January 2004
FINAL Version

TMDL For Polychlorinated Biphenols (PCBs) In Conehoma Creek and Yockanookany River, Pearl River Basin, Attala and Leake Counties, Mississippi

Prepared By

Mississippi Department of Environmental Quality
Office of Pollution Control
TMDL/WLA Section/Water Quality Assessment Branch

MDEQ
PO Box 10385
Jackson, MS 39289-0385
(601) 961-5171

FOREWORD

This report has been prepared in accordance with the schedule contained within the federal consent decree dated December 22, 1998. The report contains one or more Total Maximum Daily Loads (TMDLs) for water body segments found on Mississippi's 1996 Section 303(d) List of Impaired Water Bodies. Because of the accelerated schedule required by the consent decree, many of these TMDLs have been prepared out of sequence with the State's rotating basin approach. The implementation of the TMDLs contained herein will be prioritized within Mississippi's rotating basin approach.

The amount and quality of the data on which this report is based are limited. As additional information becomes available, the TMDLs may be updated. Such additional information may include water quality and quantity data, changes in pollutant loadings, or changes in landuse within the watershed. In some cases, additional water quality data may indicate that no impairment exists.

Prefixes for fractions and multiples of SI units

Fraction	Prefix	Symbol	Multiple	Prefix	Symbol
10^{-1}	deci	d	10	deka	da
10^{-2}	centi	c	10^{2}	hecto	h
10^{-3}	milli	m	10^{3}	kilo	k
10^{-6}	micro	μ	10^{6}	mega	M
10^{-9}	nano	n	10^{9}	giga	G
10^{-12}	pico	p	10^{12}	tera	T
10^{-15}	femto	f	10^{15}	peta	P
10^{-18}	atto	a	10^{18}	exa	E

Conversion Factors

To convert from	To	Multiply by	To Convert from	To	Multiply by
Acres	Sq. miles	0.0015625	Days	Seconds	86400
Cubic feet	Cu. Meter	0.028316847	Feet	Meters	0.3048
Cubic feet	Gallons	7.4805195	Gallons	Cu feet	0.133680555
Cubic feet	Liters	28.316847	Hectares	Acres	2.4710538
cfs	Gal/min	448.83117	Miles	Meters	1609.344
cfs	MGD	.6463168	Mg/l	ppm	1
Cubic meters	Gallons	264.17205	μg/l * cfs	Gm/day	2.45

CONTENTS

TMDL INFORMATION PAGE

Listing Information

Name	ID	County	HUC	Cause	Mon/Eval
Conehoma Creek	MS147M2	Attala	03180001	PCBs	Monitored
Near Kosciusko: From Hwy 35 to mouth at Yockanookany River					
Yockanookany River	MS147M1	Attala and Leake	03180001	PCBs	Monitored
Near Thomastown: From Hwy 35 at Kosciusko to mouth at Pearl River					

Water Quality Standard

Parameter	Beneficial use	Water Quality Criteria
PCBs	Fish Consumption	**Fresh Water Acute:** 0.2 µg/l **Fresh Water Chronic:** 0.014 µg/l **Human Health Organisms Only**: 0.00035 µg/l **Human Health Water and Organisms**: 0.00035 µg/l

Total Maximum Daily Load, MS147M1 and MS147M2

Segment	WLA (mg / day)	LA (mg / day)	MOS (mg / day)	TMDL (mg / day)
MS147M1	0	2.69E+05	6.71E+04	3.36E+05
MS147M2	0	9.86E+03	2.47E+03	1.23E+04

EXECUTIVE SUMMARY

Conehoma Creek and the Yockanookany River are located in Attala and Leake Counties. Conehoma Creek flows from its headwaters southeast of Kosciusko to the Yockanookany River just south of Kosciusko. The Yockanookany River flows in a southwesterly direction from its headwaters near Ackerman to the Pearl River in Leake County upstream of the Ross Barnett Reservoir. The impaired segment of Conehoma Creek is located from U. S. Hwy 35 to the Yockanookany River. The impaired segment of the Yockanookany River is located from U. S. Hwy 35 to the Pearl River.

Conehoma Creek and the Yockanookany River are impaired with polychlorinated biphenols (PCBs). There is a Texas Eastern Pipeline Compressor Station located near Kosciusko. The use of PCBs at this compressor station was discontinued in 1979. During the time that PCBs were in use at the compressor station, PCBs were disposed of by placing the waste in pits which migrated to Conehoma Creek and the Yockanookany River.

