

Level 3 Project Study Plan

2018 Cuyahoga River and Nearshore Lake Erie Fish Tissue Collection & Analysis

(1) Objectives

One of the beneficial use impairments for the Cuyahoga River is restrictions on fish consumption. Fish and other organisms that are living in the river and nearshore Lake Erie can be exposed to contaminants found in discharges, overflows, runoff, and sediments and may accumulate in their bodies. This can potentially cause health-related problems for humans and wildlife that eat the fish and are thus exposed to these contaminants. The purpose of this study is to conduct sampling and analysis to determine current concentrations of mercury, selenium, PCBs, and pesticides in the tissues of fish living in the Cuyahoga River and nearshore Lake Erie. These contaminants were chosen due to their historical significance, their ability to bioaccumulate in fish, and/or because of possible water quality criteria that may be adopted by the United States (U.S.)

Environmental Protection Agency (EPA): The results will be compared to those from previous studies that took place from 1989 to 1992 and in 2005 and 2008 to determine if any changes in fish contaminant levels have occurred since that time. The results will also be compared to applicable federal and state standards to evaluate potential ecological or human health risks.

(2) Nonpoint/Point Sources

Point Sources	Nonpoint Sources
Tinkers Creek	Agricultural runoff
Mill Creek	Urban Runoff
West Creek	Landfills
Southerly WWTC	Spills
Akron WWTC	Atmospheric Deposition
Ohio Canal	
Big Creek	
Combined Sewer Overflows	
Storm Sewer Outfalls	
Home Septic Systems	

A map has been provided in Section 6 to show point sources that may be influencing the water quality at each sample location. These sources, along with the ones listed in the table above, may be impacting contaminant levels in fish in the Cuyahoga River, Chagrin River and Lake Erie.

(3) Parameters Covered

Fish tissue samples will be analyzed to determine concentrations of mercury, selenium, PCBs, and pesticides. The list of pesticides that will be analyzed are shown in Table 1.

Aldrin	Alpha- BHC
Beta-BHC	Delta-BHC
Gamma-BHC	Chlordane
4,4'-DDD	4,4'-DDE
4,4'-DDT	Dieldrin
Endrin	Endrin aldehyde
Endosulfan I	Endosulfan II
Endosulfan sulfate	Heptachlor
Hepachlor epoxide	Methoxychlor
Toxaphene	

(4) Field Collection and Data Assessment Techniques

Two types of fish samples will be collected during this study. Fillet samples will be collected to represent potential impacts to humans who consume contaminated fish. Whole-body samples will be collected to represent potential impacts to piscivorous wildlife and to apply certain standards that are applicable to whole-body samples. These samples will be collected at all sites.

Mercury/Selenium/PCBs/Pesticides Fillet Samples

The mercury, selenium, percent lipids, PCBs, and pesticides fillet samples will be a composite of three to five fish fillets of the same species and size class. Fish are considered to be of the same size class if the minimum and the maximum lengths of individual fish do not vary by more than 10%. The weight of the composite sample ready for laboratory analysis should equal or exceed 150 grams (g). A composite of more than five smaller fish may be used to meet the minimum sample weight requirement.

Each station will have samples from two bottom-feeding species and two sport species. The bottom-dwellers may represent worst-case risk through human consumption for certain pollutants, and the sport fish represent most likely human consumption. The largest size class(es) from each species found at a station will be used to also represent worst-case risk. Another consideration in species and size class selection is the desire to standardize samples between stations as much as possible. The information in Table 2 will be used as a tentative guide for the selection of fish for tissue collection. The final decision on the actual species and size class to be collected for the sample will be made in the field based upon the type and size of fish captured during the collection effort.

Table 2: Fish Selection Order			
River Sites		Lake Sites	
Bottom Feeders	Sport Fish	Bottom Feeders	Sport Fish
1. Carp	1. Smallmouth bass	1. Carp	1. Walleye, Sauger, N. Pike
2. White Sucker	2. Largemouth bass	2. Channel catfish	2. Yellow perch
3. Brown bullhead catfish	3. Members of Sunfish family	3. Brown bullhead catfish	3. Largemouth bass
4. Yellow Bullhead Catfish	4. Rock bass	4. Yellow bullhead catfish	4. White bass
5. Channel catfish	5. White crappie	5. Golden redhorse	5. White perch
6. Golden redhorse	6. Black crappie		6. Freshwater drum
7. Northern Hog sucker	7. Walleye		7. Smallmouth bass

Whole Body Samples

The mercury and selenium whole-body samples will consist of 12 individuals of a sport species belonging to the same size class. Fish are considered to be of the same size class if the minimum and the maximum lengths of individual fish do not vary by more than 10%. Mercury whole-body samples will be analyzed at all sites listed in Table 3. Selenium whole-body samples will only be analyzed at FTCS-07 and FTCS-07 to help determine if there are any downstream impacts of the Southerly WWTP.

Collection Techniques

The primary method of collection will be a boat-mounted electrofishing unit based upon standardized Ohio EPA methods (Ohio EPA, Biological Criteria for the Protection of Aquatic Life: Volume II: Users Manual for Biological Assessment of Ohio Surface Waters, (1987, revised June 26, 2015). For those sites in which a

boat cannot be used, longline electrofishing equipment will be used instead. All fish shocked at a station will be collected and placed in a live well for processing. Precautions will be taken to keep all of the fish alive and to release unharmed those fish not used as a sample. All fish collected will be kept in the live well until the fish to be prepared as samples are selected. The fish not selected will be returned to the waters from which they were collected. Non-targeted species collected that are not used in analysis will be documented on the field sheet (Appendix A). Care will be taken to prevent the fish from coming into contact with oil, plastic, sediment, etc. that could contaminate the tissue samples. The fish will be weighed (to the nearest gram), and a measurement (to the nearest millimeter) of the total length will be taken.

