G996-1-2B G996-1-4B	na ¹	G996-1-5B G996-1-7B	G996-1-6B G996-1-8B	na
Acenaphthene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	5.33 <5.86, 7.73	4.44 <6.24, 5.76
Acenaphthylene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	9.62 <5.86, 16.3	6.96 <6.24, 10.8
Anthracene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Benzo(a)anthracene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Benzo(a)pyrene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Benzo(b)fluoranthene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Benzo(g,h,i)perylene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Benzo(k)fluoranthene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Chrysene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Dibenzo(a,h)anthracene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Fluoranthene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Fluorene	<6.21 <6.02, <6.21	8.36 6.51, 10.2	6.11 4.96, 7.26	<6.24 <6.24, <6.05	14.5 <5.86, 26.1	9.81 <6.24, 16.5
Indeno(1,2,3-c,d)pyrene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
1-Methylnaphthalene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	9.22 <5.86, 15.5	6.71 <6.24, 10.3
2-Methylnaphthalene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	14.3 <5.86, 25.6	9.66 <6.24, 16.2

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Naphthalene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24, 6.85	33.3 <5.86, 63.6	20.7 <6.24, 38.3
Phenanthrene	<6.21 <6.02, <6.21	<6.21, 6.25	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	11.1 <5.86, 19.3	8.46 <6.24, 13.8
Pyrene	<6.21 <6.02, <6.21	<6.21 <6.21, <6.06	<6.21 <6.21, <6.21	<6.24 <6.24, <6.05	<6.17 <5.86, <6.17	<6.24 <6.24, <6.17
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	0.00 0.00, 0.00	nc ⁴	0.0061 0.0050, 0.0073	0.00 0.00, 0.00	nc	0.051 0.00, 0.101
PEC (½DL)	19.7 19.4, 20.0	nc	19.7 19.4, 20.0	19.8 20.1, 19.5	nc	20.0 20.1, 19.9
Surrogate standards						
4-Terphenyl-d14	57.0 47, 67	63.0 53, 73	na	66.5 64, 69	71.5 58, 85	na
2-Fluorobiphenyl	47.0 38, 56	55.0 46, 64	na	54 53, 55	60.5 50, 71	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

Table 24D: Polynuclear aromatic hydrocarbon concentrations in tissues of largemouth bass taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	4			4		
Tag No.	430, 427, 435, 382			419, 415, 402, 418		
DEC ID No.	07-0079-H 07-0080-H 07-0081-H 07-0083-H	07-0079-RC 07-0080-RC 07-0081-RC 07-0083-RC	07-0079 07-0080 07-0081 07-0083	07-0108-H 07-0109-H 07-0111-H 07-0112-H	07-0108-RC 07-0109-RC 07-0111-RC 07-0112-RC	07-0108 07-0109 07-0111 07-0112
Lab ID No.	G996-1-9B G996-1-11B G996-1-13B G996-1-15B	G996-1-10B G996-1-12B G996-1-14B G996-1-16B	na ¹	G996-1-17B G996-1-19B G996-1-21B G996-1-23B	G996-1-18B G996-1-20B G996-1-22B G996-1-24B	na
Acenaphthene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Acenaphthylene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Anthracene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Benzo(a)anthracene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Benzo(a)pyrene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	3.81 ± 1.46 6.01, <6.15, <6.13, <6.21	3.51 ± 0.83 4.76, <6.18, <6.16, <6.21

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Benzo(<i>b</i>)fluoranthene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Benzo(<i>g,h,i</i>)perylene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Benzo(<i>k</i>)fluoranthene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Chrysene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Dibenzo(<i>a,h</i>)anthracene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Fluoranthene	<9.77 <5.97, <5.95, <6.04, <9.77	4.25 ± 2.31 7.71, <6.18, <6.10, <6.28	4.21 ± 1.37 5.82, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	4.91 ± 2.24 <5.84, 6.36, <6.13, 7.28	4.19 ± 1.38 <5.86, 5.19, <6.16, 5.57
Fluorene	<9.77 <5.97, <5.95, <6.04, <9.77	17.5 ± 8.75 30.4, 11.8, 12.4, 15.3	11.9 ± 5.17 19.4, 8.63, 8.29, 11.4	<6.18 <5.86, <6.18, <6.16, <5.92	4.40 ± 2.76 <5.84, <6.15, <6.13, 8.54	3.86 ± 1.65 <5.86, <6.18, <6.16, 6.33
Indeno(1,2,3- <i>c,d</i>)pyrene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
1-Methylnaphthalene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
2-Methylnaphthalene	<9.77 <5.97, <5.95, <6.04, <9.77	3.99 ± 1.79 6.67, <6.18, <6.10, <6.28	4.05 ± 1.14 5.19, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	3.90 ± 1.75 <5.84, <6.15, <6.13, 6.52	3.55 ± 1.04 <5.86, <6.18, <6.16, 5.11
Naphthalene	<9.77 <5.97, <5.95, <6.04, <9.77	<6.28 <6.22, <6.18, <6.10, <6.28	<9.77 <6.22, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	3.88 ± 1.72 <5.84, <6.15, <6.13, 6.46	3.54 ± 1.02 <5.86, <6.18, <6.16, 5.07
Phenanthrene	<9.77 <5.97, <5.95, <6.04, <9.77	6.15 ± 6.10 15.3, <6.18, <6.10, <6.28	5.36 ± 3.47 10.4, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	7.95 ± 5.73 <5.84, 13.2, <6.13, 12.6	6.09 ± 3.58 <5.86, 9.57, <6.16, 8.78
Pyrene	<9.77 <5.97, <5.95, <6.04, <9.77	3.99 ± 1.78 6.66, <6.18, <6.10, <6.28	4.05 ± 1.14 5.19, <6.18, <6.10, <9.77	<6.18 <5.86, <6.18, <6.16, <5.92	<6.21 <5.84, <6.15, <6.13, <6.21	<6.21 <5.86, <6.18, <6.16, <6.21
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	0.00 0.00, 0.00, 0.00, 0.00	nc ⁴	0.0186 ± 0.0183 0.0460, 0.00863, 0.00829, 0.0114	0.00 0.00, 0.00, 0.00, 0.00	nc	1.20 ± 2.37 4.76, 0.0148, 0.00, 0.0309
PEC (½DL)	22.3 ± 6.07 19.2, 19.2, 19.4, 31.4	nc	22.8 ± 19.1 20.1, 19.9, 19.6, 31.5	19.4 ± 0.50 18.9, 19.9, 19.8, 19.1	nc	20.1 ± 0.408 20.7, 19.9, 19.8, 20.0
Surrogate standards						
4-Terphenyl-d14	70.5 ± 5.46 78, 65, 69, 70	84.5 ± 14.8 105, 79, 84, 70	na	75.0 ± 20.7 54, 62, 99, 85	115 ± 27.6 80, 111, 124, 146 ⁵	na
2-Fluorobiphenyl	53.8 ± 8.38 65, 45, 51, 54	61.8 ± 7.04 71, 60, 62, 54	na	54.5 ± 11.8 43, 46, 67, 62	74.8 ± 10.3 60, 77, 84, 78	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

⁵ Exceeds quality control limit.

Table 25A: Polynuclear aromatic hydrocarbons in tissues of pumpkinseed taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	2			2		
Tag No.	380, 332			385, 344		
DEC ID No.	07-0046-H 07-0048-H	07-0046-RC 07-0048-RC	07-0046 07-0048	07-0059-H 07-0061-H	07-0059-RC 07-0061-RC	07-0059 07-0061
Lab ID No.	892415-004 892415-006	892415-005 892415-007	na ¹	892415-008 892415-010	892415-009 892415-011	na
Lipid (%)	1.02 0.95, 1.09	4.78 3.46, 6.10	3.19 2.44, 3.93	0.74 0.68, 0.79	3.33 3.00, 3.66	2.40 2.13, 2.67
Naphthalene	2.75 2.8J, 2.7J ²	5.20 4.5, 5.9	4.16 3.81, 4.51	1.90 2.1J, 1.7J	2.40 2.7, 2.1	2.22 2.47, 1.96
2-methylnaphthalene	2.15 2.2J, 2.1J	4.10 3.5J, 4.7	3.27 2.97, 3.57	1.80 2.1J, 1.5J	3.05 3.5, 2.6	2.60 2.97, 2.22
C1-naphthalenes	3.40 3.5J, 3.3J	6.90 5.8J, 8.0	5.42 4.87, 5.96	2.85 3.3J, 2.4J	4.55 5.4, 3.7	3.93 4.61, 3.25
1-methylnaphthalene	1.30 1.3J, 1.3J	2.75 2.3J, 3.2J	2.14 1.89, 2.38	0.97 1.1J, 0.83J	1.55 1.9, 1.2J	1.34 1.60, 1.07
Biphenyl	0.920 0.96J, 0.88J	2.50 2.4J, 2.6J	1.65 1.43, 1.86	0.330 0.40J, <0.46	0.415 0.36J, 0.47J	0.381 0.375, 0.387
2, 6-dimethylnaphthalene	0.605 <0.84, 0.79J	1.90 1.5J, 2.3J	1.36 1.06, 1.65	0.57 0.57J, 0.57J	1.15 1.0J, 1.3J	0.944 0.838, 1.05
C2-naphthalenes	0.605 <0.84, 0.79J	1.90 1.5J, 2.3J	1.36 1.06, 1.65	0.57 0.57J, 0.57J	1.15 1.0J, 1.3J	0.944 0.838, 1.05
C2-phenanthrenes	<0.72 <0.72, <0.60	<0.53 <0.52, <0.53	<0.72 <0.72, <0.60	<0.43 <0.31, <0.43	<0.24 <0.24, <0.24	<0.43 <0.31, <0.43

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Fluoranthene	1.95 1.8J, 2.1J	6.15 4.3, 8.0	4.37 3.29, 5.45	1.35 1.5J, 1.2J	3.15 3.7, 2.6	2.50 2.87, 2.12
Pyrene	0.90 0.79J, 1.0J	2.35 1.9J, 2.8J	1.74 1.45, 2.02	1.05 1.2J, 0.90J	2.25 2.4, 2.1	2.13 2.57, 1.69
Benzo(a)anthracene	<0.79 <0.79, <0.66	<0.59 <0.57, <0.59	<0.79 <0.79, <0.66	<0.48 <0.35, <0.48	0.215 0.30J, <0.26	0.247 0.253, <0.48
Chrysene	<0.82 <0.82, <0.69	0.840 0.68J, 1.0J	0.646 0.575, 0.716	<0.50 <0.36, <0.50	0.835 0.99J, 0.68J,	0.609 0.685, 0.532
Benzo(b)fluoranthene	<0.83 <0.83, <0.70	<0.62 <0.60, <0.62	<0.83 <0.83, <0.70	<0.51 <0.37, <0.51	<0.28 <0.28, <0.28	<0.51 <0.37, <0.51
3, 6-dimethylphenanthrene	<0.72 <0.72, <0.60	<0.53 <0.52, <0.53	<0.72 <0.72, <0.60	<0.43 <0.31, <0.43	<0.24 <0.24, <0.24	<0.43 <0.31, <0.43
1-methylphenanthrene	<0.82 <0.82, <0.69	<0.62 <0.60, <0.62	<0.82 <0.82, <0.69	<0.50 <0.36, <0.50	<0.27 <0.27, <0.27	<0.50 <0.36, <0.50
C1-anthracenes	<1.3 <1.3, <1.1	0.93 <0.92, 1.4J	0.840 <1.3, 1.03	<0.77 <0.56, <0.77	0.750 0.92J, 0.58J	0.596 0.679, 0.513
1-methylanthracene	<0.87 <0.87, <0.73	0.708 <0.63, 1.1J	0.609 <0.87, 0.782	<0.53 <0.38, <0.53	0.665 0.75J, 0.58J	0.505 0.539, 0.471
2-methylanthracene	<0.45 <0.45, <0.38	<0.34 <0.33, <0.34	<0.45 <0.45, <0.38	<0.27 <0.20, <0.27	0.123 0.17J, <0.15	0.140 0.144, <0.27
2-methylphenanthrene	<0.86 <0.86, <0.73	<0.65 <0.63, <0.65	<0.86 <0.86, <0.73	<0.52 <0.38, <0.52	0.405 0.47J, 0.34J	0.339 0.365, 0.312
Fluorene	1.80 1.7J, 1.9J	6.80 5.0, 8.6	4.68 3.66, 5.70	0.50 0.47J, 0.52J	0.920 0.91J, 0.93J	0.767 0.744, 0.789
C3-naphthalenes	<0.80 <0.80, <0.67	1.24 0.87J, 1.6J	0.865 0.680, 1.05	0.355 0.47J, <0.48	1.05 1.1J, 1.0J	0.801 0.863, 0.738