Fish tissue samples from Conehoma Creek and the Yockanookany River have shown concentrations of PCBs elevated above safe levels for consumption. This pollution problem was handled with a consent order between Texas Eastern and the Environmental Protection Agency (EPA) to abate the release of PCBs. MDEQ's Hazardous Waste Division has verified remediation of the site.

The water bodies were listed as impaired on the 1996 Section 303(d) List of Impaired Water Bodies due to the fish consumption advisory. This Phase One TMDL has been prepared to meet the requirements of the Consent Decree regarding TMDL work in Mississippi.

INTRODUCTION

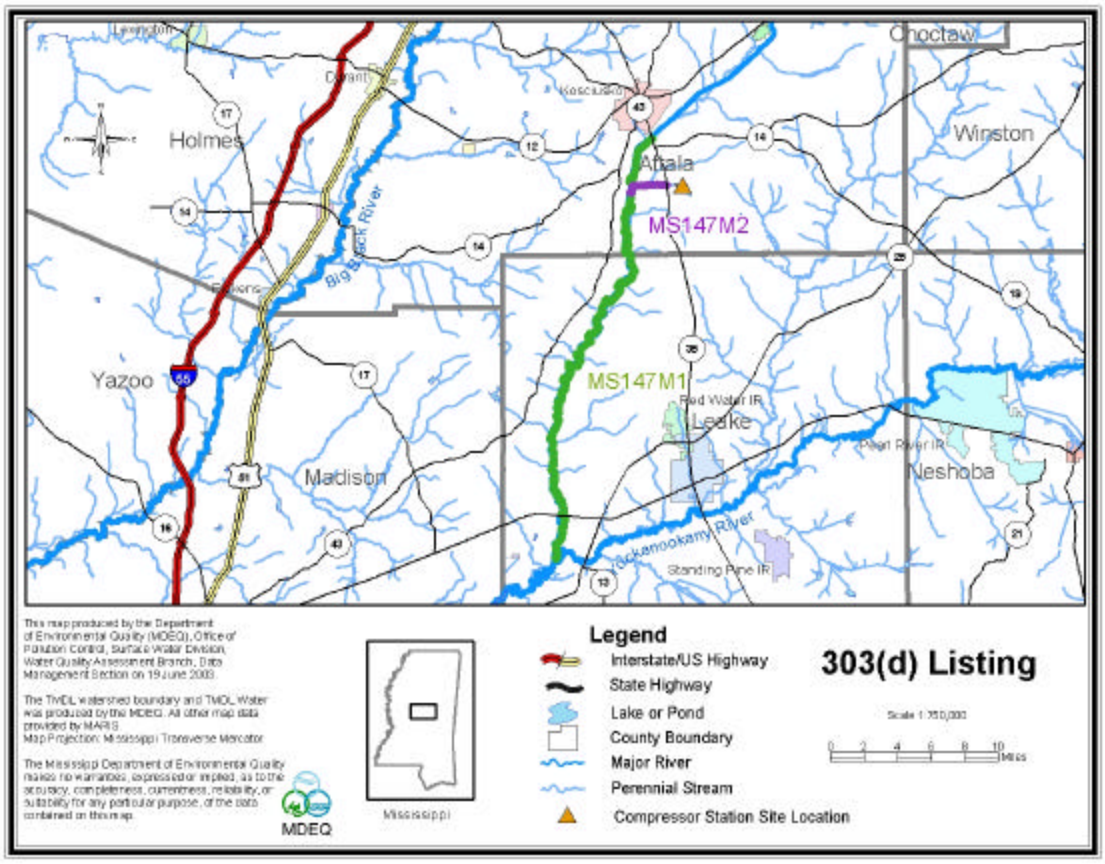
Section 303(d) of the Clean Water Act (CWA) and the Environmental Protection Agency's (EPA) Water Quality Planning and Management Regulations [Title 40 of the Code of Federal Regulation (40 CFR), Part 130] require the State to identify those waters within its boundaries not meeting water quality standards. Total maximum daily loads (TMDLs) for all pollutants violating or causing violation of applicable water quality standards are established for each identified water. Such loads are established at levels necessary to restore the appplicable water quality standards with seasonal variations and a margin of safety. The TMDL process establishes the allowable loadings of pollutants or other quantifiable parameters for a water body, based on the relationship between pollution sources and in-stream water quality conditions, so that states can establish water quality based controls to reduce pollution from both point and nonpoint sources and restore and maintain the quality of their water resources.