A sample information form, including individual records of each fish retained for analysis with information on species, weight, length, and notations of physical deformities or parasites, will be completed at each site. The presence of other fish collected during the sampling effort, but not prepared as samples, will be recorded, but not quantified or measured.

The fish will then be immediately dispatched and wrapped in aluminum foil that has been cleaned with acetone and put into a plastic bag. Whole-body samples will be put into a cooler filled with dry ice. The coolers will be washed with hot water and 10% nitric acid and rinsed with DI water prior to use. Samples to be filleted will be put into a cooler filled with regular ice. All samples will then be transported to the NEORSD Environmental & Maintenance Services Center (EMSC) for processing.

Aging

In order to determine the age of the fish, scales or otoliths (catfish) will be collected from each fish used as a sample. The scales and/or otoliths will be placed in paper envelopes or plastic bags with date, sample code and species information. Scales will be aged in house by WQIS staff. Otoliths will be aged by the Ohio Department of Natural Resources.

Fillet Sample Preparation

The fish will be de-scaled and filleted at the Northeast Ohio Regional Sewer District's (NEORSD) Environmental and Maintenance Services Center in order to reduce possible contamination in the field. The fish will be placed upon an aluminum foil-lined cutting board (dull side towards the fish). The aluminum foil will be changed between each new size class or species prepared. The foil and fillet knife will be rinsed with acetone or similar solvent compatible with the laboratory sample preparation. Fillets are to be prepared as illustrated in

Appendix B and taken from both sides of the fish. The skin will be removed for channel catfish, bullheads, and carp. The skin will be left on for all other species. The fillets for each species will be composited and homogenized using a blender. Enough dry ice will be added to the blender to ensure that the entire sample is frozen and no moisture is visible. The resulting powder will be placed in glass jars with Teflon lids and labeled with date, sample code and species. Care will be taken to exclude any internal organs from the tissue sample. The blender and all utensils used during preparation will be washed between each sample.

Whole Body

Fish collected as whole-body samples will be kept as individuals instead of making a composite sample. The samples will be cut into chunks using a clean butcher saw and/or meat cleaver. The chunks will be put through the meat grinder with enough dry ice to ensure that the entire sample is frozen and no moisture is visible. The resulting ground tissue will then be homogenized using a blender. The resulting powder will be placed in glass jars and labeled with date, sample code and species. The grinder, blender, and all utensils used during preparation will be washed between each sample.

Preservation and Holding Times

Fillet and whole-body samples will immediately be placed in a freezer at -30°C or placed in a cooler with dry ice prior to transportation to the NEORSD's Analytical Service's freezer. Samples will be analyzed within one year of collection.

Fish fillet samples to be analyzed for percent lipids, PCBs and pesticides will be shipped to the contract laboratory using common carrier. Samples will be shipped in dry ice to ensure the samples stay frozen. The integrity of the samples and chain of custody will be maintained. The laboratory will be called prior to shipment to be sure they are ready to accept the fish. If possible, shipments will be made early in the week to avoid unforeseen delays that could result in weekend deliveries to the lab and potential confusion regarding their receipt.

Chemical Analysis

NEORSD Analytical Services will analyze whole-body samples for mercury using EPA Method 245.2. Selenium will be analyzed using method 220.8.

The contract laboratory, TestAmerica, will be used to analyze the fish fillet samples for percent lipids, PCBs (EPA Method 8082A) and organochlorine pesticides (EPA Method 8081BLL).

(5) Stream Flow Measurement

Stream flows will be recorded for all locations during each pass along the Cuyahoga River and Chagrin River using data from the United States Geological Survey (USGS) gauge station nearest the stream location, if possible.