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
2, 3, 5-trimethylnaphthalene	<0.80 <0.80, <0.67	1.24 0.87J, 1.6J	0.865 0.680, 1.05	0.355 0.47, <0.48	1.05 1.1J, 1.0J	0.801 0.863, 0.738
Acenaphthene	0.775 <1.1, 1.0J	2.45 2.2J, 2.7J	1.75 1.53, 1.96	<0.66 <0.48, <0.66	0.510 0.50J, 0.52J	0.428 0.402, 0.454
Acenaphthylene	0.555 <0.74, 0.74J	2.25 1.7J, 2.8J	1.54 1.16, 1.91	<0.45 <0.32, <0.45	0.320 0.35J, 0.29J	0.274 0.279, 0.268
C1-phenanthrene	<1.5 <1.5, <1.2	<1.1 <1.1, <1.1	<1.5 <1.5, <1.2	<0.90 <0.65, <0.90	<0.50 <0.50, <0.50	<0.90 <0.65, <0.90
Anthracene	<0.82 <0.82, <0.69	1.85 1.2J, 2.5J	1.23 0.880, 1.57	0.56 0.54J, 0.58J	1.55 1.6J, 1.5J	1.19 1.20, 1.18
Phenanthrene	3.15 3.1J, 3.2J	7.05 5.1, 9.0	5.39 4.29, 6.49	2.50 2.4, 2.6J	3.45 3.4, 3.5	0.311 3.02, 3.19
Benzo(g,h,i)perylene	<0.90 <0.90, <0.76	<0.67 <0.66, <0.67	<0.90 <0.90, <0.76	<0.55 <0.40, <0.55	<0.30 <0.30, <0.30	<0.55 <0.40, <0.55
Indeno(1,2,3-c,d)pyrene	<0.95 <0.95, <0.80	<0.71 <0.69, <0.71	<0.95 <0.95, <0.80	<0.58 <0.42, <0.58	<0.32 <0.32, <0.32	<0.58 <0.42, <0.58
Dibenzo(a,h)anthracene	<1.3 <1.3, <1.1	<0.97 <0.94, <0.97	<1.3 <1.3, <1.1	<0.79 <0.57, <0.79	<0.43 <0.43, <0.43	<0.79 <0.57, <0.79
Perylene	<0.72 <0.72, <0.61	<0.54 <0.52, <0.54	<0.72 <0.72, <0.61	<0.44 <0.32, <0.44	<0.24 <0.24, <0.24	<0.44 <0.32, <0.44
Benzo(a)pyrene	<0.51 <0.51, <0.43	<0.38 <0.37, <0.38	<0.51 <0.51, <0.43	<0.31 <0.23, <0.31	0.158 0.23J, <0.17	0.171 0.187, <0.31
Benzo(e)pyrene	<0.81 <0.81, <0.68	<0.60 <0.58, <0.60	<0.81 <0.81, <0.68	<0.49 <0.35, <0.49	0.218 0.30J, <0.27	0.249 0.253, <0.49
Benzo(k)fluoranthene	<0.69 <0.69, <0.58	<0.52 <0.50, <0.52	<0.69 <0.69, <0.58	<0.42 <0.30, <0.42	0.193 0.27J, <0.23	0.218 0.225, <0.42

Parameter	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	0.0136 0.0124, 0.0147	nc ⁴	0.0456 0.0367, 0.0545	0.0147 0.0152, 0.0142	nc	0.1494 0.2690, 0.0298
PEC (½DL)	3.411 3.694, 3.127	nc	3.433 3.705, 3.160	1.945 1.631, 2.259	nc	1.999 1.735, 2.262
Surrogate standards						
Terphenyl-d14	48.5 49, 48	52.0 53, 51	na	48.5 49, 48	45.5 47, 44	na
2-Fluorobiphenyl	39.5 40, 39	45.5 47, 44	na	41.0 42, 40	40.5 40, 41	na
Nitrobenzene-d5	52.5 54, 51	72.5 71, 74	na	58.0 62, 54	56.0 64, 50	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used for computations.

⁴ nc = Not calculated.

Table 25B: Polynuclear aromatic hydrocarbons in tissues of pumpkinseed taken from the Buffalo River, October 2007.

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	2			2		
Tag No.	442, 439			417, 408		
DEC ID No.	07-0077-H 07-0078-H	07-0077-RC 07-0078-RC	07-0077 07-0078	07-0104-H 07-0107-H	07-0104-RC 07-0107-RC	07-0104 07-0107
Lab ID No.	892415-012 892415-014	892415-013 892415-015	na ¹	892415-016 892415-018	892415-017 892415-019	na
Lipid (%)	1.61 1.26, 1.95	5.10 4.73, 5.46	3.83 3.45, 4.20	1.04 0.86, 1.22	8.17 5.44, 10.9	4.87 3.38, 6.35
Naphthalene	1.80 1.6J, 2.0J ²	2.20 2.0, 2.4	2.06 1.85, 2.26	3.05 2.9J, 3.2J	5.50 5.6, 5.4	4.38 4.38, 4.38
2-methylnaphthalene	1.75 1.6J, 1.9J	2.50 2.2, 2.8	2.23 1.98, 2.48	3.20 2.8J, 3.6	7.05 6.6, 7.5	5.29 4.89, 5.69
C1-naphthalenes	2.65 2.3J, 3.0J	3.80 3.3J, 4.3	3.38 2.93, 3.83	4.90 4.2J, 5.6J	10.9 9.8, 12	8.15 7.27, 9.03
1-methylnaphthalene	0.935 0.77J, 1.1J	1.30 1.1J, 1.5J	1.17 0.978, 1.36	1.65 1.4J, 1.9J	3.70 3.2, 4.2	2.76 2.39, 3.13
Biphenyl	0.460 0.42J, 0.50J	0.450 0.47J, 0.43J	1.13 0.451, 1.81	0.445 <0.64, 0.57J	1.25 0.70J, 1.8J	0.879 0.528, 1.23
2, 6-dimethylnaphthalene	0.860 0.77J, 0.95J	2.20 2.4, 2.0	1.71 1.80, 1.62	1.37 0.84J, 1.9J	5.35 3.9, 6.8	3.53 2.52, 4.53
C2-naphthalenes	0.86 0.77J, 0.95J	2.20 2.4, 2.0	1.71 1.80, 1.62	1.37 0.84J, 1.9J	5.35 3.9, 6.8	3.53 2.52, 4.53

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
C2-phenanthrenes	<0.43 <0.31, <0.43	0.218 <0.27, 0.30J	0.212 <0.31, 0.269	<0.61 <0.61, <0.50	0.895 0.59J, 1.2J	0.610 0.461, 0.759
Fluoranthene	2.70 1.8J, 3.6	6.25 5.0, 7.5	4.96 3.82, 6.10	4.50 3.3J, 5.7	19.0 18, 20	12.4 11.4, 13.4
Pyrene	1.75 1.3J, 2.2J	4.30 3.7, 4.9	3.37 2.81, 3.93	2.15 1.3J, 3.0J	9.00 8.0, 10	5.87 4.98, 6.75
Benzo(a)anthracene	<0.47 <0.34, <0.47	<0.30 <0.30, <0.27	<0.47 <0.34, <0.47	<0.67 <0.67, <0.55	1.45 1.7J, 1.2J	0.926 1.08, 0.771
Chrysene	0.358 <0.35, 0.54J	1.07 0.88J, 1.3J	0.825 0.619, 1.03	0.850 0.70J, 1.0J	4.70 5.5, 3.9	2.95 3.34, 2.55
Benzo(b)fluoranthene	<0.50 <0.36, <0.50	<0.32 <0.32, <0.29	<0.50 <0.36, <0.50	<0.71 <0.71, <0.58	2.55 3.6, 1.5J	1.54 2.14, 0.938
3, 6-dimethylphenanthrene	<0.43 <0.31, <0.43	0.218 <0.27, 0.30J	0.212 <0.31, 0.269	<0.61 <0.61, <0.50	0.895 0.59J, 1.2J	0.610 0.461, 0.759
1-methylphenanthrene	<0.50 <0.36, <0.50	0.238 0.33J, <0.29	0.262 0.274, <0.50	<0.70 <0.70, <0.58	0.830 0.67J, 0.99J	0.595 0.525, 0.665
C1-anthracenes	<0.77 <0.55, <0.77	1.35 1.0J, 1.7J	0.981 0.732, 1.23	<1.1 <1.1, <0.89	3.70 2.9J, 4.5J	2.24 1.84, 2.64
1-methylanthracene	0.415 <0.38, 0.64J	1.12 0.83J, 1.4J	0.862 0.593, 1.13	0.615 <0.74, 0.86J	3.05 2.4J, 3.7	1.93 1.48, 2.38
2-methylanthracene	<0.27 <0.19, <0.27	0.255 0.20J, 0.31J	0.204 0.161, 0.247	<0.38 <0.38, <0.31	0.675 0.48J, 0.87J	0.444 0.349, 0.538
2-methylphenanthrene	<0.52 <0.37, <0.52	0.690 0.54J, 0.84J	0.520 0.409, 0.631	0.543 <0.73, 0.72J	2.20 1.5J, 2.9	1.44 0.988, 1.89

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Fluorene	0.930 0.76J, 1.1J	1.85 1.6J, 2.1	1.52 1.29, 1.74	2.05 0.89J, 3.2J	8.40 3.8, 13	5.47 2.49, 8.45
C3-naphthalenes	1.05 0.89J, 1.2J	2.65 2.4, 2.9	2.07 1.84, 2.29	1.20 0.99J, 1.4J	5.60 5.0, 6.2	3.58 3.19, 3.97
2, 3, 5-trimethylnaphthalene	1.05 0.89J, 1.2J	2.65 2.4, 2.9	2.07 1.84, 2.29	1.20 0.99J, 1.4J	5.60 5.0, 6.2	3.58 3.19, 3.97
Acenaphthene	0.880 0.56J, 1.2J	1.65 1.6J, 1.7	1.37 1.22, 1.52	1.70 1.0J, 2.4J	6.10 2.5J, 9.7	4.07 1.82, 6.31
Acenaphthylene	<0.44 <0.32, <0.44	0.345 0.31J, 0.38J	0.288 0.254, 0.322	<0.62 <0.62, <0.54	0.715 0.66J, 0.77J	0.520 0.502, 0.538
C1-phenanthrene	<0.90 <0.64, <0.90	0.855 0.87J, 0.84J	0.683 0.666, 0.700	<1.3 <1.3, <1.0	3.05 2.2J, 3.9J	1.91 1.50, 2.32
Anthracene	1.26 0.81J, 1.7J	3.30 2.8, 3.8	2.55 2.06, 3.04	1.55 0.70J, 2.4J	6.55 3.3, 9.8	4.25 2.13, 6.37
Phenanthrene	3.45 2.8, 4.1	6.75 5.9, 7.6	5.55 4.75, 6.34	7.90 3.8J, 12	30.5 17, 44	20.1 11.0, 29.1
Benzo(g,h,i)perylene	<0.54 <0.39, <0.54	<0.35 <0.35, <0.31	<0.54 <0.39, <0.54	<0.77 <0.77, <0.63	1.23 1.6J, 0.85J	0.826 1.05, 0.602
Indeno(1,2,3-c,d)pyrene	<0.57 <0.41, <0.57	<0.50 <0.50, <0.33	<0.57 <0.50, <0.57	<0.81 <0.81, <0.67	0.905 <0.82, 1.4J	0.658 <0.82, 0.906
Dibenzo(a,h)anthracene	<0.79 <0.56, <0.79	<0.45 <0.36, <0.45	<0.79 <0.56, <0.79	<1.1 <1.1, <0.91	<0.71 <0.60, <0.71	<1.1 <1.1, <0.91
Perylene	<0.43 <0.31, <0.43	<0.27 <0.27, <0.25	<0.43 <0.31, <0.43	<0.61 <0.61, <0.50	0.388 0.58J, <0.39	0.353 0.456, <0.50

Parameter	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
Benzo(a)pyrene	<0.31 <0.22, <0.31	<0.20 <0.20, <0.18	<0.31 <0.22, <0.31	<0.44 <0.44, <0.36	1.53 2.1, 0.95J	0.922 1.25, 0.593
Benzo(e)pyrene	<0.49 <0.35, <0.49	0.290 0.44J, <0.28	0.294 0.342, <0.49	<0.68 <0.68, <0.56	2.15 2.7J, 1.6J	1.31 1.64, 0.987
Benzo(k)fluoranthene	<0.42 <0.30, <0.42	<0.26 <0.26, <0.24	<0.42 <0.30, <0.42	<0.59 <0.59, <0.49	2.11 3.3, 0.92J	1.28 1.95, 0.607
Benzo(a)pyrene potency equivalent concentrations ³						
PEC (DL = 0)	0.0205 0.0185, 0.0224	nc ⁴	0.0551 0.0448, 0.0654	0.04855 0.0300, 0.0671	nc	1.480 1.874, 1.085
PEC (½DL)	2.289 2.308, 2.269	nc	1.964 1.632, 2.296	2.890 3.143, 2.637	nc	4.013 4.665, 3.360
Surrogate standards						
Terphenyl-d14	48.5 46, 51	45.0 40, 50	na	57.5 50, 65	59.5 64, 55	na
2-Fluorobiphenyl	43.0 43, 43	42.0 37, 45	na	54.0 44, 64	57.5 61, 54	na
Nitrobenzene-d5	52.0 47, 57	56.0 49, 63	na	67.5 62, 73	81.5 86, 77	na

¹ na = Not applicable or not appropriate.

² J = Value below calibration range but greater than limit of detection.

³ Potency equivalency factors of Nisbet and LaGoy (1992) were used in computations.

⁴ nc = Not calculated.

Table 26: Potency equivalent concentrations¹ (PECs) for select PAHs in fish taken from the Buffalo River, October 2007.

Species	n	Edible tissues		Whole fish	
		DL = 0	½DL	DL = 0	½DL
<u>Analyses by Pace Analytical Services, Inc.</u>					
Bluntnose minnow	2	na ²	na	2.44	3.58
Brown bullhead	6	0.0951 ± 0.0928	1.756 ± 0.221	0.610 ± 0.819	2.21 ± 0.825
Carp					
- Zone 1	3 ³	1.12 ± 0.722 (0.706)	17.5 ± 20.9 (5.47)	6.76 ± 9.55	20.4 ± 20.0
- Zone 4	3	0.197 ± 0.107	1.40 ± 0.113	0.793 ± 0.642	1.91 ± 0.606
Largemouth bass	8	0.0233 ± 0.0105	1.22 ± 0.0389	0.0976 ± 0.0662	1.30 ± 0.0408
Pumpkinseed	8	0.0243 ± 0.0182	2.63 ± 0.656	0.432 ± 0.684	2.77 ± 1.00
<u>Analyses by SGS Environmental Services, Inc.</u>					
Carp	8	0.0890 ± 0.147	57.6 ± 15.6	0.0948 ± 0.118	63.4 ± 0.678
Largemouth bass	12 ⁴	0.000	20.5 ± 3.46	0.416 ± 1.37 (0.0312 ± 0.0390)	20.9 ± 3.35

¹ Potency equivalent factors of Nesbit and LaGoy (1992) were used; all values are relative to the potency of benzo(a)pyrene. Individual sample PECs can be found in Tables 21 through 25. Alternative potency factors from which PECs may be calculated are provided in Table 5.

² na - Not applicable.

³ Edible tissues includes outlier caused by elevated naphthalene values and elevated detection limits; average without outlier is in parenthesis. Whole fish PECs for Zone 1 are widely divergent for all three samples. See Table 23.