Conehoma Creek and the Yockanookany River were listed on the 1996 Section 303d List of Waterbodies for priority organics due to a fish consumption advisory. Polychlorinated biphenols (PCBs) were the pollutant cause for the 1996 listing. Conehoma Creek and the Yockanookany River are currently listed on the 2002 303d List of Water Bodies for PCBs due to a fish consumption advisory. This advisory was issued because fish tissue samples exceeded the Mississippi Fish Advisory Task Force fish consumption advisory limit for total PCBs of 0.2 mg/kg. The impaired segments are shown in Figure 1.

PROBLEM DEFINITION

Mississippi's 2002 Section 303(d) List of Water Bodies identified Conehoma Creek and the Yockanookany River as impaired for the use of fish consumption due to elevated levels of PCBs in fish tissue samples. The source of PCBs to Conehoma Creek and the Yockanookany River is a Texas Eastern Pipeline Compressor Station that used PCBs prior to 1979. Texas Eastern entered into a consent order with EPA in 1994 to perform site characterization and remediation related to the potential presence of PCBs at compressor stations along the Texas Eastern interstate gas pipeline system. Remediation activities at the Koscuisko compressor station were finalized in 1997 and a Site Verification Report was submitted. This Phase One TMDL will establish the concentration of PCBs that can be transported through Conehoma Creek and the Yockanookany River without exceeding the water quality standards in the water body.

Figure 1: 303d Listed Segment



TARGET IDENTIFICATION

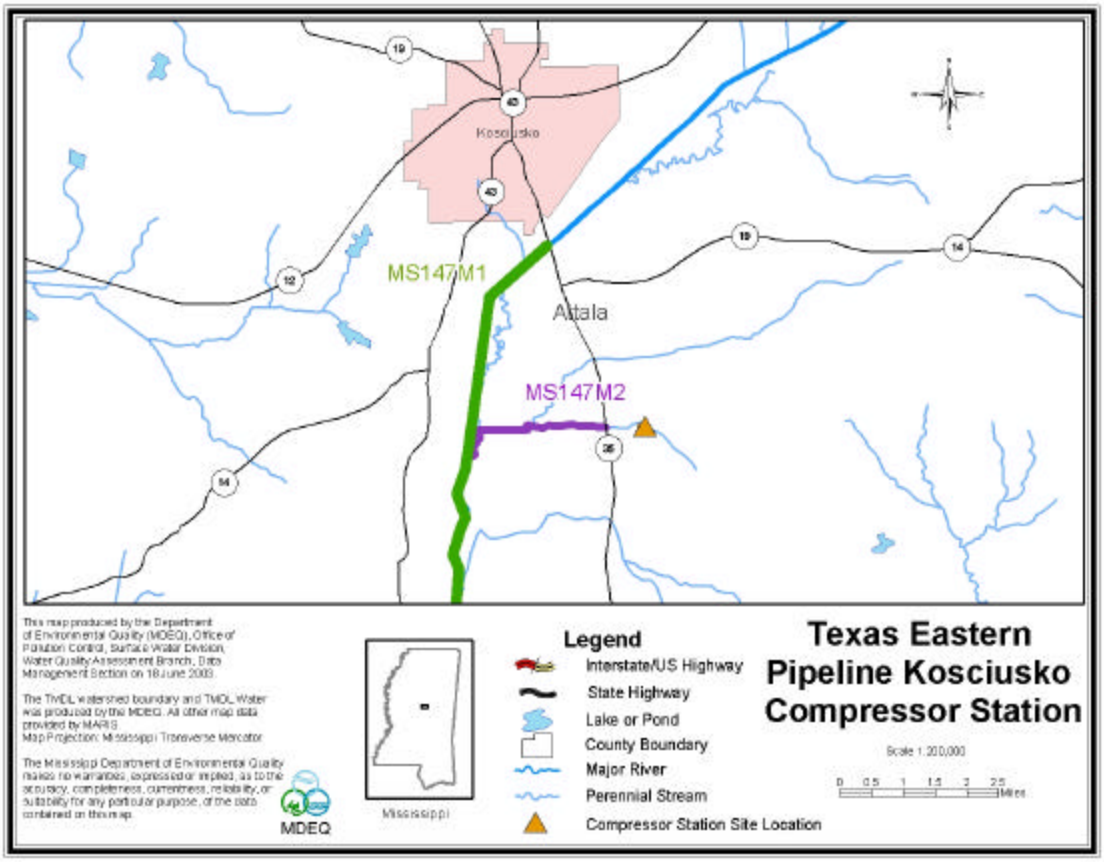
This TMDL is being proposed for Conehoma Creek and the Yockanookany River for PCBs in fish tissue because concentrations above safe consumption levels were detected. The appropriate target concentrations for PCBs will be used to establish the endpoints for this TMDL.