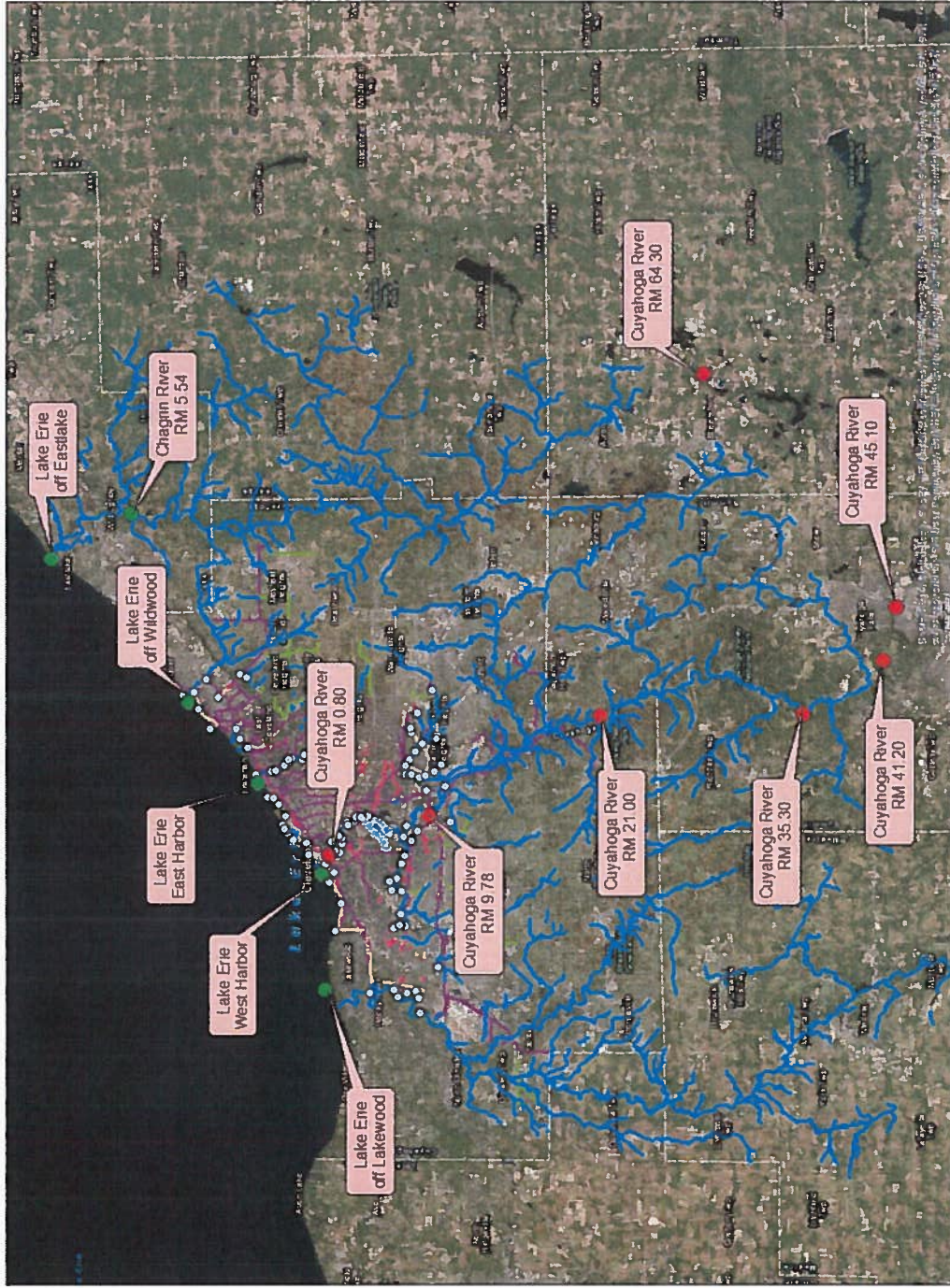
(6) Sampling Locations

The Cuyahoga fish tissue collection stations have been selected to meet the stated objectives of this study. Factors that were considered in their selection include: heavily fished areas, areas of known pollution sources, areas that show degradation or recovery, and reference sites. Field adjustments of the exact sampling locations may be needed due to climatic, hydraulic, or boat access concerns. Sampling locations will mostly duplicate the sites used in the 1989-1992, 2005, and 2008 studies and are detailed in Table 3 and Figure 1. NEORSD will be working with Ohio EPA to conduct the sites along the Cuyahoga River. NEORSD will only be analyzing for mercury in whole body fish at these sites while Ohio EPA will analyze the fillet samples for mercury, selenium, PCBs and pesticides. At all other sites listed in Table 3, NEORSD will be analyzing the samples for PCBs, pesticides, mercury, and selenium.

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 July 25, 2018

**Northeast Ohio
 Regional Sewer District**

**2018 Cuyahoga River
 and Nearshore Lake
 Erie Fish Tissue Collection
 and Analysis**



Legend

- Mercury Only Analysis Site
- Fish Tissue Analysis Site
- CSO Outfall
- Regional Drainage
- World Boundaries and Places
- NEORSD CSO Combined Sewer
- NEORSD CSO Responsibility Sewer
- NEORSD Intercommunity Relief Sewer
- NEORSD Interceptor



This information is for display purposes only. The Northeast Ohio Regional Sewer District (NEORSD) makes no warranty, expressed or implied, with respect to the accuracy of the information, with the exception of the information specifically stated for any specific purpose. This map was created to serve as basic information for use in Geographic Information Systems (GIS) for a variety of planning and analysis purposes. The NEORSD accepts no liability for any errors or omissions that may appear on this map. For more information, please contact: NEORSD GIS Services, 1400 Southland Avenue, Cleveland, Ohio 44115 ---(216) 851-6699 --- GIS@neorsd.org

Figure 1: Map of fish tissue sampling site locations.