⁴ Whole fish PEC outlier caused by a detection of benzo(a)pyrene is excluded in parenthesis values. See Table 24D.

Table 27: Polybrominated diphenyl ether (BDE) concentrations in whole body composite samples of bluntnose minnows taken from the Buffalo River, October 2007.

Parameter/BDE No.	Concentration (pg/g wet weight) in:		
	Zone 2		Zone 3
	Mean	Values	
n	2 composites		1 composite
Tag No.	398A, 398B		441
DEC ID No.	07-0057-H, 07-0058-H		07-0073-H
Lab ID No.	892415060, 892415061		892415062
1	<9.67	<9.67, <7.81	<6.25
2	<8.02	<7.71, <8.02	<4.92
3	<8.09	<6.73, <8.09	<4.68
7	1.06	<0.462, 1.89	<4.67
8/11	<0.555	<0.555, <0.376	<0.369
10	<0.633	<0.445, <0.633	<0.509
12	<0.503	<0.503, <0.434	<0.392
13	0.592	1.06 B, <0.247	<0.206
15	16.3	32.4, <0.231	<0.215
17	51.0	53.4, 48.6	6.88 B ¹
27	<1.77	<1.77, <1.34	4.34
28/33	672	666, 678	185
30	<1.25	<1.00, <1.25	<0.606
32	15.05	15.1, 15.0	3.70
35	1.47	<1.13, 2.28	<1.04
37	4.74	4.68, 4.80	<0.574
47	39000	40300, 37700	9900
49	1310	1350, 1270	420
51	77.05	68.0, 86.1	23.6
66	<17.2	<17.2, <0.692	<1.13
71	<1.24	<1.24, <0.942	<1.64
75	106.75	119, 94.5	36.4
77	<2.52	<2.52, <0.657	<0.350

Parameter/BDE No.	Concentration (pg/g wet weight) in:		
	Zone 2		Zone 3
	Mean	Values	
79	<10.1	<10.1, <0.828	<1.26
85	160.5	191, 130	66.3
99	2405	2800, 2010	571
100	8065	8060, 8070	1800
105	473	942, <6.44	<7.15
116	<28.3	<28.3, <17.6	<3.08
118	27.75	28.9, 26.6	<4.65
119/120	562.5	548, 577	82.6
126	<3.17	<3.17, <2.71	135
128	<10.9	<10.9, <10.4	<8.95
138	42.6	52.7, 32.5	7.97
140	63.45	68.1, 58.8	8.65
153	926.5	963, 890	109
154	3620	3660, 3580	721
155	343	347, 339	68.6
166	<4.96	<4.96, <2.84	<2.98
181	<6.99	<6.99, <2.35	<2.36
183	105.5	111, 100 B	13.2 B
190	<13.0	<13.0, <5.53	<3.52
203	168.5	158, 179	22.5
206	362.5	381, 344	10.2 B
207	277.5	275, 280	10.8 B
208	200	191, 209	6.86 B
209	7495	8150, 6840	154 B

¹ B = Blank detection; sample value less than 10 times blank value.

Table 28A: Polybrominated diphenyl ether (BDE) concentrations in tissues of brown bullhead taken from the Buffalo River, October 2007.

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	1			2		
Tag No.	389			391, 376		
DEC ID No.	07-0045-H	07-0045-RC	07-0045	07-0071-H 07-0072-H	07-0071-RC 07-0072-RC	07-0071 07-0072
Lab ID No.	892415079	892415080	na ¹	892415081 892415083	892415082 892415084	na
1	<3.59	<6.77	<6.77	<23.1 <23.1, <11.4	<4.33 <3.38, <4.33	<23.1 <23.1, <11.4
2	<2.82	<4.43	<4.43	<10.6 <10.6, <6.95	<4.00 <1.87, <4.00	<10.6 <10.6, <6.95
3	1.33 J ²	<3.95	1.83	<10.3 <10.3, <6.75	<3.12 <1.69, <3.12	<10.3 <10.3, <6.75
7	2.66	8.31	7.02	2.01 3.81, <0.432	8.42 13.4, 3.43	7.64 12.7, 2.57
8/11	<0.121	<0.230	<0.230	<0.481 <0.481, <0.319	<0.331 <0.191, <0.331	<0.481 <0.481, <0.331
10	<0.167	<0.317	<0.317	<0.968 <0.968, <0.558	<0.310 <0.222, <0.310	<0.968 <0.968, <0.558
12	<0.0883	<0.213	<0.213	<0.808 <0.808, <0.427	<0.311 <0.152, <0.311	<0.808 <0.808, <0.427
13	1.44 B	3.87	3.31	0.416 <0.733, 0.466	1.17 1.54, 0.804	0.966 1.22, 0.712
15	<0.158	<0.143	<0.158	<0.662 <0.662, <0.292	<0.213 <0.155, <0.213	<0.662 <0.662, <0.292
17	39.5	112	95.4	18.0 23.0, 13.0	62.4 86.0, 38.8	52.0 72.2, 31.8
25	<0.614	10.5	8.17	1.73 2.12, 1.33	3.56 6.67, <0.915	3.18 5.67, 0.689
28/33	57.9	179	151	39.5 37.2, 41.8	133 134, 131	110 113, 107
30	<0.475	<0.845	<0.845	<1.00 <1.00, <0.965	<0.752 <0.379, <0.752	<1.00 <1.00, <0.965

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
32	<0.253	<0.456	<0.456	<0.452 <0.452, <0.351	<0.423 <0.314, <0.423	<0.452 <0.452, <0.351
35	0.433	2.02	1.66	<0.929 <0.929, <0.699	<0.841 <0.385, <0.841	<0.929 <0.929, <0.841
37	6.15	16.4	14.1	1.83 1.85, 1.80	6.12 5.86, 6.38	5.07 4.98, 5.15
47	10400	20700	18335	3815 3660, 3970	12300 12400, 12200	10232 10481, 9982
49	261	634	548	125 87.0, 162	534 415, 653	432 343, 521
51	57.9	111	98.8	20.8 18.5, 23.1	85.7 99.4, 72.0	70.2 81.6, 58.8
66	<5.01	<4.36	<5.01	<6.90 <3.94, <6.90	<7.49 <7.49, <7.41	<7.49 <7.49, <7.41
71	<0.526	<0.214	<0.526	<1.09 <1.09, <0.768	<1.10 <1.10, <0.814	<1.10 <1.10, <0.814
76	10.4	29.9	25.4	8.33 7.20, 9.45	26.0 21.2, 30.7	21.6 18.1, 25.0
77	<1.98	<2.00	<2.00	2.16 <2.15, 3.24	<2.97 <2.44, <2.97	1.59 <2.44, 1.95
79	<3.81	<4.21	<4.21	<17.9 <10.7, <17.9	<12.1 <12.1, <4.90	<17.9 <12.1, <17.9
85	515	1510	1282	92.5 119, 66.0	656 1030, 282	1527 830, 2224
99	11700	25100	22025	3585 3600, 3570	12400 12900, 11900	10254 10852, 9656
100	2960	8180	6984	1091 872, 1310	4370 3660, 5080	3556 3047, 4065
105	210	430	380	59.6 <4.58, 117	224 442, <11.6	190 345, 35.4
116	<2.33	<8.17	<8.17	<5.78 <5.78, <2.15	<31.8 <31.8, <7.41	<31.8 <31.8, <7.41
118	48.7	194	161	31.0 12.7, 49.2	178 97.3, 258	140 78.7, 202
119/120	95.2	325	272	51.9 34.4, 69.3	213 127, 299	172 107, 237

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
126	<2.76	<4.18	<4.18	<1.33 <1.11, <1.33	<5.51 <5.51, <4.44	<5.51 <5.51, <4.44
128	<6.60	22.1	17.8	<20.3 <20.3, <17.8	10.3 <7.32, 17.0	12.5 <20.3, 14.8
138	115	350	296	26.3 30.9, 21.6	114 150, 77.7	93.3 124, 62.6
140	62.7	170	145	19.4 21.8, 17.0	68.7 76.1, 61.3	56.8 64.2, 49.4
153	1260	3770	3195	534 358, 710	2155 1460, 2850	1746 1218, 2274
154	901	2690	2280	430 316, 543	1690 1260, 2120	1374 1053, 1695
155	57.3	166	141	70.4 23.7, 117	269 78.6, 460	217 66.5, 368
166	<2.45	<3.21	<3.21	<9.62 <9.62, <5.46	<3.65 <3.09, <3.65	<9.62 <9.62, <5.46
181	7.14	20.1	17.1	<3.87 <3.87, <2.25	13.5 14.0, 13.0	10.6 11.4, 9.81
183	134	411	348	53.0 67.3, 38.7	210 278, 142	173 232, 114
190	22.0	69.2	58.2	<8.80 <8.80, <3.94	36.9 51.3, 22.5	29.0 41.0, 17.0
203	38.8	114	96.8	18.5 21.8, 15.2	69.3 84.0, 54.5	57.1 70.3, 43.9
206	8.75 B ³	22.4 B	19.3	11.0 13.4 B, 8.67 B	27.1 44.4 B, 9.89 B	23.6 37.6, 9.55
207	34.2 B	85.0	73.4	16.7 23.5 B, 9.90 B	74.9 118, 31.8 B	61.6 97.2, 25.9
208	22.7	55.4	47.9	11.0 14.7 B, 7.26 B	54.1 84.2, 24.0	44.2 68.9, 19.5
209	98.3 B	666	536	154 198 B, 110 B	400 565 B, 234 B	342 484, 200

¹ na = Not applicable.

² J = Value is below calibration range but greater than limit of detection.

³ B = Blank detection; sample value is less than 10 times the blank value.

Table 28B: Polybrominated diphenyl ether (BDE) concentrations in tissues of brown bullhead taken from the Buffalo River, October 2007.

Parameter/BDE No.	Concentration (pg/g wet weight) in:		
	Zone 3		
	Edible tissue	Carcass	Calculated whole fish
n	3		
Tag No.	438, 434, 436		
DEC ID No.	07-0089-H 07-0092-H 07-0093-H	07-0089-RC 07-0092-RC 07-0093-RC	07-0089 07-0092 07-0093
Lab ID No.	892415085 892415087 892415089	892415086 892415088 892415090	na ¹
1	<16.5 <11.9, <16.5, <8.24	<4.26 <3.92, <3.87, <4.26	<16.5 <11.9, <16.5, <8.24
2	<7.40 <7.38, <7.40, <4.38	<2.67 <2.67, <1.87, <2.19	<7.40 <7.38, <7.40, <4.38
3	3.55 ± 0.892 <6.28, 2.93 B, 4.57 B ² J ³	1.32 ± 0.480 1.57, <1.54, 1.63 BJ	1.89 ± 0.529 1.97, 1.33, 2.38
7	2.08 ± 2.15 1.96, 4.29, <0.428	4.51 ± 4.08 1.39, 9.13, 3.01	3.90 ± 3.46 1.53, 7.87, 2.30
8/11	0.587 ± 0.723 <0.434, <0.245, 1.42	<0.246 <0.147, <0.246, <0.223	<0.445 <0.434, <0.246, <0.445
10	<0.658 <0.658, <0.442, <0.523	<0.251 <0.220, <0.251, <0.198	<0.658 <0.658, <0.442, <0.523
12	<0.488 <0.361, <0.398, <0.488	<0.212 <0.212, <0.153, <0.189	<0.488 <0.361, <0.398, <0.488
13	0.482 ± 0.300 <0.392, 0.794 B, 0.455 B	0.786 ± 0.931 0.224, 1.86, 0.273 B	0.686 0.217, 1.58, 0.261
15	<0.349 <0.349, <0.260, <0.313	<0.259 <0.138, <0.259, <0.118	<0.349 <0.349, <0.260, <0.313
17	31.5 ± 6.99 24.1, 32.3, 38.0	4.89 ± 3.39 17.4, 84.8, 44.5	44.3 ± 26.1 19.0, 71.1, 42.8
25	1.71 ± 0.983 <1.47, 1.68, 2.70	2.29 ± 1.93 <0.801, 4.26, 2.22	2.22 ± 1.43 <1.47, 3.58, 2.34
28/33	67.7 ± 25.6 87.9, 39.0 B, 76.3	91.3 ± 14.5 76.2, 92.7, 105	85.1 ± 10.9 79.0, 78.7, 97.7
30	<1.67 <1.67, <1.11, <1.38	<1.30 <1.30, <0.491, <0.965	<1.67 <1.67, <1.11, <1.38

Parameter/BDE No.	Concentration (pg/g wet weight) in:		
	Zone 3		
	Edible tissue	Carcass	Calculated whole fish
32	<0.861 <0.861, <0.694, <0.860	<0.745 <0.476, <0.418, <0.745	<0.861 <0.861, <0.694, <0.860
35	<0.813 <0.813, <0.612, <0.680	<0.755 <0.469, <0.325, <0.755	<0.813 <0.813, <0.612, <0.755
37	1.18 ± 1.28 2.80, 2.27, <0.728	3.58 ± 2.68 1.67, 6.65, 2.43	3.12 ± 2.07 1.94, 5.51, 1.90
47	4070 ± 1219 4520, 2690 B, 5000	5993 ± 1866 3870, 6740, 7370	5492 ± 1382 4024, 5684, 6767
49	139 ± 81.1 90.5, 94.6, 233	230 ± 154 73.0, 236, 381	206 ± 133 77.1, 199, 343
51	25.3 ± 6.34 26.5, 18.4, 30.9	46.3 ± 10.9 33.9, 54.2, 50.8	40.9 ± 7.63 32.1, 44.9, 45.7
66	24.2 ± 38.7 68.8, <2.31, <5.14	10.5 ± 14.0 26.6, <3.55, <6.25	13.8 ± 19.7 36.6, <3.55, <6.25
71	<0.897 <0.897, <0.589, <0.631	9.07 ± 11.0 21.8, <6.56, <4.23	7.40 ± 8.16 16.8, <6.56, <4.23
76	9.80 ± 2.69 9.32, 7.39, 12.7	9.71 ± 4.29 5.33, 13.9, 9.91	9.69 ± 3.06 6.28, 12.2, 10.6
77	<2.56 <1.91, <1.35, <2.56	<3.78 <2.12, <1.67, <3.78	<3.78 <2.12, <1.67, <3.78
79	<13.6 <3.25, <0.696, <13.6	<5.97 <0.730, <0.453, <5.97	<13.6 <3.25, <0.696, <13.6
85	153 ± 145 319, 91.9 B, 48.8 B	443 ± 321 738, 491, 101 B	371 ± 276 639, 387, 87.7
99	4300 ± 1954 6520, 2840 B, 3540 B	6393 ± 958 6180, 7440, 5560	5849 ± 695 6260, 6241, 5046
100	1385 ± 607 1870, 704 B, 1580	2173 ± 477 1840, 1960, 2720	1970 ± 412 1847, 1633, 2430
105	82.3 ± 34.1 110, 44.2 B, 92.6	220 ± 189 371, <16.4, 280	186 ± 151 309, 17.6, 232
116	<5.55 <4.37, <2.54, <5.55	<13.3 <11.9, <11.5, <13.3	<13.3 <11.9, <11.5, <13.3
118	20.0 ± 27.2 59.4, 17.0, <3.21	91.5 ± 22.5 95.0, 67.4, 112	74.4 ± 17.5 86.5, 54.3, 82.4
119/120	24.3 ± 20.2 42.1, 28.5, <4.71	64.1 ± 40.2 25.8, 60.6, 106	53.9 ± 25.0 29.7, 52.4, 79.6