The Mississippi water quality standard for individual PCB compounds is 0.2 µg/l (fresh water acute aquatic life) and 0.014 µg/l (fresh water chronic aquatic life). The Mississippi water quality standard for total PCBs is 0.00035 µg/l for both human health organisms only and human health water and organisms. The target is based on the water column concentration of PCBs and not a fish tissue concentration. When applying the criteria the 7Q10 flow shall be used with acute and chronic toxicity and the average annual flow shall be used with human health. The applicable numeric target was selected by comparing the standard multiplied by the appropriate selected flow. The most protective criterion is the fresh water chronic criteria multiplied by the 7Q10 flow.

SITE DESCRIPTION

Conehoma Creek flows in a westerly direction from its headwaters to its confluence with the Yockanookany River just south of Kosciusko. The Yockanookany River flows in a southwesterly direction from its headwaters near Ackerman in Choctaw County to its mouth at the Pearl River in southwestern Leake County. Three miles of Conehoma Creek, MS147M2, are impaired, from U. S. Hwy 35 to the mouth at the Yockanookany. The Yockanookany River, MS147M1, is impaired from U. S. Hwy 35 near Kosciusko to the mouth at the Pearl River. The Texas Eastern Pipeline Compressor Station is located on U. S. Highway 35 and has a drainage ditch that flows into Conehoma Creek. A map of the site is shown in Figure 2.

Figure 2: Site Description



BACKGROUND

The source of PCBs is the Texas Eastern Pipeline Compressor Station. The station used high-speed, high-pressure gas-fired turbines to maintain pressure in the gas pipeline beginning in the late 1950's. The turbines used an oil for cooling and lubrication that contained PCBs. The oil was then periodically disposed of by putting the waste into pits at the compressor station. The pit system and oil containing PCBs were discontinued in

1979. Over the years, PCBs have migrated to Conehoma Creek and the Yockanookany River. PCBs were found in the sediment and in fish tissue in Conehoma Creek and the Yockanookany River. This contamination was investigated by the MDEQ Hazardous Waste Division. Texas Eastern entered into a consent order with EPA in 1994 and as of 1997, the site was remediated. Remediation activities and results are outlined in the Site Verification Report prepared by Consoer Townsend Envirodyne Engineers, Inc. for Texas Eastern Transmission Corporation.

AVAILABLE MONITORING DATA

Fish tissue samples were collected by MDEQ in June 1987. In June 1988 Texas Eastern contracted with Environmental Research and Technology, Inc. (ERT) to perform further fish tissue sampling. Texas Eastern continued to perform fish tissue sampling on a semi-yearly basis through 1996. More recent fish tissue data have been collected in the Yockanookany River and an ox-bow lake in the Conehoma Creek system, Old River Lake, by MDEQ in 2002 and 2003. Species collected in the sampling events included large mouth bass, channel catfish, and spotted gar. The initial 1987 fish tissue data and the 2003 fish tissue data are provided in Appendix A. The 1987 fish tissue data resulted in a fish consumption advisory being issued for Conehoma Creek and the Yockanookany River and the 303(d) listing of these water bodies. The 2003 fish tissue data indicates the fish consumption advisory should remain in effect, however, the concentrations of PCBs in the fish tissue have decreased.

THE TMDL APPROACH

This TMDL was calculated using a mass balance approach. Water Quality data do not exist to determine the current loading of PCBs in the river from the Texas Eastern Pipeline Compressor Station. Therefore, the load reduction needed from the site cannot be determined at this time. It is assumed that all loadings of PCBs were due to the compressor station.

