UPPER COLUMBIA RIVER

FINAL
White Sturgeon Tissue Study Data Summary Report

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ACRONYMS AND ABBREVIATIONS

ACG	analytical concentration goal
ALS	ALS Environmental
BDE	bromodiphenyl ether
CCT	Confederated Tribes of the Colville Reservation
CH2M	CH2M HILL
COI	chemical of interest
DQO	data quality objective
EDL	estimated detection limit
EMPC	estimated maximum possible concentration
ESI	Environmental Standards, Inc.
EPA	U.S. Environmental Protection Agency
FL	fork length
FSP	field sampling plan
FSR	field summary report
GPS	global positioning system
HHRA	human health risk assessment
HS	hatchery sturgeon
ID	identification
LCS	laboratory control sample
MDL	method detection limit
MQO	measurement quality objective
MRL	method reporting limit
MS/MSD	matrix spike/matrix spike duplicate
NPS	National Park Service
OPR	ongoing precision and recovery
PARCC	precision, accuracy, representativeness, comparability, and completeness
PBDE	polybrominated diphenylether
PCB	polychlorinated biphenyl
PeCDF	pentachlorodibenzofuran

PIT	passive integrated transponder
QC	quality control
QAPP	quality assurance project plan
RI/FS	remedial investigation/feasibility study
RL	reporting limit
RM	river mile
STI	Spokane Tribe of Indians
TAL	target analyte list
TAI	Teck American Incorporated
TCDF	tetrachlorodibenzofuran
TEF	toxic equivalency factor
TEQ	toxic equivalents
UCR	Upper Columbia River
WDFW	Washington Department of Fish and Wildlife
WDOH	Washington Department of Health

UNITS OF MEASURE

cm	centimeter(s)
dw	dry weight
ft	foot/feet
g	gram(s)
in.	inch(es)
kg	kilogram(s)
mg/kg	milligram(s) per kilogram
ng/kg	nanogram(s) per kilogram
pg/g	picogram(s) per gram
µg/kg	microgram(s) per kilogram
ww	wet weight

1 INTRODUCTION

This report presents the results of the 2016 hatchery white sturgeon tissue study (herein referred to as the study) conducted by CH2M HILL (CH2M) on behalf of the U.S. Environmental Protection Agency (EPA) and Teck American Incorporated (TAI) for the Upper Columbia River (UCR) Site, herein referred to as the Site.[1] The study was planned to determine if the consumption of hatchery white sturgeon collected from the Site would result in human health risks. White sturgeon have been identified as a traditional tribal food source and common sport fish in the Columbia River, but they were not sampled as part of the 2009 fish tissue sampling study, because they were not part of a legal fishery at the Site during the course of that study (SRC 2016). Survival rates and abundance of hatchery white sturgeon at the Site are much higher than anticipated, and this has prompted plans for targeted removal of hatchery white sturgeon in order to prevent the dilution of genetic diversity in the wild sturgeon population (SRC 2016). The preferred approach to removing hatchery white sturgeon is to establish recreational and subsistence fisheries and to distribute hatchery sturgeon collected during targeted removals to tribal memberships and local food banks. Before hatchery white sturgeon can be considered safe for human consumption, fish tissues need to be evaluated to determine if their consumption poses human health risks (SRC 2016).

Sampling and analyses were conducted as described in the quality assurance project plan (QAPP) for the study prepared for the EPA (SRC 2016). The QAPP for the study is Addendum No. 1 to the QAPP for the 2009 fish tissue study (Parametrix et al. 2009). This study was conducted as part of the remedial investigation and feasibility study (RI/FS) for the Site. The objective of the study was to supplement the original data quality objectives (DQOs) of the 2009 fish tissue study by providing data that could be used to evaluate potential exposure to chemicals of interest (COIs) by people consuming hatchery white sturgeon from the Site.

To meet the study objective, hatchery white sturgeon tissue samples were collected during a population stock assessment and subsequently analyzed. Tissue samples were collected from fish caught by the Lake Roosevelt fisheries sampling team, comprised of the Confederated Tribes of the Colville Reservation (CCT) and Spokane Tribe of Indians (STI). The population stock assessment was conducted in areas extending from Inchelium/Gifford to the U.S.-Canada border (Reaches 1 through 4 of the UCR Site), which is where the vast majority of hatchery white sturgeon are distributed (Stroud et al. 2012; as cited in Environment International 2016). A subset of fish caught by the Lake Roosevelt fisheries sampling team was

[1] The Site, as defined in the June 2, 2006, Settlement Agreement (USEPA 2006), is "the areal extent of hazardous substances contamination within the United States in or adjacent to the Upper Columbia River, including the Franklin D. Roosevelt Lake ("Lake Roosevelt"), from the border between the United States and Canada downstream to the Grand Coulee Dam, and all suitable areas in proximity to such contamination necessary for implementation of the response actions.…"

given to EPA for tissue collection and analysis. Although the population stock assessment took place throughout Reaches 1 through 4 of the UCR Site, the hatchery white sturgeon tissue samples were obtained from fish caught in areas where hatchery white sturgeon were thought to be abundant (Reaches 2, 3, and 4 of the UCR Site). Composites of white sturgeon fillets representing three different size classes of fish were analyzed for the following: conventional parameters, concentrations of common target analyte list (TAL) metals/metalloids identified as COIs in the 2009 human health risk assessment (HHRA) work plan (SRC 2009), and concentrations of organic chemicals that the Washington Department of Health (WDOH) had determined were of concern in updating fish advisories for the UCR. Each size class was represented by three replicate composites consisting of eight fish fillets. The size classes were defined as 50 to 97, 98 to 137, and 138 to 160 cm. Fish tissue sampling activities for this study were performed between August 30 and September 13, 2016.

1.1 STUDY PURPOSE AND DATA QUALITY OBJECTIVES

The DQO process summarized in the QAPP (SRC 2016) identified an approach for filling a data gap regarding the characterization of potential risk associated with the consumption of hatchery white sturgeon from the UCR Site by humans. As part of the DQO process, the goals of the study were identified.

The primary goals of the study were:

- To provide information to be used in the HHRA to determine whether contaminants in hatchery white sturgeon tissue in the UCR Site pose an unacceptable risk to human health; and
- To provide data required by WDOH to evaluate the need for a fish advisory for white sturgeon.

1.2 REPORT ORGANIZATION

This report is organized into the following sections:

- **Section 1—Introduction.** This section provides background information, identifies the purpose of the study, and outlines the organization of the report.
- **Section 2—Study Design and Methods.** This section describes the study design and sampling locations, the methods used for collecting fish tissues, the methods used for compositing fish tissues, and the methods used for conducting field and laboratory analyses.
- **Section 3—Quality Assurance Project Plan Modifications and Deviations.** This section discusses modifications to and deviations from the QAPP.
- **Section 4—Validation Assessment.** This section provides a summary of the validation assessment of the analytical results of the study samples.

- **Section 5—Results.** This section presents a summary of the analytical results.
- **Section 6—Summary.** This section presents a summary of the study.
- **Section 7—References.** This section presents bibliographic information for the documents cited in this report.

Figures, maps, and data tables are provided following Section 7. Data tables presented herein have been provided in electronic format, including raw data (provided on CD-ROM). Data may also be obtained directly from the project database, accessible at: http://teck-ucr.exponent.com.

2 STUDY DESIGN AND METHODS

This section summarizes the study design and methods (including field collection and laboratory methods). Additional details of the study plan are presented in the QAPP (SRC 2016).

2.1 STUDY DESIGN

The 2016 white sturgeon tissue sampling study targeted locally abundant hatchery white sturgeon to provide data to support the HHRA. The CCT and STI fisheries personnel performed a stock assessment of hatchery white sturgeon from reaches 1 through 4 during August and September 2016. During the stock assessment, hatchery white sturgeon from reaches 2 through 4 were provided to CH2M/EPA personnel for filleting of tissues prior to chemical analysis.

The following sections provide details on the white sturgeon size classes, tissue types analyzed, sample locations, analyte list and methods, sampling effort and collection methods, biological measurements, and sample compositing. Additional details on the study design and its implementation are presented in Section B of the QAPP (SRC 2016) and in the field summary report (FSR; Appendix A). Details regarding the fillet compositing plan are presented in Appendix B.

2.1.1 White Sturgeon Size Classes

Three size classes of hatchery white sturgeon were targeted to provide representative data on COI concentrations in hatchery white sturgeon of the various sizes that are targeted for removal. Hatchery white sturgeon with a 50- to 160-cm fork length (FL) are being targeted for removal because of concerns over the potential reduction in genetic diversity of white sturgeon in the UCR (SRC 2016). Offspring of relatively few parents comprise the majority of hatchery white sturgeon, which outnumber the wild sturgeon population (SRC 2016). The Lake Roosevelt Fishery Co-Managers have recommended reducing the abundance of hatchery white sturgeon produced from adult broodstock crosses completed prior to 2010 (McLellan 2016). The size range of fish targeted for removal (i.e., 50- to 160-cm FL) is based on the minimum and maximum lengths of hatchery white sturgeon from the selected brood years that have been caught in previous monitoring efforts (SRC 2016). The three size classes selected within this size range were defined as follows:

- 50 to 97 cm (A—small)
- 98 to 137 cm (B—medium)
- 138 to 160 cm (C—large).

The medium size class (B) was selected based upon the current fishery downriver from the Bonneville Dam to The Dalles Dam (38 to 54 inches [in.], e.g., 97 to 137 cm). The small and large size classes (A and C) were selected to determine if hatchery white sturgeon could be provided to tribal members or food banks after the targeted removal of the hatchery white sturgeon of the selected brood classes (i.e., brood years 2001 to 2010).

2.1.2 Tissue Type

Fillets with skin removed were collected from hatchery white sturgeon. Because sturgeon skin is generally considered inedible, fillets without skin best represent human exposure via consumption. Composite samples of the fillets were prepared according to the sample compositing plan described in Section 2.1.7 and Appendix B.

2.1.3 Sample Locations

The hatchery white sturgeon stock assessment extended from Inchelium/Gifford to the U.S.-Canada border (Reaches 1 through 4 of the UCR Site). However, the sturgeon tissue samples for this study were obtained from fish caught in Reaches 2, 3, and 4 of the UCR Site. Fillets from individual fish were collected from river mile (RM) 684 to RM 723 (Map 2-1). This is the area in which the majority of hatchery white sturgeon are distributed (Stroud et al. 2012; as cited in Environment International 2016).

The average spatial location of each composite sample (calculated by averaging the RM associated with each individual fillet of a composite) is shown on Maps 2-2 to 2-10.

2.1.4 Analyte List and Methods

Planned target analytes as defined in the QAPP (SRC 2016) are presented in Table 2-1. Analytical procedures used for this study were standard EPA-approved analytical protocols (Table 2-2) with detection limits sufficiently low to provide concentration data that are below risk-based benchmarks when possible (Table 2-1). Analytical laboratory procedures for analysis of polychlorinated biphenyl (PCB) congeners, dioxins/furans, and polybrominated diphenylethers (PBDEs) were performed by Vista Analytical Laboratory. All other analytical laboratory procedures, including tissue homogenization, compositing, and analysis, were performed by ALS Environmental (ALS).

2.1.5 Sampling Effort and Collection Methods

Hatchery white sturgeon were collected by Lake Roosevelt fisheries sampling team personnel (CCT and STI) via set lining, and whole or partially dissected sturgeon were provided to CH2M for processing. The Lake Roosevelt fisheries sampling team recorded the global

positioning system (GPS) coordinates (latitude and longitude) where fish were collected (i.e., point coordinates for set lines).

Sampling was performed by one field team consisting of CH2M and EPA personnel. For the first week, the team consisted of one CH2M field team lead, one CH2M sampling staff, and one EPA representative. CH2M performed all duties and responsibilities for sample preparation, sample collection, and sample handling. EPA staff reviewed and approved sampling changes/deviations, and supported CH2M with sampling. For the remainder of the sampling event, the team consisted of one CH2M field team lead and one CH2M sampling staff.

Sample pick-up and processing was conducted on boats provided by the National Park Service (NPS) from August 30 through September 7, 2016, and by Columbia Navigation on September 8, 9, and 13, 2016.

A total of 72 hatchery white sturgeon were sampled during the 2016 field sampling effort. The length and weight of each fish, as well as other field collection and fillet processing information is provided in the FSR (Appendix A).

Fish Collection and Handling

All hatchery white sturgeon were measured for fork length (cm) and weighed (kg) by the Lake Roosevelt fisheries sampling team upon retrieval from the set lines. Wild white sturgeon were returned to the water alive. The hatchery white sturgeon were euthanized using a sharp blow to the head with a decontaminated mallet or club, being careful not to break the skin of the fish. Fish were also scanned with a passive integrated transponder (PIT) tag reader to determine brood year.

Specimens of hatchery white sturgeon that met the size class requirements for tissue sampling were transferred to CH2M for tissue sample processing. Prior to transfer of fish from the Lake Roosevelt fisheries sampling team, internal organs (stomachs and gonad tissue) of some fish were removed for use in separate studies (Appendix A provides additional details). The Lake Roosevelt fisheries sampling team provided CH2M with the PIT tag identification (ID), fish brood year, length, and weight of each fish at the time fish were transferred.

Tissue Sample Processing

All tissue processing was performed on the boat operated by the NPS or Columbia Navigation. The processing boat either traveled to shore and fish processing was conducted on the boat while beached to provide a stable platform, or if calm water permitted, fish were processed while the boat floated in water deeper than 50 feet (ft). The tagged fish were held in decontaminated plastic tubs prior to processing.

Fish were photographed and examined for external abnormalities, filleted with skin removed, and at least 200 ± 20 g wet weight (ww) of fillet was collected, wrapped in foil, labeled[2], double-bagged in re-sealable plastic bags and placed in a cooler on ice. For fish in the C size class, 400 g of fillet was collected for some samples because there was a concern that there would not be a sufficient number (i.e., 24) of C size class hatchery white sturgeon caught during the sampling effort. During filleting, no internal organs were punctured. As previously noted, some fish were received with stomach or gonad tissue removed for separate studies. According to CCT and STI fisheries personnel, removal of the organs did not impact the white sturgeon tissue that was sampled because the incisions were small relative to the overall size of the fish and not in the part of the fish that was filleted and sampled.

Equipment Decontamination

The field team thoroughly rinsed all sampling equipment that came into contact with fish between samples and upon completion of the study.

Rinsing was performed using river water away from the shoreline and any areas where sediment had been disturbed during beaching of the boat. Equipment used for processing the fish was washed with soap (i.e., Alconox™) and rinsed with river water after each use. Cleanroom 100 certified nitrile gloves used for handling fish were discarded, not decontaminated. Clean gloves were worn when handling each fish to avoid transfer of potential contaminants among samples. This equipment decontamination procedure deviates from that described in the QAPP in that methanol and nitric acid rinses were not performed due to lack of availability at the sampling locations (i.e., shipping issues).

Fish Identification Numbering

Individual fish were identified with the letters "EPA," a species abbreviation, brood year, a sequential number, and a composite bin/replicate identifier (e.g., EPA-HS-01-001-A1). Individual fish ID codes included the following information:

- Species = Hatchery White Sturgeon (HS)
- Brood year designated as follows
    - 2001 = 01
    - 2002 = 02
    - 2003 = 03
    - 2004 = 04
    - 2005 = 05
    - 2006 = 06

[2] Field sample labels included the task name, sample location, fish number, CH2M sampler initials, analyses to be performed, and sample date and time.

  - 2007 = 07
  - 2008 = 08
  - 2009 = 09
  - 2010 = 10
- Sequential fish number expressed as three digits, starting with 001 (e.g., 001 or 002)
- Composite bin identifier
  - A = 50 to 97 cm
  - B = 98 to 137 cm
  - C = 138 to 160 cm
- Composite bin replicate number 1, 2, or 3[3].

The example fish identifier code EPA-HS-01-001-A1 represents a hatchery white sturgeon from the 2001 brood year that was the first fish selected by the Lake Roosevelt fisheries sampling team for tissue sampling, and in the first group of the 50- to 97-cm size class. Ultimately, the composite bin replicate numbers were not used for assigning individual fish to replicate composites for each size class.

2.1.6 Sample Compositing

A plan for compositing individual sturgeon tissue samples into size class-specific composites was developed after the field sampling program was complete. The original compositing plan described in the QAPP, which indicated that fish tissues would be composited by reach, was not used. The compositing plan, detailed in a letter from EPA to TAI on September 30, 2016 (Appendix B), consisted of a stratified random approach based on fork length in each size class. The locations where fish assigned to each composite sample were caught are shown on Maps 2-2 through 2-10.

ALS prepared the fillet composites by combining equal masses of individual homogenized fillets. The composites were then homogenized and subsampled for analysis. Homogenates from the individual fillets were archived at the laboratory. Any remaining homogenized composite sample material was discarded.

[3] The individual fish ID applied in the field designated a composite replicate number, but the field-assigned composite replicate number was not ultimately used for determining compositing in the laboratory.

3 QUALITY ASSURANCE PROJECT PLAN MODIFICATIONS AND DEVIATIONS

This section provides a description of deviations from the 2016 QAPP and field sampling plan (FSP), and how these changes affect the quality of data.

3.1 DEVIATIONS FROM QAPP AND FSP

Two deviations from the QAPP and FSP occurred during the field event due to unanticipated conditions. The changes to field sampling procedures were approved by EPA personnel present between August 30 and September 2, 2016. Copies of the field change forms are presented in the FSR (Appendix A) and summarized below.

- Modification to equipment decontamination. The FSP called for a methanol and nitric acid rinse of fish processing equipment. Shipping of these materials to the sampling site was delayed because methanol and nitric acid are considered hazardous substances. As a consequence, these chemicals did not arrive in a timely manner. As a modification, field equipment used for processing the fish was washed with soap (i.e., Alconox™) and rinsed with deionized water and site water prior to the start of sampling each day. In addition, the field team used river water to thoroughly rinse all sampling equipment that came into contact with fish after each use and upon completion of the study.
- Modification to sample packaging. Dry ice was not available during the first week of sampling. As a consequence, samples were packaged and shipped using wet ice during that time. Wet ice was double-bagged in resealable plastic bags, and coolers were lined on the top and bottom with ice to ensure that samples remained at temperature during shipping.

In addition to the above-mentioned modifications, EPA provided oversight during only the first week of tissue collection, and not during the entire tissue collection event. Also, the QAPP states that the CH2M/EPA processing team was to receive whole fish, but some fish were received partially dissected. The level of oversight and the sample handling procedures for these fish were not specified in the QAPP or in the FSR.

None of the modifications described herein are anticipated to adversely affect the quality of the data collected during the 2016 white sturgeon tissue study.

4 VALIDATION ASSESSMENT

Data validation was performed by Environmental Standards, Inc. (ESI) of Valley Forge, Pennsylvania, in accordance with the QAPP (SRC 2016) and based on EPA guidance from applicable analytical methods and the following documents:

- *Guidance for Labeling Externally Validated Laboratory Analytical Data for Superfund Use* (EPA 540-R-08-005) (USEPA 2009)
- *USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Superfund Data Review* (EPA 540-R-013-001) (USEPA 2014a)
- *USEPA Contract Laboratory Program National Functional Guidelines for Superfund Organic Methods Data Review* (EPA 540-R-014-002) (USEPA 2014b)
- *USEPA Contract Laboratory Program National Functional Guidelines for Chlorinated Dibenzo-p-Dioxins (CDDs) and Chlorinated Dibenzofurans (CDFs) Data Review* (EPA 540-R-11-016) (USEPA 2011).

Stage 4 validation was conducted for all data. Data were qualified, as needed, based on an evaluation of the following quality control (QC) criteria:

- Holding times
- Condition of samples upon laboratory receipt
- Sample preparation
- Initial and continuing calibrations
- Blank results
- Matrix spike/matrix spike duplicates (MS/MSDs) results
- Laboratory control sample (LCS) results
- Laboratory duplicate and triplicate results
- Ongoing precision and recovery (OPR) standard results
- Mass tuning
- Labeled compound recoveries
- Reporting limit (RL) standard results
- Interference check sample results
- Post-digestion spike results
- Serial dilution results
- Internal standard performance
- Instrument sensitivity
- Retention times
- Analytical sequence and quantitation of positive results.

The ESI data validation report is provided in Appendix C and is also available on the Downloads page of the project database (http://teck-ucr.exponent.com). The results of the data validation for overall data quality of chemistry results; sample transport and holding times; and equipment blank data, inorganic tissue data, and organic tissue data are summarized in Sections 4.1, 4.2, and 4.3 through 4.5, respectively.

4.1 OVERALL DATA QUALITY

Chemistry data for equipment rinsate blanks and fish tissues meet quality requirements in accordance with the QAPP (SRC 2016). A summary of the qualifiers assigned to equipment blank and tissue results is presented in Tables 4-1 and 4-2, respectively. No data were rejected and all data are usable with the qualifiers presented. The following data qualifiers were applied by ESI:

- Estimated maximum possible concentration (EMPC)—Chromatographic peaks were present in the expected retention time window; however, the peaks did not meet all of the conditions required for a positive ID. The detection limit represents the maximum possible concentration if the analyte was present.
- J—The concentration was considered estimated due to one or more of the following conditions: concentration was between the detection limit and the reporting limit, extraction standard recovery was either low or high, or the result exceeded instrument calibration range.
- U—The analyte was not detected at or above the method detection limit (MDL) for inorganics or the estimated detection limit (EDL) for organics.
- U*—The analyte was considered not detected because a similar concentration was detected in an associated blank sample. ESI considered sample weight, percent solids, and dilution factor when evaluating blank contamination. For results qualified as U*, the detection limit was changed to the concentration of the qualified result.

Data quality indicators for precision, accuracy or bias, representativeness, completeness, and comparability (PARCC) were specified in the 2016 QAPP addendum (SRC 2016) and measurement quality objectives (MQOs) were listed in Table B-4 of the 2009 fish tissue QAPP (Parametrix et al. 2009). The data validator used the project-specific MQOs to evaluate sturgeon tissue data for the quantitative components of PARCC (i.e., precision and accuracy or bias). Duplicate relative percent differences and triplicate relative standard deviations were used to assess precision. The evaluation of accuracy and bias was based on the results of QC samples such as matrix spikes, internal standards, and

equipment and method blanks. The data validator also assessed sample handling, laboratory methods, and holding times to evaluate the representativeness and comparability of analytical data. Data were qualified as necessary by ESI when MQOs were not met. A data completeness goal of 95 percent was specified in the QAPP (Parametrix et al. 2009). Data completeness was 100 percent for all analyte groups.

The following sections discuss the data review findings and reasons qualifiers were applied by the data validator. Laboratory QC samples (i.e., laboratory duplicate and triplicate samples) were included in the validation assessment, and are, therefore, also indicated in the qualifier counts below. Tables 4-1 and 4-2 show both the number of qualifiers applied by the analytical laboratory and the number of qualifiers applied by the data validator. These sections also summarize the data validation results for sample transport and holding times, equipment blanks, and tissue data.

4.2 SAMPLE TRANSPORT AND HOLDING TIMES

The caps on the containers for samples EPA-HS-A1 DUP and EPA-HS-B2 were broken upon receipt at Vista Analytical. The jars and samples were uncompromised and no data were qualified due to this issue.

4.3 EQUIPMENT BLANK DATA

This section summarizes equipment blank concentrations and data qualifiers for equipment blank results. Data qualifiers are summarized in Table 4-1. Qualifiers were added to equipment blank data by ESI based on an evaluation of QC factors such as laboratory blank concentrations and ion abundance ratios.

Because the equipment blanks were liquid (rinse water) and the samples analyzed were a solid matrix (tissue), equipment blank concentrations were converted to the same units as the tissue data in order to evaluate contamination. Equipment blank concentrations did not warrant the qualification of any tissue results.

The first equipment rinsate blank created by ALS (Homogenization Blank 10/17/16) contained limited volume and was not analyzed for PCB congeners. Subsequent rinsate blanks were created with enough volume for all target analyte groups.

The only qualifiers applied to equipment blank results were due to ion abundance ratios. Rinsate blank concentrations were qualified as EMPC due to out of control ion abundance ratios for the following analytes and numbers of samples:

- Octachlorobiphenyl homologs – 1
- PBDE-47 – 1
- PBDE-99 – 1
- PBDE-153 – 1
- PCB-16/32 – 1
- PCB-18 – 2
- PCB-20/21/33 – 1
- PCB-28 – 2
- PCB-31 – 2
- PCB-43 – 2
- PCB-61/70 – 1
- PCB-95/98/102 – 1
- PCB-110 – 1
- PCB-194 – 1
- Pentachlorobiphenyl homologs – 1
- Total tetra-bromodiphenyl ether (BDE) – 1
- Trichlorobiphenyl homologs – 1.

4.4 INORGANIC TISSUE DATA

This section summarizes data quality issues for inorganic tissue results, including laboratory duplicate and triplicate samples as qualified by ESI based on an evaluation of various QC factors (e.g., LCS and MS recoveries, laboratory blank concentrations, and laboratory duplicate and triplicate results). Data qualifiers are summarized in Table 4-2.

The only qualifiers applied to inorganic tissue results were due to method or calibration blank contamination. Tissue concentrations were qualified as non-detected (U* flagged) due to the presence of the analyte in an associated blank for the following analytes and numbers of samples (numbers of laboratory QC samples[4] qualified are shown in parentheses):

- Aluminum – 3
- Antimony – 8 (3)
- Silver – 3 (3).

4.5 ORGANIC TISSUE DATA

This section summarizes the number of organic tissue results qualified by ESI, including laboratory duplicate and triplicate samples. Data qualifiers are also summarized in

[4] Laboratory duplicate and laboratory triplicate samples.

Table 4-2. Qualifiers were applied as needed based on an evaluation of various QC factors (e.g., calibration and extraction standard recoveries and laboratory blank concentrations). Organic tissue data were qualified due to calibration, method blank, ion abundance ratio, and extraction standard results, as detailed in the subsections below. All other QC parameters were within control limits.

4.5.1 Calibration

Tissue concentrations were qualified as estimated (J flagged) due to results exceeding the instrument calibration range for PBDE-47 in nine samples and two laboratory QC samples.

4.5.2 Blanks

Tissue concentrations were qualified as non-detected (U* flagged) due to the presence of the analyte in an associated method blank for PCB-11 in nine samples and two laboratory QC samples.

4.5.3 Ion Abundance Ratios

Tissue concentrations were qualified as EMPC due to out of control ion abundance ratios for the following analytes and numbers of samples (numbers of laboratory QC samples qualified are shown in parentheses):

- 1,2,3,7,8-pentachlorodibenzofuran (PeCDF) – 4
- 2,3,4,7,8-PeCDF – 4
- 2,3,7,8-tetrachlorodibenzofuran (TCDF) – 0 (1)
- Monochlorobiphenyl homologs – 3
- Octachlorodibenzodioxin – 2
- PCB-1 – 3
- PCB-3 – 4
- PCB-4/10 – 2
- PCB-6 – 2
- PCB-34 – 1 (2)
- PCB-40 – 1 (1)
- PCB-46 – 1
- PCB-50 – 1
- PCB-54 – 1
- PCB-55 – 1
- PCB-67 – 1 (1)
- PCB-77 – 1
- PCB-94 – 1
- PCB-103 – 0 (1)
- PCB-145 – 1
- PCB-150 – 1 (1)
- Total PeCDF – 4
- Total TCDF – 0 (1)
- Total di-BDE – 2.

4.5.4 Extraction Standards

Tissue concentration was qualified as estimated (J flagged) due to low extraction standard recoveries for total tetra-BDE in one sample.

Tissue concentrations were qualified as estimated (J flagged) due to high extraction standard recoveries for the following analytes and numbers of samples (numbers of laboratory QC samples qualified are shown in parentheses):

- Total hepta-BDE – 0 (1)
- PBDE-99 – 2
- Total penta-BDE – 2
- Total hexa-BDE – 2.

5 RESULTS

This section summarizes the sturgeon tissue results and analytical concentration goal (ACG) screens for each analyte group. A total of nine sturgeon fillet composites representing three sturgeon size classes were analyzed for metals, conventional parameters (i.e., fluoride, lipid content, and total solids), dioxins/furans, PCB congeners, and PBDEs.

Summary statistics for all COIs are presented in Tables 5-1, 5-2, and 5-3 for small (50 to 97 cm), medium (98 to 137 cm), and large (138 to 160 cm) hatchery white sturgeon fillet composites, respectively. Chemical concentration data are summarized on a dry weight basis for metals and on a wet weight basis for organic chemicals, as reported by the laboratory. This also facilitates comparison with ACGs. In addition, tissue concentration data for metals are summarized on a wet weight basis (Table 5-4) to facilitate comparisons with previously reported data. Prior to summarizing tissue concentration data for metals on a wet weight basis, reported tissue concentration data were converted from a dry weight basis to a wet weight basis for each composite using this equation: wet weight concentration = dry weight concentration*percent solids/100. Percent solids was measured for each composite sample and is reported in the project database The chemical concentration data are also shown by size class in Figures 5-1 through 5-5. ACGs were compared to actual method reporting limits (MRLs) for non-detected inorganics results and to EDLs for non-detected organics results, as summarized in the following sections and in Tables 5-5 through 5-8.

5.1 TARGET ANALYTE LIST METALS/METALLOIDS AND CONVENTIONAL PARAMETERS

All composite fillet samples were analyzed for the following metals/metalloids and conventional parameters: aluminum, antimony, total arsenic, inorganic arsenic, barium, beryllium, boron, cadmium, calcium, chromium, cobalt, copper, fluoride, iron, lead, magnesium, manganese, mercury, molybdenum, nickel, potassium, selenium, silicon, silver, sodium, sulfur, thallium, tin, uranium, vanadium, zinc, lipid content, and total solids. Summary statistics for all COIs and conventionals are presented in Tables 5-1 through 5-3. Tissue concentrations for metals are also summarized in Table 5-4 on a wet weight basis. Figures 5-1a through 5-1ad and 5-2a through 5-2c show metal/metalloid and conventional results, respectively, for each sturgeon fillet composite by size class.

ACG, planned MRLs, and actual MRLs for metals/metalloids and conventional parameters are shown in Table 5-5. Actual MRLs were compared to ACGs for

non-detected results, and the only exceedances were for inorganic arsenic. None of the inorganic arsenic results (n = 9) were detected, and the actual MRL was four times the ACG of 0.02 mg/kg. Actual MRLs were below the ACG for all other non-detected results.

5.2 DIOXINS/FURANS

All composite fillet samples were analyzed for dioxin/furan congeners. Summary statistics for dioxins/furans and calculated mammalian toxic equivalents (TEQs) and congener sums are presented in Tables 5-1 through 5-3. Figures 5-3a and 5-3b show total and dioxin TEQ[5] concentrations for each sturgeon fillet composite by size class.

ACGs, planned MDLs, and toxic equivalency factor (TEF)-adjusted EDLs for dioxins/furans and dioxin-like congeners are shown in Table 5-6. EDLs were weighed by the appropriate mammalian TEF from Van den Berg et al. (2006) and compared to the ACG. There were no ACG exceedances for non-detected dioxins/furans or dioxin-like congeners.

5.3 POLYCHLORINATED BIPHENYLS

All composite fillet samples were analyzed for PCB congeners. Summary statistics for PCB congeners and the calculated sum of total PCB congeners are presented in Tables 5-1 through 5-3. Figures 5-4a and 5-4b show total PCB congener and PCB TEQ[6] concentrations for each sturgeon fillet composite by size class.

ACGs, planned MDLs, and EDLs for PCB congeners are shown in Table 5-7. ACGs for individual PCB congeners were presented in the QAPP (Parametrix et al. 2009), and an ACG for total PCB congeners was presented in the QAPP (SRC 2016). EDLs were compared to ACGs and there were no ACG exceedances for non-detected PCBs.

[5] Dioxin TEQ was calculated by summing the products of the concentration of each of the 17 individual dioxin/furan congeners and its specific TEF from Van den Berg et al. (2006). Total TEQ was calculated by summing the products of the concentration of each of the 17 individual dioxin/furan congeners and the 12 individual dioxin-like PCB congeners and its specific TEF from Van den Berg et al. (2006). Congeners that were undetected for a given sample were assigned a value equal to one-half the sample-specific DL for use in the TEQ calculation.

[6] PCB TEQ was calculated by summing the products of the concentration of each of the 12 individual dioxin-like PCB congeners and its specific TEF from Van den Berg et al. (2006). Congeners that were undetected for a given sample were assigned a value equal to one-half the sample-specific DL for use in the TEQ calculation.

5.4 POLYBROMINATED DIPHENYLETHERS

All composite fillet samples were analyzed for PBDEs. Summary statistics for PBDEs are presented in Tables 5-1 through 5-3. Figures 5-5a through 5-5n show PBDE concentrations for each sturgeon fillet composite by size class.

ACGs, planned MDLs, and EDLs for PBDEs are shown in Table 5-8. EDLs were compared to ACGs and there were no ACG exceedances for non-detected PBDEs.

6 SUMMARY

Consistent with the QAPP (SRC 2016), 72 individual fish fillet samples were composited into 9 samples representing 3 different size classes of hatchery white sturgeon and were analyzed for COIs. The targeted number of hatchery white sturgeon was obtained for chemical analysis. All samples were analyzed for COIs appropriately and in accordance with the QAPP (SRC 2016). For inorganic COIs, all samples had detected concentrations or non-detected MRLs that met the ACGs, with the exception of inorganic arsenic. All samples had inorganic arsenic concentrations that were non-detected, and the MRL was higher than the ACG. For organic COIs, all EDLs were below associated ACGs. As part of the data validation assessment, no data were rejected and all data are considered usable with the qualifiers presented.