Parameter/BDE No.	Concentration (pg/g wet weight) in:		
	Zone 3		
	Edible tissue	Carcass	Calculated whole fish
126	<2.04 <2.04, <0.910, <1.28	<5.47 <5.47, <5.32, <5.09	<5.47 <5.47, <5.32, <5.09
128	<16.6 <16.6, <10.8, <14.7	<4.27 <4.27, <3.98, <4.03	<16.6 <16.6, <10.8, <14.7
138	59.0 ± 65.1 134, 26.3 B, 16.8 B	95.4 ± 75.5 176, 84.1, 26.2 B	86.3 ± 72.7 166, 69.0, 23.8
140	34.6 ± 34.1 73.9, 17.3 B, 12.5 B	48.5 ± 26.7 76.9, 44.6, 23.9 B	44.9 ± 28.4 76.3, 37.5, 21.0
153	978 ± 804 1870, 308 B, 755	1446 ± 601 2060, 859, 1420	1327 ± 653 2015, 715, 1251
154	540 ± 279 788, 237 B, 594	854 ± 160 861, 690, 1010	773 ± 177 844, 572, 904
155	61.2 ± 54.3 47.8, 14.9, 121	94.3 ± 91.6 44.8, 38.2, 200	85.9 ± 81.8 45.5, 32.1, 180
166	<7.46 <7.46, <5.49, <7.42	<3.30 <2.37, <1.88, <3.30	<7.46 <7.46, <5.49, <7.42
181	4.10 ± 4.97 9.84, <2.16, <2.78	6.88 ± 5.52 11.3, 8.63, <1.39	6.35 ± 4.81 11.0, 6.66, <2.78
183	106 ± 109 231, 51.4, 34.3 B	161 ± 116 281, 152, 50.2	147 ± 113 269, 126, 45.9
190	<4.89 <4.79, <4.32, <4.89	25.8 ± 16.0 40.2, 28.5, 8.60	19.9 ± 12.2 31.2, 21.6, 7.03
203	34.1 ± 28.9 66.4, 25.4, 10.5	54.7 ± 35.3 83.9, 64.7, 15.4	49.3 ± 33.4 79.8, 54.5, 13.7
206	12.7 ± 9.65 23.8 B, 6.84 B, 7.35 B	10.0 ± 7.44 16.2 B, 12.1 B, <3.54	10.6 ± 7.41 18.0, 10.7, 3.19
207	36.0 ± 35.9 77.1, 20.7 B, 10.3 B	51.2 ± 40.1 88.2, 56.7 B, 8.57 B	47.3 ± 38.3 85.6, 47.3, 8.96
208	23.6 ± 22.4 49.0, 15.1 B, 6.70 B	35.4 ± 28.5 62.9, 37.4 B, 6.01 B	32.5 ± 26.7 59.6, 31.6, 6.18
209	180 ± 113 309 B, 129B, 101 B	146 ± 82.2 216 B, 166 B, 55.4 B	154 ± 85.8 238, 156, 66.5

¹ na = Not applicable.

² B = Blank detection; sample value is less than 10 times the blank value.

³ J = Value is below calibration range but greater than limit of detection.

Table 29: Polybrominated diphenyl ether (BDE) concentrations in tissues of carp taken from the Buffalo River, October 2007.

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	3			3		
Tag No.	379, 388, 314			410, 405, 406		
DEC ID No.	07-0051-H 07-0052-H 07-0054-H	07-0051-RC 07-0052-RC 07-0054-RC	07-0051 07-0052 07-0054	07-0098-H 07-0100-H 07-0101-H	07-0098-RC 07-0100-RC 07-0101-RC	07-0098 07-0100 07-0101
Lab ID No.	892415091 892415093 892415095	892415092 892415094 892415096	na ¹	892415097 892415099 892415101	892415098 892415100 892415102	na
1	<12.5 <10.5, <8.81, <12.5	<16.9 <5.07, <9.58, <16.9	<16.9 <10.5, <9.58, <16.9	<31.8 <31.8, <16.5, <19.1	<45.4 <45.4, <38.2, <23.6	<45.4 <45.4, <38.2, <23.6
2	<9.73 <6.51, <6.00, <9.73	<13.0 <4.71, <7.38, <13.0	<13.9 <6.51, <7.38, <13.0	<21.4 <21.4, <8.32, <10.3	<26.1 <26.1, <22.3, <18.8	<26.1 <26.1, <22.3, <18.8
3	<5.79 <5.37, <5.66, <5.79	<17.6 <4.54, <5.79, <17.6	<17.6 <5.37, <5.79, <17.6	<19.1 <19.1, <6.14, <11.1	<20.2 <19.0, <14.7, <20.2	<20.2 <19.0, <14.7, <20.2
7	7.18 ± 4.30 2.23, 9.31, 10.0	9.17 ± 7.46 2.64, 7.56, 17.3	8.43 ± 6.06 2.49, 8.21, 14.6	6.15 ± 3.32 8.52, 2.36, 7.58	4.06 ± 4.36 8.90, 2.82, <0.901	4.95 ± 3.30 8.74, 2.66, 3.46
8/11	<1.39 <0.413, <1.39, <0.310	<0.700 <0.416, <0.505, <0.700	<1.39 <0.416, <1.39, <0.700	<0.879 <0.879, <0.342, <0.519	<0.978 <0.978, <0.904, <0.842	<0.978 <0.978, <0.904, <0.842
10	<0.812 <0.812, <0.686, <0.390	<1.06 <0.550, <1.06, <1.01	<1.06 <0.812, <1.06, <1.01	<1.66 <1.66, <0.658, <0.613	<1.51 <1.26, <1.51, <1.51	<1.66 <1.66, <1.51, <1.51
12	<0.488 <0.488, <0.454, <0.326	<1.25 <1.25, <0.494, <0.670	<1.25 <1.25, <0.494, <0.670	<0.826 <0.826, <0.345, <0.443	<0.894 <0.749, <0.894, <0.741	<0.894 <0.826, <0.894, <0.741

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
13	<0.432 <0.432, <0.359, <0.245	1.00 ± 1.30 2.50, <0.501, <0.496	0.723 ± 0.820 1.67, <0.501, <0.496	0.341 ± 0.150 <0.718, 0.481 B ² , <0.367	0.495 ± 0.244 <0.686, 0.776 B, <0.739	0.467 ± 0.178 <0.718, 0.672, <0.739
15	<1.99 <0.548, <1.99, <0.168	<3.23 <1.31, <3.23, <0.732	<3.23 <1.31, <3.23, <0.732	<0.651 <0.651, <0.300, <0.363	<0.755 <0.529, <0.755, <0.611	<0.755 <0.651, <0.755, <0.611
17	351 ± 358 117, 174, 763	271 ± 256 84.5, 164, 563	301 ± 294 96.4, 168, 638	225 ± 159 319, 40.9, 314	235 ± 127 297, 89.3, 319	232 ± 138 307, 72.3, 317
25	119 ± 131 29.6, 57.7, 269	90.5 ± 137 21.1, <4.85, 248	101 ± 134 24.2, 23.0, 256	33.5 ± 39.6 77.9, 20.7, <3.57	39.6 ± 25.5 68.9, 27.0, 22.8	37.2 ± 31.3 72.8, 24.8, 13.9
28/33	2960 ± 2265 859, 2660, 5360	2469 ± 2017 636, 2140, 4630	2651 ± 2111 717, 2333, 4903	7167 ± 847 7820, 6210, 7470	7427 ± 2488 6010, 10300, 5970	7418 ± 1252 6792, 8860, 6603
30	<5.21 <5.21, <2.62, <0.573	<4.01 <3.90, <4.01, <2.10	<5.21 <5.21, <4.01, <2.10	<6.12 <6.12, <1.48, <5.40	<6.63 <6.63, <3.16, <2.16	<6.63 <6.63, <3.16, <5.40
32	5.33 ± 5.89 <5.00, 12.1, <2.77	3.70 ± 4.23 <2.61, 8.58, <2.40	4.59 ± 4.62 <5.00, 9.89, <2.77	<6.99 <6.99, <1.48, <2.49	<3.19 <3.19, <2.75, <2.05	<6.99 <6.99, <2.75, <2.49
35	2.40 ± 1.71 <4.05, <1.93, 4.27	<2.87 <2.20, <2.47, <2.87	1.92 ± 0.639 <4.05, <2.47, 2.50	<4.46 <3.89, <2.00, <4.46	<5.18 <4.10, <5.18, <1.90	<5.18 <4.10, <5.18, <4.46
37	4.58 ± 5.91 <3.07, <1.63, 11.4	<2.66 <2.31, <2.66, <2.64	2.65 ± 2.11 <3.07, <2.66, 5.09	<4.68 <4.68, <1.53, <2.61	<5.69 <4.15, <5.69, <2.05	<5.69 <4.68, <5.69, <2.61
47	18343 ± 8585 9730, 18400, 26900	18047 ± 9982 7940, 18300, 27900	18152 ± 9467 8594, 18337, 27526	25500 ± 6102 30500, 18700, 27300	29500 ± 800 29500, 28700, 30300	28048 ± 2526 29932, 25178, 29035
49	1243 ± 467 829, 1150, 1750	1422 ± 559 795, 1600, 1870	1355 ± 513 807, 1433, 1825	537 ± 223 733, 294, 585	641 ± 38.3 685, 615, 623	604 ± 102 706, 502, 603
51	185 ± 32.3 156, 180, 220	185 ± 32.0 157, 220, 179	185 ± 25.1 157, 205, 194	106 ± 81.6 200, 62.3, 55.2	9.99 ± 16.4 28.9, <1.36, <0.817	49.6 ± 46.2 103, 22.4, 23.5

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
66	3.60 ± 3.65 <4.26, 7.75 B, <0.183	<10.6 <6.19, <10.6, <0.607	3.20 ± 2.95 <6.19, 6.21, <0.607	<3.69 <3.69, <3.21, <3.19	<4.40 <4.40, <2.47, <0.935	<4.40 <4.40, <3.21, <3.19
71	<0.605 <0.605, <0.268, <0.194	29.9 ± 46.6 83.6, <11.6, <0.506	19.7 ± 29.2 53.2, <11.6, <0.506	31.2 ± 51.8 <3.11, 91.0, <2.07	<2.21 <0.739, <2.21, <0.616	11.8 ± 18.2 <3.11, 32.8, <2.07
75	66.3 ± 40.4 32.4, 55.4, 111	210 ± 155 31.4, 293, 305	156 ± 109 31.8, 205, 232	105 ± 63.8 31.3, 139, 144	172 ± 45.0 139, 223, 153	145 ± 50.4 92.5, 193, 149
77	<3.37 <3.37, <1.97, <0.124	<5.45 <5.45, <4.85, <0.386	<5.45 <5.45, <4.85, <0.386	<2.28 <2.16, <2.28, <1.31	<2.27 <2.27, <1.87, <0.475	<2.28 <2.27, <2.28, <1.31
79	<3.85 <0.920, <3.85, <0.194	<13.6 <2.01, <13.6, <0.559	<13.6 <2.01, <13.6, <0.559	<4.07 <4.07, <3.98, <1.79	<4.02 <4.02, <1.86, <0.851	<4.07 <4.07, <3.98, <1.79
85	57.2 ± 10.6 45.9 B, 66.9 B, 58.9 B	85.0 ± 34.8 44.9 B, 102 B, 108 B	74.6 ± 25.4 45.3, 89.0, 89.6	38.4 ± 13.1 30.5 B, 53.5 B, 31.3 B	32.5 ± 16.4 27.0 B, 50.9 B, 19.6 B	34.9 ± 14.7 28.5, 51.8, 24.5
99	141 ± 148 311 B, 55.7 B, 54.9 B	108 ± 57.7 107 B, 50.7 B, 166 B	119 ± 64.3 181, 52.6, 124	208 ± 231 99.4 B, 473 B, 51.1 B	65.7 ± 18.6 51.6 B, 58.7 B, 86.8B	116 ± 76.8 72.3, 205, 71.7
100	6547 ± 3987 2750, 6190, 10700	6203 ± 4409 2010, 5800, 10800	6329 ± 4255 2280, 5945, 10763	10203 ± 2716 12200, 7110, 11300	11200 ± 1054 10200, 12300, 11100	10907 ± 381 11064, 10472, 11184
105	610 ± 172 423, 761, 647	621 ± 648 554, 1300, <17.2	618 ± 437 506, 1100, 247	102 ± 174 <3.60, 303, <2.94	181 ± 305 <6.28, 533, <12.2	154 ± 258 <6.28, 452, <12.2
116	<4.15 <3.63, <4.15, <2.06	<15.2 <8.15, <15.2, <4.87	<15.2 <8.15, <15.2, <4.87	<7.71 <4.52, <3.05, <7.71	<12.1 <7.46, <12.1, <4.70	<12.1 <7.46, <12.1, <7.71
118	3.25 ± 3.92 <1.32, <2.63, 7.76	4.29 ± 2.10 <3.72, <10.9, 5.55 J ³	4.56 ± 2.39 <3.72, <10.9, 6.38	<5.98 <3.10, <2.87, <5.98	<13.9 <7.21, <13.9, <7.91	<13.9 <7.21, <13.9, <7.91
119/120	374 ± 293 151, 265, 706	231 ± 80.6 141, 297, 254	284 ± 139 145, 285, 423	221 ± 143 379, 98.4, 187	258 ± 68.5 313, 181, 279	245 ± 95.1 342, 152, 240
126	<2.65 <1.06, <2.65, <0.658	<5.54 <3.32, <5.54, <1.99	<5.54 <3.32, <5.54, <1.99	<5.57 <1.05, <0.556, <5.57	<10.7 <4.25, <10.7, <5.15	<10.7 <4.25, <10.7, <5.57