FLOW ANALYSIS

USGS station 02484500 on the Yockanookany River near Ofahoma was used for the flow for segment MS147M1. The 7Q10 flow for the Yockanookany River is 9.8 cfs. The flow for MS147M2 was estimated based on station 02484500 because there are no flow monitoring data for Conehoma Creek. The 7Q10 for Conehoma Creek is estimated to be 0.36 cfs based on the 7Q10 at station 02484500 (Telis).

7Q10 Discharge (cfs)={[**02484500 7Q10 Discharge** (cfs)]/[**02484500 Drainage Area** (square mile)]}*[**MS147M2 Drainage Area** (square mile)]

7Q10 Discharge (cfs) = {[**9.8** (cfs)]/[**469** (square mile)]}*[**17.25** (square mile)]

7Q10 Discharge (cfs) = **0.36** cfs

TOTAL MAXIMUM DAILY LOAD

The TMDL is the total amount of a pollutant that can be assimilated by the receiving water body while achieving the water quality target that is protective of the designated use. In this case, the impaired use is fish consumption. The TMDL calculation assumes that the consent order resulted in the best remedy for the pollution problem in Conehoma Creek and the Yockanookany River. The intermediate goal in this TMDL is no fish consumption advisories. The current levels indicated by monitoring should be reduced below the action level for the consumption advisory. The TMDL target is the water column concentration standard. Once the fish flesh target is met and no further consumption advisories are needed, the load allocation can be determined by a mass balance approach.

CRITICAL CONDITION DETERMINATION

Critical conditions for Conehoma Creek and the Yockanookany River are difficult to determine due to the lack of water column data. The critical condition used in the TMDL calculation considers a 7Q10 flow and no pollutant degradation in the water column.

SEASONAL VARIATION

This TMDL determination considers seasonal influences on PCB concentrations in Conehoma Creek and the Yockanookany River by using year round criteria and the 7Q10 flow. It is expected that changes in water temperature or light regimes would not significantly affect the water column or fish tissue concentrations.

REASONABLE ASSURANCES

This component of TMDL development does not apply. There are no point sources requesting a reduction based on LA components and reductions.

MARGIN OF SAFETY

The two types of MOS development are to implicitly incorporate the MOS using conservative model assumptions or to explicitly specify a portion of the total TMDL as the MOS. For this TMDL, the MOS is incorporated explicitly by selecting the instream target concentration at 0.0112 µg/l. This is a 20% reduction of the water quality standard of 0.014 µg/l

TMDL DETERMINATION

The TMDL calculation will utilize the conservation of mass principle, where the load can be calculated by using the following relationship:

Concentration = Load / Flow

Rearranging this equation, the maximum load can be calculated as follows:

Load = Concentration(Water Quality Target) * Flow * Conversion Factor

The concentration is the fresh water chronic aquatic life standard and flow is the 7Q10 flow where, for segment MS147M1, the calculation is:

Load = 0.014 µg/l * 9.8 cfs * 2.45 (unit conversion factor) = 335,669.61 µg/day

And for segment MS147M2, the calculation is:

Load = 0.014 µg/l * 0.36 cfs * 2.45 (unit conversion factor) = 12,330.72 µg/day

This TMDL is calculated based on the following equation where WLA is the wasteload allocation (the load from the point sources), the LA is the load allocation (the load from nonpoint sources), and MOS is the margin of safety:

TMDL = WLA + LA + MOS

WLA = NPDES Permitted Facilites

LA = Surface Runoff

MOS = explicit

There are no facilities permitted to discharge PCBs into Conehoma Creek or the Yockanookany River, so the WLA component is zero. The TMDL is given in Table 1.

Table 1: TMDL for PCBs

	MS147M1	**MS147M2**
WLA	0 µg/day	0 µg/day
LA	268,535.69 µg/day	9,864.58 µg/day
MOS	67,133.92 µg/day	2,466.14 µg/day
Total TMDL	**335,669.61 µg/day**	**12,330.72 µg/day**

CONCLUSION

This TMDL does not attempt to quantify the level of contamination in Conehoma Creek and the Yockanookany River or at the Texas Eastern Pipeline Compressor Station. It also does not attempt to determine the current loading of PCBs that are entering Conehoma Creek and the Yockanookany River. It is assumed that all loadings of PCBs were due to the Texas Eastern Pipeline Compressor Station. The consent order between

Texas Eastern and EPA resulted in remediation of the compressor station site and the abatement of PCBs to Conehoma Creek and the Yockanookany River. It is assumed that the remediation activities at the Texas Eastern Pipeline Compressor Station removed the source of the PCBs.