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FIGURES

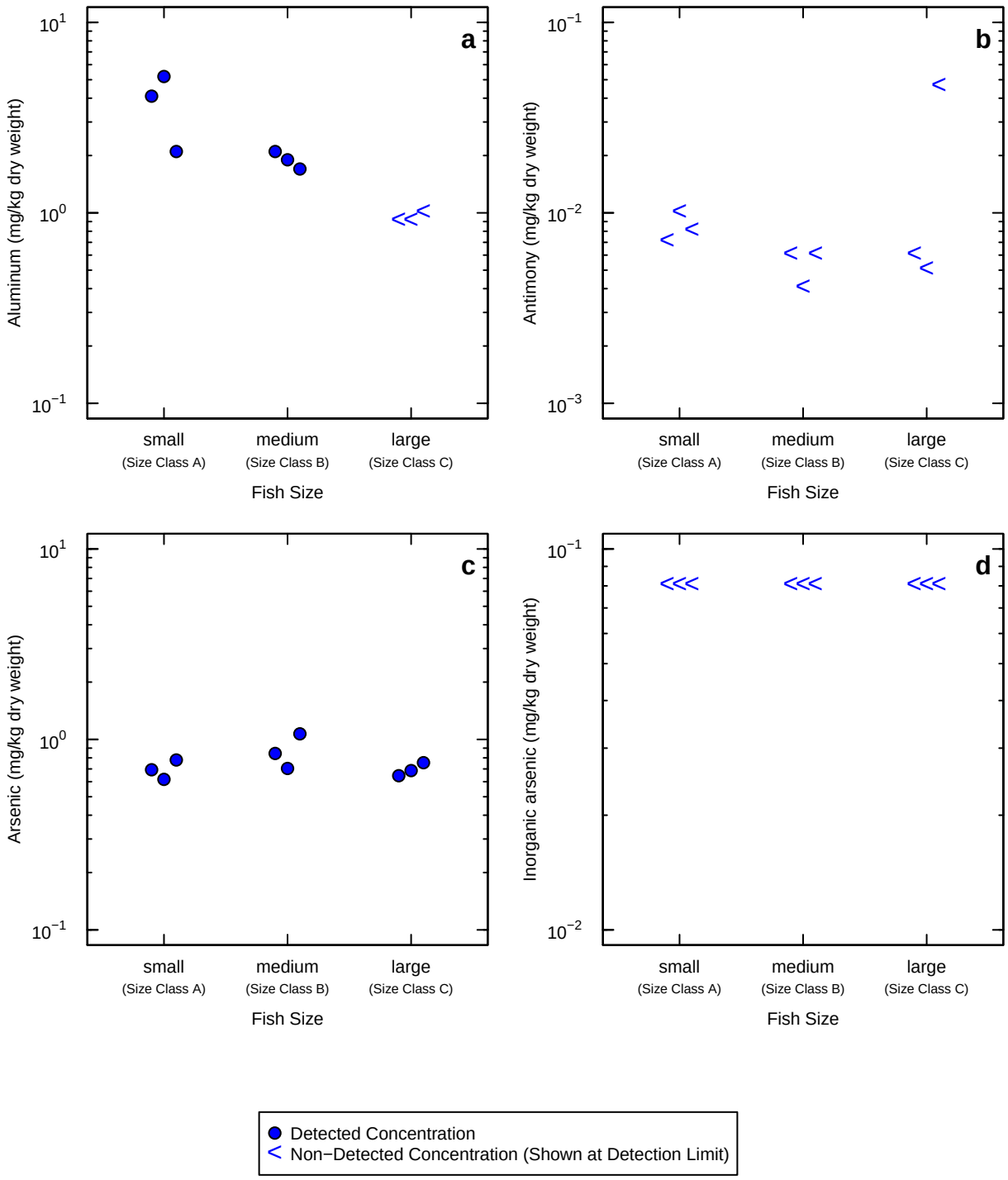


Figure 5−1a through d. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites

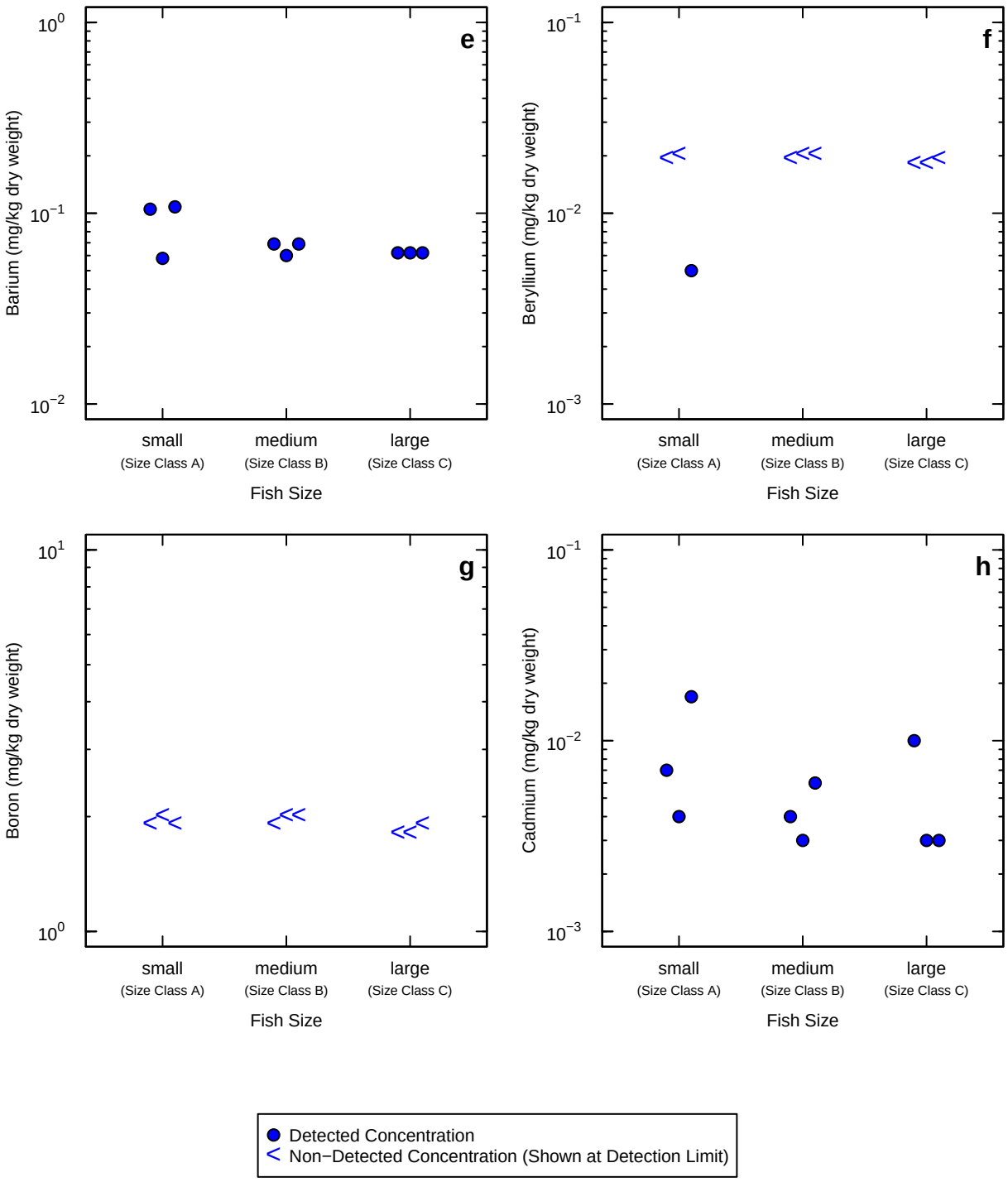


Figure 5−1e through h. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites

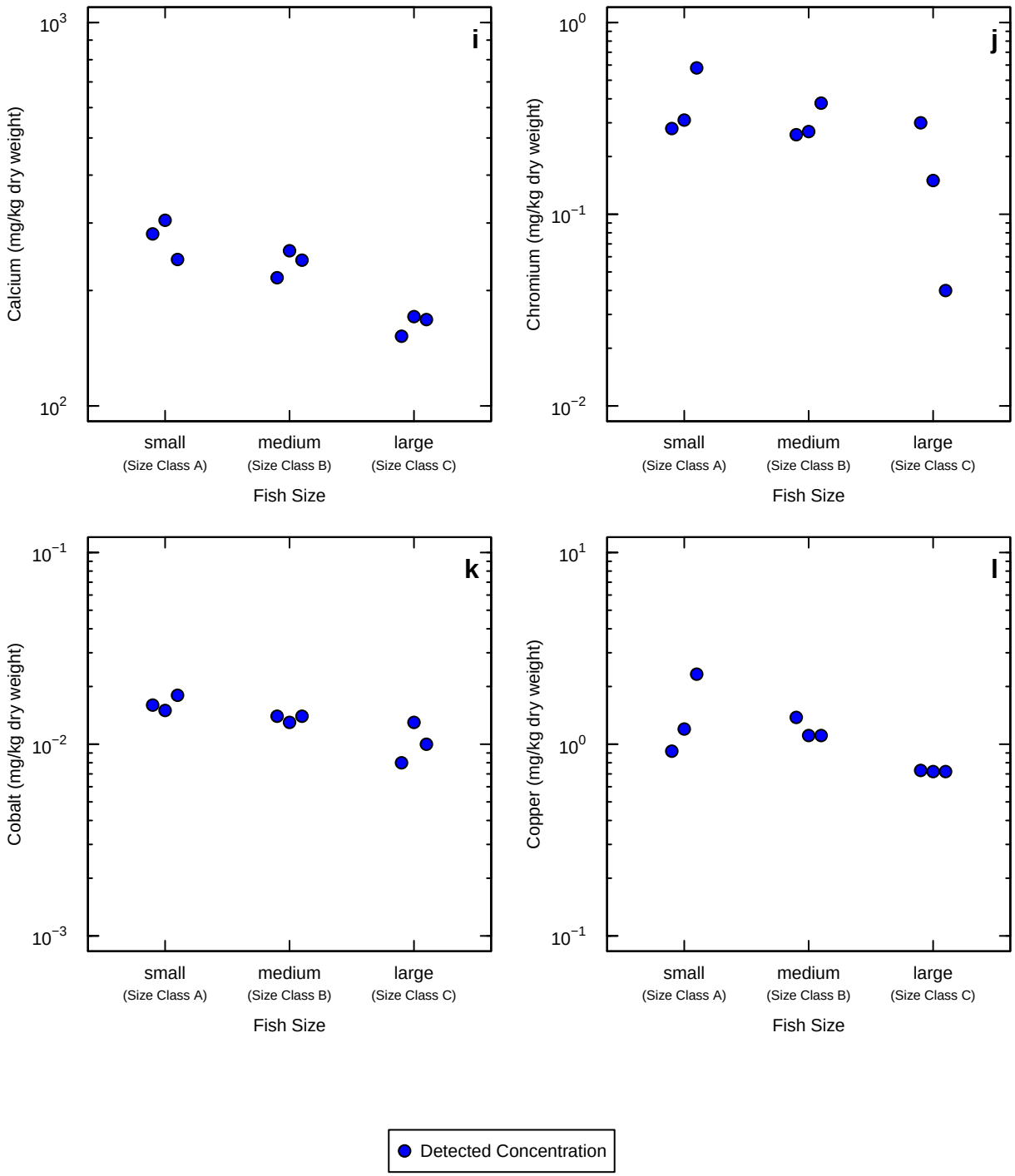


Figure 5−1i through l. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites

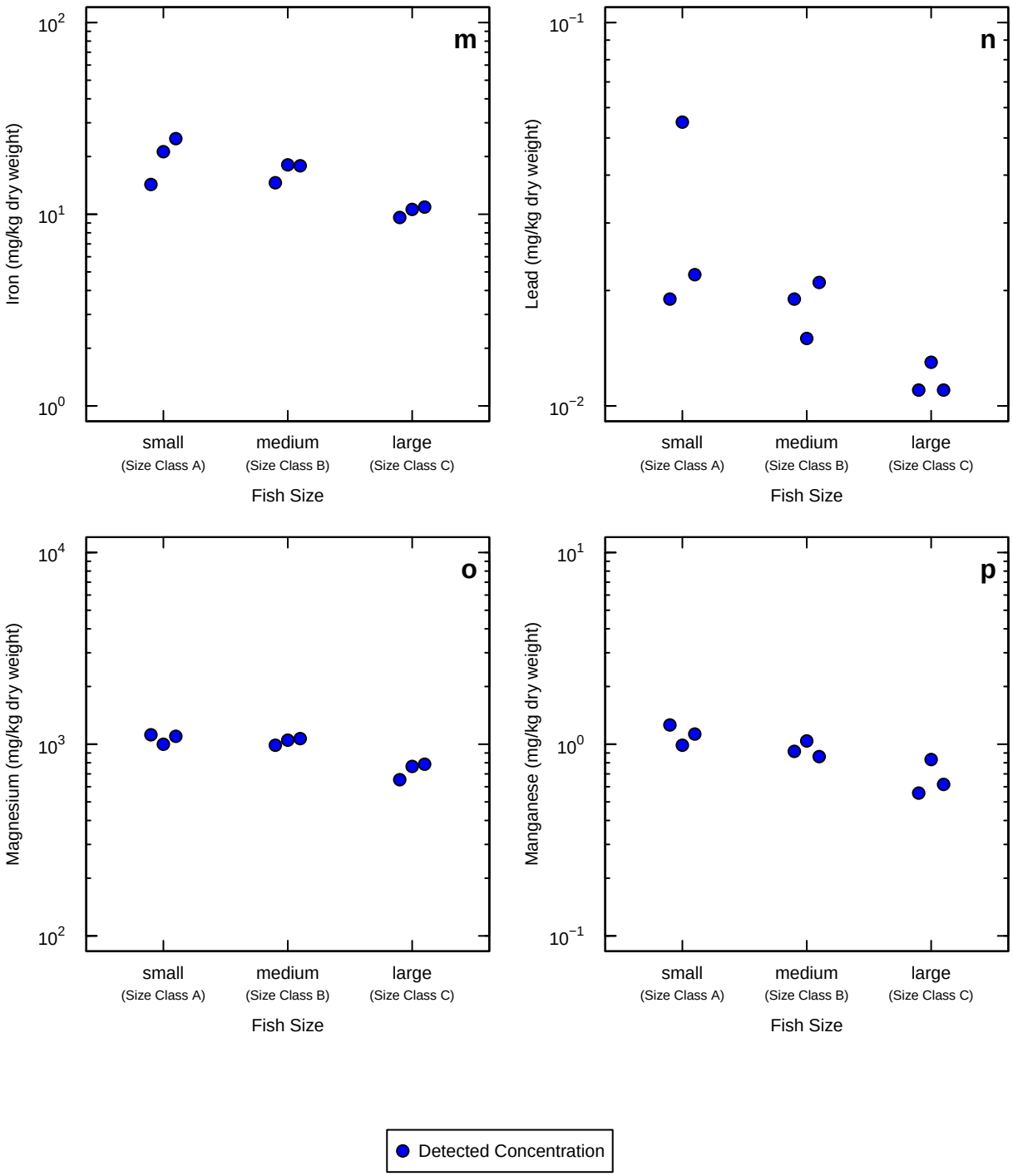


Figure 5−1m through p. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites

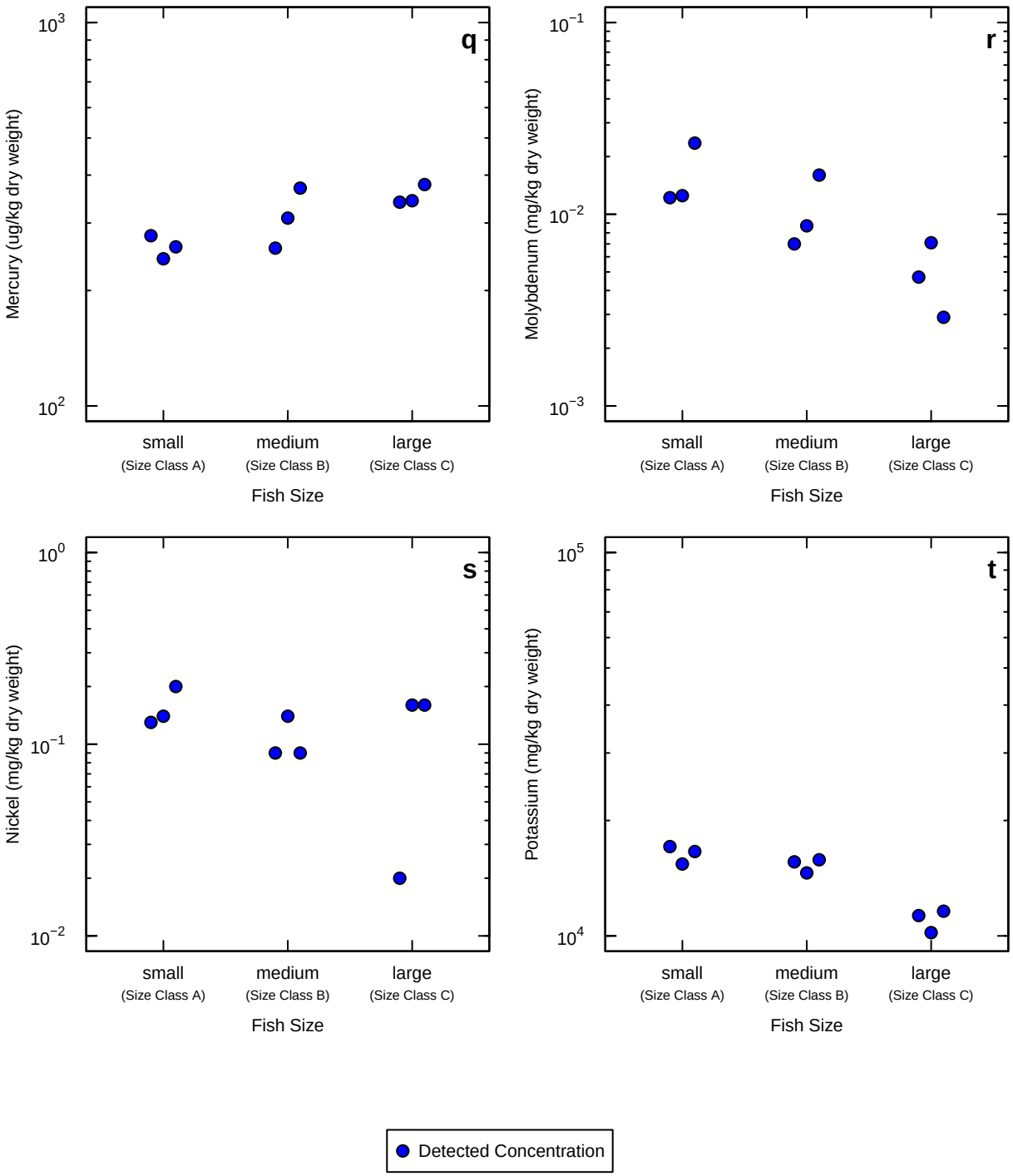


Figure 5−1q through t. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites

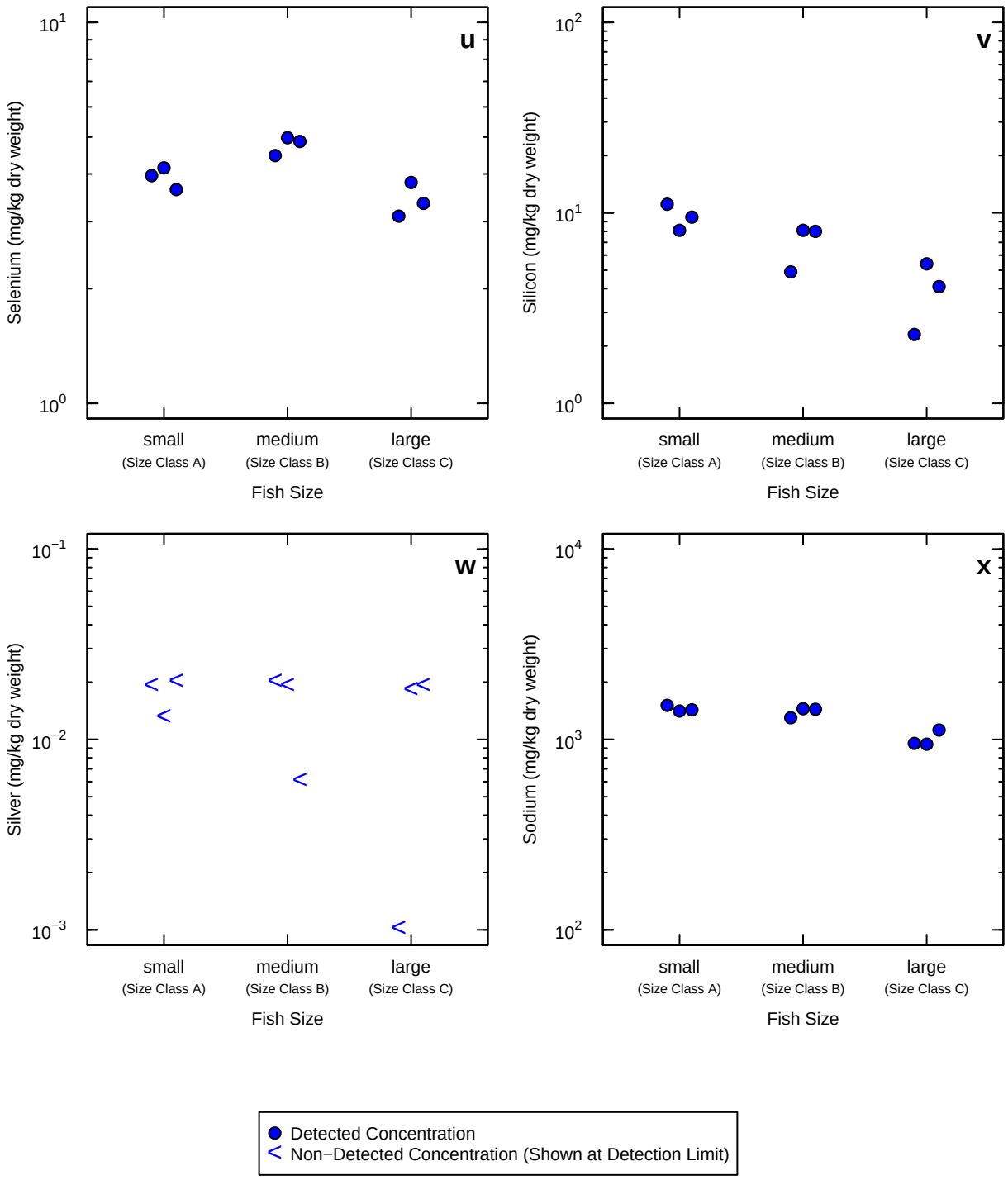


Figure 5−1u through x. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites

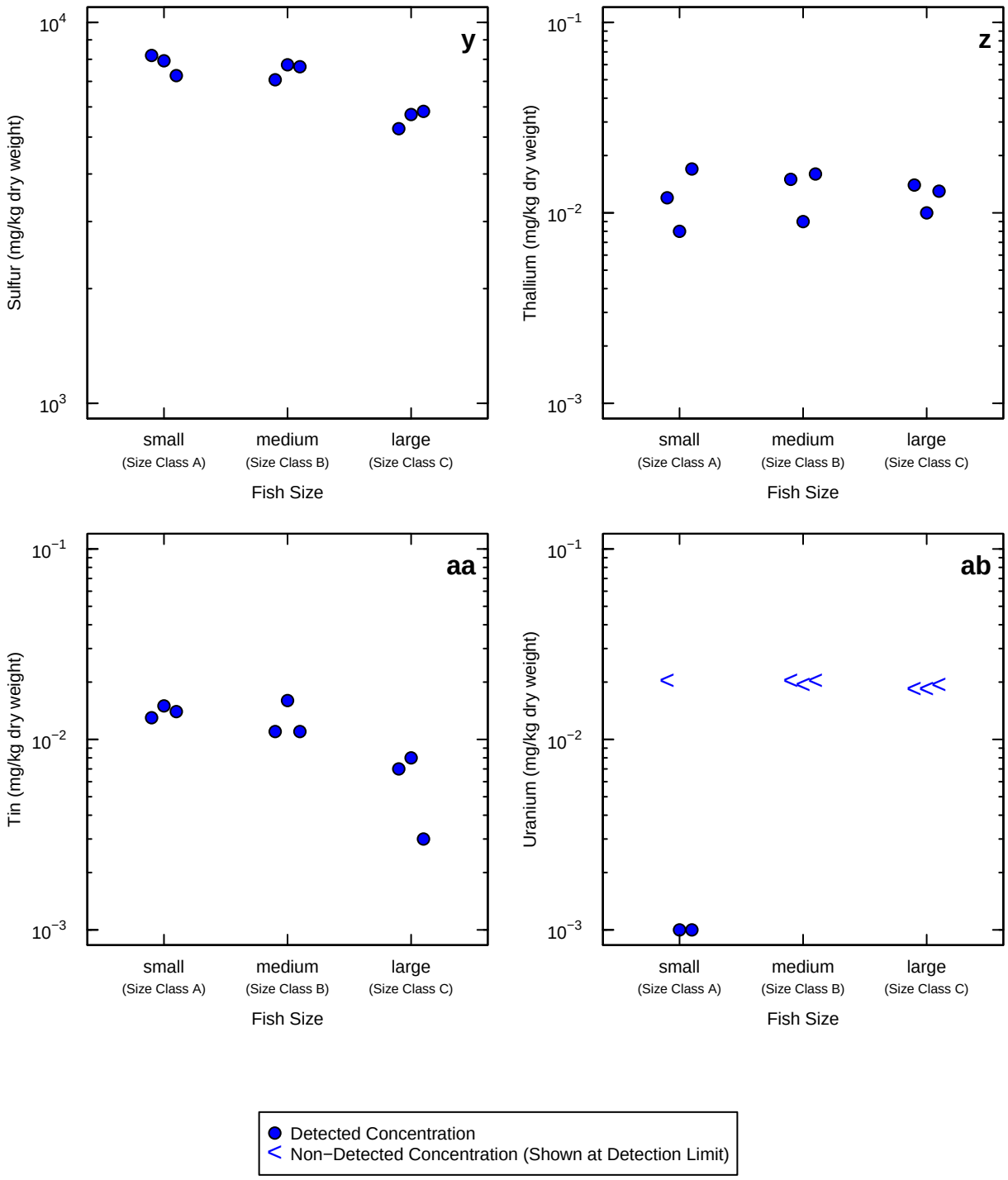
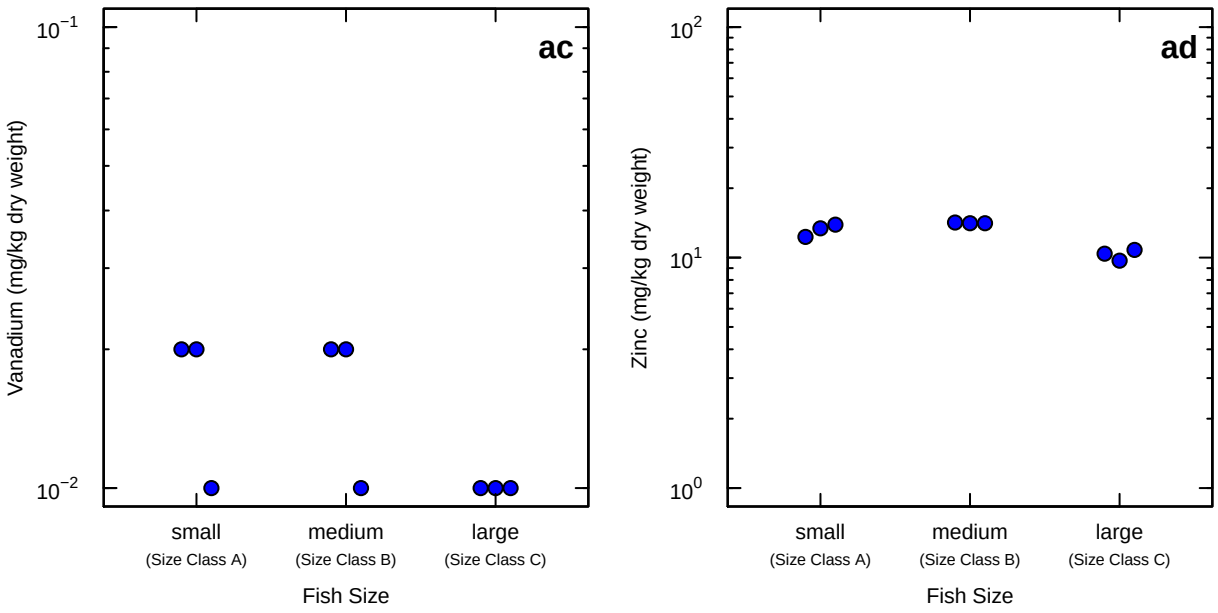


Figure 5−1y through ab. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites



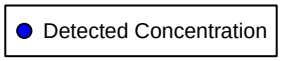


Figure 5−1ac through ad. Concentrations of Metals/Metalloids in White Sturgeon Fillet Composites

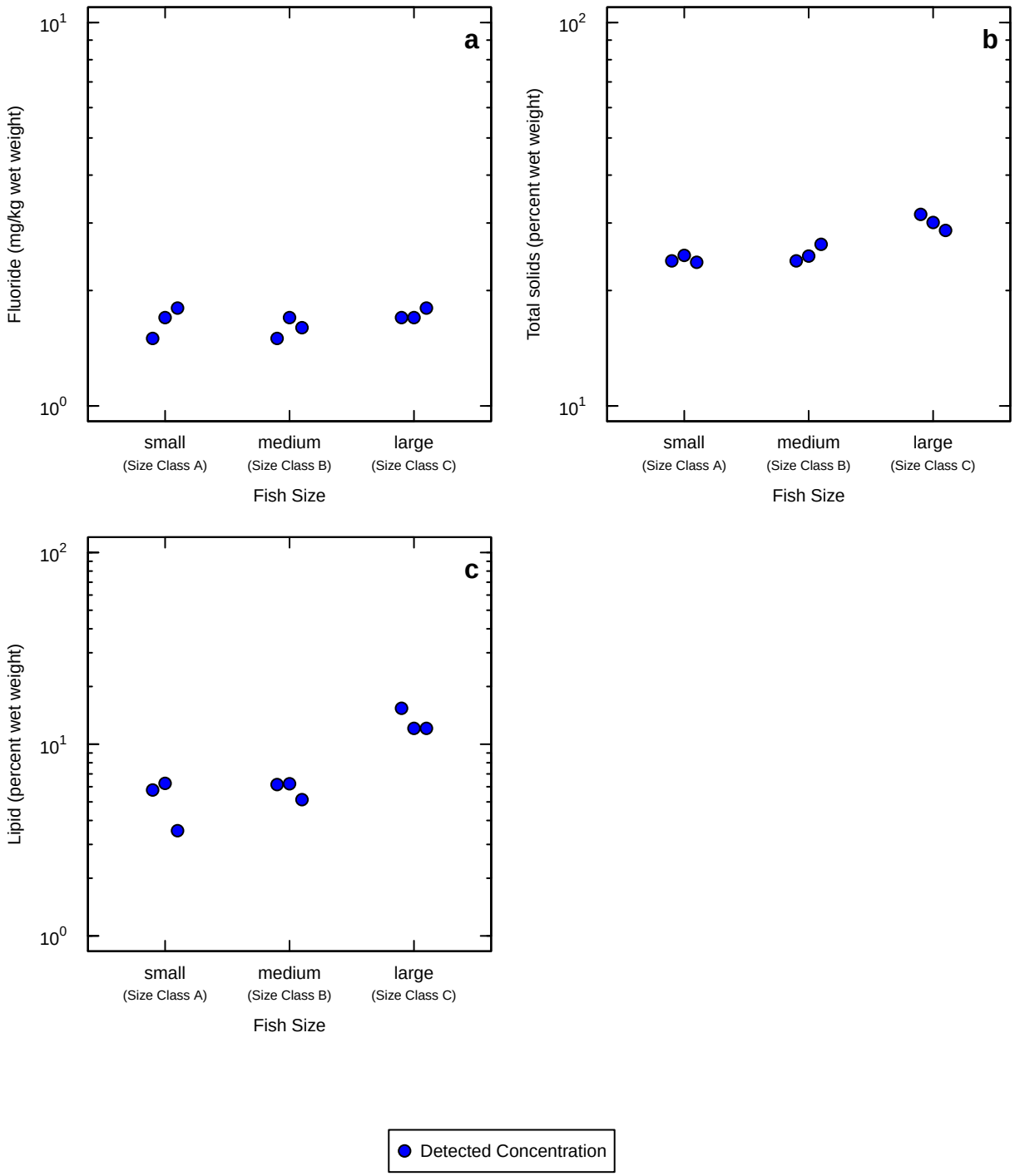


Figure 5−2a through c. Concentrations of Conventional Parameters in White Sturgeon Fillet Composites

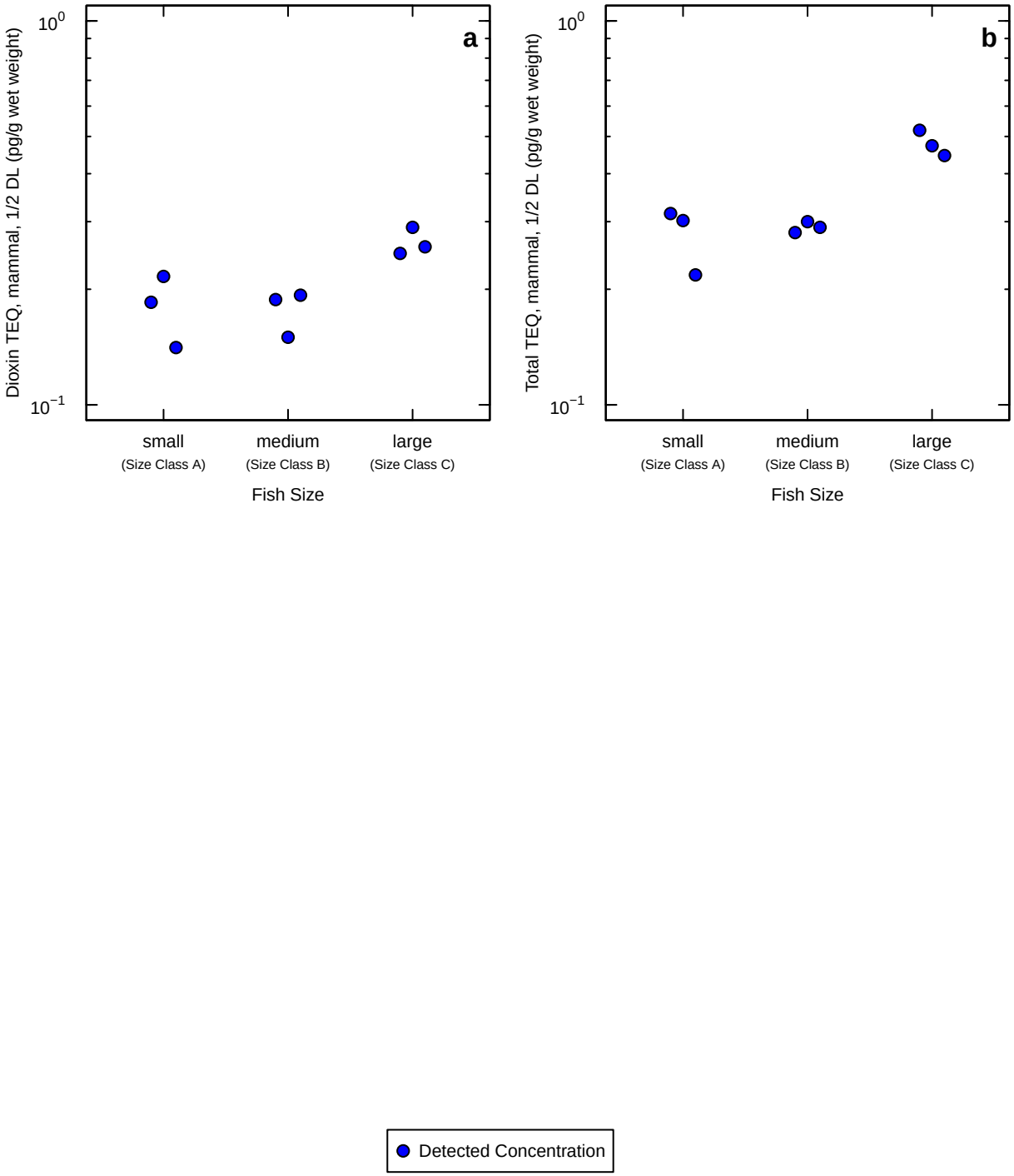


Figure 5−3a and b. Concentrations of Dioxins/Furans in White Sturgeon Fillet Composites

Notes: Dioxin TEQ was calculated by summing the products of the concentrations of each of the 17 individual dioxin/furan congeners and its specific TEF from Van den Berg et al. (2006). Total TEQ was calculated by summing the products of the concentrations of each of the 17 individual dioxin/furan congeners and the 12 individual dioxin−like PCB congeners and its specific TEF from Van den Berg et al. (2006). Congeners that were undetected for a given sample were assigned a value equal to one−half the sample−specific detection limit (DL) for use in the TEQ calculation.