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Table 3: Sampling Locations						
Location	Latitude (°N)	Longitude (°W)	River Mile	Description	Quadrangle	Purpose
*Cuyahoga River at Shalersville (FTCS-01)	41.2449	81.2862	64.30	Upstream from State Route 303	Kent	Reference
*Cuyahoga River Upstream of Akron (FTCS-02)	41.1195	81.4912	45.10	Ohio Edison Dam Pool	Akron East	AOC
*Cuyahoga River Upstream of Akron WWTP (FTCS-03)	41.1288	81.5382	41.20	Upstream of Portage Path and Downstream of the Little Cuyahoga River	Peninsula	AOC
*Cuyahoga River Downstream of Akron WWTP (FTCS-04)	41.1816	81.5836	35.30	Near Ira Road	Peninsula	Impact of Akron WWTP/AOC
*Cuyahoga River Near Route 82 (FTCS-05)	41.3152	81.5835	21.00	Upstream of canal diversion dam	Northfield	AOC
*Cuyahoga River at Southwest Interceptor (FTCS-06)	41.4291	81.6694	9.78	Downstream of Southerly WWTC	Cleveland South	Impact of SWWTC/AOC
*Cuyahoga River Navigation Channel (FTCS-07)	41.49455	81.7033	0.80	Irishtown Bend	Cleveland South	AOC
Lake Erie West Harbor (FTCS-08)	41.4995	81.7191	NA	Between Edgewater Marina and Cuyahoga River	Cleveland North/ Cleveland South	AOC
Lake Erie East Harbor (FTCS-09)	41.5410	81.6393	NA	Between East 72 nd Marina and East 55 th Street	Cleveland North	AOC
Lake Erie off Eastlake (FTCS-10)	41.6758	81.4403	NA	West of Chagrin River	Eastlake	Reference
Lake Erie off Wildwood (FTCS-11)	41.5860	81.5675	NA	Between Wildwood Park Marina and Villa Angela Beach	East Cleveland	AOC
Lake Erie off Lakewood (FTCS-12)	41.4981	81.8203	NA	Between Rocky River and Lakewood Park	Lakewood	Reference
Chagrin River at Daniels Park (FTCS-13)	41.6228	81.4015	5.54	Upstream of the confluence with the East Branch	Eastlake	Reference

*Ohio EPA will be collecting fish samples. NEORSD will be on site to collect samples for whole body mercury only.

(7) Schedule

Fish tissue collections will be made between June 15 and October 15, 2018. Actual sampling dates will depend upon weather, equipment, and personnel availability.

(8) QA/QC

The laboratory will follow an in-house QA/QC program based upon U.S. EPA Contract Lab Program (CLP) QA/QC protocols. Duplicate samples will be prepared for 10% of the samples taken. The duplicate samples shall be made by splitting the homogenized powder prepared by blending. The duplicates are intended to be blind samples and will be labeled as if they were from another station. Field notes will be taken to assure the proper comparisons are made following the results. The sample stations will be identified by numeric or alphanumeric codes so as not to readily disclose the location of the sampling station. The NEORS D Analytical Services Quality Manual and associated Standard Operating Procedures are on file with Ohio EPA. The Quality Assurance Officer at Analytical Service will send updates, revisions, and any information on document control to Ohio EPA as needed. A quality assurance manual for the contract laboratory analyzing the pesticide and PCB samples will be submitted once that laboratory is selected.

(9) Work Products

Within one year of completion of the project, a spreadsheet that presents data collected during the study and highlights any excursions from applicable criteria will be submitted to the Ohio EPA. Additionally, reports summarizing, interpreting, graphically presenting, and discussing the data may be prepared.

(10) Qualified Data Collectors

The following Level 3 Qualified Data Collectors for chemical water quality assessment will be involved with this study:

Name	Address	Email Address	Phone Number	QDC Number
Seth Hothem ¹	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	hothems@neorsd.org	216-641-6000	00010
Kelsey Amidon	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	amidonk@neorsd.org	216-641-6000	01091
Jillian Knittle	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	knittlej@neorsd.org	216-641-6000	00512
Ron Maichle	4747 East 49 th Street	maichler@neorsd.org	216-641-6000	00145

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Name	Address	Email Address	Phone Number	QDC Number
	Cuyahoga Hts., Ohio 44125			
Mark Matteson	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	mattesonm@neorsd.org	216-641-6000	01031
Denise Phillips	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	phillipsd@neorsd.org	216-641-6000	01203
John Rhoades	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	rhoadesj@neorsd.org	216-641-6000	00008
Francisco Rivera	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	riveraf@neorsd.org	216-641-6000	00262
Eric Soehnlén	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	soehnlene@neorsd.org	216-641-6000	01030
Cathy Zamborsky	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	zamborskyc@neorsd.org	216-641-6000	00009
¹ NEORS D Lead Project Manager				

The following is a list of persons not qualified as level 3 data collectors who may also be involved in the project. Prior to the start of sampling, the lead project manager or QDC will explain to each of these and any other individuals the proper methods for collecting and processing the fish samples. These activities will only be completed under the direct observation of a QDC. The lead project manager will also be responsible for reviewing all reports and data analysis prepared by these individuals prior to completion.

Name	Address	Email Address	Phone Number
Lindsay Baker	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	bakerl@neorsd.org	216-641-6000
Nick Barille	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	barillen@neorsd.org	216-641-6000
Hannah Boesinger	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	boesingerh@neorsd.org	216-641-6000
Mark Colvin	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	colvinm@neorsd.org	216-641-6000
Nya Dreyfuss	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	dreyfussn@neorsd.org	216-641-6000
Rae Grant	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	grantr@neorsd.org	216-641-6000
Mario Meany	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	meanym@neorsd.org	216-641-6000

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Name	Address	Email Address	Phone Number
Carrie Millward	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	millwardc@neorsd.org	216-641-6000
Joseph Schiel	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	schielj@neorsd.org	216-641-6000
Frank Schuschu	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	schuschuf@neorsd.org	216-641-6000
William Stanford	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	stanfordw@neorsd.org	216-641-6000
Justin Telep	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	telepj@neorsd.org	216-641-6000
Wolfram vonKiparski	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	vonkiparskiw@neorsd.org	216-641-6000
Shadrack Ampomah	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	ampomahs@neorsd.org	216-641-6000
John Capuano	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	capuanoj@neorsd.org	216-641-6000
Trevor Connelly	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	connellyt@neorsd.org	216-641-6000
Miranda DeGarmo	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	degarmom@neorsd.org	216-641-6000
Kirk Kallenborn	4747 East 49 th Street Cuyahoga Hts., Ohio 44125	kallenbornk@neorsd.org	216-641-6000

(11) Contract laboratory contact information

TestAmerica Pittsburgh
 301 Alpha Drive
 RIDC Park
 Pittsburgh, PA 15238

NEORSD Analytical Services
Cheryl Soltis-Muth
4747 E. 49th Street
Cuyahoga Heights, OH 44125
Soltis-muthc@neorsd.org
216-641-6000

(12) Copy of ODNR collector's permit

See Appendix C.