FUTURE MONITORING

MDEQ has adopted the Basin Approach to Water Quality Management, a plan that divides Mississippi's major drainage basins into five groups. During each yearlong cycle, MDEQ resources for water quality monitoring are focused on one of the basin groups. During the next monitoring phase in the Pearl River Basin, Conehoma Creek and the Yockanookany River may receive additional monitoring to identify the improvements in water quality gained from the remediation of the Texas Eastern Pipeline Compressor Station.

PUBLIC PARTICIPATION

This Phase One TMDL project will be published for a 30-day public notice. During this time, the public will be notified by publication in both a statewide and local newspaper. The public will be given an opportunity to review the TMDL and submit comments. MDEQ also distributes all TMDLs at the beginning of the public notice to those members of the public who have requested to be included on a TMDL mailing list. TMDL mailing list members may request to receive the TMDL reports through either, email or the postal service. Anyone wishing to become a member of the TMDL mailing list should contact Greg Jackson at (601) 961-5098 or Greg_Jackson@deq.state.ms.us.

All comments received during the public notice period and at any public hearings become a part of the record of this TMDL. All comments will be considered in the ultimate approval of this TMDL and for submission of this TMDL to EPA Region 4 for final approval.

ABBREVIATIONS

7Q10.....Seven-Day Average Low Stream Flow with a Ten-Year Occurrence Period

CWA .....Clean Water Act

EPA.....Environmental Protection Agency

LA .....Load Allocation

MDEQ.....Mississippi Department of Environmental Quality

MOS.....Margin of Safety

WLA.....Waste Load Allocation

REFERENCES

Consoer Townsend Envirodyne Engineers, Inc. *Site Verification Report Kosciusko Compressor Station Site Remediation Kosciusko, Mississippi.* Fairfax, VA. December 1997.

Golder Associates, Inc. *Summary of Previous Investigations Conducted in Drainage Basin "A" Kosciusko Compressor Station Kosciusko, Mississippi.* Houston, TX. July 1992.

Jackson, Donald C., Jackson, J.R., and Flotemersch, J.E.. *Environmental Factors Influencing Stream Fisheries Resources*. Starkville, MS. Department of Wildlife and Fisheries, Forest and Wildlife Research Center, Mississippi State University. September, 1997.

MDEQ. 1994. *Wastewater Regulations for National Pollutant Discharge Elimination System (NPDES) Permits, Underground Injection Control (UIC) Permits, State Permits, Water Quality Based Effluent Limitations and Water Quality Certification.* Office of Pollution Control.

MDEQ. 2002. *State of Mississippi Water Quality Criteria for Intrastate, Interstate, and Coastal Waters*. Office of Pollution Control.

MDEQ. 2002. *Mississippi List of Water Bodies, Pursuant to Section 303(d) of the Clean Water Act*. Office of Pollution Control.

MDEQ. 1998. *Mississippi 1998 Water Quality Assessment, Pursuant to Section 305(b) of the Clean Water Act*. Office of Pollution Control.

APPENDIX A

The following pages are copies of the MDEQ fish tissue data from Conehoma Creek and the Yockanookany River. They include the MDEQ 1987 data and the MDEQ 2002 / 2003 data.

MISSISSIPPI DEPARTMENT OF NATURAL RESOURCES
Bureau of Pollution Control
P. O. Box 10385
Jackson, Mississippi 39209
(601) 961-5171

MEMORANDUM

TO: Charles Chisolm

FROM: Phil Bass

SUBJECT: PCB Study, Yockanookany River Basin

DATE: August 11, 1987

The follow-up sampling and analysis of fish from the Yockanookany River basin confirms our initial data. There are 4 sites (2 from the Conehoma system and 2 from the Yockanookany) that exceed the Food and Drug Administration action level of 2.0 parts per million total PCB. These elevated levels were found in bass and channel catfish from the Big Conehoma, the old river lake which the Big Conehoma flow into, the Yockanookany at the confluence with the old river lake, and in catfish only from the Yockanookany at Sanders crossing.