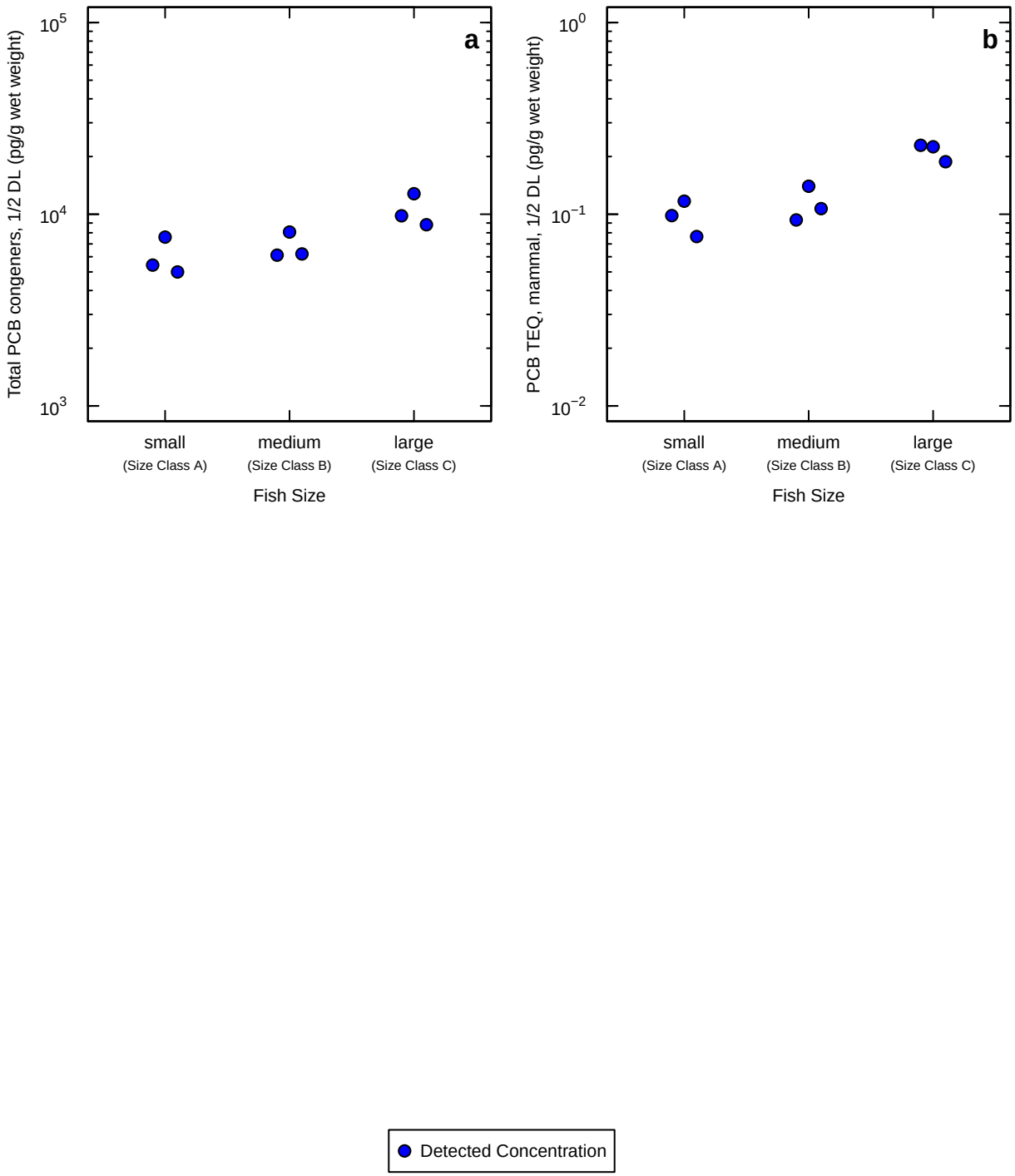


Figure 5−4a and b. Concentrations of Polychlorinated Biphenyls in White Sturgeon Fillet Composites

Notes: PCB TEQ was calculated by summing the products of the concentrations of each of the 12 individual dioxin−like PCB congeners and its specific TEF from Van den Berg et al. (2006). Congeners that were undetected for a given sample were assigned a value equal to one−half the sample−specific detection limit (DL) for use in the TEQ calculation.

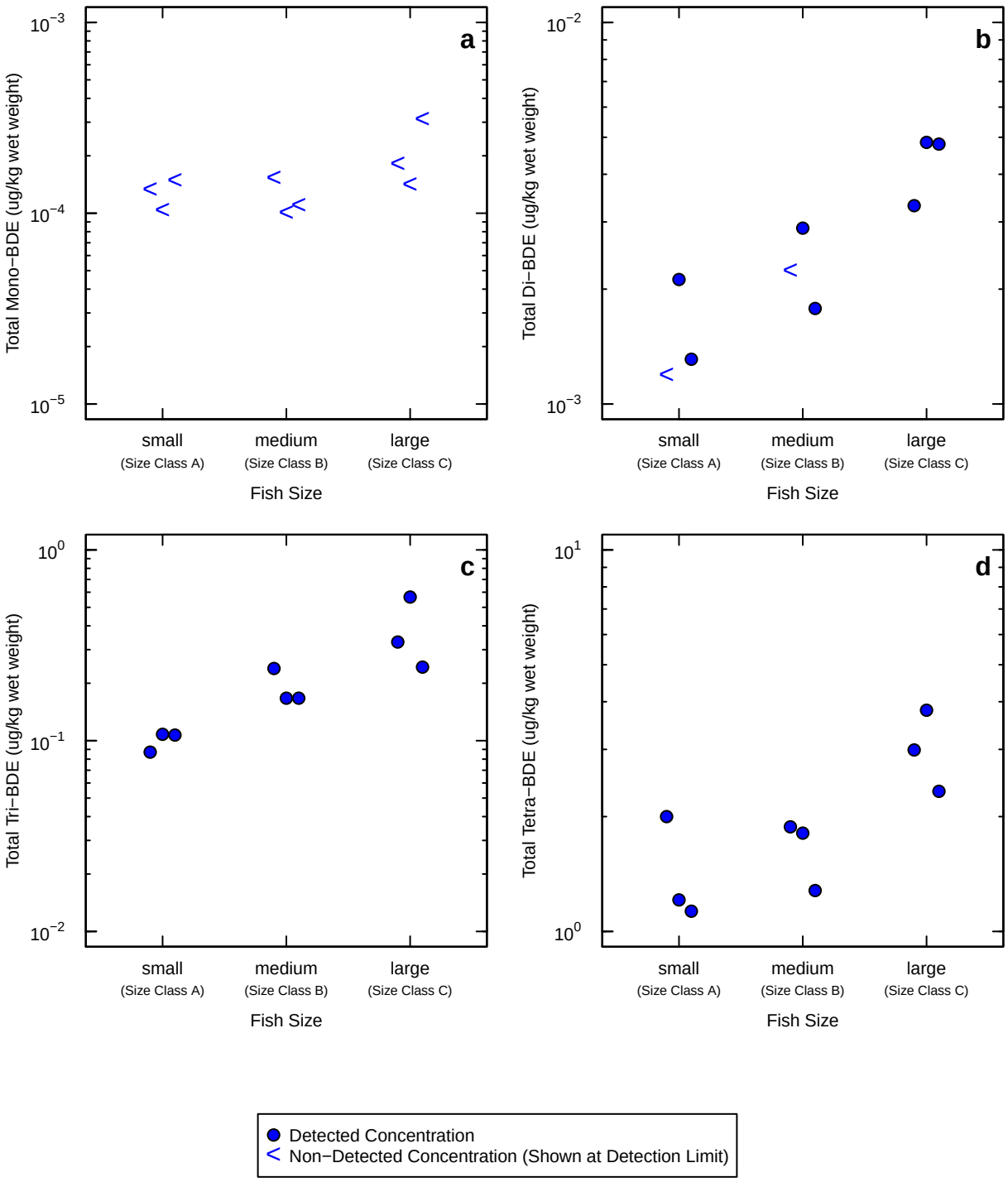


Figure 5−5a through d. Concentrations of Polybrominated Diphenylethers in White Sturgeon Fillet Composites

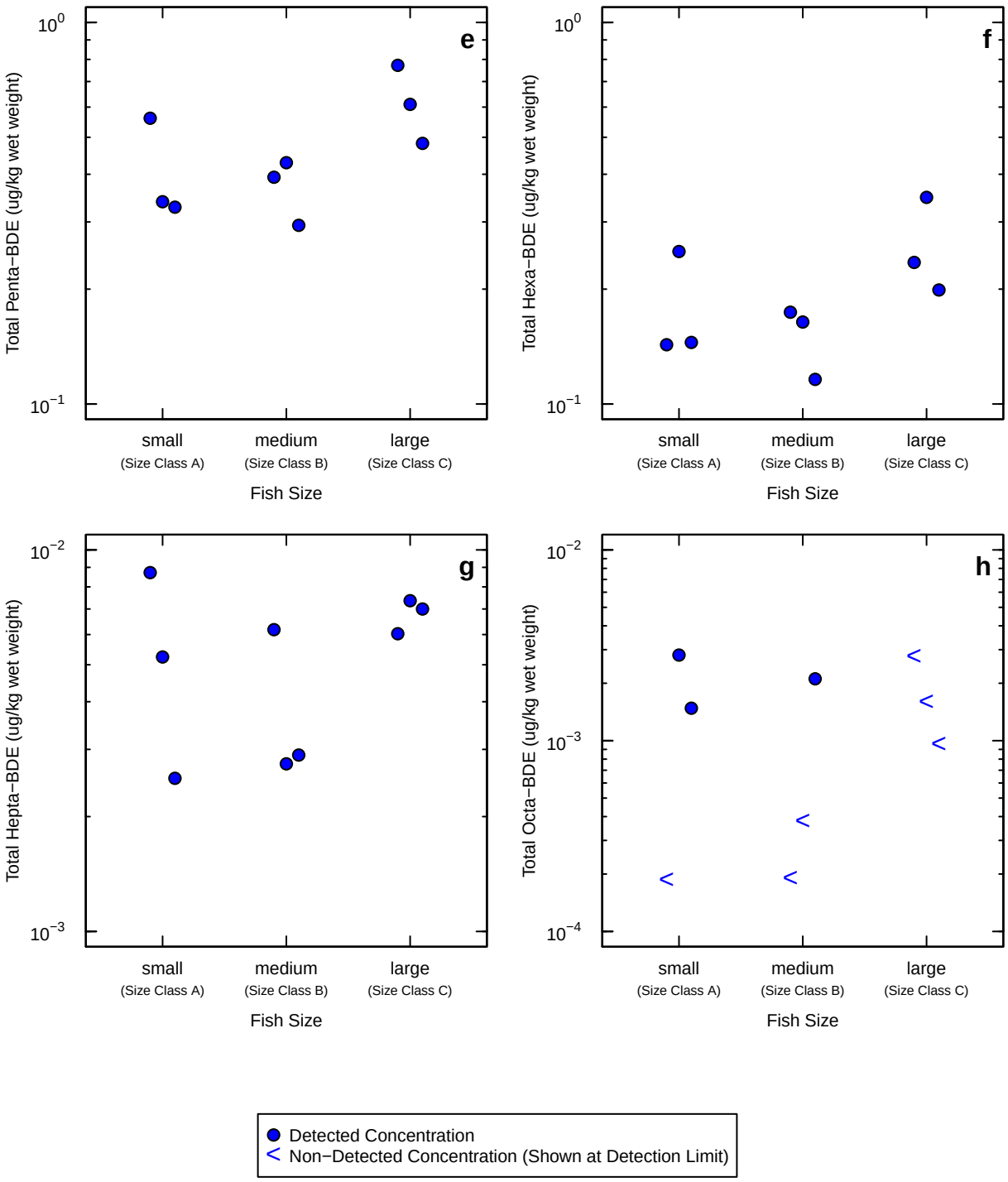


Figure 5−5e through h. Concentrations of Polybrominated Diphenylethers in White Sturgeon Fillet Composites

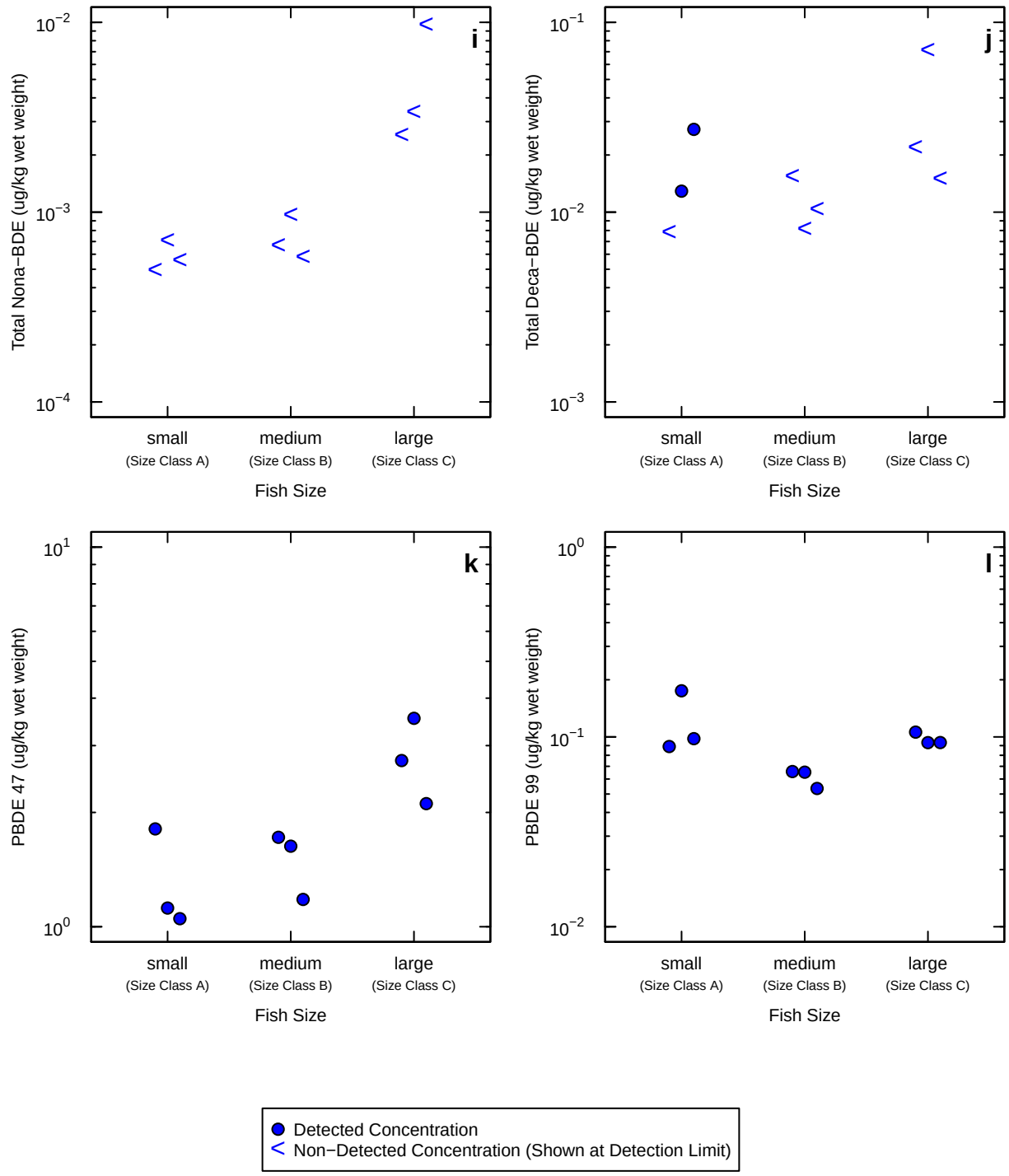


Figure 5−5i through l. Concentrations of Polybrominated Diphenylethers in White Sturgeon Fillet Composites

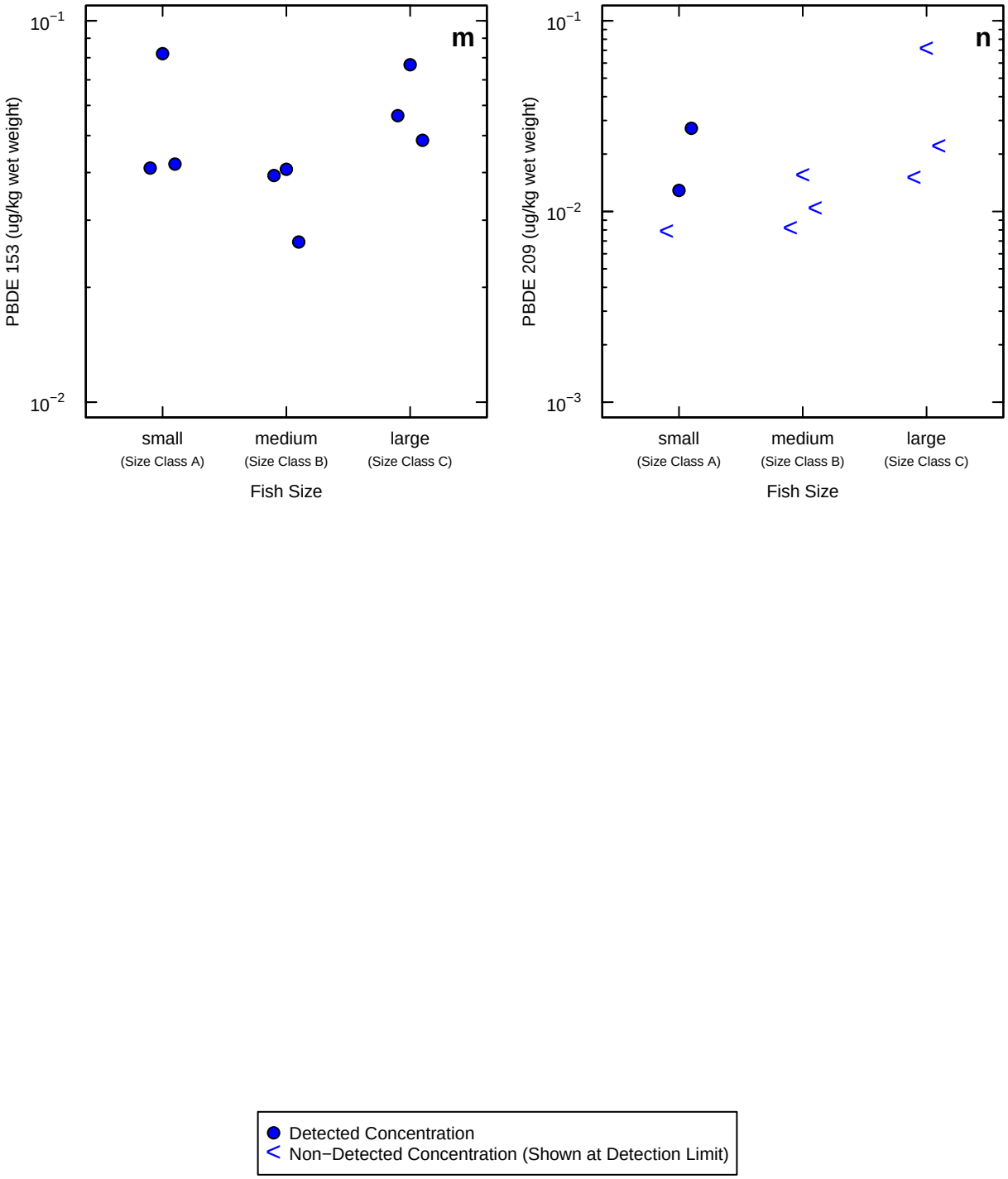
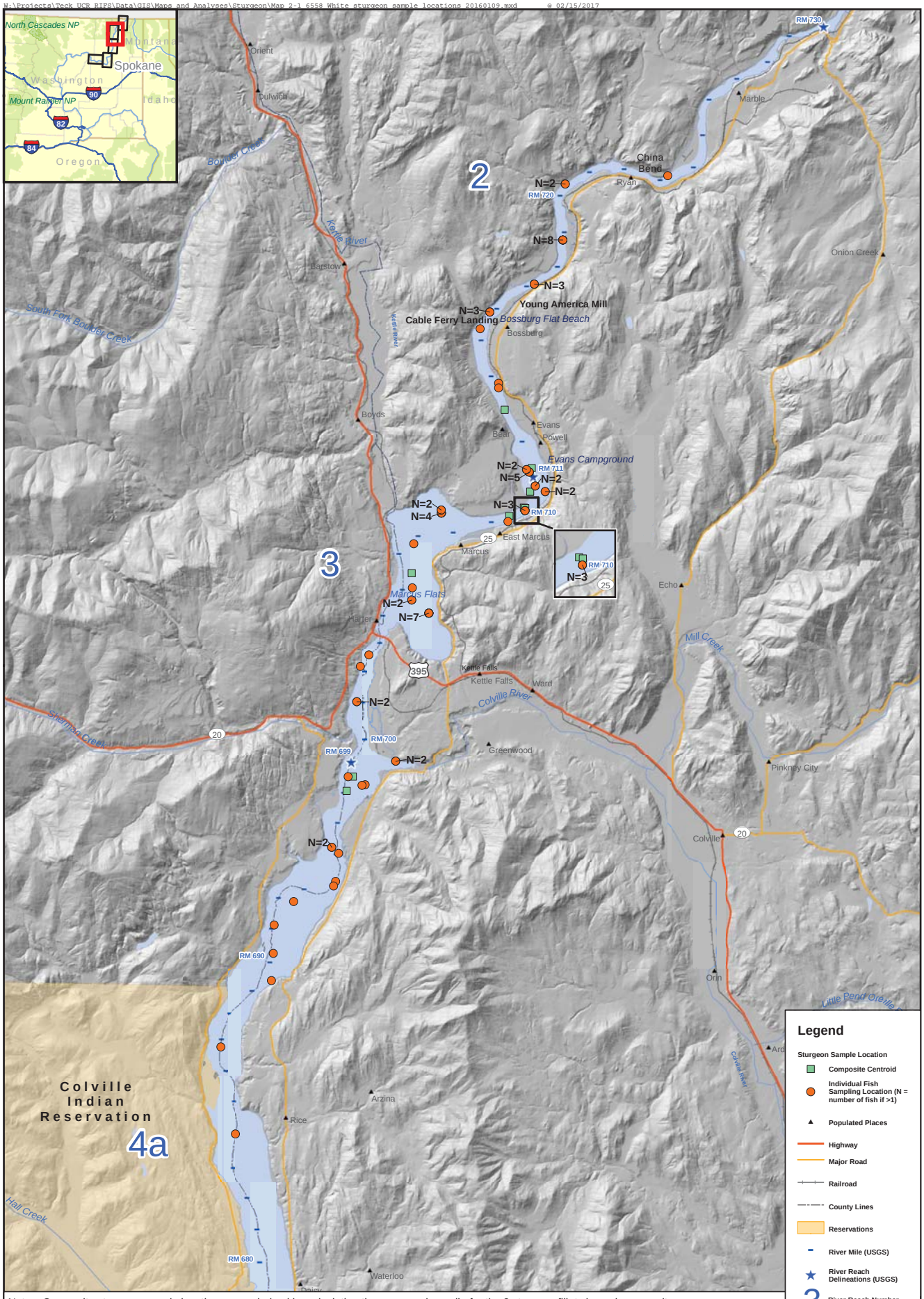


Figure 5−5m through n. Concentrations of Polybrominated Diphenylethers in White Sturgeon Fillet Composites

Maps



Notes: Composite sturgeon sample locations were derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.

Windward environmental LLC

Km
0 1.75 3.5
Miles
0 1.75 3.5
N

Map 2-1. **Sturgeon Tissue Study Sample Locations**
Upper Columbia River, WA

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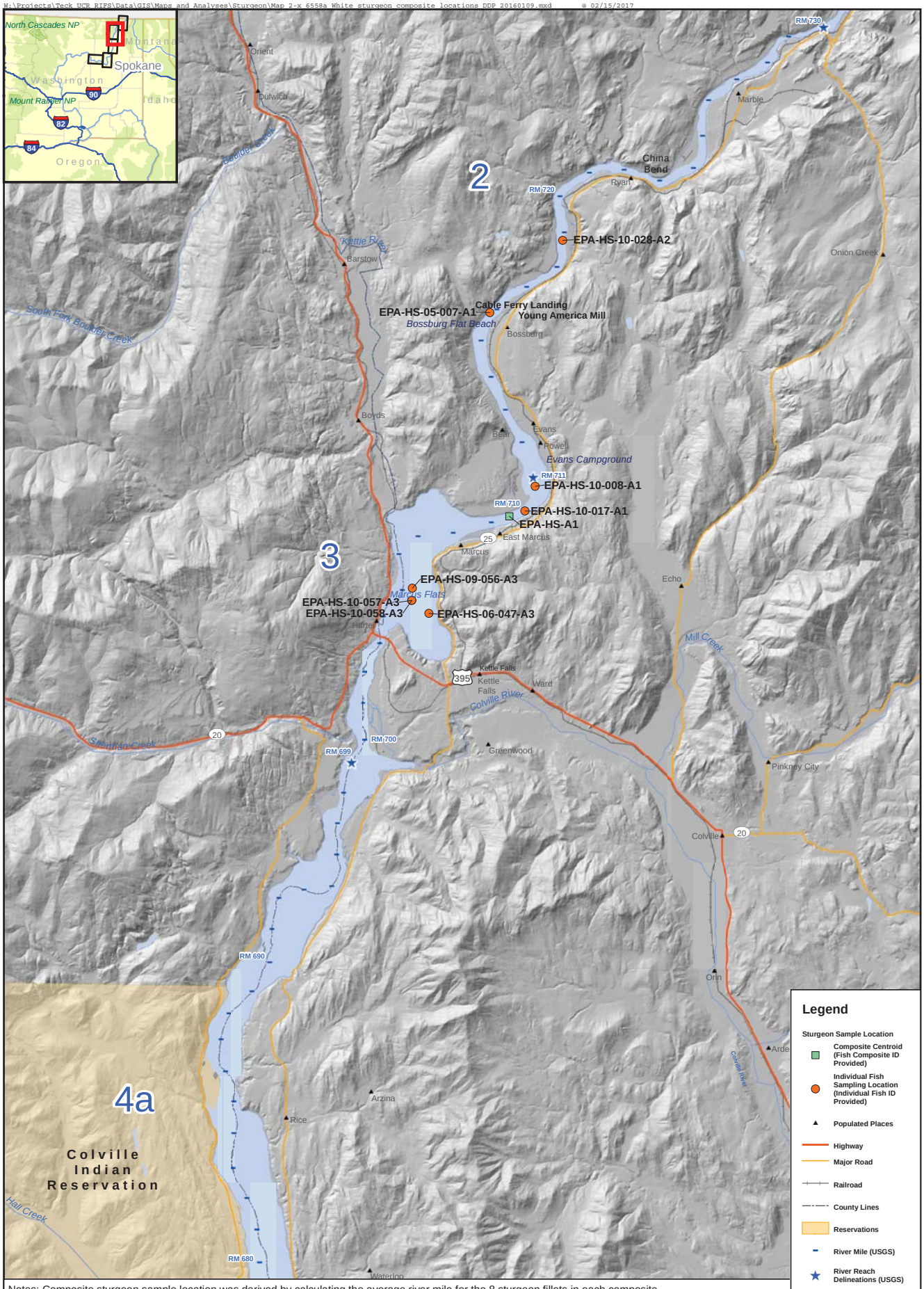
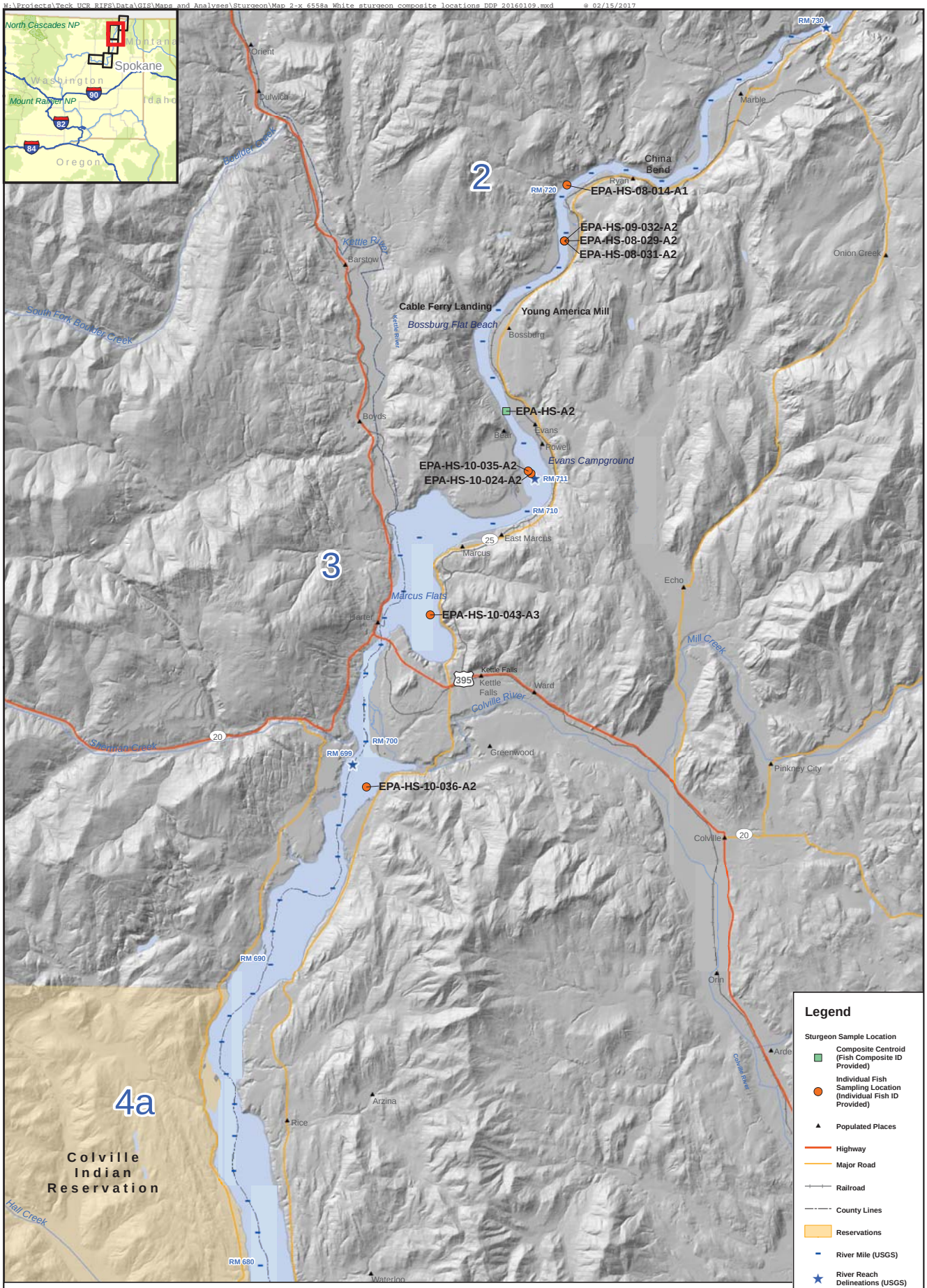


Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite A1 represents replicate 1 of the fillet composites for the small size class (A – 50 to 97 cm).

Windward environmental LLC

Km 0 1.75 3.5
Miles 0 1.75 3.5
N

Map 2-2. **Sturgeon Tissue Study Composite A1 Locations**
Upper Columbia River, WA



Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite A2 represents replicate 2 of the fillet composites for the small size class (A – 50 to 97 cm).

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Map 2-3. **Sturgeon Tissue Study Composite A2 Locations**
Upper Columbia River, WA

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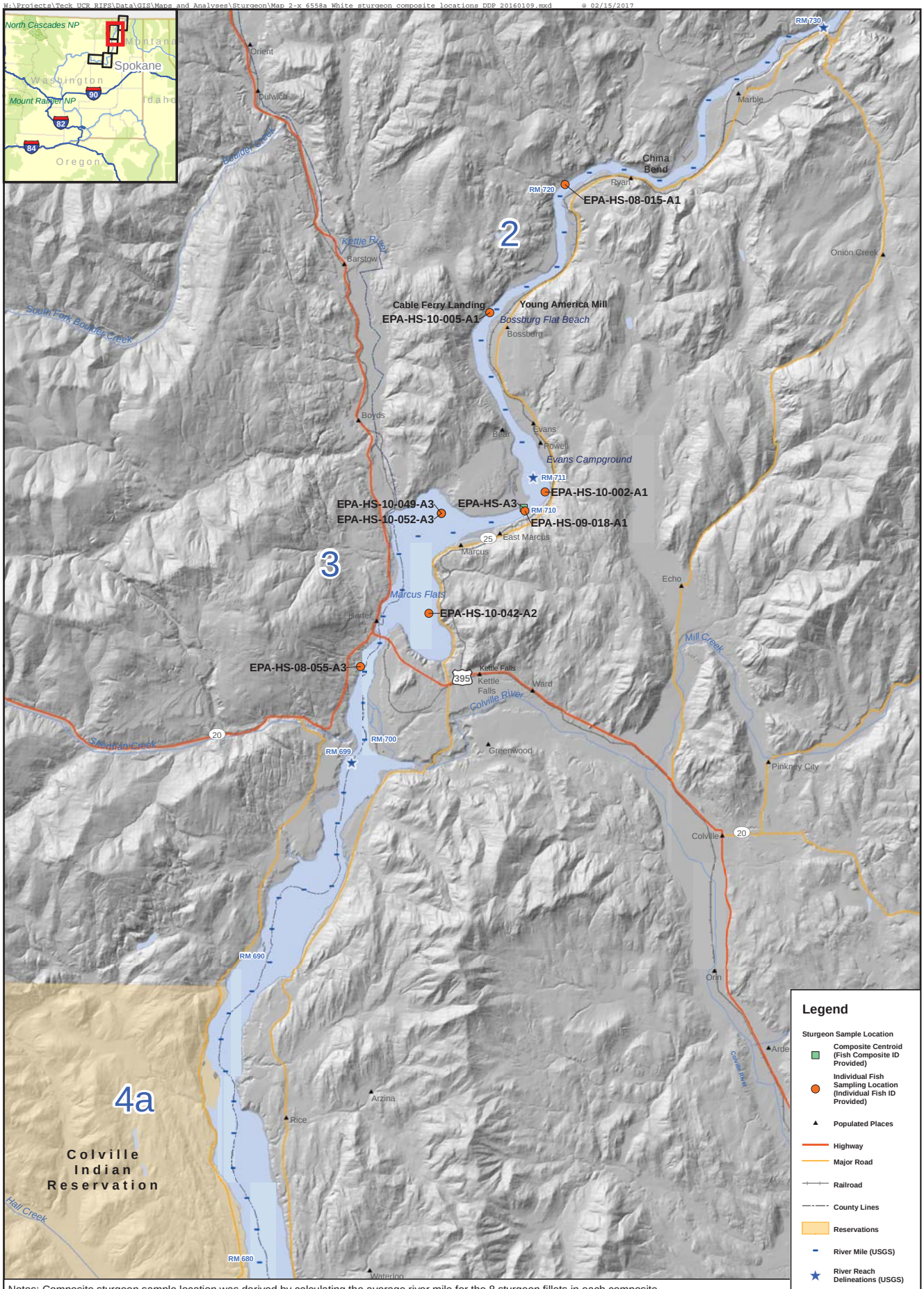

Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite A3 represents replicate 3 of the fillet composites for the small size class (A – 50 to 97 cm).