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
128	<8.37 <5.37, <8.37, <2.59	<9.64 <4.88, <9.64, <3.49	<9.64 <5.37, <9.64, <3.49	<5.55 <5.55, <2.38, <2.27	<8.06 <6.22, <8.06, <6.81	<8.06 <6.22, <8.06, <6.81
138	2.11 ± 2.49 4.96 B, <1.94, <0.775	<2.68 <1.95, <2.68, <0.581	1.39 ± 1.02 2.43, <2.68, <0.775	<2.69 <2.69, <0.582, <0.779	<2.69 <2.36, <2.16, <2.69	<2.69 <2.67, <2.16, <2.69
140	7.90 ± 8.02 5.67 B, <2.46, 16.8 B	8.12 ± 8.55 4.39 B, <4.15, 17.9 B	8.15 ± 8.22 4.86, <4.15, 17.5	2.82 ± 1.27 <2.74, 3.74 B, 3.35 B	2.62 ± 2.58 5.60, <2.46, <2.06	2.63 ± 0.99 3.77, 2.11, 2.01
153	212 ± 146 104 B, 153 B, 378 B	201 ± 174 62.2 B, 145 B, 397 B	205 ± 164 77.5, 148, 390	96.0 ± 52.1 153 B, 50.8 B, 84.2 B	78.5 ± 50.9 124 B, 23.5 B, 88.0 B	85.5 ± 52.0 137, 33.1, 86.3
154	3413 ± 1470 1950, 3400, 4890	3017 ± 1522 1380, 3280, 4390	3163 ± 1501 1588, 3325, 4577	3457 ± 1013 4390, 2380, 3600	3757 ± 428 3490, 4250, 3530	3677 ± 176 3879, 3591, 3560
155	615 ± 249 329, 732, 785	540 ± 273 239, 610, 772	568 ± 264 272, 655, 777	519 ± 105 636, 489, 433	604 ± 215 531, 846, 435	577 ± 143 576, 720, 434
166	<3.65 <2.30, <3.65, <0.871	<3.54 <2.00, <3.54, <0.482	<3.65 <2.30, <3.65, <0.871	<3.83 <3.83, <1.37, <0.823	<4.78 <2.71, <4.78, <2.80	<4.78 <3.83, <4.78, <2.80
181	<2.01 <2.01, <1.42, <1.04	<1.90 <1.41, <1.90, <1.05	<2.01 <2.01, <1.90, <1.05	<3.66 <3.66, <0.607, <0.851	<3.43 <3.43, <3.08, <2.66	<3.66 <3.66, <3.08, <2.66
183	3.59 ± 1.11 3.53 B, 2.51 B, 4.72 B	2.54 ± 3.85 <0.503, <0.774, 6.98 B	2.93 ± 2.79 1.45, 1.18, 6.15	10.6 ± 15.3 <1.64, 2.69 B, 28.2	1.60 ± 1.53 <1.56, 3.37 B, <1.30	5.42 ± 6.07 <1.64, 3.13, 12.3
190	1.58 ± 0.968 <3.10, 2.56, <1.25	<3.01 <2.45, <3.01, <1.04	<3.10 <3.10, <3.01, <1.25	<5.39 <5.39, <1.06, <1.39	<6.77 <5.28, <6.77, <5.51	<6.77 <5.39, <6.77, <5.51
203	7.07 ± 4.38 11.0, <4.70, 7.86	6.32 ± 5.10 <6.15, <7.15, 12.2	6.75 ± 3.57 6.08, <7.15, 10.6	<16.8 <16.8, <5.80, <9.32	<14.3 <8.49, <14.3, <9.32	<16.8 <16.8, <14.3, <9.32
206	9.41 ± 14.4 26.0B, <2.14, <2.32	<3.18 <3.18, <2.60, <3.10	4.45 ± 5.24 10.5, <2.60, <3.10	<12.8 <10.0, <4.08, <12.8	5.16 ± 2.52 7.68, <10.3, <5.27	6.20 ± 0.932 6.52, <10.3, 6.93
207	12.0 ± 19.5 34.5 B, <1.53, <1.51	2.70 ± 0.142 2.81 B, 2.75 B, 2.54 B	6.09 ± 7.19 14.4, 2.01, 1.87	5.65 ± 5.64 <6.31, <2.36, 12.1 B	4.16 ± 1.79 6.13 B, <5.27, 3.70 B	4.91 ± 2.30 4.84, <5.27, 7.24

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
208	8.37 ± 13.5 23.9 B, <1.21, <1.20	1.43 ± 0.556 <1.78, 1.39 B, 2.00 B	3.96 ± 4.63 9.29, 1.10, 1.48	<9.29 <5.11, <2.08, <9.29	3.09 ± 1.69 3.70 B, <4.40, <2.36	3.33 ± 1.21 3.20, <4.40, 4.60
209	304 ± 456 830 B, 40.3 B, 40.9 B	56.7 ± 20.2 37.3 B, 77.6 B, 55.3 B	147 ± 156 327, 63.1, 49.9	127 ± 144 <137, <41.6 B, 291 B	149 ± 109 98.3 B, 274 B, 74.7 B	148 ± 55.6 85.4, 192, 166

¹ na = Not applicable.

² B = Blank detection; sample value is less than 10 times the blank value.

³ J = Value below calibration range but greater than limit of detection.

Table 30A: Polybrominated diphenyl ether (BDE) concentrations in tissues of largemouth bass taken from the Buffalo River, October 2007.

Parameter/ BDE No.	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	2			2		
Tag No.	386, 311			377, 330		
DEC ID No.	07-0041-H 07-0042-H	07-0041-RC 07-0042-RC	07-0041 07-0042	07-0066-H 07-0068-H	07-0066-RC 07-0068-RC	07-0066 07-0068
Lab ID No.	G996-2-1A G996-2-3A	G996-2-2A G996-2-4A	na ¹	G996-2-5A G996-2-7A	G996-2-6A G996-2-8A	na
Subcontract Lab ID No.	K0805851-001 K0805851-003	K0805851-002 K0805851-004	na	K0805851-005 K0805851-007	K0805851-006 K0805851-008	na
Lipid (%)	0.92, 0.97	4.09, 3.23	2.69, 2.31	0.75, # ²	2.89, 3.44	2.11, #
17	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
28	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
47	170 X ³ , 63	77 X, 99	118 X, 84.3	70, 47	120 X, 200 X	102 X, 136 X
66	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
71	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
85	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
99	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
100	10, <15	8.8, 9.8	9.34, 8.87	6.1, 5.6	11, 20	9.20, 14.0
128	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
138	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98

Parameter/ BDE No.	Concentration (ng/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
153	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
154	<9.8, <15	<3.9, 5.0	<9.8, 6.03	1.6, 2.1	6.6, 8.1	4.77, 5.59
183	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
190	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
203	<9.8, <15	<3.9, <3.9	<9.8, <15	<0.20, <0.97	<1.5, <0.98	<1.5, <0.98
206	<200, <290	<78, <77	<200, <290	<3.9, <20	<30, <20	<30, <20
209	<200, <290	<78, <77	<200, <290	<3.9, <20	<30, <20	<30, <20

¹ na = not applicable.

² # = Insufficient sample material remaining to determine lipid content.

³ X = Possible high bias due to interfering compound.

Table 30B: Polybrominated diphenyl ether (BDE) concentrations in tissues of largemouth bass taken from the Buffalo River, October 2007.

Parameter/ BDE No.	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	4			3		
Tag No.	430, 427, 435, 382			419, 415, 402		
DEC ID No.	07-0079-H 07-0080-H 07-0081-H 07-0083-H	07-0079-RC 07-0080-RC 07-0081-RC 07-0083-RC	07-0079 07-0080 07-0081 07-0083	07-0108-H 07-0109-H 07-0111-H	07-0108-RC 07-0109-RC 07-0111-RC	07-0108 07-0109 07-0111
Lab ID No.	G996-2-9A G996-2-11A G996-2-13A G996-2-15A	G996-2-10A G996-2-12A G996-2-14A G996-2-16A	na ¹	G996-2-17A G996-2-19A G996-2-21A	G996-2-18A G996-2-20A G996-2-22A	na
Subcontract Lab ID No.	K0805851-009 K0805851-011 K0805851-013 K0805851-015	K0805851-010 K0805851-012 K0805851-014 K0805851-016	na	K0805851-017 K0805851-019 K0805851-021	K0805851-018 K0805851-020 K0805851-022	na
Lipid (%)	1.28, 0.78, 0.93, # ²	3.75, 3.94, 4.14, #	2.76, 2.80, 2.73, #	1.51, 0.82, 0.39	3.22, 5.35, 3.00	2.52, 3.72, 2.03
17	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
28	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
47	210, 78, 61 X, 50 X ³	220 X, 85, 120, 49 X	216 X, 82.5, 94.1 X, 49.3 X	3.1, 4.0, 8.3 X	24 X, 48 X, 29 X	15.5 X, 32.2 X, 21.3 X
66	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21

Parameter/ BDE No.	Concentration (ng/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
71	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
85	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
99	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	2.5, 1.9, 1.0	12, 9.5, 7.5	8.14, 6.77, 5.08
100	<4.8, 12, 5.7, 1.1	4.8, 14, 12, 2.7	3.84, 13.3, 9.24, 2.09	0.78, 0.75, 0.33	3.5, 4.0, 3.1	2.39, 2.83, 2.07
128	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
138	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
153	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	0.34, 0.37, <0.21	1.5, 2.1, 1.5	1.03, 1.48, 0.98
154	<4.8, <3.0, 2.3, <0.75	2.4, <9.4, 5.1, <1.6	2.40, <9.4, 3.87, <1.6	0.29, 0.26, <0.21	1.3, <1.9, 1.1	0.89, 0.70, 0.73
183	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
190	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
203	<4.8, <3.0, <0.39, <0.75	<0.97, <9.4, <0.76, <1.6	<4.8, <9.4, <0.76, <1.6	<0.22, <0.095, <0.21	<1.9, <0.39, <0.092	<1.9, <0.39, <0.21
206	<96, <59, <7.7, <15	<20, <190, <16, <31	<96, <190, <16, <31	<4.4, <1.9, <4.2	<19, <38, <7.7	<19, <38, <7.7
209	<96, <59, <7.7, <15	<20, <190, <16, <31	<96, <190, <16, <31	<4.4, <1.9, <4.2	<19, <38, <7.7	<19, <38, <7.7

¹ na = not applicable. ² # = Insufficient sample material remaining to determine lipid content. ³ X = Possible high bias due to interfering compound.

Table 31A: Polybrominated diphenyl ether (BDE) concentrations in tissues of pumpkinseed taken from the Buffalo River, October 2007.

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	2			2		
Tag No.	380 332			385 344		
DEC ID No.	07-0046-H 07-0048-H	07-0046-RC 07-0048-RC	07-0046 07-0048	07-0059-H 07-0061-H	07-0059-RC 07-0061-RC	07-0059 07-0061
Lab ID No.	892415063 892415065	892415064 892415066	na ¹	892415067 892415069	892415068 892415070	na
1	<40.8 <28.4, <40.8	<37.2 <19.8, <37.2	<40.8 <28.4, <40.8	<12.5 <12.5, <4.62	<74.2 <74.2, <4.32	<74.2 <74.2, <4.62
2	<22.3 <17.1, <22.3	<22.2 <11.1, <22.2	<22.2 <17.1, <22.2	<8.94 <8.94, <3.96	<60.9 <60.9, <3.22	<60.9 <60.9, <3.96
3	<19.1 <11.1, <19.1	<19.7 <9.54, <19.7	<19.7 <11.1, <19.7	<7.32 <7.32, <2.56	<39.5 <39.5, <2.17	<39.5 <39.5, <2.56
7	<0.951 <0.663, <0.951	0.97 <1.02, 1.43	0.755 <1.02, 1.00	<0.328 <0.328, <0.199	2.85 2.66, 3.04	1.88 1.75, 2.00
8/11	<0.680 <0.561, <0.680	<0.809 <0.600, <0.809	<0.809 <0.600, <0.809	<0.272 <0.272, <0.214	<1.82 <1.82, <0.255	<1.82 <1.82, <0.255
10	<1.13 <1.13, <0.734	<1.32 <1.32, <0.953	<1.30 <1.30, <0.953	<0.548 <0.548, <0.179	<2.87 <2.87, <0.280	<2.87 <2.87, <0.280
12	<0.753 <0.528, <0.753	<0.815 <0.815, <0.676	<0.815 <0.815, <0.753	<0.279 <0.279, <0.137	<1.42 <1.42, <0.284	<1.42 <1.42, <0.284
13	0.610 0.954 B ² , <0.531	1.02 1.27 B, <0.763	0.771 1.16, <0.763	0.513 0.606 B, 0.420 B	1.25 <1.96, 1.52 B	0.990 0.85, 1.13