Fish were collected from 9 sites, 7 by laboratory biologists and 2 by Department of Wildlife Conservation biologists. Sampling was via electrofishing and trammel nets and was carried out July 5, 8, 10, 15, 23, and 24. Target species were largemouth bass and channel catfish. Two to three bass and two to three catfish were composited from each site with the exception of the Pearl at lowhead and the small oxbow near Kosciusko where spotted bass and crappie, respectively, were substituted.

Fish samples were headed, gutted, composited and analyzed for total PCB's according to BPC SOP. The analyses also revealed detectable levels of the DDT derivative para-para (p-p) DDE. These levels are reported in Table I, however none approached the FDA action level of 5.0 ppm. Two PCB mixtures were identified in the tissue, Arclor 1248 and Arclor 1254. Detectable levels of PCB's were found in 10 of the 18 composites analyzed with 7 exceeding the 2.0 ppm limit (Tables II & III).

No PCB's were found at or below Highway 429 on the Yockanookany. There were no detectable levels of PCB in fish from the Pearl River at the lowhead dam or from the confluence of the Yockanookany and the Pearl River. There was also none detected from tissue collected from the Yockanookany at Highway 429. There were, however, detectable levels in catfish from the Yockanookany at Highway 35. This site being approximately 3 miles upstream of the Texas Eastern Site. Detectable levels were also found in the oxbow near Kosciusko which is also

upstream. These values reflect the movement of PCB's through the food-chain and the normal movement of organisms within an aquatic ecosystem.

Based on the information we have acquired, it is our recommendation that an advisory be issued to include the Big and Little Conehoma, the Yockanookany from Highway 35 to 429 including tributaries and adjacent oxbow lakes. DWC should also consider a ban on commercial fishing. This advisory would include approximately 13 river miles on the Yockanookany and would include its tributaries the Big and Little Conehoma, Bokshenya, Soki, Coleman and Merchants Creeks.

Sanders Crossing, located approximately 5 river miles downstream from the old river lake is the last site to have detectable levels, however to account for possible increased movement of fish we feel it wiser to extend the advisory 4 additional miles to Highway 429. Additional data may cause the upstream limit to be revised northward as well.

Our data demonstrates that catfish have the highest residual concentration, up to 45 ppm. This is attributable to the relatively high fat content and the bottom-feeding characteristics of the species. This fact should be pointed out in the advisory.

We currently plan additional sampling upstream of Highway 35 to better define the area of concern. This, however, is not critical since only trace levels were found in catfish at this site. Future sampling should be designed to address the following issues:

1. Is the contamination in the tissue increasing, stable or decreasing?

2. Are there seasonal fluctuations in the levels of PCB's?

3. What impact will the removal action have on available PCB's?

4. What impact will flooding have on tissue levels?

At least one ambient monitoring site at Highway 429 should be added to our tissue monitoring network. Since there is a fishable population of striped bass in Ross Barnett Reservoir, and stripers are highly susceptible to PCB's (high fat content and migratory habits) it would be advisable to analyze a composite of this species at our earliest opportunity.

This problem is one that no doubt will be with us for a number of years and will require frequent evaluation. It is the opinion of the lab staff that the beaver dam separating the old river lake from the Yockanookany is the major reason the contamination is not more widespread in the Yockanookany. Removal of the dam would no doubt worsen the problem here.

TABLE I.

KOSCIUSKO PCB STUDY
Fish Tissue Results
para, para DDE
parts per million in edible tissue

Site	Bass	(Bench#)	Catfish	(Bench#)
Pearl River at Lowhead Dam	0.100	B87412	0.012	B87413
Yockanookany at Highway 35	0.260	B87418	0.077	B87417
Yockanookany at Pearl River	0.034	B87423	<0.01	B87424
Small Oxbow near Kosciusko (crappie)	0.005	B87428	0.101	B87429
Yockanookany at 429	0.016	B87421	0.057	B87422
Yockanookany at Sanders Crossing	0.010	B87420	0.123	B87419
Yockanookany at Old River Lake	<0.010	B87427	0.119	B87426
Old River Lake	<0.10	B87416	<0.250	B87425
Big Conehoma	<0.10	B87414	<0.10	B87415

TABLE II.