Windward environmental LLC

Km 0 1.75 3.5
Miles 0 1.75 3.5
N

Map 2-4. **Sturgeon Tissue Study Composite A3 Locations**
Upper Columbia River, WA

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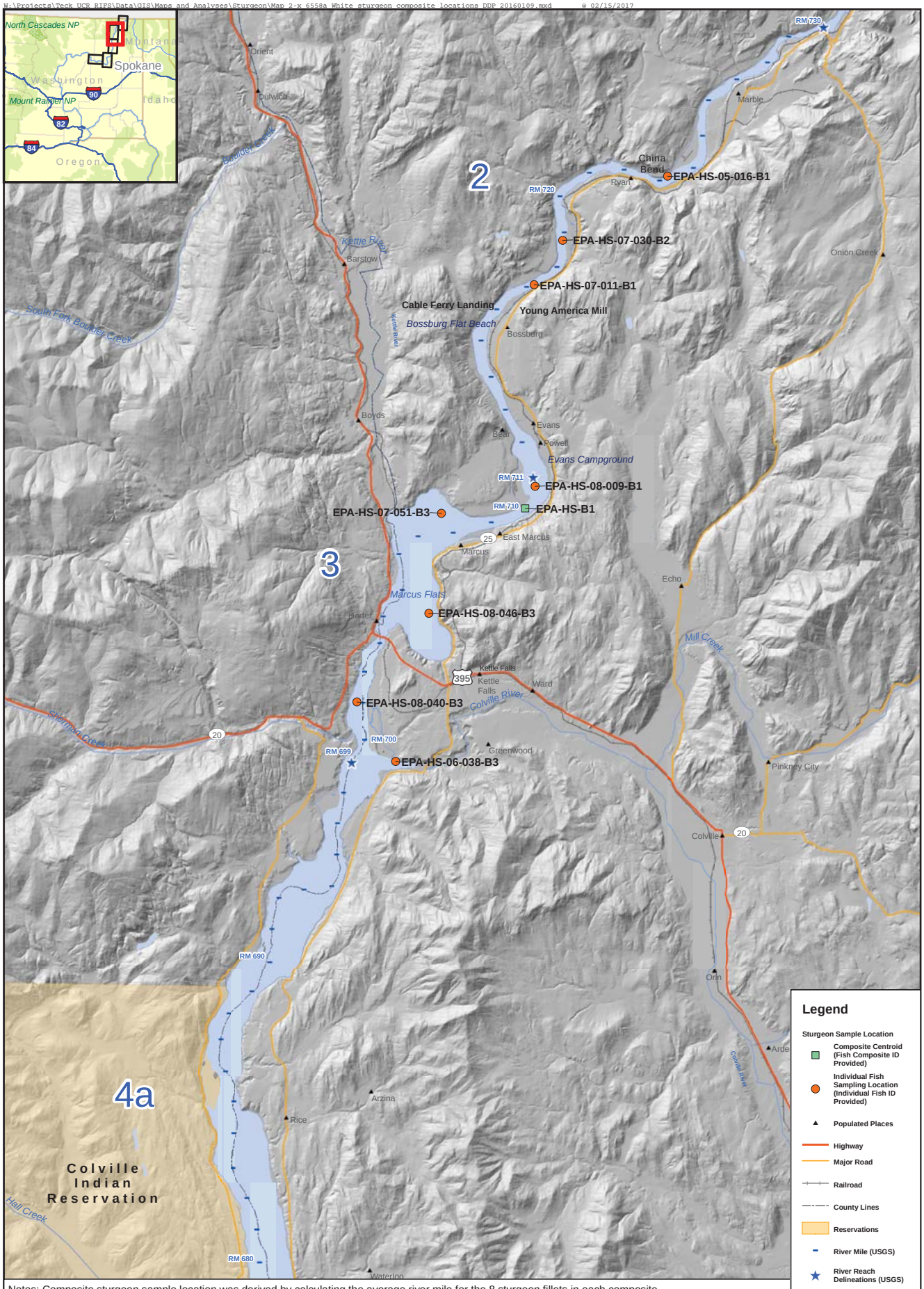

Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite B1 represents replicate 1 of the fillet composites for the medium size class (B – 98 to 137 cm).

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Map 2-5. **Sturgeon Tissue Study Composite B1 Locations**
Upper Columbia River, WA

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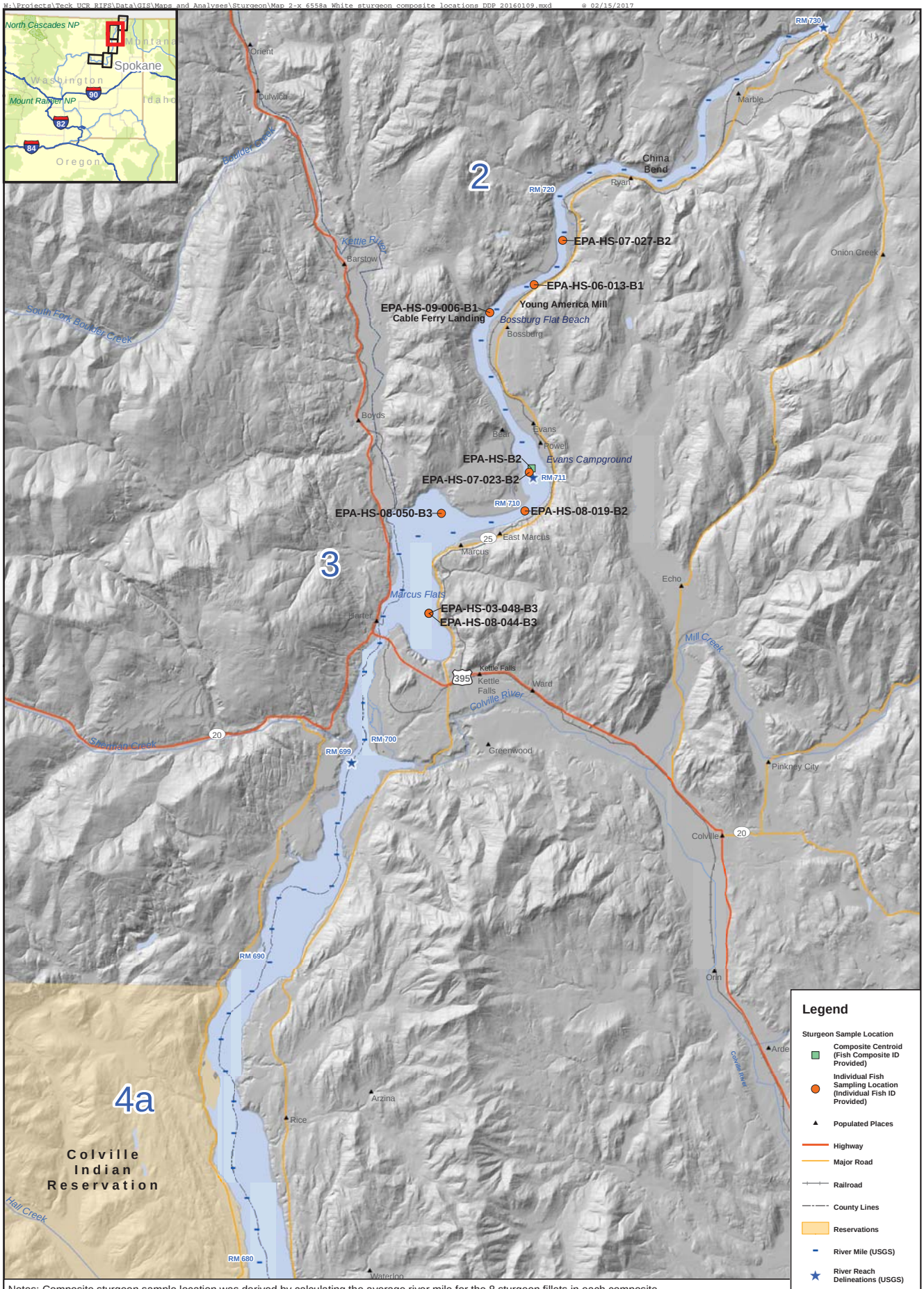

Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite B2 represents replicate 2 of the fillet composites for the medium size class (B – 98 to 137 cm).

Windward environmental LLC

Km 0 1.75 3.5
Miles 0 1.75 3.5
N

Map 2-6. **Sturgeon Tissue Study Composite B2 Locations**
Upper Columbia River, WA

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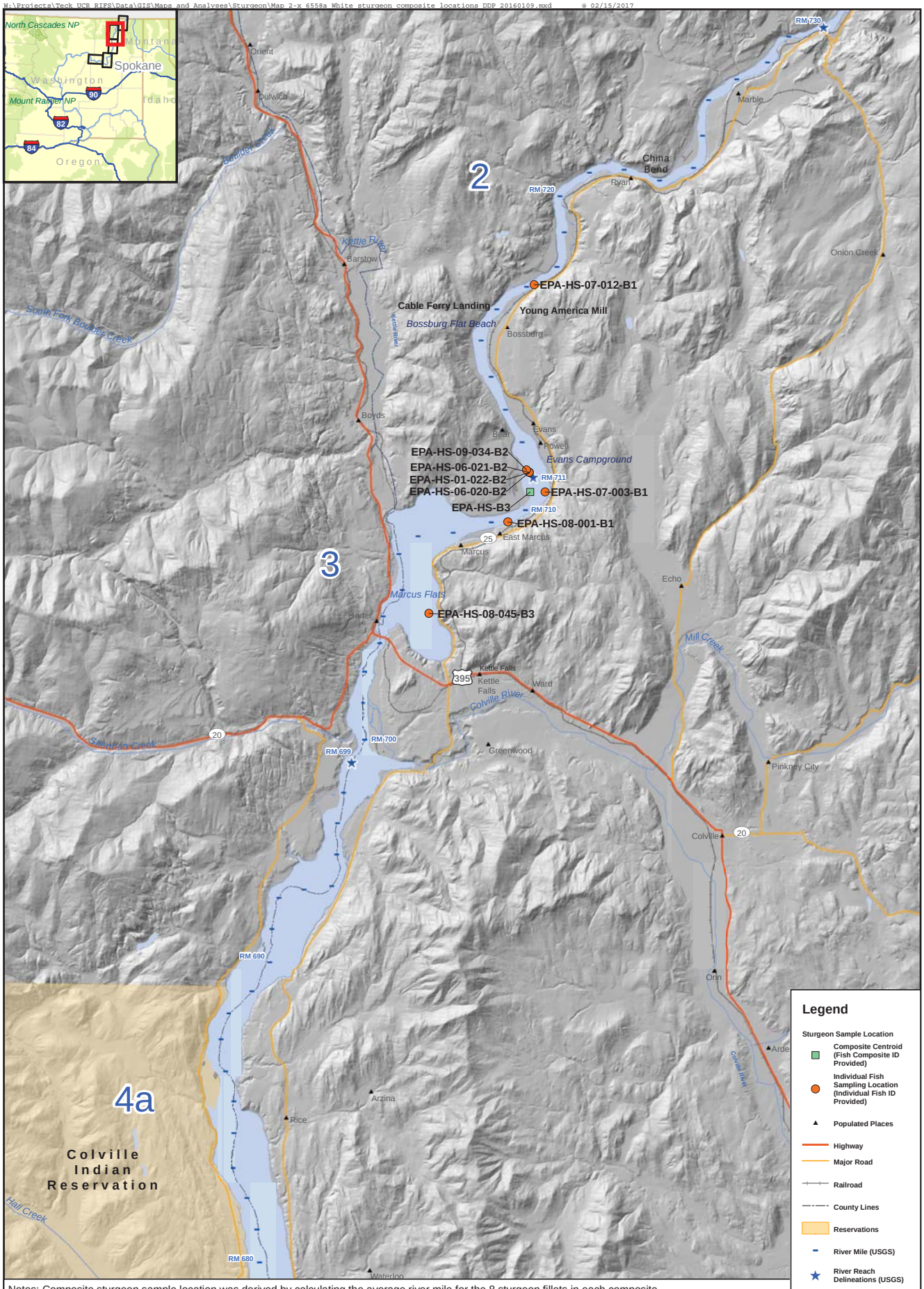


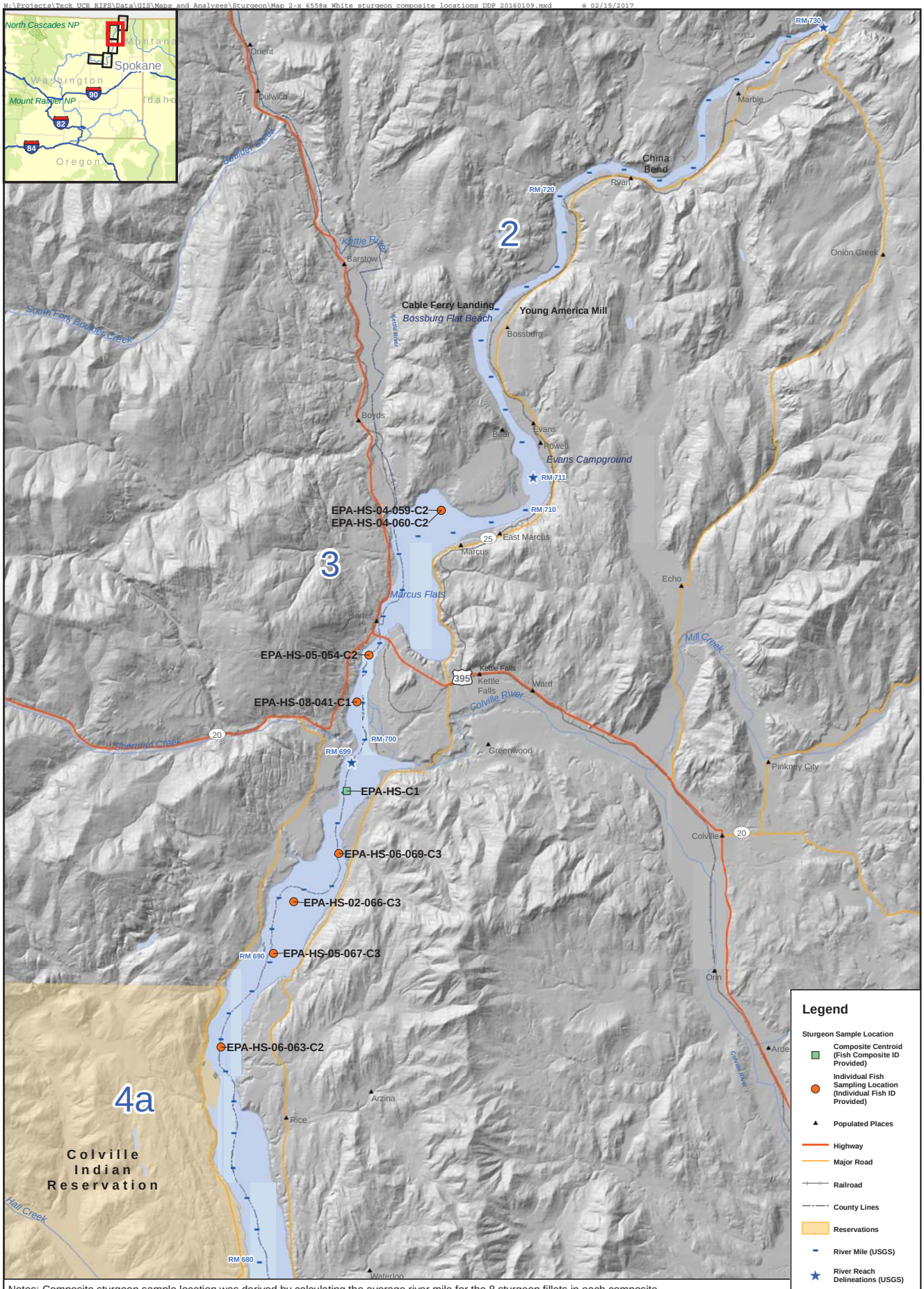
Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite B3 represents replicate 3 of the fillet composites for the medium size class (B – 98 to 137 cm).

Windward environmental LLC

0 1.75 3.5 Km
0 1.75 3.5 Miles
N

Map 2-7. **Sturgeon Tissue Study Composite B3 Locations**
Upper Columbia River, WA

W:\Projects\Teck_UCR_RIFS\Data\GIS\Maps and Analyses\Sturgeon\Map 2-x 6558a White sturgeon composite locations DDP 20160109.mxd 02/15/2017

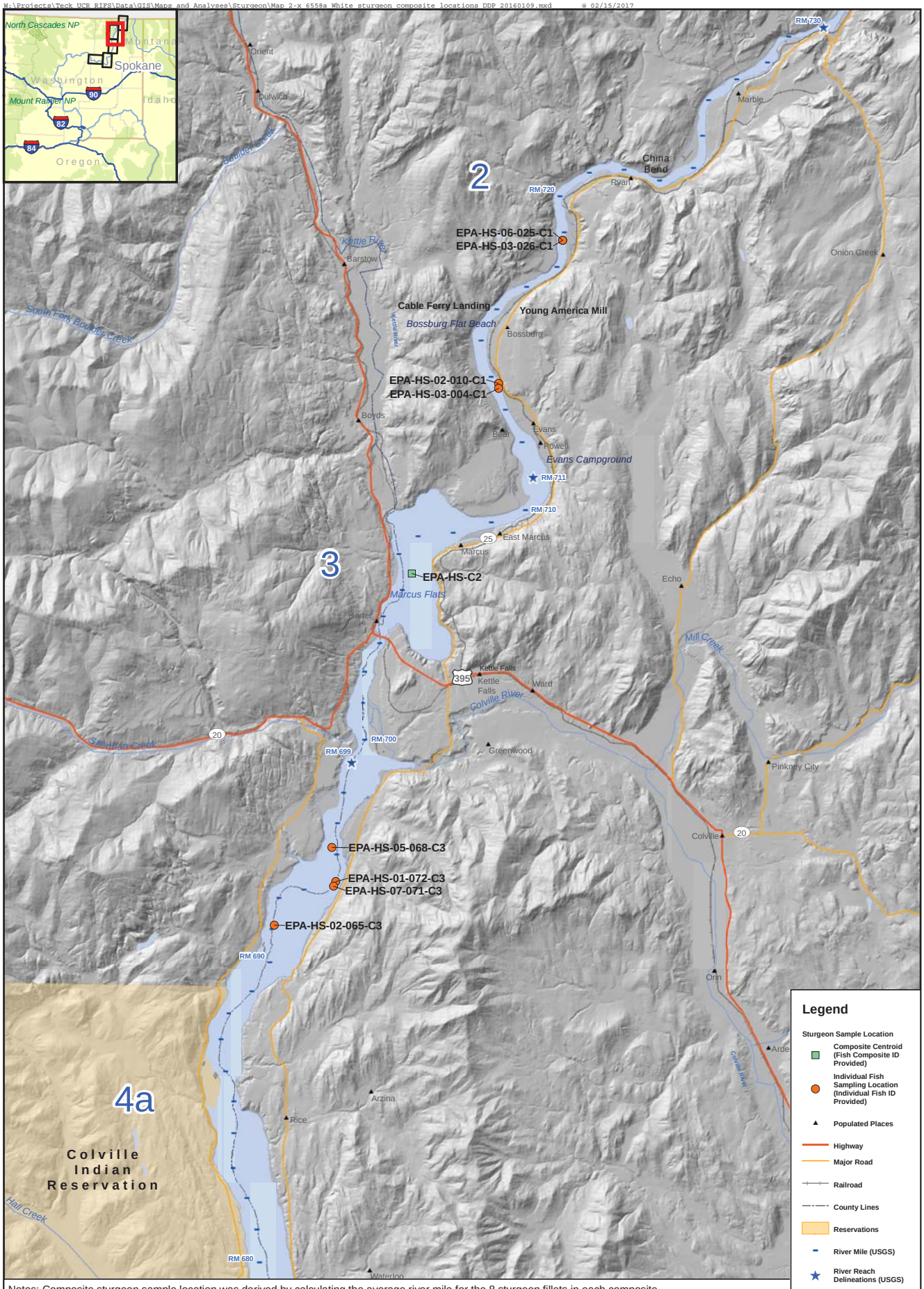


Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite C1 represents replicate 1 of the fillet composites for the large size class (C – 138 to 160 cm).

Windward environmental LLC

Km 0 1.75 3.5
Miles 0 1.75 3.5
N

Map 2-8. **Sturgeon Tissue Study Composite C1 Locations**
Upper Columbia River, WA

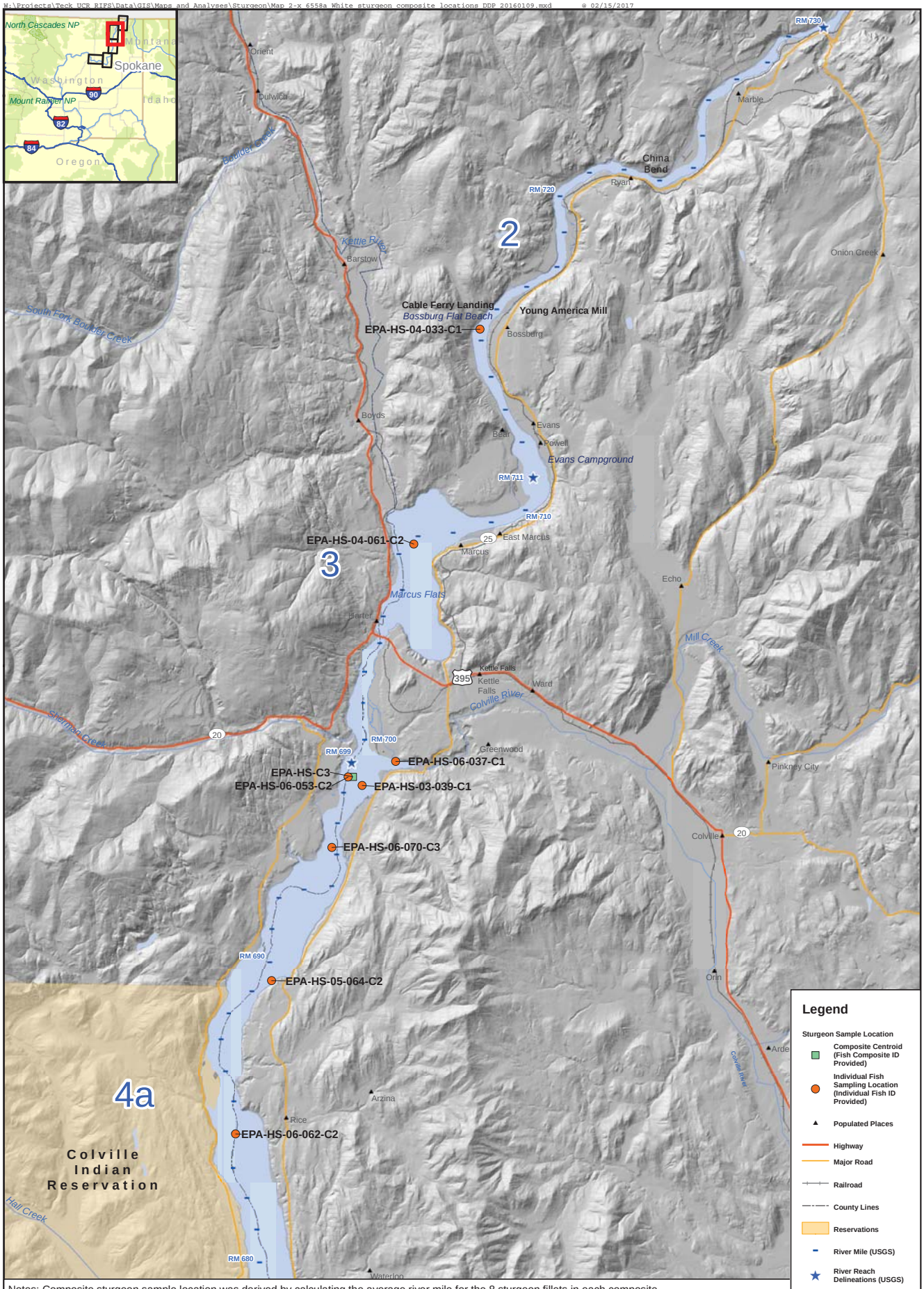


Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite C2 represents replicate 2 of the fillet composites for the large size class (C – 138 to 160 cm).

Windward environmental LLC

Map 2-9. **Sturgeon Tissue Study Composite C2 Locations**
Upper Columbia River, WA

W:\Projects\Teck_UCR_RIFS\Data\GIS\Maps and Analyses\Sturgeon\Map 2-x 6558a White sturgeon composite locations DDP 20160109.mxd @ 02/15/2017



Notes: Composite sturgeon sample location was derived by calculating the average river mile for the 8 sturgeon fillets in each composite.
Reach 4 is divided into two segments: 4a from RM 676 to 699 and 4b from RM 640 to 676.
Composite C3 represents replicate 3 of the fillet composites for the large size class (C – 138 to 160 cm).

Windward environmental LLC

0 1.75 3.5 Km
0 1.75 3.5 Miles
N

Map 2-10. **Sturgeon Tissue Study Composite C3 Locations**
Upper Columbia River, WA

TABLES

Table 2-1. Target Analyte List, Method Detection and Reporting Limits, and Analytical Concentration Goals[a]

Analyte	RBC	MRL	MDL	2016 ACG
Conventional Parameters				
Total Length	na	na	na	na
Total Mass	na	na	na	na
Percent Moisture	na	0.1	na	0.1
Percent Lipids	na	0.1	na	0.1
Metals/Metalloids (mg/kg-dw)				
Aluminum	13.6	2	0.2	13.6
Antimony	0.0056	0.05	0.002	0.05
Arsenic - Total	0.00226	0.5	0.02	0.5
Arsenic - Total inorganic	0.00226	0.02	0.007	0.02
Barium	2.72	0.05	0.005	2.72
Beryllium	0.0272	0.02	0.003	0.0272
Boron	2.72	2	0.2	2.72
Cadmium	0.0136	0.02	0.002	0.02
Calcium	na	4	2	4
Chromium	20.32	0.2	0.02	20.32
Cobalt	0.004	0.02	0.003	0.02
Copper	0.56	0.1	0.02	0.56
Fluoride (mg/kg-ww)[b]	0.56	1	0.2	1
Iron	9.6	1	0.2	9.6
Lead	na	0.02	0.0005	0.02
Magnesium	na	2	0.6	2
Manganese	1.88	0.05	0.008	1.88
Mercury	0.001	0.001	0.00008	0.001
Molybdenum	0.068	0.05	0.008	0.068
Nickel	0.272	0.2	0.02	0.272
Potassium	na	20	9	20
Selenium	0.068	0.1	0.05	0.1
Silicon	na	20	4	20
Silver	0.068	0.02	0.006	0.068
Sodium	na	20	2	20
Sulfur	na	8	4	8
Thallium	0.000136	0.02	0.0009	0.02
Tin	8.12	0.05	0.003	8.12
Uranium	0.008	0.02	0.0008	0.02
Vanadium	0.068	0.2	0.007	0.2
Zinc	4.08	0.5	0.06	4.08
Dioxin-Like Congeners (ng/kg-ww)				
TEQ	0.00054	0.125	0.12825	0.125
PCBs (µg/kg-ww)				
Total PCBs	0.0424	2.5	0.7	2.5
PBDEs (µg/kg-ww)				
Total PBDEs	TBD	na	na	TBD
PBDE 47	0.339	0.025	0.014	0.339
PBDE 99	0.339	0.025	0.014	0.339
PBDE 153	0.68	0.025	0.004	0.68
PBDE 209	23.7	0.25	0.00575	23.7

Notes:

[a] RBCs, MRLs, MDLs, and ACGs are from the QAPP (SRC 2016)

[b] ACG and planned MRL from the QAPP (SRC 2016) were assumed to be on a wet weight basis.

ACG - analytical concentration goal

MDL - method detection limit

MRL - method reporting limit

na - not available

PBDE - polybrominated diphenylether

PCB - polychlorinated biphenyl

RBC - risk-based concentration

TBD - to be determined

TEQ - toxic equivalent quotient

Table 2-2. Methods for Analysis of COIs in White Sturgeon Fillet Composites

Analyte(s)	Analytical Method	Description
Aluminum, antimony, arsenic, barium, beryllium, cadmium, chromium, cobalt, copper, iron, lead, manganese, molybdenum, nickel, silver, thallium, tin, uranium, vanadium, and zinc	EPA 6020A	ICP-MS
Boron, calcium, magnesium, potassium, silicon, sodium, and sulfur	EPA 6010C	ICP-AES
Inorganic arsenic	EPA 1632	HG-QFAAS
Mercury	EPA 1631E	CV-AFS
Selenium	EPA 7742	AA
Fluoride	SM4500FC	ISE
PCB congeners	EPA 1668A	HRGC/HRMS
Dioxins/furans	EPA 1613B	HRGC/HRMS
PBDEs	EPA 1614	HRGC/HRMS

Notes:
AA - atomic absorption
COI - chemical of interest
CV-AFS - cold vapor-atomic fluorescence spectrometry
HG-QFAAS - hydride generation-quartz furnace atomic absorption spectrometry
HRGC/HRMS - high resolution gas chromatography/high resolution mass spectrometry
ICP-AES - inductively coupled plasma-atomic emission spectrometry
ICP-MS - inductively coupled plasma-mass spectrometry
ISE - ion-selective electrode
PBDE - polybrominated diphenylether
PCB - polychlorinated biphenyl
SM - standard method

Table 4-1. Summary of Data Qualifiers Applied to Equipment Rinsate Blank Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags			Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results		
Analyte	Number of Samples Analyzed	Rejected Results	Accepted Results	Count of Results with No Flags	B	EMPC	J	J, B	U	J	U	EMPC	B	EMPC	J	J, B	U	J	U	EMPC
Metals/Metalloids																				
Aluminum	3	0 (0%)	3 (100%)	0	0	0	3	0	0	3	0	0	0	0	100	0	0	100	0	0
Antimony	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Arsenic	3	0 (0%)	3 (100%)	0	0	0	2	0	1	2	1	0	0	0	67	0	33	67	33	0
Barium	3	0 (0%)	3 (100%)	1	0	0	0	0	2	0	2	0	0	0	0	0	67	0	67	0
Beryllium	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Boron	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Cadmium	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Calcium	3	0 (0%)	3 (100%)	1	0	0	2	0	0	2	0	0	0	0	67	0	0	67	0	0
Chromium	3	0 (0%)	3 (100%)	0	0	0	2	0	1	2	1	0	0	0	67	0	33	67	33	0
Cobalt	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Copper	3	0 (0%)	3 (100%)	1	0	0	1	0	1	1	1	0	0	0	33	0	33	33	33	0
Iron	3	0 (0%)	3 (100%)	1	0	0	2	0	0	2	0	0	0	0	67	0	0	67	0	0
Lead	3	0 (0%)	3 (100%)	0	0	0	1	0	2	1	2	0	0	0	33	0	67	33	67	0
Magnesium	3	0 (0%)	3 (100%)	0	0	0	3	0	0	3	0	0	0	0	100	0	0	100	0	0
Manganese	3	0 (0%)	3 (100%)	1	0	0	2	0	0	2	0	0	0	0	67	0	0	67	0	0
Mercury	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Molybdenum	3	0 (0%)	3 (100%)	0	0	0	1	0	2	1	2	0	0	0	33	0	67	33	67	0
Nickel	3	0 (0%)	3 (100%)	0	0	0	1	0	2	1	2	0	0	0	33	0	67	33	67	0
Potassium	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Selenium	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Silicon	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Silver	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Sodium	3	0 (0%)	3 (100%)	0	0	0	1	0	2	1	2	0	0	0	33	0	67	33	67	0
Sulfur	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Thallium	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Tin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Uranium	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Vanadium	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Zinc	3	0 (0%)	3 (100%)	2	0	0	0	0	1	0	1	0	0	0	0	0	33	0	33	0
Conventional Parameters																				
Fluoride	3	0 (0%)	3 (100%)	0	0	0	3	0	0	3	0	0	0	0	100	0	0	100	0	0
PCB Congeners																				
PCB 1	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 2	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 3	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 4/10	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 5/8	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 6	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 7/9	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 11	2	0 (0%)	2 (100%)	0	0	0	1	0	1	1	1	0	0	0	50	0	50	50	50	0
PCB 12/13	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 14	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 15	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 16/32	2	0 (0%)	2 (100%)	0	0	1	1	0	0	1	0	1	0	50	50	0	0	50	0	50
PCB 17	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 18	2	0 (0%)	2 (100%)	0	0	2	0	0	0	0	0	2	0	100	0	0	0	0	0	100
PCB 19	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 20/21/33	2	0 (0%)	2 (100%)	0	0	1	0	0	1	0	1	1	0	50	0	0	50	0	50	50
PCB 22	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0

Table 4-1. Summary of Data Qualifiers Applied to Equipment Rinsate Blank Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags			Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results		
Analyte	Number of Samples Analyzed	Rejected Results	Accepted Results	Count of Results with No Flags	B	EMPC	J	J, B	U	J	U	EMPC	B	EMPC	J	J, B	U	J	U	EMPC
PCB Congeners (continued)																				
PCB 23	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 24/27	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 25	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 26	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 28	2	0 (0%)	2 (100%)	0	0	2	0	0	0	0	0	2	0	100	0	0	0	0	0	100
PCB 29	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 30	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 31	2	0 (0%)	2 (100%)	0	0	2	0	0	0	0	0	2	0	100	0	0	0	0	0	100
PCB 34	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 35	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 36	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 37	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 38	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 39	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 40	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 41/64/71/72	2	0 (0%)	2 (100%)	0	0	0	2	0	0	2	0	0	0	0	100	0	0	100	0	0
PCB 42/59	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 43/49	2	0 (0%)	2 (100%)	0	0	2	0	0	0	0	0	2	0	100	0	0	0	0	0	100
PCB 44	2	0 (0%)	2 (100%)	0	0	0	2	0	0	2	0	0	0	0	100	0	0	100	0	0
PCB 45	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 46	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 47	2	0 (0%)	2 (100%)	0	1	0	0	1	0	1	0	0	50	0	0	50	0	50	0	0
PCB 48/75	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 50	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 51	2	0 (0%)	2 (100%)	0	0	0	2	0	0	2	0	0	0	0	100	0	0	100	0	0
PCB 52/69	2	0 (0%)	2 (100%)	0	0	0	2	0	0	2	0	0	0	0	100	0	0	100	0	0
PCB 53	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 54	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 55	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 56/60	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 57	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 58	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 61/70	2	0 (0%)	2 (100%)	0	0	1	1	0	0	1	0	1	0	50	50	0	0	50	0	50
PCB 62	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 63	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 65	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 66/76	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 67	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 68	2	0 (0%)	2 (100%)	0	0	0	1	0	1	1	1	0	0	0	50	0	50	50	50	0
PCB 73	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 74	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 77	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 78	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 79	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 80	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 81	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 82	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 83	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 84/92	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0