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
15	<0.578 <0.578, <0.529	<0.673 <0.673, <0.535	<0.673 <0.673, <0.535	4.28 7.79 B, <0.154	<1.86 <1.86, <0.175	1.81 3.53, <0.175
17	10.5 8.35 B, 12.7	23.6 18.6, 28.6	18.4 14.7, 22.1	7.42 6.76 B, 8.07 B	26.7 23.5, 29.9	20.0 17.5, 22.5
25	2.86 4.95, <1.53	16.7 14.2, 19.2	10.7 10.3, 11.1	3.15 <1.39, 5.60	20.6 17.3, 23.8	14.3 10.9, 17.7
28/33	79.6 64.5, 94.7	243 190, 295	173 139, 206	50.5 44.0, 57.0	222 166, 277	117 123, 111
30	<1.77 <1.34, <1.77	<2.03 <0.943, <2.03	<2.03 <1.34, <2.03	<1.02 <1.02, <0.804	<5.88 <5.88, <0.624	<5.88 <5.88, <0.804
32	<1.11 <0.981, <1.11	<1.34 <1.07, <1.34	<1.34 <1.07, <1.34	<0.536 <0.536, <0.470	1.83 <4.69, 1.31	1.67 <4.69, 1.00
35	<1.55 <1.55, <0.737	<1.15 <1.00, <1.15	<1.55 <1.55, <1.15	<0.873 <0.873, <0.354	1.98 <5.08, 1.41	1.76 <5.08, 0.98
37	3.40 2.39, 4.40	9.60 9.22, 9.98	7.01 6.45, 7.57	1.99 1.85, 2.13	8.71 8.75, 8.66	6.30 6.16, 6.43
47	2780 2210, 3350	8550 6200, 10900	6124 4580, 7668	2540 1930, 3150	10680 6560, 14800	7883 4831, 10935
49	199 205, 192	651 578, 724	461 430, 491	276 194, 358	1082 643, 1520	789 471, 1107
51	13.1 13.6, 12.5	40.6 35.3, 45.8	28.9 26.5, 31.3	9.41 7.22, 11.6	64.5 48.5, 80.4	44.6 32.6, 56.6
66	<2.46 <2.46, <2.19	<4.92 <3.63, <4.92	<4.92 <3.63, <4.92	<1.34 <1.34, <1.05	<22.2 <22.2, <1.92	<22.2 <22.2, <1.92

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
71	<1.94 <1.94, <1.26	<3.06 <1.12, <3.06	<3.06 <1.94, <3.06	<0.958 <0.958, <0.753	<9.13 <9.13, <3.42	<9.13 <9.13, <3.42
75	6.85 4.67, 9.03	22.0 22.7, 21.2	15.8 15.6, 15.9	10.1 5.85, 14.3	37.2 13.1, 61.2	27.6 10.3, 44.8
77	<1.27 <1.03, <1.27	<1.69 <1.69, <1.61	<1.69 <1.69, <1.61	<0.848 <0.848, <0.610	<12.7 <12.7, <1.19	<12.7 <12.7, <1.19
79	<3.05 <3.05, <2.00	<5.02 <3.83, <5.02	<5.02 <3.83, <5.02	<1.21 <1.21, <1.19	<20.9 <20.9, <2.53	<20.9 <20.9, <2.53
85	23.3 13.7 B, 32.8	27.4 30.0, 24.7	26.0 23.5, 28.4	26.5 14.0 B, 38.9	16.7 10.8 B, 32.5	23.3 12.1, 34.4
99	2285 1910, 2660	7515 5960, 9070	5336 4340, 6331	2250 1510, 2990	10080 5760, 14400	7196 4181, 10211
100	720 664, 776	2415 2100, 2730	1693 1517, 1869	886 722, 1050	4105 2790, 5420	2951 2017, 3884
105	<6.33 <4.00, <6.33	303 344, 262	176 203, 149	119 79.8, 158	<8.51 <6.53, <8.51	45.2 32.2, 58.2
116	<5.14 <5.14, <3.45	<12.0 <9.25, <12.0	<12.0 <9.25, <12.0	<4.39 <2.45, <4.39	<10.3 <7.01, <10.3	<10.3 <7.01, <10.3
118	28.7 31.3, 26.0	106 119, 92.3	73.7 84.0, 63.4	31.6 19.7, 43.4	148 73.0, 223	106 53.1, 159
119/120	58.1 65.4, 50.8	77.0 178, 130	114 133, 95.8	73.7 62.4, 84.9	336 227, 445	246 167, 324
126	<1.78 <1.78, <1.39	<5.85 <5.85, <3.30	<5.85 <5.85, <3.30	<1.98 <1.21, <1.98	<8.14 <3.14, <8.14	<8.14 <3.14, <8.14

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
128	<35.3 <35.3, <30.0	<38.6 <20.9, <38.6	<38.6 <35.3, <38.6	<10.9 <10.9, <10.6	<21.9 <21.9, 19.7	13.1 <21.9, 15.3
138	<11.8 <6.96, <11.8	<10.8 <5.51, <10.8	<11.8 <6.96, <11.8	4.56 <5.09, 6.58	<9.29 <9.29, <0.698	3.57 <9.29, 2.50
140	14.4 <7.96, 24.8	32.0 21.3, 42.7	24.7 14.1, 35.2	9.21 6.42, 12.0	22.4 <9.20, 40.1	17.8 5.28, 30.4
153	240 249, 320	889 799, 979	636 577, 694	326 253, 399	1550 1100, 2000	1115 780, 1449
154	263 241, 285	875 831, 918	619 591, 647	320 265, 375	1470 1090, 1850	1046 784, 1307
155	22.2 21.3, 23.0	62.4 65.0, 59.8	45.6 47.2, 44.0	26.8 20.0, 33.5	111 73.7, 149	81.9 53.7, 110
166	<16.0 <5.91, <16.0	<12.1 <6.57, <12.1	<16.0 <6.57, <16.0	<5.99 <5.99, <1.12	<15.6 <15.6, <0.923	<15.6 <15.6, <1.12
181	<9.07 <9.07, <8.10	<9.96 <6.04, <9.96	<9.96 <9.07, <9.96	<1.98 <1.98, <1.47	<16.6 <16.6, <2.66	<16.6 <16.6, <2.66
183	15.1 <2.78, 28.8 B	27.8 17.0 B, 38.5 B	22.4 10.7, 34.1	3.75 <1.34, 6.82 B	14.9 <9.26, 25.1 B	11.7 <9.26, 18.7
190	<13.5 <10.7, <13.5	<15.6 <9.25, <15.6	<15.6 <10.7, <15.6	<4.89 <4.89, <2.27	<27.5 <27.5, <5.66	<27.5 <27.5, <5.66
203	<40.6 <40.6, <21.8	<68.5 <21.4, <68.5	<68.5 <40.6, <68.5	<28.2 <28.2, <6.07	16.4 <19.8, 22.9	15.1 <28.2, 16.1
206	<22.0 <22.0, <20.8 B	14.5 16.3 B, <25.2	13.3 14.0, <25.2	6.31 <11.8, 6.71 B	10.2 17.0 B, <6.73	8.70 12.9, 4.50

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 1			Zone 2		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
207	19.6 21.0 B, 18.2 B	15.7 12.9 B, 18.5 B	17.1 16.2, 18.0	5.75 7.35 B, 4.14 B	11.6 13.3 B, 9.91 B	9.40 10.9, 7.90
208	8.05 <11.4, 10.4 B	13.6 11.1 B, 16.1 B	11.3 9.18, 13.4	3.11 <6.00, 3.21 B	10.5 10.8 B, 10.2 B	7.83 7.99, 7.66
209	280 269 B, 290 B	223 222 B, 223 B	245 240, 250	108 131 B, 85.2 B	244 339 B, 148 B	195 261, 128

¹ na = Not applicable.

² B = Blank detection; sample value is less than 10 times the blank value.

Table 31B: Polybrominated diphenyl ether (BDE) concentrations in tissues of pumpkinseed taken from the Buffalo River, October 2007.

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
n	2			2		
Tag No.	442 439			417 408		
DEC ID No.	07-0077-H 07-0078-H	07-0077-RC 07-0078-RC	07-0077 07-0078	07-0104-H 07-0107-H	07-0104-RC 07-0107-RC	07-0104 07-0107
Lab ID No.	89241571 89241573	892415072 892415074	na ¹	89241575 89241577	892415076 892415078	na
1	<14.4 <14.4, <11.4	<140 <140, <106	<140 <140, <110	<5.33 <5.33, <4.93	<10.6 <6.87, <10.6	<10.6 <6.87, <10.6
2	<6.76 <6.10, <6.76	<85.0 <85.0, <56.5	<85.0 <85.0, <56.5	<3.92 <3.48, <3.92	<6.53 <2.95, <6.53	<6.53 <3.48, <6.53
3	2.71 <5.53, 2.65 J ²	<49.6 <49.6, <46.3	20.3 <49.6, 15.8	2.71 3.11 J, 2.30	2.26 <2.99, 3.03 J	2.45 2.22, 2.67
7	0.576 <0.351, 0.976	<3.26 <3.26, <2.69	1.42 <3.26, 1.21	<0.313, 0.792	3.51 2.16, 4.86	2.14 1.28, 2.99
8/11	0.158 <0.219, 0.207	<2.44 <2.44, <2.31	1.02 <2.44, 0.813	0.510 0.937 B ³ , <0.164	<0.454 <0.256, <0.454	0.359 0.49, <0.454
10	<0.351 <0.351, <0.333	<4.34 <4.03, <4.34	<4.34 <4.03, <4.34	<0.327 <0.318, <0.327	<0.548 <0.323, <0.548	<0.548 <0.323, <0.548
12	<0.374 <0.374, <0.298	<2.24 <2.24, <1.77	<2.24 <2.24, <1.77	<0.300 <0.300, <0.210	<0.419 <0.275, <0.419	<0.419 <0.300, <0.419
13	0.364 0.619 B, <0.218	<2.00 <2.00, <1.59	0.828 0.859, <1.59	0.485 0.579 B, 0.390 B	1.66 1.65 B, 1.67 B	1.12 1.14, 1.09

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
15	9.71 19.2, <0.231	<1.91 <1.91, <1.67	4.23 7.63, <1.67	4.34 7.81 B, <0.172	10.2 <0.196, 20.3	71.8 3.56, 10.8
17	14.4 17.1, 11.6	51.5 67.4, 35.6	38.0 48.5, 27.4	10.5 13.6, 7.42 B	38.1 32.5, 43.6	25.5 23.9, 27.0
25	5.47 5.47, 5.46	23.0 27.5, 18.4	16.6 19.7, 13.5	3.91 4.70, 3.12	8.95 <1.01, 17.4	6.45 2.39, 10.5
28/33	78.2 75.4, 80.9	273 315, 230	203 229, 176	61.3 73.8, 48.8	259 222, 295	169 154, 184
30	<1.05 <1.05, <0.618	<8.65 <8.65, <5.76	<8.65 <8.65, <5.76	<0.669 <0.555, <0.669	<1.28 <0.962, <1.28	<1.28 <0.962, <1.28
32	<0.656 <0.656, <0.340	<4.49 <4.49, <3.93	<4.49 <4.49, <3.93	<0.387 <0.387, <0.318	<0.844 <0.716, <0.844	<0.844 <0.716, <0.844
35	<1.02 <1.02, <0.628	<5.41 <5.41, <4.78	<5.41 <5.41, <4.78	<0.765 <0.765, <0.460	0.569 0.765, <0.747	0.482 0.590, <0.747
37	2.45 2.22, 2.67	6.24 10.5, <3.97	4.68 7.11, 2.25	2.12 2.82, 1.41	7.90 6.90, 8.89	5.24 5.05, 5.42
47	2640 3170, 2110	7630 10200, 5060	5752 7484, 4020	2295 2620, 1970	11305 9610, 13000	7169 6443, 7895
49	202 247, 156	646 864, 428	484 634, 333	129 164, 93.7	673 598, 748	424 402, 446
51	22.7 20.1, 25.3	40.8 45.9, 35.6	34.2 36.4, 32.0	12.49 17.3, 7.68	59.0 56.4, 61.4	37.4 38.4, 36.3
66	<2.18 <1.16, <2.18	45.3 83.0, <15.1	30.0 52.5, <15.1	<1.74 <1.74, <0.861	<2.43 <2.17, <2.43	<2.43 <2.17, <2.43

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
71	21.9 <1.06, 43.2	<11.9 <7.67, <11.9	11.6 <7.67, 19.4	14.1 <0.877, 27.7	<1.86 <1.81, <1.86	7.20 <1.81, 13.5
76	3.92 7.07, <1.52	25.3 34.8, 15.8	17.6 24.7, 10.5	3.91 2.76, 5.04	11.5 <2.33, 21.8	8.00 1.89, 14.1
77	<1.90 <0.877, <1.90	<10.5 <9.07, <10.5	<10.5 <9.07, <10.5	<0.684 <0.684, <0.487	<1.64 <1.46, <1.64	<1.64 <1.46, <1.64
79	<2.38 <1.06, <2.38	<20.3 <20.3, <17.0	<20.3 <20.3, <17.0	<0.905 <0.905, <0.571	<2.70 <2.70, <2.67	<2.70 <2.70, <2.67
85	15.9 15.3 B, 16.4 B	18.7 <4.94, 35.0	17.6 7.09, 28.2	15.4 18.2, 12.5 B	254 422, 86.1	146 239, 52.1
99	2275 2740, 1810	7690 10400, 4980	5574 7299, 3848	2015 2400, 1630	10900 10400, 11400	6606 6573, 6638
100	889 1190, 588	3165 4710, 1620	2321 3405, 1236	572 661, 482	3005 2670, 3340	1905 1780, 2029
105	49.3 <6.93, 95.1	<16.9 <16.9, <7.74	22.6 <16.9, 36.7	31.0 59.9, <4.14	203 402, <9.05	126 247, <9.05
116	<6.43 <5.58, <6.43	<12.8 <12.8, <5.88	<12.8 <12.8, <6.43	<4.66 <4.66, <3.77	<21.9 <21.9, <3.69	<21.9 <21.9, <3.77
118	34.1 45.2, 23.0	95.1 150, 40.1	72.5 111, 33.9	26.2 33.4, 18.9	113 115, 111	74.3 80.8, 67.8
119/120	68.4 94.3, 42.4	239 356, 122	177 262, 91.9	28.5 35.7, 21.3	129 100, 158	83.3 71.1, 95.5
126	<2.66 <1.72, <2.66	<5.54 <5.54, <3.90	<5.54 <5.54, <3.90	<2.14 <2.14, <1.69	<13.7 <13.7, <4.37	<13.7 <13.7, <4.37