KOSCIUSKO PCB STUDY
Fish Tissue Results
Total Polychlorinated Bi-Phenyls
parts per million in edible tissue

Site	Bass	(Bench#)	Catfish	(Bench#)
Pearl River at Lowhead Dam	<0.05	B87412	<0.05	B87413
Yockanookany at Highway 35	<0.05	B87418	0.20	B87417
Yockanookany at Pearl River	<0.05	B87423	<0.13	B87424
Small Oxbow near Kosciusko (crappie)	<0.13	B87428	0.327	B87429
Yockanookany at 429	<0.05	B87421	<0.050	B87422
Yockanookany at Sanders Crossing	0.082	B87420	4.17	B87419
Yockanookany at Old River Lake	3.38	B87427	5.09	B87426
Old River Lake	5.18	B87416	45.7	B87425
Big Conehoma	6.56	B87414	23.4	B87415

TABLE III.

KOSCIUSKO PCB STUDY
Fish Tissue Results
Polychlorinated Bi-Phenyls
parts per million in edible tissue

Site	Bass		(Bench#)	Catfish		(Bench#)
	Arclor 1248	Arclor 1254		Arclor 1248	Arclor 1254	
Pearl River at Lowhead Dam	<0.05	<0.05	B87412	<0.05	<0.05	B87413
Yockanookany at Highway 35	<0.05	<0.05	B87418	0.20	<0.05	B87417
Yockanookany at Pearl River	<0.05	<0.05	B87423	<0.025	<0.100	B87424
Small Oxbow near Kosciusko (crappie)	<0.025	<0.10	B87428	0.33	<0.100	B87429
Yockanookany at 429	<0.05	<0.05	B87421	<0.05	<0.05	B87422
Yockanookany at Sanders Crossing	0.082	<0.05	B87420	3.37	0.80	B87419
Yockanookany at Old River Lake	2.36	1.02	B87427	3.78	1.31	B87426
Old River Lake	2.85	2.33	B87416	23.5	22.2	B87425
Big Conehoma	6.56	*	B87414	23.4	*	B87415

***Arclor 1254 not calculated for at this time**
Total PCB's with 1254 added would be elevated

Old River Lake

* Weight (Grams) 453.6 grams/pound
* PCB Concentrations (parts per billion)
* MDL (parts per billion)

Date: 1/7/2003

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF03001	Blacktailed Redhorse	3	595	694	632

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	331	170
Arochlor 1254	239	134
Arochlor 1260	ND	67

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF03002	Largemouth Bass	2	383	401	392

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	Trace	34
Arochlor 1254	Trace	67
Arochlor 1260	ND	67

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF03003	Spotted Gar	2	186	206	196

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	282	170
Arochlor 1254	493	335
Arochlor 1260	ND	67

Yockanookany River Below Confluence Of Conehoma Creek

* Weight (Grams) 453.6 grams/pound
* PCB Concentrations (parts per billion)
* MDL (parts per billion)

Date: 2/5/2003

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF03004	Channel Catfish	4	888	945	911

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	Trace	34
Arochlor 1254	Trace	67
Arochlor 1260	ND	67

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF03005	Channel Catfish	5	564	757	686

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	41.1	34
Arochlor 1254	Trace	67
Arochlor 1260	ND	67

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF03006	Channel Catfish	4	331	364	354

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	59.6	34
Arochlor 1254	71.5	67
Arochlor 1260	ND	67

Yockanookany River At Kosciusko 12/23/2002

* Weight (Grams) 453.6 grams/pound
* PCB Concentrations (parts per billion)
* MDL (parts per billion)

Date: 12/23/2002

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF02117	**Channel Catfish**	**4**	**1940**	**2491**	**2150**

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	ND	34
Arochlor 1254	Trace	67
Arochlor 1260	ND	67

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF02118	**Channel Catfish**	**5**	**1144**	**1323**	**1251**

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	Trace	34
Arochlor 1254	Trace	67
Arochlor 1260	ND	67

Sample #	Species	# In Sample	Min Weight	Max Weight	Avg Weight
SF02119	**Channel Catfish**	**5**	**859**	**1077**	**968**

ANALYTE	RESULT	MDL
Arochlor 1016	ND	36
Arochlor 1221	ND	670
Arochlor 1232	ND	34
Arochlor 1242	ND	34
Arochlor 1248	Trace	34
Arochlor 1254	Trace	67
Arochlor 1260	ND	67