Table 4-1. Summary of Data Qualifiers Applied to Equipment Rinsate Blank Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags			Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results		
Analyte	Number of Samples Analyzed	Rejected Results	Accepted Results	Count of Results with No Flags	B	EMPC	J	J, B	U	J	U	EMPC	B	EMPC	J	J, B	U	J	U	EMPC
PCB Congeners (continued)																				
PCB 85/116	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 86	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 87/117/125	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 88/91	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 89	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 90/101	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 93	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 94	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 95/98/102	2	0 (0%)	2 (100%)	0	0	1	0	0	1	0	1	1	0	50	0	0	50	0	50	50
PCB 96	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 97	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 99	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 100	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 103	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 104	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 105	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 106/118	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 107/109	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 108/112	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 110	2	0 (0%)	2 (100%)	0	0	1	1	0	0	1	0	1	0	50	50	0	0	50	0	50
PCB 111/115	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 113	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 114	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 119	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 120	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 121	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 122	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 123	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 124	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 126	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 127	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 128/162	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 129	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 130	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 131	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 132/161	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 133/142	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 134/143	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 135	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 136	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 137	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 138/163/164	2	0 (0%)	2 (100%)	0	0	0	2	0	0	2	0	0	0	0	100	0	0	100	0	0
PCB 139/149	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 140	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 141	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 144	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 145	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 146/165	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 147	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0

Table 4-1. Summary of Data Qualifiers Applied to Equipment Rinsate Blank Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags			Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results		
Analyte	Number of Samples Analyzed	Rejected Results	Accepted Results	Count of Results with No Flags	B	EMPC	J	J, B	U	J	U	EMPC	B	EMPC	J	J, B	U	J	U	EMPC
PCB Congeners (continued)																				
PCB 148	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 150	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 151	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 152	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 153	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 154	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 155	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 156	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 157	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 158/160	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 159	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 166	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 167	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 168	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 169	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 170	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 171	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 172	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 173	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 174	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 175	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 176	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 177	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 178	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 179	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 180	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 181	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 182/187	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 183	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 184	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 185	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 186	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 188	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 189	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 190	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 191	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 192	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 193	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 194	2	0 (0%)	2 (100%)	0	0	1	0	0	1	0	1	1	0	50	0	0	50	0	50	50
PCB 195	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 196/203	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 197	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 198	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 199	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 200	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 201	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 202	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0

Table 4-1. Summary of Data Qualifiers Applied to Equipment Rinsate Blank Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags			Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results		
Analyte	Number of Samples Analyzed	Rejected Results	Accepted Results	Count of Results with No Flags	B	EMPC	J	J, B	U	J	U	EMPC	B	EMPC	J	J, B	U	J	U	EMPC
PCB Congeners (continued)																				
PCB 204	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 205	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 206	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 207	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
PCB 208	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
Decachlorobiphenyl	2	0 (0%)	2 (100%)	1	0	0	0	0	1	0	1	0	0	0	0	0	50	0	50	0
Monochlorobiphenyl homologs	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
Dichlorobiphenyl homologs	2	0 (0%)	2 (100%)	1	0	0	0	0	1	0	1	0	0	0	0	0	50	0	50	0
Trichlorobiphenyl homologs	2	0 (0%)	2 (100%)	1	0	1	0	0	0	0	0	1	0	50	0	0	0	0	0	50
Tetrachlorobiphenyl homologs	2	0 (0%)	2 (100%)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pentachlorobiphenyl homologs	2	0 (0%)	2 (100%)	1	0	1	0	0	0	0	0	1	0	50	0	0	0	0	0	50
Hexachlorobiphenyl homologs	2	0 (0%)	2 (100%)	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heptachlorobiphenyl homologs	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
Octachlorobiphenyl homologs	2	0 (0%)	2 (100%)	0	0	1	0	0	1	0	1	1	0	50	0	0	50	0	50	50
Nonachlorobiphenyl homologs	2	0 (0%)	2 (100%)	0	0	0	0	0	2	0	2	0	0	0	0	0	100	0	100	0
Dioxins/Furans																				
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,4,7,8-Hexachlorodibenzodioxin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,4,7,8-Hexachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,6,7,8-Hexachlorodibenzodioxin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,6,7,8-Hexachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,7,8,9-Hexachlorodibenzodioxin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,7,8,9-Hexachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,7,8-Pentachlorodibenzodioxin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
1,2,3,7,8-Pentachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
2,3,4,6,7,8-Hexachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
2,3,4,7,8-Pentachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
2,3,7,8-Tetrachlorodibenzodioxin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
2,3,7,8-Tetrachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Tetrachlorodibenzodioxin (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Tetrachlorodibenzofuran (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Pentachlorodibenzodioxin (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Pentachlorodibenzofuran (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Hexachlorodibenzodioxin (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Hexachlorodibenzofuran (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Heptachlorodibenzodioxin (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Heptachlorodibenzofuran (Total)	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Octachlorodibenzodioxin	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Octachlorodibenzofuran	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
TEQMinWHO05Dioxn (lab)	3	0 (0%)	3 (100%)	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-1. Summary of Data Qualifiers Applied to Equipment Rinsate Blank Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags			Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results		
Analyte	Number of Samples Analyzed	Rejected Results	Accepted Results	Count of Results with No Flags	B	EMPC	J	J, B	U	J	U	EMPC	B	EMPC	J	J, B	U	J	U	EMPC
PBDEs																				
PBDE 47	3	0 (0%)	3 (100%)	0	0	1	0	2	0	2	0	1	0	33	0	67	0	67	0	33
PBDE 99	3	0 (0%)	3 (100%)	1	0	1	1	0	0	1	0	1	0	33	33	0	0	33	0	33
PBDE 153	3	0 (0%)	3 (100%)	0	0	1	1	0	1	1	1	1	0	33	33	0	33	33	33	33
PBDE 209	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Total Mono-BDE	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Total Di-BDE	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Total Tri-BDE	3	0 (0%)	3 (100%)	0	0	0	0	2	1	2	1	0	0	0	0	67	33	67	33	0
Total Tetra-BDE	3	0 (0%)	3 (100%)	0	0	1	0	2	0	2	0	1	0	33	0	67	0	67	0	33
Total Penta-BDE	3	0 (0%)	3 (100%)	0	1	0	0	2	0	2	0	0	33	0	0	67	0	67	0	0
Total Hexa-BDE	3	0 (0%)	3 (100%)	0	0	0	0	2	1	2	1	0	0	0	0	67	33	67	33	0
Total Hepta-BDE	3	0 (0%)	3 (100%)	0	0	0	3	0	0	3	0	0	0	0	100	0	0	100	0	0
Total Octa-BDE	3	0 (0%)	3 (100%)	0	0	0	1	0	2	1	2	0	0	0	33	0	67	33	67	0
Total Nona-BDE	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0
Total Deca-BDE	3	0 (0%)	3 (100%)	0	0	0	0	0	3	0	3	0	0	0	0	0	100	0	100	0

Notes:
BDE - bromodiphenyl ether
PBDE - polybrominated diphenylether
PCB - polychlorinated biphenyl
Data qualifiers:

<u>Laboratory</u>	
B	The compound was also detected in the method blank.
EMPC	Estimated maximum possible concentration
J	The result is an estimated value that was detected outside the quantitation range.
J, B	The result is an estimated value that was detected outside the quantitation range. The compound was also detected in the method blank.
U	The analyte was analyzed for, but was not detected at or above the method reporting limit/method detection limit (MRL/MDL).
<u>Validator</u>	
EMPC	Chromatographic peaks are present in the expected retention time window; however, the peaks do not meet all of the conditions required for a positive identification. The detection limit represents the maximum possible concentration if the analyte was present.
J	Quantitation is approximate due to limitations identified during the QA review (data validation).
U	This analyte was not detected at or above the associated detection limit.
U*	This analyte should be considered non-detected because it was detected in an associated blank at a similar level.

Table 4-2. Summary of Data Qualifiers Applied to Tissue Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags				Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results			
Analyte	Number of Samples Analyzed[a]	Rejected Results	Accepted Results	Count of Results with No Flags	B	B, E	EMPC	J	U	J	U	EMPC	U*	B	B, E	EMPC	J	U	J	U	EMPC	U*
Metals/Metalloids																						
Aluminum	9	0 (0%)	9 (100%)	4	0	0	0	5	0	2	0	0	3	0	0	0	56	0	22	0	0	33
Antimony	9	0 (0%)	9 (100%)	0	0	0	0	8	1	0	1	0	8	0	0	0	89	11	0	11	0	89
Arsenic	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Barium	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Beryllium	9	0 (0%)	9 (100%)	0	0	0	0	1	8	1	8	0	0	0	0	0	11	89	11	89	0	0
Boron	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Cadmium	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Calcium	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Chromium	9	0 (0%)	9 (100%)	7	0	0	0	2	0	2	0	0	0	0	0	0	22	0	22	0	0	0
Cobalt	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Copper	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Inorganic arsenic	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Iron	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Lead	9	0 (0%)	9 (100%)	4	0	0	0	5	0	5	0	0	0	0	0	0	56	0	56	0	0	0
Magnesium	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Manganese	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Mercury	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Molybdenum	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Nickel	9	0 (0%)	9 (100%)	1	0	0	0	8	0	8	0	0	0	0	0	0	89	0	89	0	0	0
Potassium	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Selenium	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Silicon	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Silver	9	0 (0%)	9 (100%)	0	0	0	0	3	6	0	6	0	3	0	0	0	33	67	0	67	0	33
Sodium	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sulfur	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Thallium	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Tin	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Uranium	9	0 (0%)	9 (100%)	0	0	0	0	2	7	2	7	0	0	0	0	0	22	78	22	78	0	0
Vanadium	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Zinc	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Conventional Parameters																						
Fluoride	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Lipid	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total solids	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB Congeners																						
PCB 1	9	0 (0%)	9 (100%)	0	0	0	3	4	2	4	2	3	0	0	0	33	44	22	44	22	33	0
PCB 2	9	0 (0%)	9 (100%)	0	0	0	0	3	6	3	6	0	0	0	0	0	33	67	33	67	0	0
PCB 3	9	0 (0%)	9 (100%)	0	0	0	4	3	2	3	2	4	0	0	0	44	33	22	33	22	44	0
PCB 4/10	9	0 (0%)	9 (100%)	0	0	0	2	1	6	1	6	2	0	0	0	22	11	67	11	67	22	0
PCB 5/8	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 6	9	0 (0%)	9 (100%)	0	0	0	2	0	7	0	7	2	0	0	0	22	0	78	0	78	22	0
PCB 7/9	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 11	9	0 (0%)	9 (100%)	0	9	0	0	0	0	0	0	0	9	100	0	0	0	0	0	0	0	100
PCB 12/13	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 14	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 15	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 16/32	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 17	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 18	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-2. Summary of Data Qualifiers Applied to Tissue Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags				Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results			
Analyte	Number of Samples Analyzed[a]	Rejected Results	Accepted Results	Count of Results with No Flags	B	B, E	EMPC	J	U	J	U	EMPC	U*	B	B, E	EMPC	J	U	J	U	EMPC	U*
PCB Congeners (continued)																						
PCB 19	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 20/21/33	9	0 (0%)	9 (100%)	5	0	0	0	4	0	4	0	0	0	0	0	0	44	0	44	0	0	0
PCB 22	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 23	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 24/27	9	0 (0%)	9 (100%)	3	0	0	0	6	0	6	0	0	0	0	0	0	67	0	67	0	0	0
PCB 25	9	0 (0%)	9 (100%)	1	0	0	0	8	0	8	0	0	0	0	0	0	89	0	89	0	0	0
PCB 26	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 28	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 29	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 30	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 31	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 34	9	0 (0%)	9 (100%)	0	0	0	1	6	2	6	2	1	0	0	0	11	67	22	67	22	11	0
PCB 35	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 36	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 37	9	0 (0%)	9 (100%)	3	0	0	0	6	0	6	0	0	0	0	0	0	67	0	67	0	0	0
PCB 38	9	0 (0%)	9 (100%)	7	0	0	0	2	0	2	0	0	0	0	0	0	22	0	22	0	0	0
PCB 39	9	0 (0%)	9 (100%)	0	0	0	0	2	7	2	7	0	0	0	0	0	22	78	22	78	0	0
PCB 40	9	0 (0%)	9 (100%)	6	0	0	1	2	0	2	0	1	0	0	0	11	22	0	22	0	11	0
PCB 41/64/71/72	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 42/59	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 43/49	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 44	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 45	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 46	9	0 (0%)	9 (100%)	7	0	0	1	1	0	1	0	1	0	0	0	11	11	0	11	0	11	0
PCB 47	9	0 (0%)	9 (100%)	0	9	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0
PCB 48/75	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 50	9	0 (0%)	9 (100%)	0	0	0	1	3	5	3	5	1	0	0	0	11	33	56	33	56	11	0
PCB 51	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 52/69	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 53	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 54	9	0 (0%)	9 (100%)	0	0	0	1	3	5	3	5	1	0	0	0	11	33	56	33	56	11	0
PCB 55	9	0 (0%)	9 (100%)	8	0	0	1	0	0	0	0	1	0	0	0	11	0	0	0	0	11	0
PCB 56/60	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 57	9	0 (0%)	9 (100%)	3	0	0	0	6	0	6	0	0	0	0	0	0	67	0	67	0	0	0
PCB 58	9	0 (0%)	9 (100%)	2	0	0	0	7	0	7	0	0	0	0	0	0	78	0	78	0	0	0
PCB 61/70	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 62	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 63	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 65	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 66/76	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 67	9	0 (0%)	9 (100%)	2	0	0	1	6	0	6	0	1	0	0	0	11	67	0	67	0	11	0
PCB 68	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 73	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 74	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 77	9	0 (0%)	9 (100%)	8	0	0	1	0	0	0	0	1	0	0	0	11	0	0	0	0	11	0
PCB 78	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 79	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 80	9	0 (0%)	9 (100%)	0	0	0	0	3	6	3	6	0	0	0	0	0	33	67	33	67	0	0
PCB 81	9	0 (0%)	9 (100%)	7	0	0	0	2	0	2	0	0	0	0	0	0	22	0	22	0	0	0

Table 4-2. Summary of Data Qualifiers Applied to Tissue Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags				Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results			
Analyte	Number of Samples Analyzed[a]	Rejected Results	Accepted Results	Count of Results with No Flags	B	B, E	EMPC	J	U	J	U	EMPC	U*	B	B, E	EMPC	J	U	J	U	EMPC	U*
PCB Congeners (continued)																						
PCB 82	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 83	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 84/92	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 85/116	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 86	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 87/117/125	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 88/91	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 89	9	0 (0%)	9 (100%)	4	0	0	0	3	2	3	2	0	0	0	0	0	33	22	33	22	0	0
PCB 90/101	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 93	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 94	9	0 (0%)	9 (100%)	7	0	0	1	1	0	1	0	1	0	0	0	11	11	0	11	0	11	0
PCB 95/98/102	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 96	9	0 (0%)	9 (100%)	7	0	0	0	2	0	2	0	0	0	0	0	0	22	0	22	0	0	0
PCB 97	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 99	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 100	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 103	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 104	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 105	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 106/118	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 107/109	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 108/112	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 110	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 111/115	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 113	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 114	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 119	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 120	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 121	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 122	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 123	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 124	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 126	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 127	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 128/162	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 129	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 130	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 131	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 132/161	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 133/142	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 134/143	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 135	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 136	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 137	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 138/163/164	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 139/149	9	0 (0%)	9 (100%)	0	9	0	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0
PCB 140	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 141	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 144	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-2. Summary of Data Qualifiers Applied to Tissue Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags				Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results			
Analyte	Number of Samples Analyzed[a]	Rejected Results	Accepted Results	Count of Results with No Flags	B	B, E	EMPC	J	U	J	U	EMPC	U*	B	B, E	EMPC	J	U	J	U	EMPC	U*
PCB Congeners (continued)																						
PCB 145	9	0 (0%)	9 (100%)	0	0	0	1	3	5	3	5	1	0	0	0	11	33	56	33	56	11	0
PCB 146/165	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 147	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 148	9	0 (0%)	9 (100%)	8	0	0	0	1	0	1	0	0	0	0	0	0	11	0	11	0	0	0
PCB 150	9	0 (0%)	9 (100%)	3	0	0	1	5	0	5	0	1	0	0	0	11	56	0	56	0	11	0
PCB 151	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 152	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
PCB 153	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 154	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 155	9	0 (0%)	9 (100%)	8	0	0	0	1	0	1	0	0	0	0	0	0	11	0	11	0	0	0
PCB 156	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 157	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 158/160	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 159	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 166	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 167	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 168	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 169	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 170	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 171	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 172	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 173	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 174	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 175	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 176	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 177	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 178	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 179	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 180	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 181	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 182/187	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 183	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 184	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 185	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 186	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 188	9	0 (0%)	9 (100%)	5	0	0	0	4	0	4	0	0	0	0	0	0	44	0	44	0	0	0
PCB 189	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 190	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 191	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 192	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
PCB 193	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 194	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 195	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 196/203	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 197	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 198	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 199	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 200	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 201	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-2. Summary of Data Qualifiers Applied to Tissue Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags				Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results			
Analyte	Number of Samples Analyzed[a]	Rejected Results	Accepted Results	Count of Results with No Flags	B	B, E	EMPC	J	U	J	U	EMPC	U*	B	B, E	EMPC	J	U	J	U	EMPC	U*
PCB Congeners (continued)																						
PCB 202	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 204	9	0 (0%)	9 (100%)	0	0	0	0	1	8	1	8	0	0	0	0	0	11	89	11	89	0	0
PCB 205	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 206	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 207	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PCB 208	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Decachlorobiphenyl	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Monochlorobiphenyl homologs	9	0 (0%)	9 (100%)	6	0	0	3	0	0	0	0	3	0	0	0	33	0	0	0	0	33	0
Dichlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Trichlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Tetrachlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pentachlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Hexachlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Heptachlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Octachlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Nonachlorobiphenyl homologs	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dioxins/Furans																						
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	9	0 (0%)	9 (100%)	0	0	0	0	3	6	3	6	0	0	0	0	0	33	67	33	67	0	0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,4,7,8-Hexachlorodibenzodioxin	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,4,7,8-Hexachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,6,7,8-Hexachlorodibenzodioxin	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,6,7,8-Hexachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,7,8,9-Hexachlorodibenzodioxin	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,7,8,9-Hexachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,7,8-Pentachlorodibenzodioxin	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
1,2,3,7,8-Pentachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	4	0	5	0	5	4	0	0	0	44	0	56	0	56	44	0
2,3,4,6,7,8-Hexachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
2,3,4,7,8-Pentachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	4	1	4	1	4	4	0	0	0	44	11	44	11	44	44	0
2,3,7,8-Tetrachlorodibenzodioxin	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
2,3,7,8-Tetrachlorodibenzofuran	9	0 (0%)	9 (100%)	8	0	0	0	1	0	1	0	0	0	0	0	0	11	0	11	0	0	0
Tetrachlorodibenzodioxin (Total)	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Tetrachlorodibenzofuran (Total)	9	0 (0%)	9 (100%)	8	0	0	0	1	0	1	0	0	0	0	0	0	11	0	11	0	0	0
Pentachlorodibenzodioxin (Total)	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Pentachlorodibenzofuran (Total)	9	0 (0%)	9 (100%)	0	0	0	4	1	4	1	4	4	0	0	0	44	11	44	11	44	44	0
Hexachlorodibenzodioxin (Total)	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Hexachlorodibenzofuran (Total)	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Heptachlorodibenzodioxin (Total)	9	0 (0%)	9 (100%)	0	0	0	0	3	6	3	6	0	0	0	0	0	33	67	33	67	0	0
Heptachlorodibenzofuran (Total)	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Octachlorodibenzodioxin	9	0 (0%)	9 (100%)	0	0	0	2	3	4	3	4	2	0	0	0	22	33	44	33	44	22	0
Octachlorodibenzofuran	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
TEQMinWHO05Dioxn (lab)	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Table 4-2. Summary of Data Qualifiers Applied to Tissue Data

					Count of Accepted Results Laboratory Flags					Count of Accepted Results Validator Flags				Laboratory Flags, % of Accepted Results					Validator Flags, % of Accepted Results			
Analyte	Number of Samples Analyzed[a]	Rejected Results	Accepted Results	Count of Results with No Flags	B	B, E	EMPC	J	U	J	U	EMPC	U*	B	B, E	EMPC	J	U	J	U	EMPC	U*
PBDEs																						
PBDE 47	9	0 (0%)	9 (100%)	0	0	9	0	0	0	9	0	0	0	0	100	0	0	0	100	0	0	0
PBDE 99	9	0 (0%)	9 (100%)	0	9	0	0	0	0	2	0	0	0	100	0	0	0	0	22	0	0	0
PBDE 153	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PBDE 209	9	0 (0%)	9 (100%)	0	0	0	0	2	7	2	7	0	0	0	0	0	22	78	22	78	0	0
Total Mono-BDE	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Total Di-BDE	9	0 (0%)	9 (100%)	0	0	0	2	7	0	7	0	2	0	0	0	22	78	0	78	0	22	0
Total Tri-BDE	9	0 (0%)	9 (100%)	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Tetra-BDE	9	0 (0%)	9 (100%)	0	9	0	0	0	0	1	0	0	0	100	0	0	0	0	11	0	0	0
Total Penta-BDE	9	0 (0%)	9 (100%)	0	9	0	0	0	0	2	0	0	0	100	0	0	0	0	22	0	0	0
Total Hexa-BDE	9	0 (0%)	9 (100%)	7	0	0	0	0	0	2	0	0	0	0	0	0	0	0	22	0	0	0
Total Hepta-BDE	9	0 (0%)	9 (100%)	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0	0
Total Octa-BDE	9	0 (0%)	9 (100%)	0	0	0	0	3	6	3	6	0	0	0	0	0	33	67	33	67	0	0
Total Nona-BDE	9	0 (0%)	9 (100%)	0	0	0	0	0	9	0	9	0	0	0	0	0	0	100	0	100	0	0
Total Deca-BDE	9	0 (0%)	9 (100%)	0	0	0	0	2	7	2	7	0	0	0	0	0	22	78	22	78	0	0

Notes:

[a] Qualifier counts do not include laboratory quality control samples

BDE - bromodiphenyl ether

PBDE - polybrominated diphenylether

PCB - polychlorinated biphenyl

Data qualifiers:

Laboratory

B	The compound was also detected in the method blank.
B, E	The compound was also detected in the method blank. The associated compound concentration exceeded the calibration range for the instrument.
EMPC	Estimated maximum possible concentration
J	The result is an estimated value that was detected outside the quantitation range.
U	The analyte was analyzed for, but was not detected at or above the method reporting limit/method detection limit (MRL/MDL).

Validator

EMPC	Chromatographic peaks are present in the expected retention time window; however, the peaks do not meet all of the conditions required for a positive identification. The detection limit represents the maximum possible concentration if the analyte was present.
J	Quantitation is approximate due to limitations identified during the QA review (data validation).
U	This analyte was not detected at or above the associated detection limit.
U*	This analyte should be considered non-detected because it was detected in an associated blank at a similar level.

Table 5-1. Summary of Results for Fillet Composites from Small Fish (A – 50 to 97 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Metals/Metalloids (mg/kg dw except mercury)											
Aluminum	3	3	100	2.1	3.8	5.2	1.6	2.1	3.8	5.2	1.6
Antimony	3	0	0	0.0035	0.0042	0.005	0.00076	NA	NA	NA	NA
Arsenic	3	3	100	0.617	0.697	0.78	0.0816	0.617	0.697	0.78	0.0816
Barium	3	3	100	0.058	0.09	0.108	0.028	0.058	0.09	0.108	0.028
Beryllium	3	1	33	0.005	0.0082	0.01	0.0028	0.005	NA	0.005	NA
Boron	3	0	0	0.95	0.97	1	0.029	NA	NA	NA	NA
Cadmium	3	3	100	0.004	0.0093	0.017	0.0068	0.004	0.0093	0.017	0.0068
Calcium	3	3	100	241	276	305	32.3	241	276	305	32.3
Chromium	3	3	100	0.28	0.39	0.58	0.17	0.28	0.39	0.58	0.17
Cobalt	3	3	100	0.015	0.016	0.018	0.0015	0.015	0.016	0.018	0.0015
Copper	3	3	100	0.92	1.5	2.32	0.74	0.92	1.5	2.32	0.74
Inorganic arsenic	3	0	0	0.04	0.04	0.04	0	NA	NA	NA	NA
Iron	3	3	100	14.3	20.1	24.8	5.34	14.3	20.1	24.8	5.34
Lead	3	3	100	0.019	0.032	0.055	0.02	0.019	0.032	0.055	0.02
Magnesium	3	3	100	1000	1070	1120	64.3	1000	1070	1120	64.3
Manganese	3	3	100	0.988	1.13	1.26	0.136	0.988	1.13	1.26	0.136
Mercury (µg/kg dw)	3	3	100	242	260	278	18	242	260	278	18
Molybdenum	3	3	100	0.0122	0.0161	0.0235	0.00644	0.0122	0.0161	0.0235	0.00644
Nickel	3	3	100	0.13	0.16	0.2	0.038	0.13	0.16	0.2	0.038
Potassium	3	3	100	15400	16400	17100	874	15400	16400	17100	874
Selenium	3	3	100	3.64	3.92	4.15	0.258	3.64	3.92	4.15	0.258
Silicon	3	3	100	8.1	9.6	11.1	1.5	8.1	9.6	11.1	1.5
Silver	3	0	0	0.0065	0.0087	0.01	0.0019	NA	NA	NA	NA
Sodium	3	3	100	1410	1450	1510	52.9	1410	1450	1510	52.9
Sulfur	3	3	100	7250	7790	8190	485	7250	7790	8190	485
Thallium	3	3	100	0.008	0.012	0.017	0.0045	0.008	0.012	0.017	0.0045
Tin	3	3	100	0.013	0.014	0.015	0.001	0.013	0.014	0.015	0.001
Uranium	3	2	67	0.001	0.004	0.01	0.0052	0.001	0.001	0.001	0
Vanadium	3	3	100	0.01	0.017	0.02	0.0058	0.01	0.017	0.02	0.0058
Zinc	3	3	100	12.3	13.2	13.9	0.819	12.3	13.2	13.9	0.819
Conventional Parameters											
Fluoride (mg/kg ww)	3	3	100	1.5	1.7	1.8	0.15	1.5	1.7	1.8	0.15
Lipid (% ww)	3	3	100	3.54	5.19	6.25	1.45	3.54	5.19	6.25	1.45
Total solids (% ww)	3	3	100	23.7	24.1	24.7	0.529	23.7	24.1	24.7	0.529
PCB Congeners (pg/g ww)											
PCB 1	3	2	67	0.0234	0.0965	0.147	0.0648	0.119	0.133	0.147	0.0198
PCB 2	3	0	0	0.0432	0.0744	0.1085	0.0327	NA	NA	NA	NA
PCB 3	3	0	0	0.0545	0.0633	0.0695	0.00785	NA	NA	NA	NA
PCB 4/10	3	1	33	0.1335	0.259	0.48	0.192	0.48	NA	0.48	NA
PCB 5/8	3	3	100	1.2	1.46	1.97	0.442	1.2	1.46	1.97	0.442
PCB 6	3	0	0	0.056	0.105	0.2	0.0821	NA	NA	NA	NA
PCB 7/9	3	0	0	0.04955	0.0567	0.0635	0.00698	NA	NA	NA	NA
PCB 11	3	0	0	0.635	0.685	0.755	0.0624	NA	NA	NA	NA
PCB 12/13	3	0	0	0.02425	0.0459	0.0725	0.0245	NA	NA	NA	NA
PCB 14	3	0	0	0.021	0.0291	0.03555	0.00741	NA	NA	NA	NA

Table 5-1. Summary of Results for Fillet Composites from Small Fish (A – 50 to 97 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 15	3	0	0	0.1155	0.155	0.2225	0.059	NA	NA	NA	NA
PCB 16/32	3	3	100	2.53	3.29	4.15	0.814	2.53	3.29	4.15	0.814
PCB 17	3	3	100	0.946	1.53	2.13	0.592	0.946	1.53	2.13	0.592
PCB 18	3	3	100	9.24	11	14.4	2.92	9.24	11	14.4	2.92
PCB 19	3	3	100	0.558	0.689	0.91	0.192	0.558	0.689	0.91	0.192
PCB 20/21/33	3	3	100	0.731	1.07	1.54	0.419	0.731	1.07	1.54	0.419
PCB 22	3	3	100	1.81	2.18	2.62	0.409	1.81	2.18	2.62	0.409
PCB 23	3	0	0	0.04645	0.0545	0.0665	0.0106	NA	NA	NA	NA
PCB 24/27	3	3	100	0.574	0.738	0.962	0.201	0.574	0.738	0.962	0.201
PCB 25	3	3	100	0.136	0.251	0.446	0.17	0.136	0.251	0.446	0.17
PCB 26	3	3	100	0.757	0.992	1.34	0.307	0.757	0.992	1.34	0.307
PCB 28	3	3	100	10.8	16.5	20.4	5.06	10.8	16.5	20.4	5.06
PCB 29	3	0	0	0.0423	0.0496	0.0605	0.00964	NA	NA	NA	NA
PCB 30	3	0	0	0.01635	0.0291	0.039	0.0116	NA	NA	NA	NA
PCB 31	3	3	100	8.87	9.76	10.5	0.825	8.87	9.76	10.5	0.825
PCB 34	3	2	67	0.0386	0.0843	0.126	0.0438	0.0883	0.107	0.126	0.0267
PCB 35	3	0	0	0.03365	0.0384	0.04485	0.00578	NA	NA	NA	NA
PCB 36	3	0	0	0.0331	0.0378	0.0441	0.00568	NA	NA	NA	NA
PCB 37	3	3	100	0.188	0.297	0.378	0.098	0.188	0.297	0.378	0.098
PCB 38	3	3	100	0.39	0.468	0.62	0.132	0.39	0.468	0.62	0.132
PCB 39	3	0	0	0.03125	0.0357	0.0416	0.00534	NA	NA	NA	NA
PCB 40	3	2	67	0.1665	0.376	0.671	0.263	0.291	0.481	0.671	0.269
PCB 41/64/71/72	3	3	100	17.2	23.4	29.2	6.01	17.2	23.4	29.2	6.01
PCB 42/59	3	3	100	2.94	3.54	4.67	0.982	2.94	3.54	4.67	0.982
PCB 43/49	3	3	100	19.3	25.3	31.3	6	19.3	25.3	31.3	6
PCB 44	3	3	100	14.3	19.1	25.7	5.91	14.3	19.1	25.7	5.91
PCB 45	3	3	100	1.18	1.55	1.94	0.38	1.18	1.55	1.94	0.38
PCB 46	3	2	67	0.1855	0.416	0.621	0.219	0.44	0.531	0.621	0.128
PCB 47	3	3	100	10.3	14.9	19.1	4.41	10.3	14.9	19.1	4.41
PCB 48/75	3	3	100	2.43	3.09	4.13	0.909	2.43	3.09	4.13	0.909
PCB 50	3	1	33	0.04655	0.0529	0.0627	0.00863	0.0627	NA	0.0627	NA
PCB 51	3	3	100	0.495	0.552	0.654	0.0885	0.495	0.552	0.654	0.0885
PCB 52/69	3	3	100	38.5	55.9	73.6	17.6	38.5	55.9	73.6	17.6
PCB 53	3	3	100	2.11	2.91	3.44	0.705	2.11	2.91	3.44	0.705
PCB 54	3	1	33	0.01625	0.0276	0.03895	0.0114	0.0275	NA	0.0275	NA
PCB 55	3	2	67	0.3205	0.787	1.21	0.446	0.829	1.02	1.21	0.269
PCB 56/60	3	3	100	7.54	11	14.3	3.38	7.54	11	14.3	3.38
PCB 57	3	3	100	0.135	0.2	0.263	0.064	0.135	0.2	0.263	0.064
PCB 58	3	3	100	0.124	0.191	0.252	0.0642	0.124	0.191	0.252	0.0642
PCB 61/70	3	3	100	22.4	32.7	43.9	10.8	22.4	32.7	43.9	10.8
PCB 62	3	0	0	0.03765	0.05	0.0705	0.0179	NA	NA	NA	NA
PCB 63	3	3	100	1.76	2.58	3.36	0.801	1.76	2.58	3.36	0.801
PCB 65	3	0	0	0.04015	0.0534	0.0755	0.0193	NA	NA	NA	NA
PCB 67	3	2	67	0.0525	0.16	0.272	0.11	0.156	0.214	0.272	0.082
PCB 68	3	3	100	0.931	1.33	1.69	0.381	0.931	1.33	1.69	0.381