(13) Digital Catalog Statement

A digital photo catalog of all sampling locations will be maintained for 10 years and will include photos of the specific sampling location(s), the riparian zone adjacent to the sampling location(s) and the general land use in the immediate vicinity of the sampling location(s).

Print/Signature: Seth Hothem /  Date: 7/25/18

(14) Voucher Specimen Statement

Not applicable.

(15) Sample Location Statement

I attest that I will make available any and all sampling location information, including but not limited to; the name of the water body sampled, sampling location latitude and longitude, sampling location river mile where possible, general location information, the U.S. geological survey HUC 8 number and name, and the purpose for data collection at each sampling location.

Print/Signature: Seth Hothem /  Date: 7/25/18

(16) Additional L3 Data Collector Statement

The Lead Project Manager for all stream locations is approved for all project data types.

Print/Signature: Seth Hothem /  Date: 7/25/18

(17) Trespassing Statement

I have not been convicted or pleaded guilty to a Violation of section 2911.21 of the Revised Code (criminal trespass) or a substantially similar municipal ordinance within the previous five years.

Print/Signature: Seth Hothem /  Date: 7/25/18

Print/Signature: Kelsey Amidon /  Date: 7/25/18

Print/Signature: Jillian Knittle /  Date: 7/25/18

Print/Signature: Ron Maichle /  Date: 07-25-18

Print/Signature: Mark Matteson /  Date: 7/25/18

Print/Signature: Denise Phillips /  Date: 7/25/18

Print/Signature: John Rhoades /  Date: 07/25/18

Print/Signature: Francisco Rivera /  Date: 7/25/18

Print/Signature: Eric Soehnlén /  Date: 7/25/18

Print/Signature: Cathy Zamborsky /  Date: 7/25/18

Appendix A

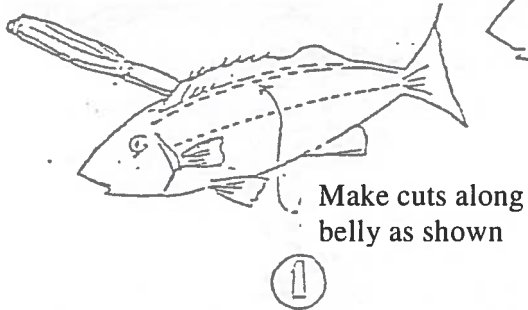
Fish Tissue Study Sample Form					
Date:					
Location:					
Collection Method:					
Names of Samplers:					
Weather:					
Comments:					
Composite Fillet Samples					
Sample #	Species	Length (mm)	Weight (g)	DELTS	Processed
Bottom Feeder Species 1					
Bottom Feeder Species 2					
Sport Fish Species 1					
Sport Fish Species 2					

- | Fish Selection Order | |
|----------------------------|------------------------------------|
| Bottom Feeders | Sport Fish |
| 1. Common Carp | 1. Smallmouth Bass 7. Walleye |
| 2. White Suckers | 2. Largemouth Bass |
| 3. Brown Bullhead Catfish | 3. Members of Sunfish Family |
| 4. Yellow Bullhead Catfish | 4. Rock Bass |
| 5. Channel Catfish | 5. White Crappie |
| | 6. Black Crappie |

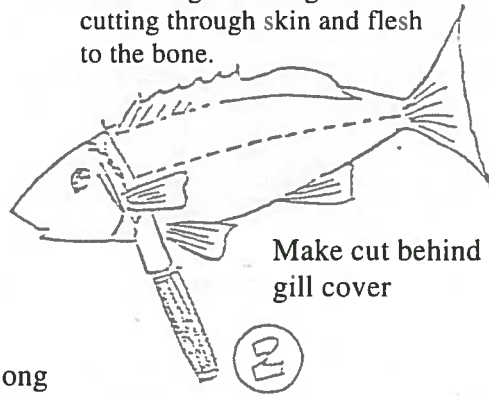
Appendix B

Procedure to produce the "Standard Fillet"

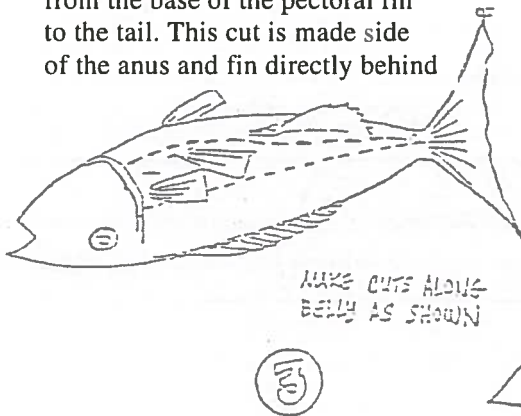
1. Make a shallow cut through the skin (on either side of the dorsal fin) from base of the head to the tail.