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
128	<18.0 <16.2, <18.0	<23.3 <20.1, <23.3	<23.3 <20.1, <23.3	<12.7 <12.7, <8.62	<12.1 <12.1, <11.1	<12.7 <12.7, <11.1
138	<2.10 <2.10, <1.85	10.0 <8.78, 15.7	7.50 <8.78, 10.6	<3.14 <3.14, <1.58	35.1 68.8, <2.96	21.1 40.8, <2.96
140	10.3 10.9, 9.61	18.8 32.3, <10.5	15.4 24.2, 6.66	11.8 13.8, 9.79	64.1 68.1, 60.1	40.2 43.7, 36.7
153	384 545, 222	1310 2070, 549	979 1527, 431	238 292, 183	1270 1280, 1260	813 845, 780
154	335 431, 238	1118 1660, 576	844 1230, 458	188 228, 148	1040 1040, 1040	630 653, 606
155	35.2 36.1, 34.3	108 134, 82.8	80.3 95.2, 65.4	14.4 16.6, 12.1	69.0 64.3, 73.7	44.0 42.8, 45.2
166	<2.69 <2.62, <2.69	<12.8 <10.4, <12.8	<12.8 <10.4, <12.8	<2.23 <2.18, <2.23	<4.67 <2.58, <4.67	<4.67 <2.58, <4.67
181	<2.69 <2.69, <1.67	<20.8 <15.4, <20.8	<20.8 <15.4, <20.8	<2.18 <2.18, <1.29	<3.40 <3.40, <1.87	<3.40 <3.40, <1.87
183	7.41 7.44 B, 7.37 B	10.3 <5.16, 18.1 B	9.29 4.37, 14.2	10.1 11.0 B, 9.28 B	48.4 42.4 B, 54.4 B	30.7 28.0, 33.3
190	<3.48 <3.48, <3.15	<31.5 <27.4, <31.5	<31.5 <27.4, <31.5	<3.03 <3.03, <0.799	<5.23 <5.23, <2.61	<5.23 <5.23, <2.61
203	<19.3 <19.3, <11.6	<29.2 <29.2, <16.0	<29.2 <29.2, <16.0	<19.1 <19.1, <8.44	19.4 <36.9, 20.4	15.6 <36.9, 12.7
206	7.11 <10.5, 8.97 B	<15.2 <15.2, <11.3	7.50 <15.2, 7.40	5.96 <8.88, 7.48 B	9.49 <21.9, 8.03 B	9.36 <21.9, 7.76

Parameter/ BDE No.	Concentration (pg/g wet weight) in:					
	Zone 3			Zone 4		
	Edible tissue	Carcass	Calculated whole fish	Edible tissue	Carcass	Calculated whole fish
207	9.46 13.8 B, 5.11 B	<8.70 <8.70, <5.85	5.81 7.92, 3.69	7.27 7.74 B, 6.79 B	8.45 <12.4, 10.7 B	7.91 6.76, 9.05
208	5.93 10.2 B, <3.32	<7.52 <7.52, <5.06	4.30 6.06, <5.06	6.16 9.19 B, 3.12 B	7.35 <10.5, 9.44 B	6.68 6.88, 6.48
209	116 140 B, 91.8 B	144 222 B, <130	132 190, 74.8	136 164 B, 107 B	221 295 B, 146 B	181 231, 131

¹ na - Not applicable.

² J = Concentration is below the lowest calibration standard.

³ B = Blank detection; sample value is less than 10 times the blank value.

Table 32: Primary brominated diphenyl ethers (BDEs) detected in fish from the Buffalo River, October 2007.

Parameter/ BDE No.	Contribution (%) by fish portion and fish species						
	Edible tissues			Whole fish			
	Brown bullhead	Carp	Pumpkinseed	Bluntnose minnow	Brown bullhead	Carp	Pumpkinseed
n	6	6	8	3	6	6	8
∑BDE (pg/g)	14496 ± 7904	41533 ± 14176	6872 ± 1750	49157 ± 30276	28206 ± 15805	43096 ± 15114	18325 ± 6093
28/33	0.43 ± 0.15	11.4 ± 4.70	1.01 ± 0.25	1.11 ± 0.17	0.41 ± 0.11	10.5 ± 4.60	0.98 ± 0.34
47	35.3 ± 5.12	52.9 ± 2.58	37.5 ± 2.36	62.1 ± 5.97	32.4 ± 5.04	53.6 ± 2.43	36.7 ± 2.88
49	1.15 ± 0.48	2.37 ± 1.48	2.91 ± 0.74	2.29 ± 0.55	1.24 ± 0.53	2.69 ± 1.76	2.92 ± 0.52
51	0.21 ± 0.035	0.41 ± 0.27	0.22 ± 0.10	0.13 ± 0.033	0.23 ± 0.047	0.38 ± 0.38	0.21 ± 0.041
85	1.19 ± 0.59	0.14 ± 0.076	0.29 ± 0.090	0.31 ± 0.13	2.03 ± 1.21	0.15 ± 0.10	0.30 ± 0.42
99	35.7 ± 4.51	0.58 ± 0.70	32.0 ± 2.27	3.72 ± 0.49	34.9 ± 3.80	0.37 ± 0.40	33.7 ± 1.95
100	10.7 ± 1.49	19.3 ± 2.80	11.1 ± 1.54	12.3 ± 0.60	11.7 ± 1.60	19.1 ± 2.75	12.0 ± 1.97
105	0.63 ± 0.36	1.08 ± 1.01	0.74 ± 0.83	0.45 ± 0.78	0.85 ± 0.67	1.29 ± 1.51	0.56 ± 0.61
119/120	0.32 ± 0.20	0.71 ± 0.37	0.82 ± 0.27	0.76 ± 0.17	0.43 ± 0.21	0.66 ± 0.24	0.84 ± 0.32
153	5.98 ± 2.65	0.38 ± 0.22	4.39 ± 0.63	1.18 ± 0.36	6.73 ± 2.75	0.36 ± 0.24	4.75 ± 1.00
154	3.98 ± 0.84	7.25 ± 3.49	4.00 ± 0.63	5.30 ± 0.31	4.43 ± 0.85	7.73 ± 2.16	4.30 ± 0.89
155	0.50 ± 0.42	1.45 ± 0.45	0.36 ± 0.12	0.50 ± 0.025	0.53 ± 0.46	1.42 ± 0.38	0.36 ± 0.12
209	1.29 ± 0.68	0.89 ± 1.76 (0.17 ± 0.22) ¹	2.40 ± 1.15	7.85 ± 5.89	0.99 ± 0.46	0.53 ± 0.76 (0.23 ± 0.12) ¹	1.12 ± 0.55
Total	97.38	98.86 (98.14) ¹	97.74	98.00	96.87	98.78 (98.48) ¹	98.74

¹ Excludes high outlier.

Figure 1: Zones for sampling fish in the Buffalo River, Erie County, New York

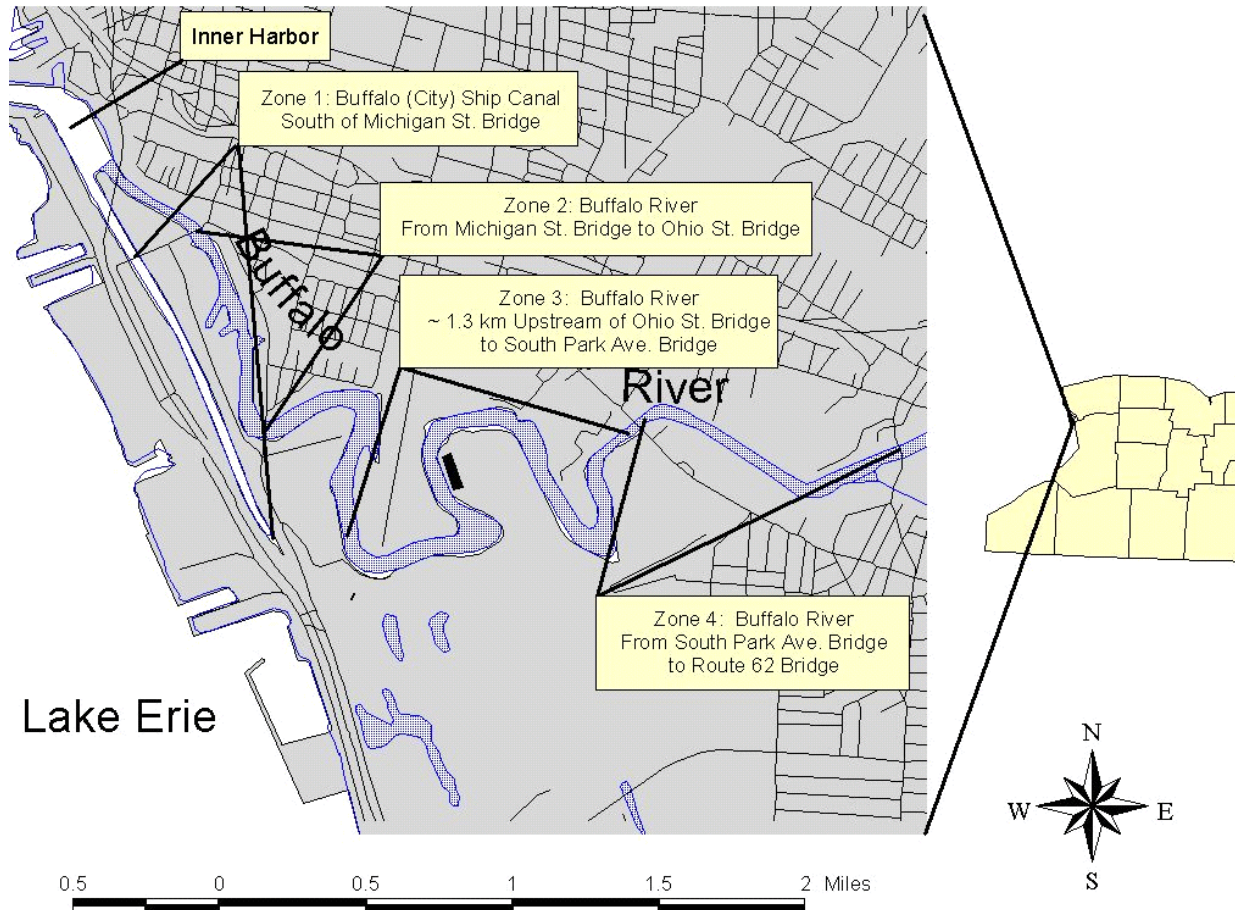


Figure 2: Comparison of total PCBs, p,p'-DDE and *trans*-nonachlor concentrations (ng/g wet weight) in fish from the Buffalo River, 2007