Table 5-1. Summary of Results for Fillet Composites from Small Fish (A – 50 to 97 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 73	3	0	0	0.03855	0.0493	0.067	0.0154	NA	NA	NA	NA
PCB 74	3	3	100	19.1	27.3	34.6	7.8	19.1	27.3	34.6	7.8
PCB 76	3	3	100	24.2	38.1	50.1	13	24.2	38.1	50.1	13
PCB 77	3	3	100	0.546	1.17	1.75	0.603	0.546	1.17	1.75	0.603
PCB 78	3	0	0	0.0334	0.0435	0.0605	0.0148	NA	NA	NA	NA
PCB 79	3	3	100	3.13	4.07	5.24	1.07	3.13	4.07	5.24	1.07
PCB 80	3	1	33	0.0276	0.065	0.136	0.0615	0.136	NA	0.136	NA
PCB 81	3	3	100	0.392	0.526	0.702	0.159	0.392	0.526	0.702	0.159
PCB 82	3	3	100	2.43	4.02	6.31	2.03	2.43	4.02	6.31	2.03
PCB 83	3	0	0	0.03475	0.0416	0.0497	0.00754	NA	NA	NA	NA
PCB 84/92	3	3	100	53	72.8	96.7	22.1	53	72.8	96.7	22.1
PCB 85/116	3	3	100	36.5	48.6	60.2	11.9	36.5	48.6	60.2	11.9
PCB 86	3	0	0	0.0575	0.069	0.0825	0.0126	NA	NA	NA	NA
PCB 87/117/125	3	3	100	50.1	68.4	91.1	20.9	50.1	68.4	91.1	20.9
PCB 88/91	3	3	100	16.5	23.3	30.6	7.06	16.5	23.3	30.6	7.06
PCB 89	3	1	33	0.04805	0.222	0.56	0.293	0.56	NA	0.56	NA
PCB 90/101	3	3	100	188	249	327	71.2	188	249	327	71.2
PCB 93	3	0	0	0.049	0.0593	0.0705	0.0108	NA	NA	NA	NA
PCB 94	3	2	67	0.373	0.449	0.546	0.0883	0.429	0.488	0.546	0.0827
PCB 95/98/102	3	3	100	90	129	168	39	90	129	168	39
PCB 96	3	3	100	0.263	0.384	0.533	0.137	0.263	0.384	0.533	0.137
PCB 97	3	3	100	23.6	30.8	45	12.3	23.6	30.8	45	12.3
PCB 100	3	3	100	0.818	1.16	1.56	0.374	0.818	1.16	1.56	0.374
PCB 99	3	3	100	128	168	213	42.8	128	168	213	42.8
PCB 103	3	3	100	1.49	2.14	2.75	0.631	1.49	2.14	2.75	0.631
PCB 104	3	0	0	0.03475	0.0415	0.0488	0.00704	NA	NA	NA	NA
PCB 105	3	3	100	61	83.2	103	21.1	61	83.2	103	21.1
PCB 106/118	3	3	100	113	168	220	53.5	113	168	220	53.5
PCB 107/109	3	3	100	20.7	27.9	36.8	8.17	20.7	27.9	36.8	8.17
PCB 108/112	3	3	100	5.02	7.26	10.2	2.66	5.02	7.26	10.2	2.66
PCB 110	3	3	100	154	208	271	59	154	208	271	59
PCB 111/115	3	3	100	3.57	4.88	6.64	1.59	3.57	4.88	6.64	1.59
PCB 113	3	0	0	0.03625	0.0437	0.051	0.00738	NA	NA	NA	NA
PCB 114	3	3	100	4.03	5.16	6.66	1.35	4.03	5.16	6.66	1.35
PCB 119	3	3	100	6.43	8.88	11.5	2.54	6.43	8.88	11.5	2.54
PCB 120	3	3	100	0.765	1.16	1.52	0.379	0.765	1.16	1.52	0.379
PCB 121	3	0	0	0.03365	0.0407	0.0483	0.00734	NA	NA	NA	NA
PCB 122	3	0	0	0.085	0.108	0.133	0.024	NA	NA	NA	NA
PCB 123	3	3	100	1.93	2.51	3	0.542	1.93	2.51	3	0.542
PCB 124	3	3	100	2.62	3.4	4.45	0.943	2.62	3.4	4.45	0.943
PCB 126	3	3	100	0.514	0.626	0.766	0.128	0.514	0.626	0.766	0.128
PCB 127	3	0	0	0.081	0.103	0.1265	0.0228	NA	NA	NA	NA
PCB 128/162	3	3	100	52.2	71.5	90.3	19.1	52.2	71.5	90.3	19.1
PCB 129	3	3	100	7.47	9.45	12.6	2.76	7.47	9.45	12.6	2.76
PCB 130	3	3	100	23.6	31.1	37.3	6.94	23.6	31.1	37.3	6.94

Table 5-1. Summary of Results for Fillet Composites from Small Fish (A – 50 to 97 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 131	3	0	0	0.071	0.0927	0.1275	0.0305	NA	NA	NA	NA
PCB 132/161	3	3	100	53.9	71.7	97.6	22.9	53.9	71.7	97.6	22.9
PCB 133/142	3	3	100	11.4	14.6	19.1	4	11.4	14.6	19.1	4
PCB 134/143	3	3	100	9.62	12.8	17.3	4.02	9.62	12.8	17.3	4.02
PCB 135	3	3	100	40.2	51.4	65.4	12.8	40.2	51.4	65.4	12.8
PCB 136	3	3	100	20.8	27.2	35.5	7.52	20.8	27.2	35.5	7.52
PCB 137	3	3	100	18.2	21.3	26.9	4.83	18.2	21.3	26.9	4.83
PCB 138/163/164	3	3	100	509	626	776	137	509	626	776	137
PCB 139/149	3	3	100	264	342	448	95	264	342	448	95
PCB 140	3	3	100	1.84	2.52	3.34	0.76	1.84	2.52	3.34	0.76
PCB 141	3	3	100	67	73.9	86.3	10.8	67	73.9	86.3	10.8
PCB 144	3	3	100	11	13.7	17.5	3.37	11	13.7	17.5	3.37
PCB 145	3	0	0	0.03195	0.0378	0.047	0.00806	NA	NA	NA	NA
PCB 146/165	3	3	100	87.9	109	139	26.5	87.9	109	139	26.5
PCB 147	3	3	100	8.07	10.8	14.5	3.34	8.07	10.8	14.5	3.34
PCB 148	3	3	100	0.451	0.621	0.861	0.214	0.451	0.621	0.861	0.214
PCB 150	3	3	100	0.286	0.371	0.475	0.0959	0.286	0.371	0.475	0.0959
PCB 151	3	3	100	95.3	122	161	34.3	95.3	122	161	34.3
PCB 152	3	3	100	0.154	0.187	0.227	0.0369	0.154	0.187	0.227	0.0369
PCB 153	3	3	100	591	672	832	139	591	672	832	139
PCB 154	3	3	100	5.52	7.71	10.3	2.41	5.52	7.71	10.3	2.41
PCB 155	3	3	100	0.426	0.574	0.704	0.14	0.426	0.574	0.704	0.14
PCB 156	3	3	100	35	41.2	51.4	8.9	35	41.2	51.4	8.9
PCB 157	3	3	100	7.43	8.97	11.3	2.05	7.43	8.97	11.3	2.05
PCB 158/160	3	3	100	44.3	51.5	63	10.1	44.3	51.5	63	10.1
PCB 159	3	0	0	0.04405	0.0584	0.0805	0.0195	NA	NA	NA	NA
PCB 166	3	3	100	1.4	1.96	2.44	0.525	1.4	1.96	2.44	0.525
PCB 167	3	3	100	1.3	2.03	2.75	0.725	1.3	2.03	2.75	0.725
PCB 168	3	3	100	0.597	0.716	0.816	0.111	0.597	0.716	0.816	0.111
PCB 169	3	3	100	0.604	0.839	0.968	0.204	0.604	0.839	0.968	0.204
PCB 170	3	3	100	104	130	158	27.1	104	130	158	27.1
PCB 171	3	3	100	33.7	39.7	48.4	7.71	33.7	39.7	48.4	7.71
PCB 172	3	3	100	22.3	27.9	33.6	5.65	22.3	27.9	33.6	5.65
PCB 173	3	3	100	1.68	2.1	2.79	0.605	1.68	2.1	2.79	0.605
PCB 174	3	3	100	112	121	138	14.7	112	121	138	14.7
PCB 175	3	3	100	4.94	6.31	8.12	1.63	4.94	6.31	8.12	1.63
PCB 176	3	3	100	11.8	14.5	18.7	3.67	11.8	14.5	18.7	3.67
PCB 177	3	3	100	92.2	105	129	21	92.2	105	129	21
PCB 178	3	3	100	37.4	45.8	60.5	12.8	37.4	45.8	60.5	12.8
PCB 179	3	3	100	50.3	64.7	86.8	19.4	50.3	64.7	86.8	19.4
PCB 180	3	3	100	282	376	444	84.1	282	376	444	84.1
PCB 181	3	0	0	0.0337	0.0454	0.053	0.0103	NA	NA	NA	NA
PCB 182/187	3	3	100	323	392	518	109	323	392	518	109
PCB 183	3	3	100	74.4	99.1	124	24.8	74.4	99.1	124	24.8
PCB 184	3	3	100	0.812	1.16	1.47	0.331	0.812	1.16	1.47	0.331

Table 5-1. Summary of Results for Fillet Composites from Small Fish (A – 50 to 97 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 185	3	3	100	18.5	20.8	24.4	3.14	18.5	20.8	24.4	3.14
PCB 186	3	0	0	0.0272	0.0363	0.04415	0.00854	NA	NA	NA	NA
PCB 188	3	3	100	0.32	0.422	0.538	0.11	0.32	0.422	0.538	0.11
PCB 189	3	3	100	3.83	4.94	6.25	1.22	3.83	4.94	6.25	1.22
PCB 190	3	3	100	28.9	33.6	42.1	7.4	28.9	33.6	42.1	7.4
PCB 191	3	3	100	4.46	5.62	6.79	1.17	4.46	5.62	6.79	1.17
PCB 192	3	0	0	0.02725	0.0367	0.0429	0.00833	NA	NA	NA	NA
PCB 193	3	3	100	20.7	25.1	32.7	6.63	20.7	25.1	32.7	6.63
PCB 194	3	3	100	48	59.8	71.5	11.8	48	59.8	71.5	11.8
PCB 195	3	3	100	27.7	31.5	37.5	5.28	27.7	31.5	37.5	5.28
PCB 196/203	3	3	100	96.8	117	140	21.7	96.8	117	140	21.7
PCB 197	3	3	100	3.02	3.68	4.76	0.943	3.02	3.68	4.76	0.943
PCB 198	3	3	100	3.72	4.34	5.3	0.843	3.72	4.34	5.3	0.843
PCB 199	3	3	100	98.8	118	147	25.8	98.8	118	147	25.8
PCB 200	3	3	100	7.7	8.93	10.7	1.57	7.7	8.93	10.7	1.57
PCB 201	3	3	100	10.2	11.8	14.6	2.46	10.2	11.8	14.6	2.46
PCB 202	3	3	100	24.4	30.7	40	8.24	24.4	30.7	40	8.24
PCB 204	3	0	0	0.0402	0.0494	0.056	0.00821	NA	NA	NA	NA
PCB 205	3	3	100	2.82	3.27	3.84	0.522	2.82	3.27	3.84	0.522
PCB 206	3	3	100	33	38.4	47.5	7.93	33	38.4	47.5	7.93
PCB 207	3	3	100	3.38	4.04	5.11	0.933	3.38	4.04	5.11	0.933
PCB 208	3	3	100	8.88	11.2	14	2.59	8.88	11.2	14	2.59
Decachlorobiphenyl	3	3	100	7.01	8.93	11.1	2.06	7.01	8.93	11.1	2.06
Total PCB congeners, 1/2 DL	3	3	100	5000	6010	7600	1390	5000	6010	7600	1390
PCB TEQ, mammal, 1/2 DL	3	3	100	0.0765	0.0973	0.117	0.0203	0.0765	0.0973	0.117	0.0203
Monochlorobiphenyl homologs	3	2	67	0.0234	0.0965	0.147	0.0648	0.119	0.133	0.147	0.0198
Dichlorobiphenyl homologs	3	3	100	2.46	2.99	3.96	0.841	2.46	2.99	3.96	0.841
Trichlorobiphenyl homologs	3	3	100	39.4	48.9	60.5	10.7	39.4	48.9	60.5	10.7
Tetrachlorobiphenyl homologs	3	3	100	190	271	353	81.5	190	271	353	81.5
Pentachlorobiphenyl homologs	3	3	100	966	1320	1720	379	966	1320	1720	379
Hexachlorobiphenyl homologs	3	3	100	1970	2400	3020	552	1970	2400	3020	552
Heptachlorobiphenyl homologs	3	3	100	1250	1510	1880	327	1250	1510	1880	327
Octachlorobiphenyl homologs	3	3	100	327	389	475	76.9	327	389	475	76.9
Nonachlorobiphenyl homologs	3	3	100	45.3	53.7	66.6	11.4	45.3	53.7	66.6	11.4
Dioxins/Furans (pg/g ww)											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	3	1	33	0.0499	0.0918	0.156	0.0565	0.156	NA	0.156	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	3	0	0	0.0481	0.0505	0.053	0.00245	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	3	0	0	0.0482	0.0526	0.0585	0.00533	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzodioxin	3	0	0	0.054	0.0645	0.0835	0.0165	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	3	0	0	0.03155	0.039	0.051	0.0105	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzodioxin	3	0	0	0.0555	0.0678	0.0835	0.0143	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	3	0	0	0.03135	0.0403	0.052	0.0106	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzodioxin	3	0	0	0.0595	0.0697	0.0895	0.0172	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	3	0	0	0.0486	0.0644	0.083	0.0174	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzodioxin	3	0	0	0.02635	0.0348	0.04235	0.00804	NA	NA	NA	NA

Table 5-1. Summary of Results for Fillet Composites from Small Fish (A – 50 to 97 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Dioxins/Furans (pg/g ww) (continued)											
1,2,3,7,8-Pentachlorodibenzofuran	3	0	0	0.0151	0.0355	0.0535	0.0193	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	3	0	0	0.0345	0.0438	0.0565	0.0114	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	3	0	0	0.03145	0.0409	0.056	0.0132	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzodioxin	3	0	0	0.0206	0.0327	0.04905	0.0147	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	3	3	100	0.416	0.59	0.807	0.199	0.416	0.59	0.807	0.199
Dioxin TEQ, mammal, 1/2 DL	3	3	100	0.141	0.181	0.216	0.0377	0.141	0.181	0.216	0.0377
Total TEQ, mammal, 1/2 DL	3	3	100	0.218	0.278	0.315	0.0527	0.218	0.278	0.315	0.0527
Tetrachlorodibenzodioxin (Total)	3	0	0	0.0206	0.0327	0.04905	0.0147	NA	NA	NA	NA
Tetrachlorodibenzofuran (Total)	3	3	100	0.416	0.59	0.807	0.199	0.416	0.59	0.807	0.199
Pentachlorodibenzodioxin (Total)	3	0	0	0.02635	0.0348	0.04235	0.00804	NA	NA	NA	NA
Pentachlorodibenzofuran (Total)	3	0	0	0.0151	0.0356	0.055	0.02	NA	NA	NA	NA
Hexachlorodibenzodioxin (Total)	3	0	0	0.0565	0.0673	0.0855	0.0158	NA	NA	NA	NA
Hexachlorodibenzofuran (Total)	3	0	0	0.03605	0.0463	0.06	0.0124	NA	NA	NA	NA
Heptachlorodibenzodioxin (Total)	3	1	33	0.0499	0.0918	0.156	0.0565	0.156	NA	0.156	NA
Heptachlorodibenzofuran (Total)	3	0	0	0.0481	0.0514	0.0555	0.00378	NA	NA	NA	NA
Octachlorodibenzodioxin	3	1	33	0.0865	0.173	0.326	0.133	0.326	NA	0.326	NA
Octachlorodibenzofuran	3	0	0	0.115	0.13	0.1385	0.0132	NA	NA	NA	NA
PBDEs (µg/kg ww)											
PBDE 47	3	3	100	1.05	1.33	1.81	0.42	1.05	1.33	1.81	0.42
PBDE 99	3	3	100	0.089	0.121	0.175	0.0473	0.089	0.121	0.175	0.0473
PBDE 153	3	3	100	0.0411	0.0551	0.082	0.0233	0.0411	0.0551	0.082	0.0233
PBDE 209	3	2	67	0.00385	0.0147	0.0273	0.0118	0.0129	0.0201	0.0273	0.0102
Total Mono-BDE	3	0	0	0.000051	0.000063	0.0000725	0.000011	NA	NA	NA	NA
Total Di-BDE	3	2	67	0.00059	0.00134	0.00212	0.000765	0.00131	0.00172	0.00212	0.000573
Total Tri-BDE	3	3	100	0.0871	0.101	0.108	0.0118	0.0871	0.101	0.108	0.0118
Total Tetra-BDE	3	3	100	1.13	1.45	2	0.481	1.13	1.45	2	0.481
Total Penta-BDE	3	3	100	0.328	0.409	0.561	0.131	0.328	0.409	0.561	0.131
Total Hexa-BDE	3	3	100	0.143	0.18	0.251	0.0618	0.143	0.18	0.251	0.0618
Total Hepta-BDE	3	3	100	0.00252	0.00549	0.00872	0.00311	0.00252	0.00549	0.00872	0.00311
Total Octa-BDE	3	2	67	9.15E-05	0.00146	0.00281	0.00136	0.00148	0.00215	0.00281	0.00094
Total Nona-BDE	3	0	0	0.000243	0.000288	0.0003475	0.0000541	NA	NA	NA	NA
Total Deca-BDE	3	2	67	0.00385	0.0147	0.0273	0.0118	0.0129	0.0201	0.0273	0.0102

Notes:

Summary statistics were calculated using half the reporting limit for non-detected inorganic results and half the estimated detection limit for non-detected organic results.

BDE - bromodiphenyl ether

DL - detection limit

NA - not applicable

PBDE - polybrominated diphenylether

PCB - polychlorinated biphenyl

SD - standard deviation

TEQ - toxicity equivalence quotient

Table 5-2. Summary of Results for Fillet Composites from Medium Fish (B – 98 to 137 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Metals/Metalloids (mg/kg dw except mercury)											
Aluminum	3	3	100	1.7	1.9	2.1	0.2	1.7	1.9	2.1	0.2
Antimony	3	0	0	0.002	0.0027	0.003	0.00058	NA	NA	NA	NA
Arsenic	3	3	100	0.704	0.873	1.07	0.185	0.704	0.873	1.07	0.185
Barium	3	3	100	0.06	0.066	0.069	0.0052	0.06	0.066	0.069	0.0052
Beryllium	3	0	0	0.0095	0.0098	0.01	0.00029	NA	NA	NA	NA
Boron	3	0	0	0.95	0.98	1	0.029	NA	NA	NA	NA
Cadmium	3	3	100	0.003	0.0043	0.006	0.0015	0.003	0.0043	0.006	0.0015
Calcium	3	3	100	216	237	254	19.2	216	237	254	19.2
Chromium	3	3	100	0.26	0.3	0.38	0.067	0.26	0.3	0.38	0.067
Cobalt	3	3	100	0.013	0.014	0.014	0.00058	0.013	0.014	0.014	0.00058
Copper	3	3	100	1.11	1.2	1.38	0.156	1.11	1.2	1.38	0.156
Inorganic arsenic	3	0	0	0.04	0.04	0.04	0	NA	NA	NA	NA
Iron	3	3	100	14.6	16.9	18.1	1.97	14.6	16.9	18.1	1.97
Lead	3	3	100	0.015	0.018	0.021	0.0031	0.015	0.018	0.021	0.0031
Magnesium	3	3	100	988	1040	1070	42.8	988	1040	1070	42.8
Manganese	3	3	100	0.862	0.94	1.04	0.091	0.862	0.94	1.04	0.091
Mercury (µg/kg dw)	3	3	100	258	312	370	56.1	258	312	370	56.1
Molybdenum	3	3	100	0.007	0.011	0.016	0.0048	0.007	0.011	0.016	0.0048
Nickel	3	3	100	0.09	0.11	0.14	0.029	0.09	0.11	0.14	0.029
Potassium	3	3	100	14600	15300	15800	643	14600	15300	15800	643
Selenium	3	3	100	4.47	4.77	4.98	0.268	4.47	4.77	4.98	0.268
Silicon	3	3	100	4.9	7	8.1	1.8	4.9	7	8.1	1.8
Silver	3	0	0	0.003	0.0075	0.01	0.0039	NA	NA	NA	NA
Sodium	3	3	100	1300	1400	1450	83.9	1300	1400	1450	83.9
Sulfur	3	3	100	7070	7490	7740	364	7070	7490	7740	364
Thallium	3	3	100	0.009	0.013	0.016	0.0038	0.009	0.013	0.016	0.0038
Tin	3	3	100	0.011	0.013	0.016	0.0029	0.011	0.013	0.016	0.0029
Uranium	3	0	0	0.0095	0.0098	0.01	0.00029	NA	NA	NA	NA
Vanadium	3	3	100	0.01	0.017	0.02	0.0058	0.01	0.017	0.02	0.0058
Zinc	3	3	100	14.1	14.1	14.2	0.0577	14.1	14.1	14.2	0.0577
Conventional Parameters											
Fluoride (mg/kg ww)	3	3	100	1.5	1.6	1.7	0.1	1.5	1.6	1.7	0.1
Lipid (% ww)	3	3	100	5.14	5.84	6.22	0.607	5.14	5.84	6.22	0.607
Total solids (% ww)	3	3	100	23.9	25	26.4	1.29	23.9	25	26.4	1.29
PCB Congeners (pg/g ww)											
PCB 1	3	1	33	0.058	0.108	0.155	0.0485	0.11	NA	0.11	NA
PCB 2	3	0	0	0.062	0.0787	0.093	0.0156	NA	NA	NA	NA
PCB 3	3	1	33	0.0328	0.0595	0.0956	0.0325	0.0956	NA	0.0956	NA
PCB 4/10	3	0	0	0.2415	0.26	0.2815	0.0203	NA	NA	NA	NA
PCB 5/8	3	3	100	1.41	1.55	1.65	0.125	1.41	1.55	1.65	0.125
PCB 6	3	0	0	0.117	0.13	0.1405	0.012	NA	NA	NA	NA
PCB 7/9	3	0	0	0.066	0.0715	0.076	0.00507	NA	NA	NA	NA
PCB 11	3	0	0	0.605	0.712	0.775	0.0929	NA	NA	NA	NA
PCB 12/13	3	0	0	0.03235	0.0495	0.065	0.0164	NA	NA	NA	NA
PCB 14	3	0	0	0.028	0.0427	0.056	0.0141	NA	NA	NA	NA
PCB 15	3	0	0	0.1255	0.156	0.186	0.0303	NA	NA	NA	NA

Table 5-2. Summary of Results for Fillet Composites from Medium Fish (B – 98 to 137 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 16/32	3	3	100	3.05	3.38	3.85	0.418	3.05	3.38	3.85	0.418
PCB 17	3	3	100	1.42	1.58	1.69	0.14	1.42	1.58	1.69	0.14
PCB 18	3	3	100	10.6	12.2	14.1	1.77	10.6	12.2	14.1	1.77
PCB 19	3	3	100	0.648	0.726	0.84	0.101	0.648	0.726	0.84	0.101
PCB 20/21/33	3	3	100	0.735	1.32	2.18	0.762	0.735	1.32	2.18	0.762
PCB 22	3	3	100	1.35	2.41	3.68	1.18	1.35	2.41	3.68	1.18
PCB 23	3	0	0	0.059	0.07	0.09	0.0173	NA	NA	NA	NA
PCB 24/27	3	3	100	0.756	0.833	0.937	0.0936	0.756	0.833	0.937	0.0936
PCB 25	3	3	100	0.17	0.264	0.411	0.129	0.17	0.264	0.411	0.129
PCB 26	3	3	100	0.642	1.22	2.01	0.711	0.642	1.22	2.01	0.711
PCB 28	3	3	100	16.9	20.5	25.3	4.31	16.9	20.5	25.3	4.31
PCB 29	3	0	0	0.04015	0.0592	0.082	0.0212	NA	NA	NA	NA
PCB 30	3	0	0	0.02705	0.0355	0.04475	0.00888	NA	NA	NA	NA
PCB 31	3	3	100	7.76	12.1	18.2	5.43	7.76	12.1	18.2	5.43
PCB 34	3	2	67	0.054	0.101	0.146	0.046	0.102	0.124	0.146	0.0311
PCB 35	3	0	0	0.0455	0.0529	0.0635	0.00943	NA	NA	NA	NA
PCB 36	3	0	0	0.04475	0.052	0.0625	0.00931	NA	NA	NA	NA
PCB 37	3	3	100	0.173	0.25	0.35	0.0907	0.173	0.25	0.35	0.0907
PCB 38	3	3	100	0.505	0.591	0.681	0.088	0.505	0.591	0.681	0.088
PCB 39	3	0	0	0.04215	0.0491	0.059	0.00883	NA	NA	NA	NA
PCB 40	3	3	100	0.484	0.779	1.23	0.397	0.484	0.779	1.23	0.397
PCB 41/64/71/72	3	3	100	27.8	30.4	33.5	2.89	27.8	30.4	33.5	2.89
PCB 42/59	3	3	100	3.24	4.74	6.92	1.93	3.24	4.74	6.92	1.93
PCB 43/49	3	3	100	33.7	36.8	40	3.15	33.7	36.8	40	3.15
PCB 44	3	3	100	24.7	26.7	30.1	2.96	24.7	26.7	30.1	2.96
PCB 45	3	3	100	1.76	2.2	2.78	0.524	1.76	2.2	2.78	0.524
PCB 46	3	3	100	0.513	0.643	0.827	0.164	0.513	0.643	0.827	0.164
PCB 47	3	3	100	17.4	18.6	20.4	1.59	17.4	18.6	20.4	1.59
PCB 48/75	3	3	100	3.32	3.91	4.89	0.857	3.32	3.91	4.89	0.857
PCB 50	3	0	0	0.098	0.114	0.1255	0.0141	NA	NA	NA	NA
PCB 51	3	3	100	0.5	0.639	0.816	0.161	0.5	0.639	0.816	0.161
PCB 52/69	3	3	100	71.1	84.8	100	14.5	71.1	84.8	100	14.5
PCB 53	3	3	100	3.4	3.66	4.09	0.377	3.4	3.66	4.09	0.377
PCB 54	3	0	0	0.082	0.0952	0.105	0.0119	NA	NA	NA	NA
PCB 55	3	3	100	1.07	1.29	1.63	0.299	1.07	1.29	1.63	0.299
PCB 56/60	3	3	100	12.6	13.7	15.2	1.36	12.6	13.7	15.2	1.36
PCB 57	3	3	100	0.268	0.302	0.345	0.0394	0.268	0.302	0.345	0.0394
PCB 58	3	3	100	0.206	0.236	0.282	0.0403	0.206	0.236	0.282	0.0403
PCB 61/70	3	3	100	40.3	44.3	48.2	3.95	40.3	44.3	48.2	3.95
PCB 62	3	0	0	0.079	0.0947	0.1025	0.0136	NA	NA	NA	NA
PCB 63	3	3	100	2.94	3.26	3.45	0.276	2.94	3.26	3.45	0.276
PCB 65	3	0	0	0.0845	0.101	0.1095	0.0144	NA	NA	NA	NA
PCB 67	3	3	100	0.181	0.215	0.275	0.0524	0.181	0.215	0.275	0.0524
PCB 68	3	3	100	1.47	1.62	1.86	0.208	1.47	1.62	1.86	0.208
PCB 73	3	0	0	0.0775	0.0923	0.102	0.013	NA	NA	NA	NA
PCB 74	3	3	100	31.6	35.8	40.3	4.36	31.6	35.8	40.3	4.36

Table 5-2. Summary of Results for Fillet Composites from Medium Fish (B – 98 to 137 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 76	3	3	100	42.6	47.9	52.1	4.84	42.6	47.9	52.1	4.84
PCB 77	3	2	67	0.765	0.846	0.96	0.102	0.813	0.887	0.96	0.104
PCB 78	3	0	0	0.0735	0.0848	0.095	0.0108	NA	NA	NA	NA
PCB 79	3	3	100	4.15	5.1	6.45	1.2	4.15	5.1	6.45	1.2
PCB 80	3	0	0	0.0615	0.0752	0.0895	0.014	NA	NA	NA	NA
PCB 81	3	3	100	0.561	0.726	0.887	0.163	0.561	0.726	0.887	0.163
PCB 82	3	3	100	4.55	5.33	6.37	0.939	4.55	5.33	6.37	0.939
PCB 83	3	0	0	0.0525	0.0613	0.071	0.00928	NA	NA	NA	NA
PCB 84/92	3	3	100	82.9	99.3	128	24.9	82.9	99.3	128	24.9
PCB 85/116	3	3	100	51.9	61	77.3	14.2	51.9	61	77.3	14.2
PCB 86	3	0	0	0.0875	0.102	0.1175	0.015	NA	NA	NA	NA
PCB 87/117/125	3	3	100	80.1	97.2	129	27.5	80.1	97.2	129	27.5
PCB 88/91	3	3	100	27.5	33	42.5	8.29	27.5	33	42.5	8.29
PCB 89	3	3	100	0.374	0.419	0.475	0.0514	0.374	0.419	0.475	0.0514
PCB 90/101	3	3	100	270	332	435	89.6	270	332	435	89.6
PCB 93	3	0	0	0.0735	0.0852	0.0995	0.0132	NA	NA	NA	NA
PCB 94	3	3	100	0.646	0.844	1.07	0.213	0.646	0.844	1.07	0.213
PCB 95/98/102	3	3	100	154	189	250	53	154	189	250	53
PCB 96	3	3	100	0.509	0.631	0.832	0.176	0.509	0.631	0.832	0.176
PCB 97	3	3	100	42.2	45.8	51.9	5.31	42.2	45.8	51.9	5.31
PCB 100	3	3	100	1.22	1.42	1.53	0.171	1.22	1.42	1.53	0.171
PCB 99	3	3	100	165	200	257	50	165	200	257	50
PCB 103	3	3	100	2.52	2.76	3.14	0.335	2.52	2.76	3.14	0.335
PCB 104	3	0	0	0.051	0.059	0.069	0.00917	NA	NA	NA	NA
PCB 105	3	3	100	84	106	133	25	84	106	133	25
PCB 106/118	3	3	100	185	207	250	37.5	185	207	250	37.5
PCB 107/109	3	3	100	29.3	33.4	41.2	6.73	29.3	33.4	41.2	6.73
PCB 108/112	3	3	100	9.28	11.2	14.3	2.74	9.28	11.2	14.3	2.74
PCB 110	3	3	100	258	302	384	71.3	258	302	384	71.3
PCB 111/115	3	3	100	4.61	5.42	6.86	1.25	4.61	5.42	6.86	1.25
PCB 113	3	0	0	0.0565	0.0648	0.0765	0.0104	NA	NA	NA	NA
PCB 114	3	3	100	5.46	6.82	8.7	1.68	5.46	6.82	8.7	1.68
PCB 119	3	3	100	10.1	10.8	11.9	0.987	10.1	10.8	11.9	0.987
PCB 120	3	3	100	0.999	1.1	1.2	0.101	0.999	1.1	1.2	0.101
PCB 121	3	0	0	0.0505	0.0583	0.068	0.00889	NA	NA	NA	NA
PCB 122	3	0	0	0.0915	0.144	0.217	0.0654	NA	NA	NA	NA
PCB 123	3	3	100	3.19	3.5	3.73	0.28	3.19	3.5	3.73	0.28
PCB 124	3	3	100	3.52	4.09	4.68	0.58	3.52	4.09	4.68	0.58
PCB 126	3	3	100	0.594	0.777	1.04	0.234	0.594	0.777	1.04	0.234
PCB 127	3	0	0	0.088	0.14	0.2105	0.0635	NA	NA	NA	NA
PCB 128/162	3	3	100	73.7	86.7	106	17.1	73.7	86.7	106	17.1
PCB 129	3	3	100	10.7	13.2	17.8	3.99	10.7	13.2	17.8	3.99
PCB 130	3	3	100	31.8	35.4	39.1	3.65	31.8	35.4	39.1	3.65
PCB 131	3	0	0	0.04875	0.174	0.256	0.11	NA	NA	NA	NA
PCB 132/161	3	3	100	87.1	96.1	111	13	87.1	96.1	111	13
PCB 133/142	3	3	100	15	16.6	19.3	2.35	15	16.6	19.3	2.35

Table 5-2. Summary of Results for Fillet Composites from Medium Fish (B – 98 to 137 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 134/143	3	3	100	16.6	18.9	22.1	2.86	16.6	18.9	22.1	2.86
PCB 135	3	3	100	56.9	64.8	75.2	9.39	56.9	64.8	75.2	9.39
PCB 136	3	3	100	36.5	38.8	43	3.67	36.5	38.8	43	3.67
PCB 137	3	3	100	19	25.3	37.5	10.5	19	25.3	37.5	10.5
PCB 138/163/164	3	3	100	610	696	823	112	610	696	823	112
PCB 139/149	3	3	100	383	417	450	33.5	383	417	450	33.5
PCB 140	3	3	100	2.98	3.27	3.66	0.352	2.98	3.27	3.66	0.352
PCB 141	3	3	100	67.7	79.5	97	15.5	67.7	79.5	97	15.5
PCB 144	3	3	100	13.4	15.8	17	2.08	13.4	15.8	17	2.08
PCB 145	3	0	0	0.0393	0.0417	0.04555	0.0034	NA	NA	NA	NA
PCB 146/165	3	3	100	101	111	127	13.8	101	111	127	13.8
PCB 147	3	3	100	11.5	13.1	15.6	2.21	11.5	13.1	15.6	2.21
PCB 148	3	3	100	0.538	0.606	0.684	0.0734	0.538	0.606	0.684	0.0734
PCB 150	3	2	67	0.23	0.383	0.479	0.134	0.441	0.46	0.479	0.0269
PCB 151	3	3	100	139	147	157	9.07	139	147	157	9.07
PCB 152	3	3	100	0.221	0.269	0.348	0.0692	0.221	0.269	0.348	0.0692
PCB 153	3	3	100	583	656	766	96.8	583	656	766	96.8
PCB 154	3	3	100	8.16	8.55	9.03	0.442	8.16	8.55	9.03	0.442
PCB 155	3	3	100	0.55	0.598	0.652	0.0512	0.55	0.598	0.652	0.0512
PCB 156	3	3	100	37.9	47.3	63.2	13.8	37.9	47.3	63.2	13.8
PCB 157	3	3	100	8.98	11	14.4	2.97	8.98	11	14.4	2.97
PCB 158/160	3	3	100	49.5	58.7	76.3	15.3	49.5	58.7	76.3	15.3
PCB 159	3	0	0	0.0288	0.115	0.171	0.0755	NA	NA	NA	NA
PCB 166	3	3	100	1.8	2.28	2.87	0.544	1.8	2.28	2.87	0.544
PCB 167	3	3	100	1.74	1.92	2.18	0.229	1.74	1.92	2.18	0.229
PCB 168	3	3	100	0.532	0.743	0.885	0.186	0.532	0.743	0.885	0.186
PCB 169	3	3	100	0.7	0.797	0.898	0.0991	0.7	0.797	0.898	0.0991
PCB 170	3	3	100	109	125	156	26.6	109	125	156	26.6
PCB 171	3	3	100	36.6	41.2	48.9	6.71	36.6	41.2	48.9	6.71
PCB 172	3	3	100	22.1	25.8	32.6	5.9	22.1	25.8	32.6	5.9
PCB 173	3	3	100	2.44	2.56	2.68	0.12	2.44	2.56	2.68	0.12
PCB 174	3	3	100	117	122	130	7	117	122	130	7
PCB 175	3	3	100	5.21	6.03	7.19	1.03	5.21	6.03	7.19	1.03
PCB 176	3	3	100	15.6	16	16.7	0.608	15.6	16	16.7	0.608
PCB 177	3	3	100	98.8	108	122	12.2	98.8	108	122	12.2
PCB 178	3	3	100	41.9	45.6	51.9	5.51	41.9	45.6	51.9	5.51
PCB 179	3	3	100	69.8	72.8	78.3	4.8	69.8	72.8	78.3	4.8
PCB 180	3	3	100	285	337	431	81.3	285	337	431	81.3
PCB 181	3	0	0	0.02995	0.101	0.2315	0.113	NA	NA	NA	NA
PCB 182/187	3	3	100	368	390	432	36.1	368	390	432	36.1
PCB 183	3	3	100	80.9	91.4	111	17	80.9	91.4	111	17
PCB 184	3	3	100	0.986	1.07	1.11	0.0716	0.986	1.07	1.11	0.0716
PCB 185	3	3	100	19.1	20.7	23.2	2.19	19.1	20.7	23.2	2.19
PCB 186	3	0	0	0.0239	0.0799	0.1815	0.0881	NA	NA	NA	NA
PCB 188	3	3	100	0.418	0.46	0.525	0.0573	0.418	0.46	0.525	0.0573
PCB 189	3	3	100	3.98	4.58	5.75	1.01	3.98	4.58	5.75	1.01