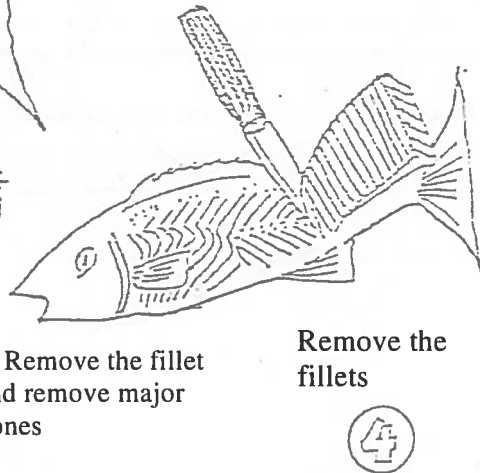
2. Make a cut behind the entire length of the gill cover cutting through skin and flesh to the bone.

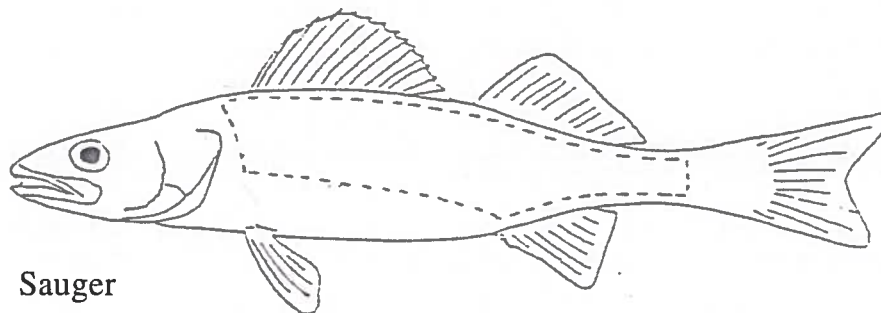


3. Make a cut along the belly from the base of the pectoral fin to the tail. This cut is made side of the anus and fin directly behind