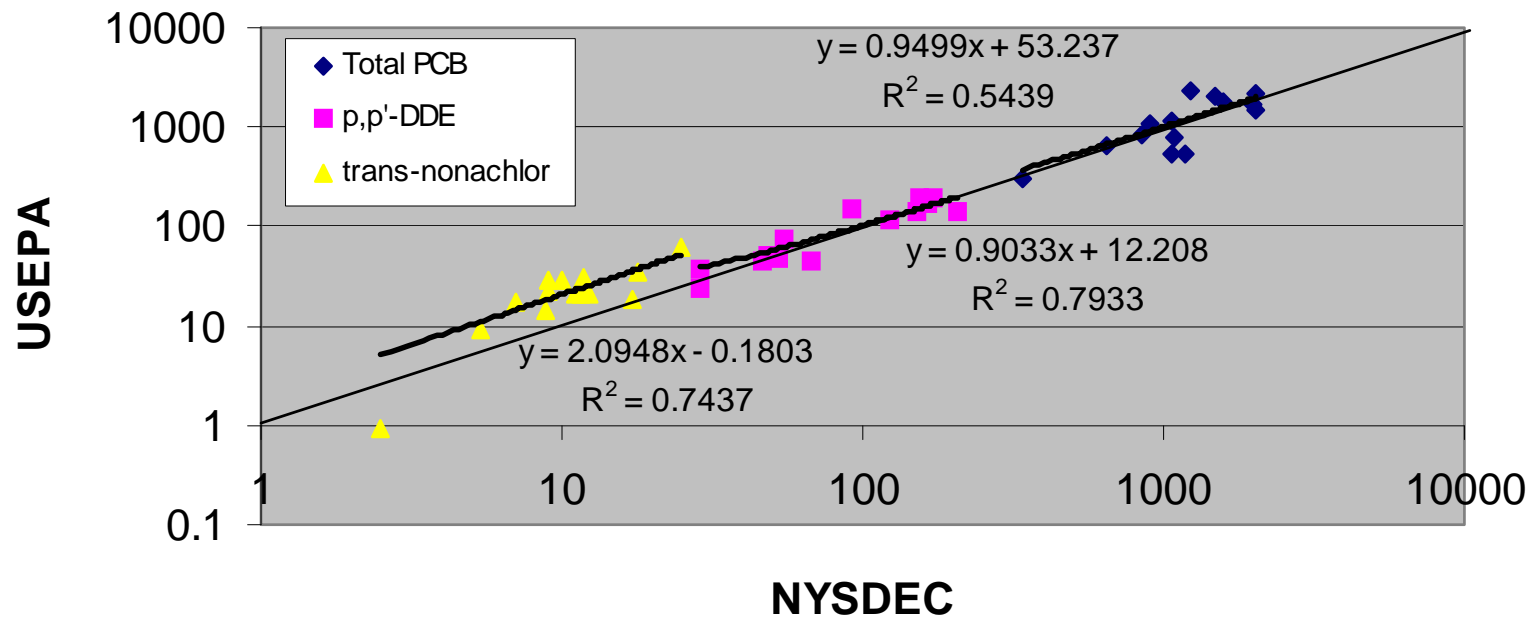


Figure 3: Mean PAHs in whole carp from the Buffalo River

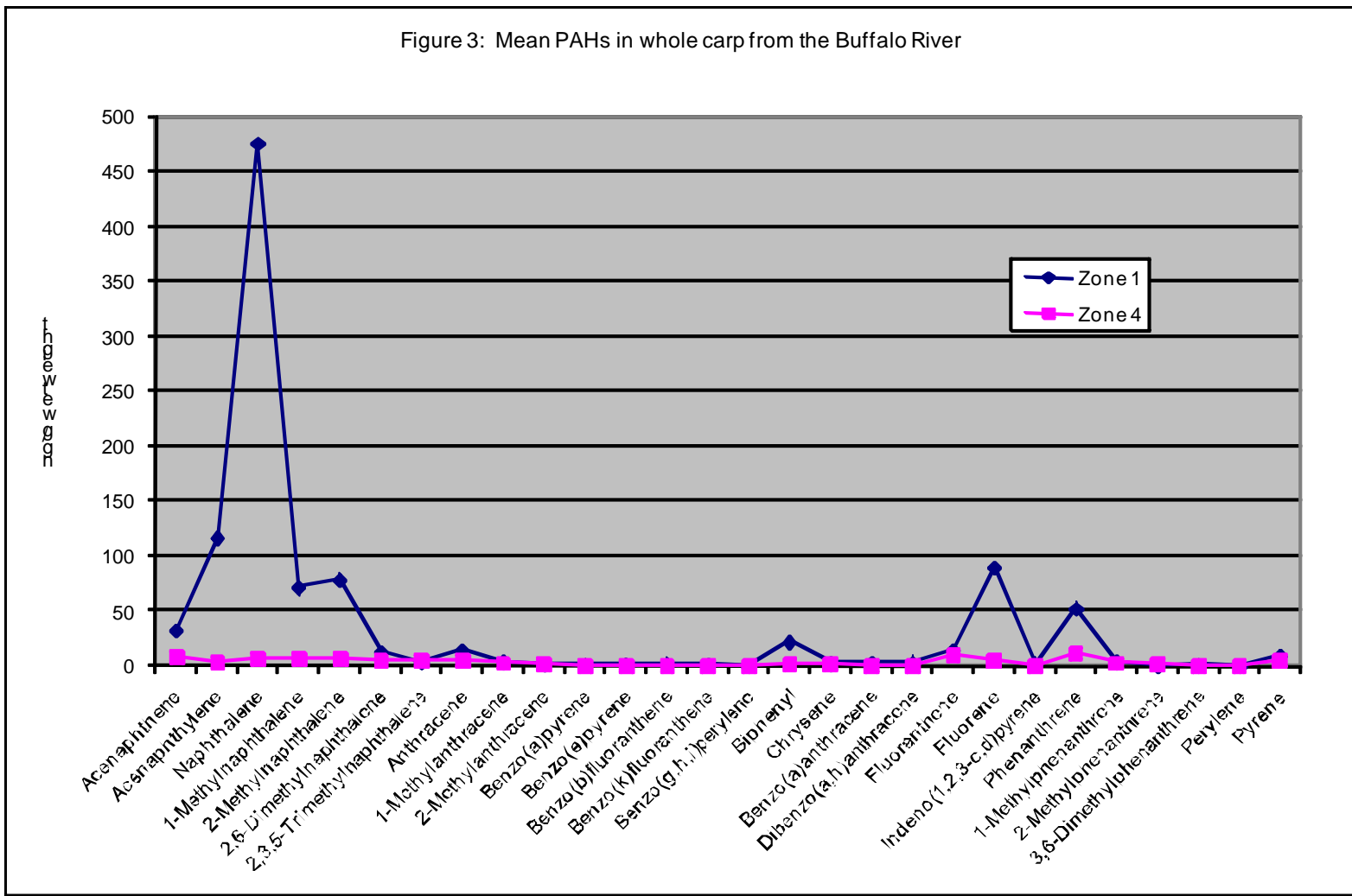
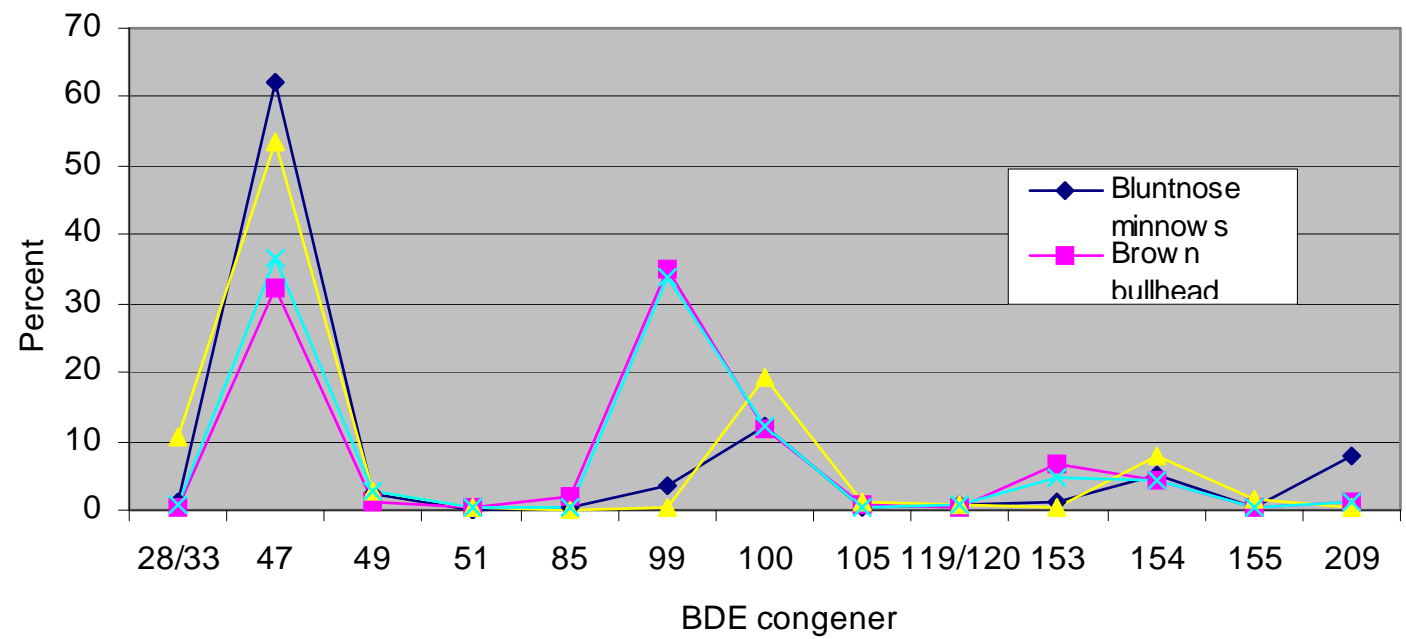


Figure 4: BDE congener distribution in fish from the Buffalo River



APPENDIX A

New York State Department of Environmental Conservation

Analytical Method for PCBs and Organochlorine Pesticides in Biota

ORGANOCHLORINE RESIDUES
NYS DEPARTMENT OF ENVIRONMENTAL CONSERVATION
Hale Creek Field Station
Toxic Substances Monitoring Laboratory

Reference: See FDA Pesticide Analytical Manual Vol. I,
Sec. 211, 253 2nd Edition

1. Extraction:

- a. Using an analytical balance, (check balance daily, see 3. Calibration) weigh a 250 mL flat bottom boiling flask (24/40) containing 2-3 Teflon boiling chips (hexane-extracted).
- b. Pour ca 200 mL 50/50hexane/acetone into boiling flask and place on cold hot plate.
- c. Place pre-extracted glass wool in soxhlet, covering the bottom and siphon tube inlet. Quantitatively transfer, using hexane, sample into soxhlet. Be sure level of sample is below top of siphon tube (the sample may be compressed with a wad of glass wool). If needed, add glass stoppers to soxhlet until level with top of siphon tube. Connect soxhlet to condenser and boiling flask.
- d. Turn on hot plate and extract for seven hours. Check after 30 min. to ensure vigorous boiling and vapor condensation. After 7 hours, turn off and let cool (ca 30-60 minutes).
- e. Remove boiling flask and soxhlet from hot plate. Drain, through siphon tube, remaining hexane into boiling flask and remove soxhlet. Rinse the lower ground glass connection and neck of flask with hexane.
- f. Evaporate hexane/acetone, just to dryness, using the rotary evaporator (rotovap, T=40C). Place flask in desiccator. Wipe the ground glass connection on the rotovap with hexane.

2. Cleanup:

- a. Weigh boiling flask and calculate weight of hexane-extractable material (lipid).
- b. Using a 30 mL beaker, weigh out ca 0.1g (0.07-0.12g) of sample (lipid) on an analytical balance. If total extracted lipid weighs ca 0.1g or less use entire sample (do not transfer to beaker). Alternatively, determine an appropriate dilution (with hexane) and an aliquot from which 0.5-5 mL will yield ca 0.1g of sample lipid (i.e.: Total weight of extracted lipid is 0.6115g. Add 6.0 mL hexane, stopper and dissolve lipid. Transfer 1.0mL, which is equal to 0.1019 g of sample, onto

column.) Or using a 30 mL beaker, weigh out ca 0.1 g (0.07-0.12g) of sample (lipid) on an analytical balance.

- c. Place a 22 mm ID glass chromatography column with a 300 mL reservoir in a clamp. Place small wad of hexane-extracted glass wool in bottom of column.
- d. Fill column with 10 g (~40mL) of activated Florisil (675C for 6 hrs., stored overnight at 130C, record oven temperature in logbook). Tap column to eliminate channeling in the Florisil.
- e. Pour 5 g of anhydrous Na_2SO_4 (heated at 600C for 8 hrs., stored at room temperature) into column.
- f. Add ca 50 ml petroleum ether (pet ether) to the packed column. Drain the pet ether into a waste beaker until pet ether level is at the Na_2SO_4 layer. Turn off stopcock and discard eluate.
- g. Place a labeled glass 250 mL Erlenmeyer flask (24/40), containing 2-3 Teflon boiling chips, underneath the column.
- h. Quantitatively transfer subsample (as determined in 2b above).
- I. Allow sample to drain through column into flask at 4-5 mL per minute. Elute until solution is just at the Na_2SO_4 layer. Close the stopcock.
- j. 6% Elution: Pour 200 mL of 6% ethyl ether/pet ether (v/v) solution onto column. Elute at 4-5 mL per minute. Stop flow when solvent is just at the Na_2SO_4 layer. Remove flask and rinse the neck of the flask with petroleum ether.
- k. 20% Elution: Place a second labeled glass 250 mL Erlenmeyer flask, containing 2-3 Teflon boiling chips under the column. Pour 200 mL of 20% ethyl-ether/ pet ether (v/v) solution onto column. Elute at 4-5mL per minute. Remove flask and rinse the neck of the flask with pet ether.
- l. Sample Concentration -- 6% and 20% Elutions:
 1. Add ~10 drops of keeper solution (1 mL paraffin oil in 100 mL acetone).
 2. Evaporate just to dryness on rotovap.
- m. 6% Fraction: Dilute with isooctane (containing OCN as an internal standard) to an appropriate concentration and stopper. Shake briefly to dissolve sample. The sample is now ready for analysis by GC1.1**.
- n. 20% Fraction: : Dilute with isooctane (containing OCN as an internal standard) to an appropriate concentration and stopper. Shake briefly to dissolve sample.

The sample is now ready for analysis by GC1.2**.

3. Calibration

- a. Each day the analytical balance is used, it is calibrated using its internal 100g class S weight.
- b. Analytical standard solutions are prepared from either primary standards or certified standard solutions available from many suppliers. Stock solutions in isooctane may be stored refrigerated up to one year. Working refrigerated standards may be used up to six months. New working standards should agree to within 10% of previous standards (as determined by gas chromatography).
- c. Gas Chromatographs
 1. 6% Hewlett Packard 5890II - Sample results are calculated using an internal standard. At the start of a run, three standards are analyzed and a linear calibration table is calculated. A standard is then run at least once every ten samples and the calibration table recalculated. The range of the calibration table is extended 20% above the high level standard and 20% below the low level standard. The correlation coefficient (r^2) is expected to be ≥ 0.95 . If $r^2 \leq 0.95$, the sample will be rerun or calculated from the standard which most closely matches it in peak area.
 2. 20% Hewlett Packard 5890II - Sample results are calculated using a single point internal standard. A standard, then up to ten samples, and another standard are injected. If the standard peak areas differ by $>15\%$, the samples are rerun.

4. Quality Control Samples

- a. With every 5 environmental samples a quality control sample is analyzed.
- b. The quality control samples are either a reagent blank, a reagent spike, or a duplicate sample. The type of quality control sample that is run is alternated among the 3 types.
- c. The acceptable criteria for reagent blanks are that no peak will interfere with the quantitation at a level greater than the detection limit.
- d. The acceptable limits for the spikes and duplicates are that the calculated results will be within ± 3 standard deviations of the expected values (see attached Tables).

- e. If a quality control sample falls outside the acceptable limits, the sample is examined and possibly reanalyzed. If the reanalyzed sample still falls outside the acceptable limits, all analyses are stopped until the problem is rectified. Data from the quality control group are then considered suspect and the samples should be reanalyzed. If the samples cannot be reanalyzed, the data from that quality control group is flagged.

05/30/97

APPENDIX B

U. S. Environmental Protection Agency

Analysis of Pesticides and PCBs in Fish Tissue

(plus amendment)

USEPA Region 2 Laboratory
SOP C-104 modifications

Extraction/Clean-up Modifications:

The following is a method modification summary. The tissue samples were extracted for 7 hours at 140°C with a 50:50 solvent solution of Acetone/Hexane using a Soxtherm extraction unit. All samples were dried through a sodium sulfate column and concentrated to a 10 mL final volume in Isooctane. After drying, a 2 step fractionation procedure was performed using 10g of Florisil. Fraction 1 was eluted with 200 mL of Hexane; Fraction 2 was eluted with 200 mL of an 85:15 solution of Hexane/Ether. The volume used for the fractionation procedure was determined based on the percent lipid result for each sample. Acid clean-up was not performed due to the elution of pesticides in both fractions.

Analysis Modifications: A 50% difference criterion was used as the acceptance limit for the continuing calibration standard. Quantification of Aroclors 1254 and 1260 was based on unique congeners in each Aroclor which was consistent with the procedure used by the NYSDEC Laboratory. Aroclor 1254 was identified using 3 congeners while Aroclor 1260 was identified using 2 congeners. All results reported below the CRQL were qualified "J". No surrogate recoveries were reportable due to dilutions prior to sample analysis.