Table 5-2. Summary of Results for Fillet Composites from Medium Fish (B – 98 to 137 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 190	3	3	100	30.4	32.6	36.4	3.3	30.4	32.6	36.4	3.3
PCB 191	3	3	100	4.54	5.51	7.31	1.56	4.54	5.51	7.31	1.56
PCB 192	3	0	0	0.0242	0.0817	0.187	0.0913	NA	NA	NA	NA
PCB 193	3	3	100	22.5	24.3	27.8	3.03	22.5	24.3	27.8	3.03
PCB 194	3	3	100	42.8	53.4	64.5	10.9	42.8	53.4	64.5	10.9
PCB 195	3	3	100	27.5	29.1	31.5	2.1	27.5	29.1	31.5	2.1
PCB 196/203	3	3	100	101	118	148	26.3	101	118	148	26.3
PCB 197	3	3	100	3.21	3.55	3.87	0.331	3.21	3.55	3.87	0.331
PCB 198	3	3	100	3.99	4.68	5.66	0.874	3.99	4.68	5.66	0.874
PCB 199	3	3	100	111	124	149	21.4	111	124	149	21.4
PCB 200	3	3	100	8.93	9.93	11.4	1.3	8.93	9.93	11.4	1.3
PCB 201	3	3	100	11.3	12.6	15	2.06	11.3	12.6	15	2.06
PCB 202	3	3	100	29.4	32.7	38.8	5.32	29.4	32.7	38.8	5.32
PCB 204	3	0	0	0.0451	0.0614	0.075	0.0151	NA	NA	NA	NA
PCB 205	3	3	100	2.76	3.11	3.35	0.312	2.76	3.11	3.35	0.312
PCB 206	3	3	100	34.3	47.8	66.7	16.8	34.3	47.8	66.7	16.8
PCB 207	3	3	100	3.52	4.9	6.53	1.52	3.52	4.9	6.53	1.52
PCB 208	3	3	100	11.1	14.4	18.8	3.98	11.1	14.4	18.8	3.98
Decachlorobiphenyl	3	3	100	9.11	10.7	13.4	2.35	9.11	10.7	13.4	2.35
Total PCB congeners, 1/2 DL	3	3	100	6120	6800	8080	1110	6120	6800	8080	1110
PCB TEQ, mammal, 1/2 DL	3	3	100	0.0934	0.113	0.14	0.024	0.0934	0.113	0.14	0.024
Monochlorobiphenyl homologs	3	1	33	0.0328	0.116	0.206	0.0868	0.206	NA	0.206	NA
Dichlorobiphenyl homologs	3	3	100	2.86	2.98	3.1	0.12	2.86	2.98	3.1	0.12
Trichlorobiphenyl homologs	3	3	100	46.2	57.5	69.8	11.8	46.2	57.5	69.8	11.8
Tetrachlorobiphenyl homologs	3	3	100	330	369	392	34	330	369	392	34
Pentachlorobiphenyl homologs	3	3	100	1500	1760	2240	416	1500	1760	2240	416
Hexachlorobiphenyl homologs	3	3	100	2420	2670	3100	376	2420	2670	3100	376
Heptachlorobiphenyl homologs	3	3	100	1340	1470	1720	214	1340	1470	1720	214
Octachlorobiphenyl homologs	3	3	100	348	391	471	69.6	348	391	471	69.6
Nonachlorobiphenyl homologs	3	3	100	48.8	67	92	22.4	48.8	67	92	22.4
Dioxins/Furans (pg/g ww)											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	3	0	0	0.04265	0.0493	0.0585	0.00823	NA	NA	NA	NA
1,2,3,4,6,7,8-Heptachlorodibenzofuran	3	0	0	0.0338	0.0434	0.04935	0.0084	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	3	0	0	0.036	0.0446	0.05	0.00754	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzodioxin	3	0	0	0.0381	0.0469	0.056	0.00895	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	3	0	0	0.02475	0.028	0.03025	0.0029	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzodioxin	3	0	0	0.0391	0.0465	0.055	0.00801	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	3	0	0	0.02655	0.0294	0.0317	0.00262	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzodioxin	3	0	0	0.041	0.0497	0.0585	0.00875	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	3	0	0	0.0382	0.0423	0.0447	0.00357	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzodioxin	3	0	0	0.02225	0.0242	0.02665	0.00225	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzofuran	3	0	0	0.02645	0.0359	0.04895	0.0117	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	3	0	0	0.02805	0.0305	0.03185	0.00209	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	3	0	0	0.0184	0.0281	0.04615	0.0156	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzodioxin	3	0	0	0.02005	0.0275	0.0339	0.00699	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	3	3	100	0.739	0.869	1.04	0.155	0.739	0.869	1.04	0.155

Table 5-2. Summary of Results for Fillet Composites from Medium Fish (B – 98 to 137 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Dioxins/Furans (pg/g ww) (continued)											
Dioxin TEQ, mammal, 1/2 DL	3	3	100	0.15	0.177	0.193	0.0235	0.15	0.177	0.193	0.0235
Total TEQ, mammal, 1/2 DL	3	3	100	0.281	0.29	0.3	0.0095	0.281	0.29	0.3	0.0095
Tetrachlorodibenzodioxin (Total)	3	0	0	0.02005	0.0275	0.0339	0.00699	NA	NA	NA	NA
Tetrachlorodibenzofuran (Total)	3	3	100	0.739	0.869	1.04	0.155	0.739	0.869	1.04	0.155
Pentachlorodibenzodioxin (Total)	3	0	0	0.02225	0.0242	0.02665	0.00225	NA	NA	NA	NA
Pentachlorodibenzofuran (Total)	3	0	0	0.0184	0.0377	0.0475	0.0167	NA	NA	NA	NA
Hexachlorodibenzodioxin (Total)	3	0	0	0.0395	0.0477	0.0565	0.00851	NA	NA	NA	NA
Hexachlorodibenzofuran (Total)	3	0	0	0.0291	0.0322	0.03425	0.00273	NA	NA	NA	NA
Heptachlorodibenzodioxin (Total)	3	0	0	0.04265	0.0493	0.0585	0.00823	NA	NA	NA	NA
Heptachlorodibenzofuran (Total)	3	0	0	0.0348	0.044	0.0486	0.00794	NA	NA	NA	NA
Octachlorodibenzodioxin	3	1	33	0.0625	0.149	0.312	0.141	0.312	NA	0.312	NA
Octachlorodibenzofuran	3	0	0	0.0755	0.0852	0.0905	0.00839	NA	NA	NA	NA
PBDEs (µg/kg ww)											
PBDE 47	3	3	100	1.18	1.51	1.72	0.289	1.18	1.51	1.72	0.289
PBDE 99	3	3	100	0.0535	0.0615	0.0657	0.0069	0.0535	0.0615	0.0657	0.0069
PBDE 153	3	3	100	0.0263	0.0355	0.0408	0.00797	0.0263	0.0355	0.0408	0.00797
PBDE 209	3	0	0	0.00399	0.00555	0.00755	0.00182	NA	NA	NA	NA
Total Mono-BDE	3	0	0	0.00004935	0.0000595	0.000075	0.0000137	NA	NA	NA	NA
Total Di-BDE	3	2	67	0.00111	0.00193	0.00289	0.000899	0.00178	0.00234	0.00289	0.000785
Total Tri-BDE	3	3	100	0.167	0.191	0.239	0.0416	0.167	0.191	0.239	0.0416
Total Tetra-BDE	3	3	100	1.28	1.66	1.88	0.328	1.28	1.66	1.88	0.328
Total Penta-BDE	3	3	100	0.294	0.372	0.429	0.0699	0.294	0.372	0.429	0.0699
Total Hexa-BDE	3	3	100	0.116	0.151	0.174	0.031	0.116	0.151	0.174	0.031
Total Hepta-BDE	3	3	100	0.00275	0.00394	0.00618	0.00194	0.00275	0.00394	0.00618	0.00194
Total Octa-BDE	3	1	33	0.0000935	0.000797	0.00211	0.00114	0.00211	NA	0.00211	NA
Total Nona-BDE	3	0	0	0.0002845	0.000362	0.000473	0.0000989	NA	NA	NA	NA
Total Deca-BDE	3	0	0	0.00399	0.00555	0.00755	0.00182	NA	NA	NA	NA

Notes:

Summary statistics were calculated using half the reporting limit for non-detected inorganic results and half the estimated detection limit for non-detected organic results.

BDE - bromodiphenyl ether

DL - detection limit

NA - not applicable

PBDE - polybrominated diphenylether

PCB - polychlorinated biphenyl

SD - standard deviation

TEQ - toxicity equivalence quotient

Table 5-3. Summary of Results for Fillet Composites from Large Fish (C – 138 to 160 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Metals/Metalloids (mg/kg dw except mercury)											
Aluminum	3	0	0	0.45	0.47	0.5	0.029	NA	NA	NA	NA
Antimony	3	0	0	0.0025	0.0095	0.023	0.012	NA	NA	NA	NA
Arsenic	3	3	100	0.645	0.695	0.755	0.0556	0.645	0.695	0.755	0.0556
Barium	3	3	100	0.062	0.062	0.062	0	0.062	0.062	0.062	0
Beryllium	3	0	0	0.009	0.0092	0.0095	0.00029	NA	NA	NA	NA
Boron	3	0	0	0.9	0.92	0.95	0.029	NA	NA	NA	NA
Cadmium	3	3	100	0.003	0.0053	0.01	0.004	0.003	0.0053	0.01	0.004
Calcium	3	3	100	152	164	171	10.2	152	164	171	10.2
Chromium	3	3	100	0.04	0.16	0.3	0.13	0.04	0.16	0.3	0.13
Cobalt	3	3	100	0.008	0.01	0.013	0.0025	0.008	0.01	0.013	0.0025
Copper	3	3	100	0.72	0.72	0.73	0.0058	0.72	0.72	0.73	0.0058
Inorganic arsenic	3	0	0	0.04	0.04	0.04	0	NA	NA	NA	NA
Iron	3	3	100	9.62	10.4	10.9	0.669	9.62	10.4	10.9	0.669
Lead	3	3	100	0.011	0.012	0.013	0.0012	0.011	0.012	0.013	0.0012
Magnesium	3	3	100	653	735	787	72.1	653	735	787	72.1
Manganese	3	3	100	0.556	0.668	0.832	0.145	0.556	0.668	0.832	0.145
Mercury (µg/kg dw)	3	3	100	340	354	378	21.1	340	354	378	21.1
Molybdenum	3	3	100	0.0029	0.0049	0.0071	0.0021	0.0029	0.0049	0.0071	0.0021
Nickel	3	3	100	0.02	0.11	0.16	0.081	0.02	0.11	0.16	0.081
Potassium	3	3	100	10200	11000	11600	737	10200	11000	11600	737
Selenium	3	3	100	3.1	3.42	3.8	0.355	3.1	3.42	3.8	0.355
Silicon	3	3	100	2.3	3.9	5.4	1.6	2.3	3.9	5.4	1.6
Silver	3	0	0	0.0005	0.0063	0.0095	0.0051	NA	NA	NA	NA
Sulfur	3	3	100	5260	5610	5840	308	5260	5610	5840	308
Sodium	3	3	100	944	1010	1120	99.1	944	1010	1120	99.1
Thallium	3	3	100	0.01	0.012	0.014	0.0021	0.01	0.012	0.014	0.0021
Tin	3	3	100	0.003	0.006	0.008	0.0026	0.003	0.006	0.008	0.0026
Uranium	3	0	0	0.009	0.0092	0.0095	0.00029	NA	NA	NA	NA
Vanadium	3	3	100	0.01	0.01	0.01	0	0.01	0.01	0.01	0
Zinc	3	3	100	9.7	10	10.8	0.56	9.7	10	10.8	0.56
Conventional Parameters											
Fluoride (mg/kg ww)	3	3	100	1.7	1.7	1.8	0.058	1.7	1.7	1.8	0.058
Lipid (% ww)	3	3	100	12.1	13.2	15.4	1.91	12.1	13.2	15.4	1.91
Total solids (% ww)	3	3	100	28.7	30.1	31.6	1.45	28.7	30.1	31.6	1.45
PCB Congeners (pg/g ww)											
PCB 1	3	1	33	0.0735	0.125	0.156	0.0451	0.156	NA	0.156	NA
PCB 2	3	3	100	0.1	0.125	0.148	0.0241	0.1	0.125	0.148	0.0241
PCB 3	3	2	67	0.039	0.111	0.161	0.0641	0.134	0.148	0.161	0.0191
PCB 4/10	3	0	0	0.202	0.359	0.515	0.157	NA	NA	NA	NA
PCB 5/8	3	3	100	2.63	2.88	3.34	0.396	2.63	2.88	3.34	0.396
PCB 6	3	0	0	0.149	0.181	0.245	0.0553	NA	NA	NA	NA
PCB 7/9	3	0	0	0.084	0.103	0.123	0.0195	NA	NA	NA	NA
PCB 11	3	0	0	0.745	0.857	1.065	0.181	NA	NA	NA	NA
PCB 12/13	3	0	0	0.04935	0.0556	0.064	0.00755	NA	NA	NA	NA
PCB 14	3	0	0	0.0427	0.0482	0.0555	0.00658	NA	NA	NA	NA

Table 5-3. Summary of Results for Fillet Composites from Large Fish (C – 138 to 160 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 15	3	0	0	0.2475	0.273	0.2955	0.0241	NA	NA	NA	NA
PCB 16/32	3	3	100	4.11	4.72	5.03	0.528	4.11	4.72	5.03	0.528
PCB 17	3	3	100	1.72	2.12	2.63	0.465	1.72	2.12	2.63	0.465
PCB 18	3	3	100	16.3	18.8	20.4	2.17	16.3	18.8	20.4	2.17
PCB 19	3	3	100	1.13	1.2	1.29	0.0833	1.13	1.2	1.29	0.0833
PCB 20/21/33	3	3	100	1.63	2.14	2.79	0.593	1.63	2.14	2.79	0.593
PCB 22	3	3	100	4.28	4.99	5.78	0.754	4.28	4.99	5.78	0.754
PCB 23	3	0	0	0.0895	0.114	0.1285	0.0212	NA	NA	NA	NA
PCB 24/27	3	3	100	1.32	1.39	1.49	0.0874	1.32	1.39	1.49	0.0874
PCB 25	3	3	100	0.327	0.445	0.608	0.146	0.327	0.445	0.608	0.146
PCB 26	3	3	100	2.11	2.56	3.02	0.455	2.11	2.56	3.02	0.455
PCB 28	3	3	100	33.4	41.9	49.8	8.22	33.4	41.9	49.8	8.22
PCB 29	3	0	0	0.0815	0.104	0.117	0.0193	NA	NA	NA	NA
PCB 30	3	0	0	0.03095	0.0325	0.0336	0.00137	NA	NA	NA	NA
PCB 31	3	3	100	21.6	27.8	33.6	6.01	21.6	27.8	33.6	6.01
PCB 34	3	2	67	0.126	0.193	0.249	0.0623	0.205	0.227	0.249	0.0311
PCB 35	3	0	0	0.0645	0.0787	0.086	0.0123	NA	NA	NA	NA
PCB 36	3	0	0	0.0635	0.0773	0.0845	0.012	NA	NA	NA	NA
PCB 37	3	3	100	0.587	0.8	1.15	0.305	0.587	0.8	1.15	0.305
PCB 38	3	3	100	0.874	1.09	1.41	0.284	0.874	1.09	1.41	0.284
PCB 39	3	2	67	0.068	0.0939	0.116	0.0242	0.0978	0.107	0.116	0.0129
PCB 40	3	3	100	0.7	0.859	1.04	0.171	0.7	0.859	1.04	0.171
PCB 41/64/71/72	3	3	100	50.5	58.1	67	8.33	50.5	58.1	67	8.33
PCB 42/59	3	3	100	8.78	9.21	9.88	0.586	8.78	9.21	9.88	0.586
PCB 43/49	3	3	100	62.1	68.9	76.2	7.06	62.1	68.9	76.2	7.06
PCB 44	3	3	100	41.5	48.2	55.6	7.07	41.5	48.2	55.6	7.07
PCB 45	3	3	100	3.77	4.5	4.86	0.629	3.77	4.5	4.86	0.629
PCB 46	3	3	100	1.33	1.49	1.71	0.197	1.33	1.49	1.71	0.197
PCB 47	3	3	100	30.1	37.2	46	8.09	30.1	37.2	46	8.09
PCB 48/75	3	3	100	5.95	6.22	6.38	0.233	5.95	6.22	6.38	0.233
PCB 50	3	2	67	0.054	0.0908	0.129	0.0375	0.0893	0.109	0.129	0.0281
PCB 51	3	3	100	1.15	1.23	1.36	0.114	1.15	1.23	1.36	0.114
PCB 52/69	3	3	100	126	145	162	18.1	126	145	162	18.1
PCB 53	3	3	100	6.61	7.87	8.93	1.17	6.61	7.87	8.93	1.17
PCB 54	3	2	67	0.0448	0.0672	0.0857	0.0207	0.071	0.0784	0.0857	0.0104
PCB 55	3	3	100	1.73	1.97	2.41	0.382	1.73	1.97	2.41	0.382
PCB 56/60	3	3	100	21.8	26	29.9	4.06	21.8	26	29.9	4.06
PCB 57	3	3	100	0.571	0.636	0.724	0.0792	0.571	0.636	0.724	0.0792
PCB 58	3	3	100	0.469	0.556	0.671	0.104	0.469	0.556	0.671	0.104
PCB 61/70	3	3	100	78	89.4	97	10	78	89.4	97	10
PCB 62	3	0	0	0.057	0.0647	0.079	0.0124	NA	NA	NA	NA
PCB 63	3	3	100	5.4	6.39	7.77	1.23	5.4	6.39	7.77	1.23
PCB 65	3	0	0	0.061	0.069	0.084	0.013	NA	NA	NA	NA
PCB 67	3	3	100	0.416	0.516	0.623	0.104	0.416	0.516	0.623	0.104
PCB 68	3	3	100	2.83	3.28	3.97	0.609	2.83	3.28	3.97	0.609

Table 5-3. Summary of Results for Fillet Composites from Large Fish (C – 138 to 160 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 73	3	0	0	0.04715	0.0561	0.0685	0.0111	NA	NA	NA	NA
PCB 74	3	3	100	52.3	64	78.1	13.1	52.3	64	78.1	13.1
PCB 76	3	3	100	79.4	96.4	113	16.8	79.4	96.4	113	16.8
PCB 77	3	3	100	2.52	2.82	3.31	0.43	2.52	2.82	3.31	0.43
PCB 78	3	0	0	0.0453	0.0513	0.0625	0.00975	NA	NA	NA	NA
PCB 79	3	3	100	6.73	7.99	9.93	1.7	6.73	7.99	9.93	1.7
PCB 80	3	2	67	0.04085	0.192	0.273	0.131	0.263	0.268	0.273	0.00707
PCB 81	3	3	100	0.829	1.43	1.99	0.581	0.829	1.43	1.99	0.581
PCB 82	3	3	100	5.87	7.51	8.82	1.5	5.87	7.51	8.82	1.5
PCB 83	3	0	0	0.0835	0.0853	0.0885	0.00275	NA	NA	NA	NA
PCB 84/92	3	3	100	126	146	170	22.2	126	146	170	22.2
PCB 85/116	3	3	100	72.1	85.4	106	18.1	72.1	85.4	106	18.1
PCB 86	3	0	0	0.1385	0.142	0.1475	0.00506	NA	NA	NA	NA
PCB 87/117/125	3	3	100	115	134	155	20.1	115	134	155	20.1
PCB 88/91	3	3	100	41.1	47.8	57.8	8.81	41.1	47.8	57.8	8.81
PCB 89	3	3	100	0.518	0.743	0.893	0.199	0.518	0.743	0.893	0.199
PCB 90/101	3	3	100	371	434	520	77	371	434	520	77
PCB 93	3	0	0	0.116	0.122	0.127	0.00562	NA	NA	NA	NA
PCB 94	3	3	100	1.1	1.31	1.62	0.274	1.1	1.31	1.62	0.274
PCB 95/98/102	3	3	100	242	285	330	44.1	242	285	330	44.1
PCB 96	3	3	100	0.916	1.14	1.29	0.197	0.916	1.14	1.29	0.197
PCB 97	3	3	100	57.6	72	81.7	12.7	57.6	72	81.7	12.7
PCB 100	3	3	100	2.33	2.77	3.21	0.44	2.33	2.77	3.21	0.44
PCB 99	3	3	100	235	290	356	61.3	235	290	356	61.3
PCB 103	3	3	100	4.62	5.51	6.12	0.786	4.62	5.51	6.12	0.786
PCB 104	3	0	0	0.0985	0.0987	0.099	0.000289	NA	NA	NA	NA
PCB 105	3	3	100	151	193	225	38.1	151	193	225	38.1
PCB 106/118	3	3	100	283	350	384	57.7	283	350	384	57.7
PCB 107/109	3	3	100	43.5	53.8	63.9	10.2	43.5	53.8	63.9	10.2
PCB 108/112	3	3	100	14.1	17	19.5	2.72	14.1	17	19.5	2.72
PCB 110	3	3	100	381	437	501	60.4	381	437	501	60.4
PCB 111/115	3	3	100	4.75	8.78	11.5	3.56	4.75	8.78	11.5	3.56
PCB 113	3	0	0	0.0895	0.0928	0.0975	0.00416	NA	NA	NA	NA
PCB 114	3	3	100	9.7	12.3	14.5	2.42	9.7	12.3	14.5	2.42
PCB 119	3	3	100	14.6	17.3	20.8	3.19	14.6	17.3	20.8	3.19
PCB 120	3	3	100	0.923	1.07	1.21	0.144	0.923	1.07	1.21	0.144
PCB 121	3	0	0	0.0795	0.084	0.0875	0.00409	NA	NA	NA	NA
PCB 122	3	0	0	0.2045	0.223	0.2545	0.0278	NA	NA	NA	NA
PCB 123	3	3	100	5.07	6.43	7.75	1.34	5.07	6.43	7.75	1.34
PCB 124	3	3	100	5.93	7.08	8.03	1.06	5.93	7.08	8.03	1.06
PCB 126	3	3	100	1.37	1.55	1.72	0.175	1.37	1.55	1.72	0.175
PCB 127	3	0	0	0.148	0.193	0.2405	0.0463	NA	NA	NA	NA
PCB 128/162	3	3	100	117	144	172	27.5	117	144	172	27.5
PCB 129	3	3	100	16.7	20.8	23.2	3.54	16.7	20.8	23.2	3.54
PCB 130	3	3	100	48.9	54.7	62.3	6.88	48.9	54.7	62.3	6.88

Table 5-3. Summary of Results for Fillet Composites from Large Fish (C – 138 to 160 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 131	3	0	0	0.2515	0.308	0.394	0.0758	NA	NA	NA	NA
PCB 132/161	3	3	100	140	165	183	22.3	140	165	183	22.3
PCB 133/142	3	3	100	22.2	26.2	31.5	4.77	22.2	26.2	31.5	4.77
PCB 134/143	3	3	100	27.6	32.4	35.5	4.22	27.6	32.4	35.5	4.22
PCB 135	3	3	100	93.4	109	127	17	93.4	109	127	17
PCB 136	3	3	100	56.6	65.3	76.8	10.4	56.6	65.3	76.8	10.4
PCB 137	3	3	100	27	38	49.3	11.2	27	38	49.3	11.2
PCB 138/163/164	3	3	100	942	1130	1380	225	942	1130	1380	225
PCB 139/149	3	3	100	603	685	801	103	603	685	801	103
PCB 140	3	3	100	4.54	5.07	6.06	0.858	4.54	5.07	6.06	0.858
PCB 141	3	3	100	98.8	119	154	30.2	98.8	119	154	30.2
PCB 144	3	3	100	22.2	26.1	33.1	6.05	22.2	26.1	33.1	6.05
PCB 145	3	3	100	0.149	0.161	0.183	0.0193	0.149	0.161	0.183	0.0193
PCB 146/165	3	3	100	139	167	213	39.9	139	167	213	39.9
PCB 147	3	3	100	15.8	18.7	22.1	3.18	15.8	18.7	22.1	3.18
PCB 148	3	3	100	1.04	1.11	1.2	0.0833	1.04	1.11	1.2	0.0833
PCB 150	3	3	100	0.699	0.806	0.963	0.139	0.699	0.806	0.963	0.139
PCB 151	3	3	100	207	230	276	39.6	207	230	276	39.6
PCB 152	3	3	100	0.332	0.388	0.473	0.0746	0.332	0.388	0.473	0.0746
PCB 153	3	3	100	781	955	1270	273	781	955	1270	273
PCB 154	3	3	100	11.9	13.8	16.6	2.49	11.9	13.8	16.6	2.49
PCB 155	3	3	100	0.918	0.992	1.11	0.103	0.918	0.992	1.11	0.103
PCB 156	3	3	100	64.1	80.4	97	16.5	64.1	80.4	97	16.5
PCB 157	3	3	100	14.8	18.1	21.3	3.25	14.8	18.1	21.3	3.25
PCB 158/160	3	3	100	71.1	87.7	111	20.8	71.1	87.7	111	20.8
PCB 159	3	0	0	0.147	0.194	0.2585	0.0576	NA	NA	NA	NA
PCB 166	3	3	100	2.85	3.26	3.72	0.437	2.85	3.26	3.72	0.437
PCB 167	3	3	100	2.88	3.9	5	1.06	2.88	3.9	5	1.06
PCB 168	3	3	100	0.948	1.15	1.34	0.197	0.948	1.15	1.34	0.197
PCB 169	3	3	100	1.14	1.27	1.51	0.211	1.14	1.27	1.51	0.211
PCB 170	3	3	100	156	187	246	51.1	156	187	246	51.1
PCB 171	3	3	100	53.4	64.3	81.5	15.1	53.4	64.3	81.5	15.1
PCB 172	3	3	100	30.7	37.2	50	11.1	30.7	37.2	50	11.1
PCB 173	3	3	100	3.64	3.99	4.61	0.536	3.64	3.99	4.61	0.536
PCB 174	3	3	100	168	193	238	39.1	168	193	238	39.1
PCB 175	3	3	100	7.58	9.14	12.2	2.65	7.58	9.14	12.2	2.65
PCB 176	3	3	100	23	26.9	32.1	4.7	23	26.9	32.1	4.7
PCB 177	3	3	100	144	168	207	34.1	144	168	207	34.1
PCB 178	3	3	100	59.6	69.5	85.7	14.1	59.6	69.5	85.7	14.1
PCB 179	3	3	100	98.8	115	136	19.1	98.8	115	136	19.1
PCB 180	3	3	100	376	481	677	170	376	481	677	170
PCB 181	3	0	0	0.03565	0.0581	0.072	0.0196	NA	NA	NA	NA
PCB 182/187	3	3	100	485	563	718	134	485	563	718	134
PCB 183	3	3	100	108	134	184	43.6	108	134	184	43.6
PCB 184	3	3	100	1.44	1.64	1.98	0.298	1.44	1.64	1.98	0.298

Table 5-3. Summary of Results for Fillet Composites from Large Fish (C – 138 to 160 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
PCB Congeners (pg/g ww) (continued)											
PCB 185	3	3	100	25.3	30.2	39.4	7.97	25.3	30.2	39.4	7.97
PCB 186	3	0	0	0.02855	0.0462	0.058	0.0156	NA	NA	NA	NA
PCB 188	3	3	100	0.627	0.702	0.782	0.0776	0.627	0.702	0.782	0.0776
PCB 189	3	3	100	5.35	6.37	8.32	1.69	5.35	6.37	8.32	1.69
PCB 190	3	3	100	41.8	49.4	61	10.2	41.8	49.4	61	10.2
PCB 191	3	3	100	6.57	8.1	10.9	2.43	6.57	8.1	10.9	2.43
PCB 192	3	0	0	0.0288	0.0468	0.058	0.0157	NA	NA	NA	NA
PCB 193	3	3	100	31.2	35.9	45.2	8.03	31.2	35.9	45.2	8.03
PCB 194	3	3	100	65.3	80.2	109	24.9	65.3	80.2	109	24.9
PCB 195	3	3	100	40.1	47.2	57.6	9.19	40.1	47.2	57.6	9.19
PCB 196/203	3	3	100	134	163	216	45.7	134	163	216	45.7
PCB 197	3	3	100	5.12	5.96	7.54	1.37	5.12	5.96	7.54	1.37
PCB 198	3	3	100	5.69	6.86	8.18	1.25	5.69	6.86	8.18	1.25
PCB 199	3	3	100	149	178	229	44.6	149	178	229	44.6
PCB 200	3	3	100	13.7	15.6	19	2.93	13.7	15.6	19	2.93
PCB 201	3	3	100	15.7	19.4	24.8	4.76	15.7	19.4	24.8	4.76
PCB 202	3	3	100	44.6	50.9	61.2	9.02	44.6	50.9	61.2	9.02
PCB 204	3	1	33	0.0535	0.105	0.205	0.0869	0.205	NA	0.205	NA
PCB 205	3	3	100	3.59	4.51	5.75	1.11	3.59	4.51	5.75	1.11
PCB 206	3	3	100	52.3	62.1	75.7	12.2	52.3	62.1	75.7	12.2
PCB 207	3	3	100	6.42	7.45	8.99	1.36	6.42	7.45	8.99	1.36
PCB 208	3	3	100	17.8	20.5	24	3.19	17.8	20.5	24	3.19
Decachlorobiphenyl	3	3	100	13.7	14.9	16.6	1.5	13.7	14.9	16.6	1.5
Total PCB congeners, 1/2 DL	3	3	100	8820	10500	12800	2070	8820	10500	12800	2070
PCB TEQ, mammal, 1/2 DL	3	3	100	0.188	0.214	0.229	0.0226	0.188	0.214	0.229	0.0226
Monochlorobiphenyl homologs	3	3	100	0.128	0.276	0.465	0.172	0.128	0.276	0.465	0.172
Dichlorobiphenyl homologs	3	3	100	4.12	4.59	5.47	0.76	4.12	4.59	5.47	0.76
Trichlorobiphenyl homologs	3	3	100	89.8	110	121	17.5	89.8	110	121	17.5
Tetrachlorobiphenyl homologs	3	3	100	592	691	784	96.1	592	691	784	96.1
Pentachlorobiphenyl homologs	3	3	100	2190	2620	3050	430	2190	2620	3050	430
Hexachlorobiphenyl homologs	3	3	100	3540	4210	5180	860	3540	4210	5180	860
Heptachlorobiphenyl homologs	3	3	100	1840	2180	2840	569	1840	2180	2840	569
Octachlorobiphenyl homologs	3	3	100	477	571	737	144	477	571	737	144
Nonachlorobiphenyl homologs	3	3	100	76.5	90.1	109	16.9	76.5	90.1	109	16.9
Dioxins/Furans (pg/g ww)											
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	3	2	67	0.0555	0.148	0.253	0.0994	0.134	0.194	0.253	0.0841
1,2,3,4,6,7,8-Heptachlorodibenzofuran	3	0	0	0.03145	0.0355	0.0428	0.00635	NA	NA	NA	NA
1,2,3,4,7,8,9-Heptachlorodibenzofuran	3	0	0	0.03095	0.0366	0.0457	0.00796	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzodioxin	3	0	0	0.055	0.057	0.059	0.002	NA	NA	NA	NA
1,2,3,4,7,8-Hexachlorodibenzofuran	3	0	0	0.0253	0.0305	0.03745	0.00628	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzodioxin	3	0	0	0.0525	0.0552	0.058	0.00275	NA	NA	NA	NA
1,2,3,6,7,8-Hexachlorodibenzofuran	3	0	0	0.02655	0.0318	0.03585	0.00475	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzodioxin	3	0	0	0.057	0.0583	0.06	0.00153	NA	NA	NA	NA
1,2,3,7,8,9-Hexachlorodibenzofuran	3	0	0	0.0403	0.0484	0.056	0.00786	NA	NA	NA	NA
1,2,3,7,8-Pentachlorodibenzodioxin	3	0	0	0.0211	0.0293	0.03445	0.00718	NA	NA	NA	NA

Table 5-3. Summary of Results for Fillet Composites from Large Fish (C – 138 to 160 cm)

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Dioxins/Furans (pg/g ww) (continued)											
1,2,3,7,8-Pentachlorodibenzofuran	3	0	0	0.02925	0.0367	0.0407	0.00646	NA	NA	NA	NA
2,3,4,6,7,8-Hexachlorodibenzofuran	3	0	0	0.0288	0.0338	0.03875	0.00498	NA	NA	NA	NA
2,3,4,7,8-Pentachlorodibenzofuran	3	1	33	0.03025	0.0671	0.121	0.0477	0.121	NA	0.121	NA
2,3,7,8-Tetrachlorodibenzodioxin	3	0	0	0.02415	0.0289	0.03345	0.00465	NA	NA	NA	NA
2,3,7,8-Tetrachlorodibenzofuran	3	3	100	1.41	1.52	1.6	0.1	1.41	1.52	1.6	0.1
Dioxin TEQ, mammal, 1/2 DL	3	3	100	0.248	0.265	0.29	0.0219	0.248	0.265	0.29	0.0219
Total TEQ, mammal, 1/2 DL	3	3	100	0.446	0.479	0.519	0.0369	0.446	0.479	0.519	0.0369
Tetrachlorodibenzodioxin (Total)	3	0	0	0.02415	0.0289	0.03345	0.00465	NA	NA	NA	NA
Tetrachlorodibenzofuran (Total)	3	3	100	1.41	1.52	1.6	0.1	1.41	1.52	1.6	0.1
Pentachlorodibenzodioxin (Total)	3	0	0	0.0211	0.0293	0.03445	0.00718	NA	NA	NA	NA
Pentachlorodibenzofuran (Total)	3	1	33	0.0715	0.109	0.135	0.0334	0.121	NA	0.121	NA
Hexachlorodibenzodioxin (Total)	3	0	0	0.055	0.057	0.0585	0.0018	NA	NA	NA	NA
Hexachlorodibenzofuran (Total)	3	0	0	0.0298	0.0357	0.04155	0.00588	NA	NA	NA	NA
Heptachlorodibenzodioxin (Total)	3	2	67	0.0555	0.148	0.253	0.0994	0.134	0.194	0.253	0.0841
Heptachlorodibenzofuran (Total)	3	0	0	0.03155	0.036	0.0441	0.00707	NA	NA	NA	NA
Octachlorodibenzodioxin	3	1	33	0.083	0.224	0.4	0.161	0.4	NA	0.4	NA
Octachlorodibenzofuran	3	0	0	0.0945	0.108	0.1295	0.0189	NA	NA	NA	NA
PBDEs (µg/kg ww)											
PBDE 47	3	3	100	2.11	2.8	3.54	0.717	2.11	2.8	3.54	0.717
PBDE 99	3	3	100	0.0933	0.0976	0.106	0.0073	0.0933	0.0976	0.106	0.0073
PBDE 153	3	3	100	0.0486	0.0606	0.0767	0.0145	0.0486	0.0606	0.0767	0.0145
PBDE 209	3	0	0	0.00735	0.0177	0.03505	0.0151	NA	NA	NA	NA
Total Mono-BDE	3	0	0	6.95E-05	0.000104	0.0001525	0.0000435	NA	NA	NA	NA
Total Di-BDE	3	3	100	0.00331	0.00432	0.00485	0.000875	0.00331	0.00432	0.00485	0.000875
Total Tri-BDE	3	3	100	0.243	0.379	0.566	0.167	0.243	0.379	0.566	0.167
Total Tetra-BDE	3	3	100	2.33	3.04	3.8	0.736	2.33	3.04	3.8	0.736
Total Penta-BDE	3	3	100	0.482	0.621	0.772	0.145	0.482	0.621	0.772	0.145
Total Hexa-BDE	3	3	100	0.199	0.261	0.348	0.0777	0.199	0.261	0.348	0.0777
Total Hepta-BDE	3	3	100	0.00603	0.0068	0.00736	0.000688	0.00603	0.0068	0.00736	0.000688
Total Octa-BDE	3	0	0	0.00047	0.00087	0.001355	0.000449	NA	NA	NA	NA
Total Nona-BDE	3	0	0	0.001245	0.00256	0.004775	0.00193	NA	NA	NA	NA
Total Deca-BDE	3	0	0	0.00735	0.0177	0.03505	0.0151	NA	NA	NA	NA

Notes:

Summary statistics were calculated using half the reporting limit for non-detected inorganic results and half the estimated detection limit for non-detected organic results.