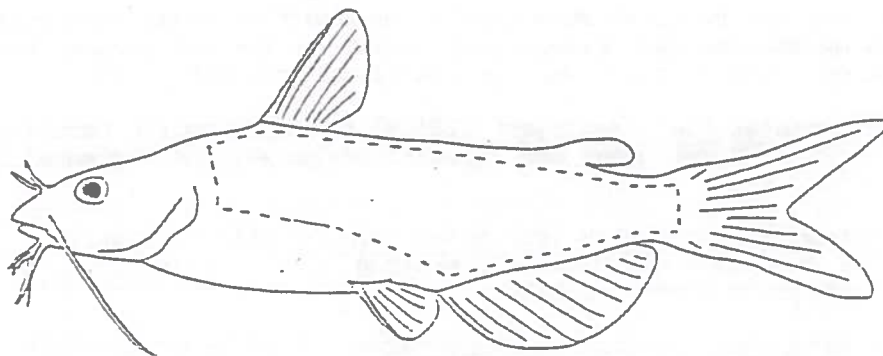


4. Remove the fillet and remove major bones

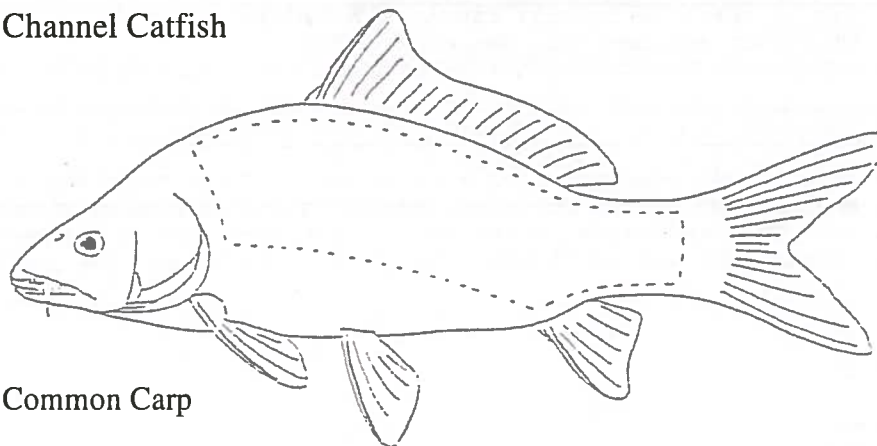




Sauger

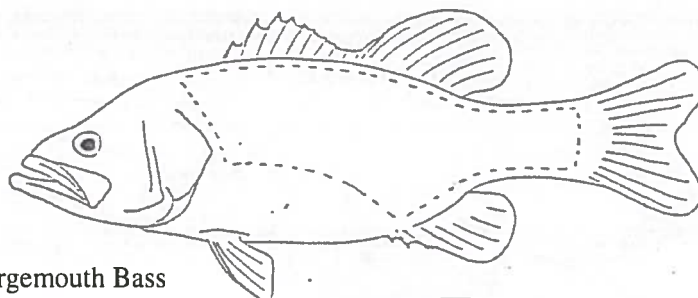


Channel Catfish

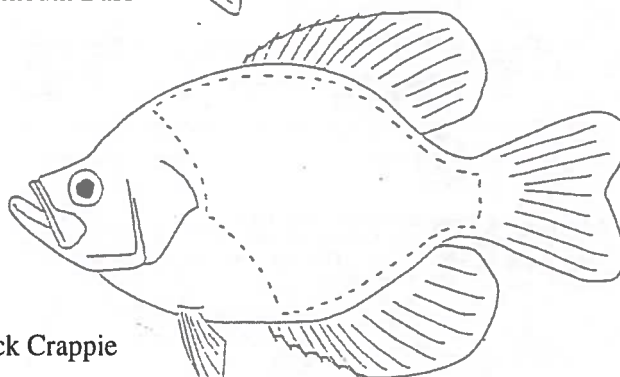


Common Carp

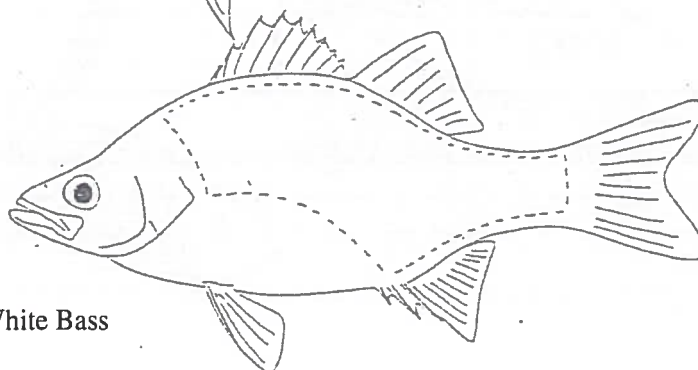
4. Diagram of a "Standard Fillet" for representative fish species.



Largemouth Bass



Black Crappie



White Bass

Appendix C



DIVISION OF WILDLIFE

Ohio Department of Natural Resources

Division of Wildlife Headquarters
2045 Morse Road, Bldg. G
Columbus, Ohio 43229-6693
1-800-WILDLIFE

Chief, Division of Wildlife **Michael R. Miller**

WILD ANIMAL PERMIT: 19-174
SCIENTIFIC COLLECTION

SETH HOTHEN
NEORS
4747 EAST 49TH ST.
CUYAHOGA HEIGHTS, OH 44125-1

RECEIVED
MAY 14 2018
WQIS
NEORS

DATE ISSUED
5/10/2018

Others authorized on permit
YES (SEE ATTACHMENT)

is hereby granted permission to take, possess, and transport at any time and in any manner specimens of wild animals, subject to the conditions and restrictions listed below or any documents accompanying this permit. This permit, unless revoked earlier by the Chief, Division of Wildlife, is effective from:

5/10/2018 to: 3/15/2019

The Chief of the Division of Wildlife will not issue permits for Dangerous Wild Animal (DWA) species (ORC 935.01 except native DWA, required for specific projects. The permit issued by the Chief does not relieve the permittee of any responsibility to obtain a permit pursuant to R.C. Chapter 935 except as specified for the animals and purposes permitted herein. The permittee must adhere to all additional requirements under R.C. Chapter 935.

THIS PERMIT IS RESTRICTED AS FOLLOWS:

1. Permittee may collect fish, macroinvertebrates, and amphibians for survey and inventory purposes. All non-target species are to be released at site of capture.
2. Fish may be collected for fish tissue study. Common species of fish may also be collected and displayed for educational purposes. Fish must be displayed at NEORS or the Greater Cleveland Aquarium or other public educational facility. They may not be maintained at a private residence. Sport fish >6 in. must be immediately released.
3. Qualified surveyors may survey freshwater mussels for reconnaissance purposes on Group 1 streams. Relic mussel shells may be collected and taken to NEORS. No more than two specimens per species.
4. Biosecurity measures must be taken at all times to minimize the potential transmission of diseases. Please follow the recommendations of the Northeast PARC (included) for all work with reptiles and amphibians.
5. Permittee must consult with Wildlife's Stream Conservation and Environmental Assessment Unit (SCEA) prior to conducting any wild animal work associated with compliance requirements of the Clean Water Act (CWA) Section 401 and/or 404. Contact the unit at 614/265-6346 (John Navarro).
6. Twenty-four (24) hours prior to collection, contact must be made with the local wildlife officer to advise location and duration of sampling.
7. All vouchers are to be deposited at NEORS or the Cleveland Museum of Biological Diversity.
8. Contact the Division of Wildlife if undocumented aquatic invasive species or new locations for state-listed species are discovered. Contact John Navarro at (614) 265-6346 or john.navarro@dnr.state.oh.us with information.
9. Collection is prohibited in the Killbuck, Big Darby, Little Darby, tributaries to and east branch of the Chagrin River above I-90, Fish Creek (Williams County) and Division of Wildlife property without explicit written permission from the Division of Wildlife. Sampling is further restricted in streams that may have federally listed mussels and contact with the USFWS is required. See Appendix A of the Ohio Mussel Survey Protocol (April 2014) <http://wildlife.ohiodnr.gov/licenses-and-permits/specialty-licenses-permits> for locations of federally listed mussels.
10. Permittee must provide an annual electronic report of collecting activities in the Diversity Database Excel spreadsheet format to the Division of Wildlife.

Locations of Collecting:

STATEWIDE WITH NOTED EXCEPTIONS

Equipment and method used in collection:

SEINES, TRAP NETS, ELECTROSHOCKER AND HAND COLLECTION

Name and number of each species to be collected:

FISH, MACROINVERTEBRATES, AND AMPHIBIANS AS REQUIRED. MUSSELS FOR RECONNAISSANCE PURPOSES ON GROUP 1 STREAMS. DEAD MUSSEL SHELLS ONLY FOR IDENTIFICATION PURPOSES.

RESTRICTIVE DOCUMENTS ACCOMPANYING THIS PERMIT? YES

NO ENDANGERED SPECIES OR AQUATIC NUISANCE SPECIES MAY BE TAKEN
WITHOUT WRITTEN PERMISSION FROM THE CHIEF

ATTACHMENT

This attachment to permit # 19-174 authorizes the following persons to conduct the activities listed on the permit, within the conditions and restrictions set forth. Each person must carry and exhibit upon request, a copy of the permit and this attachment when conducting any of the listed activities. The person named on the permit assumes full responsibility for the actions of the persons on this list and for completing and submitting all required reports.

Sub-permittee Name

JOHN RHOADES

MARIO MEANY

KELSEY AMIDON

MARK MATTESON

JILLIAN KNITTLE

RON MAICHLE

JUSTIN TELEP

ERIC SOEHNLEN

DENISE PHILLIPS

NICOLE VELEZ

JONATHAN BRAUER

NYA DREYFUSS

Restrictive Document



STANDARD CONDITIONS FOR WILD ANIMAL COLLECTION PERMITS (ORC 1533.08 AND 1533.09)

The standard conditions listed below apply to all permit holders unless otherwise stated on a valid permit. The standard conditions below are in addition to the provisions listed on the permit. Failure to comply with the conditions of the permit may result in the suspension or termination of your permit.

Requests for amendments must be made in writing to wildlife.permits@dnr.state.oh.us or ODNR Division of Wildlife, Permit Coordinator, 2045 Morse Rd., Bldg. G, Columbus, OH 43229. Please include the permit number in your request and allow a minimum of two weeks for amendments.

1. Twenty-four hours prior to all scientific collection activities or stream collection, the permit holder must contact the local wildlife officer to advise the location and duration of sampling. Messages are acceptable.
2. Traps and nets must bear a durable waterproof tag bearing the name and address of the user in English letters, legible at all times. They must be checked and all animals removed each calendar day.
3. When collecting or sampling, the permit holder and any sub-permittees must carry a copy of the permit and present it to any officer upon request. Unnamed persons may only conduct permitted activities under direct, on-site supervision of a named permittee or sub-permittee.
4. Collection on any property is prohibited without written authorization from the landowner. Collection on Ohio Department of Natural Resources properties is prohibited without written authorization from the appropriate landholding division.
5. Collection is prohibited in the Killbuck, Big Darby, Little Darby, tributaries to and east branch of the Chagrin River above I-90, Fish Creek (Williams County) without explicit written permission from the Division of Wildlife. Sampling is further restricted in streams that may have federally listed mussels. See Appendix A of the Ohio Mussel Survey Protocol (April 2014 @ <http://wildlife.ohiodnr.gov/licenses-and-permits/specialty-licenses-permits>) for locations of federally listed mussels.
6. The collection and possession of state endangered species, mussels and aquatic nuisance species is prohibited without prior written approval from the Chief.
7. The following biosecurity protocol for *reptile and amphibian* field work must be followed: "Disinfection of Field Equipment to Minimize Risk of Spread of Chytridiomycosis and Ranavirus." NEPARC Publication 2014-02.
8. For captive wildlife, all cages or enclosures must prevent ingress or egress of the animals held, have appropriate food and water, maintain appropriate temperature and provide protection from the weather. Enclosures must allow the animal to maintain species-specific and/or taxa specific seasonal and biological functions (e.g. bats hibernating).
9. Unless otherwise approved by the Chief (or their representative), wild animals may not be taken directly from the wild for educational purposes.

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10. Collectible reptiles and amphibians may not be held in captivity for more than 30 days. While in captivity, the animal may not be placed in the same enclosure with any other species of reptile or amphibian.
11. It is the permit holder's responsibility to acquire additional permits from other state or federal agencies. For example, a migratory bird permit issued by the United States Fish and Wildlife Service may be required for all persons collecting or in possession of migratory birds, their nests, or eggs.
12. All voucher specimens must be accessioned to the Cleveland Museum of Natural History, The OSU Museum of Biological Diversity or Cincinnati Museum of Natural History unless otherwise noted.
13. Unless otherwise allowed, all specimens must be released at the point of capture.
14. Contact the Division of Wildlife if undocumented aquatic invasive species or new locations for state-listed species are discovered. Contact John Navarro at (614) 265-6346 or john.navarro@dnr.state.oh.us with information.
15. When sampling on public properties or over water, non-toxic shot shall be used.
16. All starlings, house sparrows and aquatic nuisance species collected for laboratory use must be euthanized upon completion of project.
17. Animals held under a Division of Wildlife permit may not be taken out-of-state and returned.

ADDITIONAL INFORMATION

Information on the housing/husbandry of wild animals can be found on the Association of Zoos and Aquariums website: www.aza.org

Bat specific housing/care information:

- "Bats in Captivity" by Susan M. Barnard (1995). The book is available at www.basicallybats.org.
- USDA Care/Housing/Behavior handout: <http://www.nal.usda.gov/awic/pubs/bats/care.htm>

White-nose syndrome decontamination protocol:

<http://www.fws.gov/midwest/endangered/mammals/BatDisinfectionProtocol.html>

Migratory Bird Permits:

- U.S. Fish and Wildlife Service: (612) 713-5343
<http://www.fws.gov/migratorybirds/mbpermits.html>

Bird Banding:

- U.S. Geological Survey: http://www.pwrc.usgs.gov/bbl/homepage/gen_info.cfm