BDE - bromodiphenyl ether

DL - detection limit

NA - not applicable

PBDE - polybrominated diphenylether

PCB - polychlorinated biphenyl

SD - standard deviation

TEQ - toxicity equivalence quotient

Table 5-4. Summary of Results for Metals in Fillet Composites from All Size Classes on Wet Weight Basis

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Metals/Metalloids in Small Fish - Size Class A (50 to 97 cm) (mg/kg ww except mercury)											
Aluminum	3	3	100	0.519	0.91	1.23	0.36	0.519	0.91	1.23	0.36
Antimony	3	0	0	0.00083	0.001	0.001195	0.00018	NA	NA	NA	NA
Arsenic	3	3	100	0.146	0.168	0.193	0.0236	0.146	0.168	0.193	0.0236
Inorganic Arsenic	3	0	0	0.0095	0.0097	0.0099	0.00022	NA	NA	NA	NA
Barium	3	3	100	0.0137	0.022	0.0267	0.0071	0.0137	0.022	0.0267	0.0071
Beryllium	3	1	33	0.00124	0.002	0.00237	0.00063	0.00124	NA	0.00124	NA
Boron	3	0	0	0.227	0.23	0.237	0.0052	NA	NA	NA	NA
Cadmium	3	3	100	0.000948	0.0023	0.0042	0.0017	0.000948	0.0023	0.0042	0.0017
Calcium	3	3	100	57.1	66.5	75.3	9.12	57.1	66.5	75.3	9.12
Chromium	3	3	100	0.0669	0.094	0.143	0.042	0.0669	0.094	0.143	0.042
Cobalt	3	3	100	0.00359	0.0039	0.00445	0.00045	0.00359	0.0039	0.00445	0.00045
Copper	3	3	100	0.22	0.36	0.55	0.17	0.22	0.36	0.55	0.17
Iron	3	3	100	3.42	4.85	5.88	1.28	3.42	4.85	5.88	1.28
Lead	3	3	100	0.0045	0.0077	0.0131	0.0047	0.0045	0.0077	0.0131	0.0047
Magnesium	3	3	100	237	259	272	19.2	237	259	272	19.2
Manganese	3	3	100	0.234	0.271	0.301	0.0342	0.234	0.271	0.301	0.0342
Mercury (µg/kg ww)	3	3	100	57.4	62.7	66.4	4.69	57.4	62.7	66.4	4.69
Molybdenum	3	3	100	0.00292	0.00389	0.0058	0.00165	0.00292	0.00389	0.0058	0.00165
Nickel	3	3	100	0.0311	0.038	0.0494	0.01	0.0311	0.038	0.0494	0.01
Potassium	3	3	100	3650	3950	4100	257	3650	3950	4100	257
Selenium	3	3	100	0.863	0.946	1.03	0.0835	0.863	0.946	1.03	0.0835
Silicon	3	3	100	1.92	2.3	2.65	0.37	1.92	2.3	2.65	0.37
Silver	3	0	0	0.001555	0.0021	0.00237	0.00046	NA	NA	NA	NA
Sodium	3	3	100	334	349	361	13.9	334	349	361	13.9
Sulfur	3	3	100	1720	1880	1960	139	1720	1880	1960	139
Thallium	3	3	100	0.0019	0.003	0.0042	0.0012	0.0019	0.003	0.0042	0.0012
Tin	3	3	100	0.00311	0.0034	0.00356	0.00024	0.00311	0.0034	0.00356	0.00024
Uranium	3	2	67	0.000239	0.00095	0.00237	0.0012	0.000239	0.00024	0.000247	0.0000057
Vanadium	3	3	100	0.00237	0.004	0.00494	0.0014	0.00237	0.004	0.00494	0.0014
Zinc	3	3	100	2.94	3.18	3.43	0.245	2.94	3.18	3.43	0.245
Metals/Metalloids in Medium Fish - Size Class B (98 to 137 cm) (mg/kg ww except mercury)											
Aluminum	3	3	100	0.406	0.48	0.554	0.074	0.406	0.48	0.554	0.074
Antimony	3	0	0	0.000478	0.00067	0.00079	0.00017	NA	NA	NA	NA
Arsenic	3	3	100	0.186	0.217	0.256	0.0358	0.186	0.217	0.256	0.0358
Inorganic Arsenic	3	0	0	0.00955	0.01	0.01055	0.00051	NA	NA	NA	NA
Barium	3	3	100	0.0143	0.017	0.0182	0.002	0.0143	0.017	0.0182	0.002
Beryllium	3	0	0	0.00239	0.0025	0.00251	0.00006	NA	NA	NA	NA
Boron	3	0	0	0.239	0.25	0.251	0.006	NA	NA	NA	NA
Cadmium	3	3	100	0.000792	0.0011	0.00143	0.00033	0.000792	0.0011	0.00143	0.00033
Calcium	3	3	100	57	59	62.5	3.07	57	59	62.5	3.07
Chromium	3	3	100	0.0664	0.075	0.0908	0.013	0.0664	0.075	0.0908	0.013
Cobalt	3	3	100	0.0032	0.0034	0.0037	0.00026	0.0032	0.0034	0.0037	0.00026
Copper	3	3	100	0.265	0.301	0.364	0.055	0.265	0.301	0.364	0.055
Iron	3	3	100	3.59	4.22	4.78	0.598	3.59	4.22	4.78	0.598
Lead	3	3	100	0.00369	0.0046	0.00502	0.00077	0.00369	0.0046	0.00502	0.00077

Table 5-4. Summary of Results for Metals in Fillet Composites from All Size Classes on Wet Weight Basis

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Metals/Metalloids in Medium Fish - Size Class B (98 to 137 cm) (mg/kg ww except mercury) (continued)											
Magnesium	3	3	100	251	258	263	6.43	251	258	263	6.43
Manganese	3	3	100	0.206	0.235	0.256	0.0258	0.206	0.235	0.256	0.0258
Mercury (µg/kg ww)	3	3	100	68.1	77.5	88.4	10.2	68.1	77.5	88.4	10.2
Molybdenum	3	3	100	0.00185	0.0026	0.00382	0.0011	0.00185	0.0026	0.00382	0.0011
Nickel	3	3	100	0.0215	0.027	0.037	0.0088	0.0215	0.027	0.037	0.0088
Potassium	3	3	100	3780	3820	3850	37.9	3780	3820	3850	37.9
Selenium	3	3	100	1.16	1.19	1.23	0.0361	1.16	1.19	1.23	0.0361
Silicon	3	3	100	1.29	1.7	1.99	0.38	1.29	1.7	1.99	0.38
Silver	3	0	0	0.000715	0.0019	0.00251	0.001	NA	NA	NA	NA
Sodium	3	3	100	343	348	354	5.57	343	348	354	5.57
Sulfur	3	3	100	1850	1870	1880	15.3	1850	1870	1880	15.3
Thallium	3	3	100	0.00238	0.0033	0.00382	0.0008	0.00238	0.0033	0.00382	0.0008
Tin	3	3	100	0.00263	0.0032	0.00394	0.00069	0.00263	0.0032	0.00394	0.00069
Uranium	3	0	0	0.00239	0.0025	0.00251	0.00006	NA	NA	NA	NA
Vanadium	3	3	100	0.00246	0.0042	0.00528	0.0015	0.00246	0.0042	0.00528	0.0015
Zinc	3	3	100	3.37	3.53	3.75	0.197	3.37	3.53	3.75	0.197
Metals/Metalloids in Large Fish - Size Class C (138 to 160 cm) (mg/kg ww except mercury)											
Aluminum	3	0	0	0.129	0.14	0.1505	0.011	NA	NA	NA	NA
Antimony	3	0	0	0.000755	0.0028	0.0066	0.0033	NA	NA	NA	NA
Arsenic	3	3	100	0.204	0.209	0.217	0.007	0.204	0.209	0.217	0.007
Inorganic Arsenic	3	0	0	0.0115	0.012	0.01265	0.00058	NA	NA	NA	NA
Barium	3	3	100	0.0178	0.019	0.0196	0.0009	0.0178	0.019	0.0196	0.0009
Beryllium	3	0	0	0.002585	0.0028	0.00286	0.00015	NA	NA	NA	NA
Boron	3	0	0	0.2585	0.28	0.286	0.015	NA	NA	NA	NA
Cadmium	3	3	100	0.000861	0.0016	0.00316	0.0013	0.000861	0.0016	0.00316	0.0013
Calcium	3	3	100	48	49.2	51.5	1.97	48	49.2	51.5	1.97
Chromium	3	3	100	0.0115	0.05	0.0903	0.039	0.0115	0.05	0.0903	0.039
Cobalt	3	3	100	0.00253	0.0031	0.00391	0.00072	0.00253	0.0031	0.00391	0.00072
Copper	3	3	100	0.207	0.22	0.231	0.012	0.207	0.22	0.231	0.012
Iron	3	3	100	3.04	3.12	3.19	0.0755	3.04	3.12	3.19	0.0755
Lead	3	3	100	0.00316	0.0035	0.00391	0.00038	0.00316	0.0035	0.00391	0.00038
Magnesium	3	3	100	206	221	231	13.2	206	221	231	13.2
Manganese	3	3	100	0.176	0.201	0.25	0.0424	0.176	0.201	0.25	0.0424
Mercury (µg/kg ww)	3	3	100	103	106	108	2.65	103	106	108	2.65
Molybdenum	3	3	100	0.000832	0.0015	0.00214	0.00065	0.000832	0.0015	0.00214	0.00065
Nickel	3	3	100	0.00574	0.035	0.0506	0.025	0.00574	0.035	0.0506	0.025
Potassium	3	3	100	3220	3320	3400	90.7	3220	3320	3400	90.7
Selenium	3	3	100	0.933	1.03	1.2	0.147	0.933	1.03	1.2	0.147
Silicon	3	3	100	0.727	1.2	1.55	0.41	0.727	1.2	1.55	0.41
Silver	3	0	0	0.000158	0.0019	0.00286	0.0015	NA	NA	NA	NA
Sodium	3	3	100	284	302	321	18.5	284	302	321	18.5
Sulfur	3	3	100	1660	1690	1720	30.6	1660	1690	1720	30.6
Thallium	3	3	100	0.00301	0.0037	0.00411	0.00061	0.00301	0.0037	0.00411	0.00061

Table 5-4. Summary of Results for Metals in Fillet Composites from All Size Classes on Wet Weight Basis

Analyte	Count of Results		%	All Sample Results				Detected Results Only			
	Total #	# Detected	Detected	Min	Mean	Max	SD	Min	Mean	Max	SD
Metals/Metalloids in Large Fish - Size Class C (138 to 160 cm) (mg/kg ww except mercury) (continued)											
Tin	3	3	100	0.000861	0.0018	0.00253	0.00087	0.000861	0.0018	0.00253	0.00087
Uranium	3	0	0	0.002585	0.0028	0.00286	0.00015	NA	NA	NA	NA
Vanadium	3	3	100	0.00287	0.003	0.00316	0.00015	0.00287	0.003	0.00316	0.00015
Zinc	3	3	100	2.92	3.1	3.29	0.19	2.92	3.1	3.29	0.19

Notes:

Summary statistics were calculated using half the reporting limit for non-detected results.

NA - not applicable

SD - standard deviation

Table 5-5. Comparison of ACGs to MRLs for Non-detected Inorganics Results

Analyte	ACG[a]	Planned MRL[a]	Min MRL	Max MRL	# Results	# NDs	# ACG Exceedances
Metals/Metalloids (mg/kg dw except mercury)							
Aluminum	13.6	2	0.9	1	9	3	0
Antimony	0.05	0.05	0.004	0.046	9	9	0
Arsenic	0.5	0.5	NA	NA	9	0	NA
Barium	2.72	0.05	NA	NA	9	0	NA
Beryllium	0.0272	0.02	0.018	0.02	9	8	0
Boron	2.72	2	1.8	2	9	9	0
Cadmium	0.02	0.02	NA	NA	9	0	NA
Calcium	4	4	NA	NA	9	0	NA
Chromium	20.32	0.2	NA	NA	9	0	NA
Cobalt	0.02	0.02	NA	NA	9	0	NA
Copper	0.56	0.1	NA	NA	9	0	NA
Inorganic arsenic	0.02	0.02	0.08	0.08	9	9	9
Iron	9.6	1	NA	NA	9	0	NA
Lead	0.02	0.02	NA	NA	9	0	NA
Magnesium	2	2	NA	NA	9	0	NA
Manganese	1.88	0.05	NA	NA	9	0	NA
Mercury (µg/kg dw)	1	1	NA	NA	9	0	NA
Molybdenum	0.068	0.05	NA	NA	9	0	NA
Nickel	0.272	0.2	NA	NA	9	0	NA
Potassium	20	20	NA	NA	9	0	NA
Selenium	0.1	0.1	NA	NA	9	0	NA
Silicon	20	20	NA	NA	9	0	NA
Silver	0.068	0.02	0.001	0.02	9	9	0
Sodium	20	20	NA	NA	9	0	NA
Sulfur	8	8	NA	NA	9	0	NA
Thallium	0.02	0.02	NA	NA	9	0	NA
Tin	8.12	0.05	NA	NA	9	0	NA
Uranium	0.02	0.02	0.018	0.02	9	7	0
Vanadium	0.2	0.2	NA	NA	9	0	NA
Zinc	4.08	0.5	NA	NA	9	0	NA
Conventional Parameters							
Fluoride (mg/kg ww)[b]	1	1	NA	NA	9	0	NA
Lipid (% ww)	0.1	0.1	NA	NA	9	0	NA
Total solids (% ww)	0.1	0.1	NA	NA	9	0	NA

Notes:

[a] ACGs and planned MRLs are from the QAPP (SRC 2016).

[b] ACG and planned MRL from the QAPP (SRC 2016) were assumed to be on a wet weight basis.

ACG - analytical concentration goal

NA - not applicable

MRL - method reporting limit

ND - non-detected result

Table 5-6. Comparison of ACGs to EDLs for Dioxins/Furans and Dioxin-like Congeners

Analyte (pg/g ww)	ACG[a]	Planned MDL[b]	TEF[c] (unitless)	Min TEF-adjusted EDL	Max TEF-adjusted EDL	# Results	# NDs	# ACG Exceedances
PCB 77	0.125	0.12825	0.0001	0.000153	0.000153	9	1	0
PCB 81	0.125	0.12825	0.0003	NA	NA	9	0	NA
PCB 105	0.125	0.12825	0.00003	NA	NA	9	0	NA
PCB 106/118	0.125	0.12825	0.00003	NA	NA	9	0	NA
PCB 114	0.125	0.12825	0.00003	NA	NA	9	0	NA
PCB 123	0.125	0.12825	0.00003	NA	NA	9	0	NA
PCB 126	0.125	0.12825	0.1	NA	NA	9	0	NA
PCB 156	0.125	0.12825	0.00003	NA	NA	9	0	NA
PCB 157	0.125	0.12825	0.00003	NA	NA	9	0	NA
PCB 167	0.125	0.12825	0.00003	NA	NA	9	0	NA
PCB 169	0.125	0.12825	0.03	NA	NA	9	0	NA
PCB 189	0.125	0.12825	0.00003	NA	NA	9	0	NA
1,2,3,4,6,7,8-Heptachlorodibenzodioxin	0.125	0.12825	0.01	0.000853	0.00139	9	6	0
1,2,3,4,6,7,8-Heptachlorodibenzofuran	0.125	0.12825	0.01	0.000629	0.00106	9	9	0
1,2,3,4,7,8,9-Heptachlorodibenzofuran	0.125	0.12825	0.01	0.000619	0.00117	9	9	0
1,2,3,4,7,8-Hexachlorodibenzodioxin	0.125	0.12825	0.1	0.00762	0.0167	9	9	0
1,2,3,4,7,8-Hexachlorodibenzofuran	0.125	0.12825	0.1	0.00495	0.0102	9	9	0
1,2,3,6,7,8-Hexachlorodibenzodioxin	0.125	0.12825	0.1	0.00782	0.0167	9	9	0
1,2,3,6,7,8-Hexachlorodibenzofuran	0.125	0.12825	0.1	0.00531	0.0104	9	9	0
1,2,3,7,8,9-Hexachlorodibenzodioxin	0.125	0.12825	0.1	0.0082	0.0179	9	9	0
1,2,3,7,8,9-Hexachlorodibenzofuran	0.125	0.12825	0.1	0.00764	0.0166	9	9	0
1,2,3,7,8-Pentachlorodibenzodioxin	0.125	0.12825	1	0.0422	0.0847	9	9	0
1,2,3,7,8-Pentachlorodibenzofuran	0.125	0.12825	0.03	0.000906	0.00321	9	9	0
2,3,4,6,7,8-Hexachlorodibenzofuran	0.125	0.12825	0.1	0.00561	0.0113	9	9	0
2,3,4,7,8-Pentachlorodibenzofuran	0.125	0.12825	0.3	0.01104	0.0336	9	8	0
2,3,7,8-Tetrachlorodibenzodioxin	0.125	0.12825	1	0.0401	0.0981	9	9	0
2,3,7,8-Tetrachlorodibenzofuran	0.125	0.12825	0.1	NA	NA	9	0	NA
Octachlorodibenzodioxin	0.125	0.12825	0.0003	0.0000375	0.000114	9	6	0
Octachlorodibenzofuran	0.125	0.12825	0.0003	0.0000453	0.0000831	9	9	0

Notes:

[a] ACGs are from the QAPP (SRC 2016)

[b] Planned MDLs are from the QAPP (SRC 2016). Note that planned MDLs are provided for informational purposes only and are not equivalent to EDLs, which are sample-specific.

[c] TEFs are for mammals from Van den Berg et al. (2006) per the QAPP (SRC 2016)

ACG - analytical concentration goal

EDL - estimated detection limit

MDL - method detection limit

NA - not applicable

ND - non-detected result

PCB - polychlorinated biphenyl

TEF - toxic equivalence factors

Table 5-7. Comparison of ACGs to EDLs for PCB Congeners

Analyte (pg/g ww)	ACG[a]	Planned MDL[b]	Min EDL	Max EDL	# Results	# NDs	# ACG Exceedances
Total PCB Congeners	2500	0.70	NA	NA	9	0	NA
PCB 1	80	0.0125	0.0468	0.31	9	5	0
PCB 2	4	0.0225	0.0864	0.217	9	6	0
PCB 3	80	0.0225	0.0656	0.139	9	6	0
PCB 4/10	20	0.0175	0.267	1.03	9	8	0
PCB 5/8	20	0.0175	NA	NA	9	0	NA
PCB 6	20	0.0275	0.112	0.49	9	9	0
PCB 7/9	20	0.0150	0.0991	0.246	9	9	0
PCB 11	400	0.0725	1.21	2.13	9	9	0
PCB 12/13	40	0.0350	0.0485	0.145	9	9	0
PCB 14	40	0.0150	0.042	0.112	9	9	0
PCB 15	200	0.0325	0.231	0.591	9	9	0
PCB 16/32	40	0.0175	NA	NA	9	0	NA
PCB 17	80	0.0300	NA	NA	9	0	NA
PCB 18	200	0.0550	NA	NA	9	0	NA
PCB 19	40	0.0175	NA	NA	9	0	NA
PCB 20/21/33	80	0.0150	NA	NA	9	0	NA
PCB 22	80	0.0200	NA	NA	9	0	NA
PCB 23	80	0.0125	0.0929	0.257	9	9	0
PCB 24/27	80	0.0225	NA	NA	9	0	NA
PCB 25	80	0.0125	NA	NA	9	0	NA
PCB 26	80	0.0200	NA	NA	9	0	NA
PCB 28	200	0.0250	NA	NA	9	0	NA
PCB 29	80	0.0200	0.0803	0.234	9	9	0
PCB 30	200	0.0550	0.0327	0.0895	9	9	0
PCB 31	200	0.0150	NA	NA	9	0	NA
PCB 34	80	0.0150	0.0772	0.252	9	3	0
PCB 35	80	0.0175	0.0673	0.172	9	9	0
PCB 36	80	0.0150	0.0662	0.169	9	9	0
PCB 37	200	0.0175	NA	NA	9	0	NA
PCB 38	80	0.0225	NA	NA	9	0	NA
PCB 39	80	0.0150	0.0625	0.136	9	7	0
PCB 40	200	0.0400	0.333	0.333	9	1	0
PCB 41/64/71/72	80	0.0200	NA	NA	9	0	NA
PCB 42/59	80	0.0150	NA	NA	9	0	NA
PCB 43/49	200	0.0300	NA	NA	9	0	NA
PCB 44	200	0.0500	NA	NA	9	0	NA
PCB 45	80	0.0475	NA	NA	9	0	NA
PCB 46	80	0.0250	0.371	0.371	9	1	0
PCB 47	200	0.0500	NA	NA	9	0	NA
PCB 48/75	80	0.0175	NA	NA	9	0	NA
PCB 50	80	0.0475	0.0931	0.251	9	6	0
PCB 51	80	0.0475	NA	NA	9	0	NA
PCB 52/69	200	0.0200	NA	NA	9	0	NA
PCB 53	80	0.0475	NA	NA	9	0	NA
PCB 54	200	0.0325	0.0325	0.21	9	6	0
PCB 55	200	0.0325	0.641	0.641	9	1	0
PCB 56/60	80	0.0200	NA	NA	9	0	NA
PCB 57	200	0.0125	NA	NA	9	0	NA
PCB 58	200	0.0150	NA	NA	9	0	NA
PCB 61/70	200	0.0400	NA	NA	9	0	NA
PCB 62	80	0.0300	0.0753	0.205	9	9	0
PCB 63	200	0.0200	NA	NA	9	0	NA
PCB 65	200	0.0500	0.0803	0.219	9	9	0
PCB 67	200	0.0225	0.105	0.105	9	1	0

Table 5-7. Comparison of ACGs to EDLs for PCB Congeners

Analyte (pg/g ww)	ACG[a]	Planned MDL[b]	Min EDL	Max EDL	# Results	# NDs	# ACG Exceedances
PCB 68	200	0.0125	NA	NA	9	0	NA
PCB 73	200	0.0400	0.0771	0.204	9	9	0
PCB 74	200	0.0400	NA	NA	9	0	NA
PCB 76	200	0.0400	NA	NA	9	0	NA
PCB 77	200	0.0200	1.53	1.53	9	1	0
PCB 78	200	0.0200	0.0668	0.19	9	9	0
PCB 79	200	0.0275	NA	NA	9	0	NA
PCB 80	200	0.0150	0.0552	0.179	9	6	0
PCB 81	200	0.0350	NA	NA	9	0	NA
PCB 82	200	0.0425	NA	NA	9	0	NA
PCB 83	200	0.0375	0.0695	0.177	9	9	0
PCB 84/92	200	0.0300	NA	NA	9	0	NA
PCB 85/116	80	0.0700	NA	NA	9	0	NA
PCB 86	200	0.0750	0.115	0.295	9	9	0
PCB 87/117/125	80	0.0700	NA	NA	9	0	NA
PCB 88/91	200	0.0325	NA	NA	9	0	NA
PCB 89	200	0.0300	0.0961	0.116	9	2	0
PCB 90/101	400	0.0675	NA	NA	9	0	NA
PCB 93	200	0.0500	0.098	0.254	9	9	0
PCB 94	200	0.0250	0.746	0.746	9	1	0
PCB 95/98/102	200	0.0475	NA	NA	9	0	NA
PCB 96	200	0.0250	NA	NA	9	0	NA
PCB 97	200	0.0750	NA	NA	9	0	NA
PCB 99	200	0.0375	NA	NA	9	0	NA
PCB 100	200	0.0500	NA	NA	9	0	NA
PCB 103	200	0.0225	NA	NA	9	0	NA
PCB 104	200	0.0300	0.0695	0.198	9	9	0
PCB 105	80	0.0275	NA	NA	9	0	NA
PCB 106/118	200	0.0175	NA	NA	9	0	NA
PCB 107/109	80	0.0325	NA	NA	9	0	NA
PCB 108/112	400	0.0375	NA	NA	9	0	NA
PCB 110	400	0.0700	NA	NA	9	0	NA
PCB 111/115	400	0.0200	NA	NA	9	0	NA
PCB 113	400	0.0675	0.0725	0.195	9	9	0
PCB 114	200	0.0325	NA	NA	9	0	NA
PCB 119	200	0.0750	NA	NA	9	0	NA
PCB 120	200	0.0250	NA	NA	9	0	NA
PCB 121	80	0.0150	0.0673	0.175	9	9	0
PCB 122	200	0.0250	0.17	0.509	9	9	0
PCB 123	200	0.0350	NA	NA	9	0	NA
PCB 124	400	0.0500	NA	NA	9	0	NA
PCB 126	200	0.0225	NA	NA	9	0	NA
PCB 127	400	0.0325	0.162	0.481	9	9	0
PCB 128/162	200	0.0225	NA	NA	9	0	NA
PCB 129	200	0.0450	NA	NA	9	0	NA
PCB 130	200	0.0325	NA	NA	9	0	NA
PCB 131	200	0.0300	0.0975	0.788	9	9	0
PCB 132/161	200	0.0300	NA	NA	9	0	NA
PCB 133/142	200	0.0225	NA	NA	9	0	NA
PCB 134/143	200	0.0425	NA	NA	9	0	NA
PCB 135	200	0.0300	NA	NA	9	0	NA
PCB 136	80	0.0400	NA	NA	9	0	NA
PCB 137	400	0.0300	NA	NA	9	0	NA
PCB 138/163/164	200	0.0300	NA	NA	9	0	NA
PCB 139/149	200	0.0575	NA	NA	9	0	NA

Table 5-7. Comparison of ACGs to EDLs for PCB Congeners

Analyte (pg/g ww)	ACG[a]	Planned MDL[b]	Min EDL	Max EDL	# Results	# NDs	# ACG Exceedances
PCB 140	200	0.0575	NA	NA	9	0	NA
PCB 141	80	0.0350	NA	NA	9	0	NA
PCB 144	200	0.0300	NA	NA	9	0	NA
PCB 145	400	0.0300	0.0639	0.094	9	6	0
PCB 146/165	200	0.0075	NA	NA	9	0	NA
PCB 147	200	0.0575	NA	NA	9	0	NA
PCB 148	400	0.0325	NA	NA	9	0	NA
PCB 150	400	0.0325	0.46	0.46	9	1	0
PCB 151	200	0.0300	NA	NA	9	0	NA
PCB 152	400	0.0200	NA	NA	9	0	NA
PCB 153	200	0.0225	NA	NA	9	0	NA
PCB 154	200	0.0350	NA	NA	9	0	NA
PCB 155	400	0.0150	NA	NA	9	0	NA
PCB 156	200	0.0350	NA	NA	9	0	NA
PCB 157	200	0.0350	NA	NA	9	0	NA
PCB 158/160	80	0.0325	NA	NA	9	0	NA
PCB 159	400	0.0225	0.0576	0.517	9	9	0
PCB 166	200	0.0425	NA	NA	9	0	NA
PCB 167	200	0.0150	NA	NA	9	0	NA
PCB 168	200	0.0225	NA	NA	9	0	NA
PCB 169	200	0.0250	NA	NA	9	0	NA
PCB 170	200	0.0425	NA	NA	9	0	NA
PCB 171	400	0.0450	NA	NA	9	0	NA
PCB 172	400	0.0275	NA	NA	9	0	NA
PCB 173	400	0.0450	NA	NA	9	0	NA
PCB 174	200	0.0400	NA	NA	9	0	NA
PCB 175	400	0.0375	NA	NA	9	0	NA
PCB 176	400	0.0350	NA	NA	9	0	NA
PCB 177	200	0.0375	NA	NA	9	0	NA
PCB 178	200	0.0350	NA	NA	9	0	NA
PCB 179	200	0.0350	NA	NA	9	0	NA
PCB 180	200	0.0750	NA	NA	9	0	NA
PCB 181	400	0.0350	0.0599	0.463	9	9	0
PCB 182/187	200	0.0275	NA	NA	9	0	NA
PCB 183	400	0.0700	NA	NA	9	0	NA
PCB 184	400	0.0550	NA	NA	9	0	NA
PCB 185	400	0.0575	NA	NA	9	0	NA
PCB 186	400	0.0600	0.0478	0.363	9	9	0
PCB 188	200	0.0225	NA	NA	9	0	NA
PCB 189	200	0.0225	NA	NA	9	0	NA
PCB 190	200	0.0325	NA	NA	9	0	NA
PCB 191	400	0.0375	NA	NA	9	0	NA
PCB 192	400	0.0250	0.0484	0.374	9	9	0
PCB 193	200	0.0750	NA	NA	9	0	NA
PCB 194	200	0.0375	NA	NA	9	0	NA
PCB 195	400	0.0400	NA	NA	9	0	NA
PCB 196/203	400	0.0550	NA	NA	9	0	NA
PCB 197	400	0.0325	NA	NA	9	0	NA
PCB 198	200	0.1250	NA	NA	9	0	NA
PCB 199	200	0.1250	NA	NA	9	0	NA
PCB 200	400	0.0575	NA	NA	9	0	NA
PCB 201	400	0.0200	NA	NA	9	0	NA
PCB 202	400	0.0500	NA	NA	9	0	NA
PCB 204	400	0.0350	0.0804	0.15	9	8	0
PCB 205	400	0.0500	NA	NA	9	0	NA

Table 5-7. Comparison of ACGs to EDLs for PCB Congeners

Analyte (pg/g ww)	ACG[a]	Planned MDL[b]	Min EDL	Max EDL	# Results	# NDs	# ACG Exceedances
PCB 206	400	0.0300	NA	NA	9	0	NA
PCB 207	400	0.0350	NA	NA	9	0	NA
PCB 208	400	0.0250	NA	NA	9	0	NA
Decachlorobiphenyl	200	0.0275	NA	NA	9	0	NA

Notes:

Congener coelutions vary between the QAPP (Parametrix 2009), QAPP (SRC 2016), and the actual dataset. When ACGs or planned MDL values varied between coeluting congeners, the lowest value was selected (represented by the purple cells).

[a] ACG for total PCB congeners is from the QAPP (SRC 2016); ACGs for individual congeners are from Table B-2 of the QAPP (Parametrix 2009)

[b] Planned MDLs for individual congeners are from Table A-2.1 of the QAPP (SRC 2016). Values have been converted from dry weight to wet weight basis assuming 75% moisture. Note that planned MDLs are provided for informational purposes only and are not equivalent to EDLs, which are sample-specific.

ACG - analytical concentration goal

EDL - estimated detection limit

MDL - method detection limit

NA - not applicable

ND - non-detected result

PCB - polychlorinated biphenyl

Table 5-8. Comparison of ACGs to EDLs for PBDEs

Analyte (µg/kg ww)	ACG[a]	Planned MDL[b]	Min EDL	Max EDL	# Results	# NDs	# ACG Exceedances
PBDE 47	0.339	0.014	NA	NA	9	0	NA
PBDE 99	0.339	0.00168	NA	NA	9	0	NA
PBDE 153	0.68	0.004	NA	NA	9	0	NA
PBDE 209	23.7	0.00575	0.0077	0.0701	9	7	0
Total PBDEs	TBD	NA	NA	NA	9	0	NA

Notes:

[a] ACGs are from the QAPP (SRC 2016)

[b] Planned MDLs are from the QAPP (SRC 2016). Note that planned MDLs are provided for informational purposes only and are not equivalent to EDLs, which are sample-specific.

ACG - analytical concentration goal

EDL - estimated detection limit

MDL - method detection limit

NA - not applicable

ND - non-detected result

PBDE - polybrominated diphenylether

TBD - to be determined (SRC 2016)

APPENDIX A

UCR STURGEON TISSUE SAMPLE COLLECTION FIELD SUMMARY REPORT

Final

UCR Sturgeon Tissue Sample Collection Field Summary Report

Prepared for
EPA Region 10

June 2017

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Figures

1 Sturgeon Tissue Sample Locations

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Acronyms and Abbreviations

ALS	ALS Kelso Laboratory
CCT	Confederated Tribes of the Colville Reservation
cm	centimeter
COC	chain-of-custody
COI	chemical of interest
EPA	U.S. Environmental Protection Agency
FL	fork length
FSP	field sampling plan
FSR	field summary report
FTL	field team lead
GPS	global positioning system
HHRA	human health risk assessment
kg	kilogram
Lake Roosevelt	Franklin D. Roosevelt Lake
LRMP	Lake Roosevelt Monitoring Program
NPS	National Parks Service
Parametrix	Parametrix, Inc.
PBDE	polybrominated diphenyl ether
PCB	polychlorinated biphenyl
PIT	passive integrated transponder
QA	quality assurance
QA/QC	quality assurance and quality control
QC	quality control
QAPP	quality assurance project plan
RI/FS	remedial investigation and feasibility study
SCS	Spokane Courier Service
Site	Upper Columbia River site
SOP	standard operating procedure
STI	Spokane Tribe of Indians
TAL	Target Analyte List
TAI	Teck American Incorporated
UCR	Upper Columbia River
UCL95	95% Upper Confidence Limit

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UCWSRI	Upper Columbia White Sturgeon Recovery Initiative
WDFW	Washington Department of Fish and Wildlife
WDOH	Washington Department of Health
%	percent

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SECTION 1

Introduction

This Field Summary Report (FSR) describes the procedures and methods that the field team used to collect sturgeon tissue samples during the 2016 Sturgeon tissue sampling effort, and provides summary information and details regarding sample locations, sample quality assurance/quality control (QA/QC), and known deviations from the field sampling plan included as an appendix to Addendum No. 1 to the Quality Assurance Project Plan for the 2009 Fish Tissue Study and Appendix A-1 Field Sampling Plan - Upper Columbia River Sturgeon Tissue Study (Fish QAPP Addendum – Sturgeon) (SRC, 2016a). This work was conducted in August and September 2016 by CH2MHill (CH2M) on behalf of the U.S. Environmental Protection Agency (EPA) at the Upper Columbia River (UCR) Site (Site)[1] in Washington.

The primary objective of the 2016 sturgeon tissue sampling effort is to collect information on the concentrations of UCR chemicals of interest (COIs) in hatchery white sturgeon tissues (fillets) from three size classes collected in the upper portion of the UCR Site. The 2016 sturgeon tissue sampling effort is one of the tasks that will support the remedial investigation and feasibility study (RI/FS) that is being conducted by Teck American Incorporated (TAI) for the Site. This information will be used to support the human health risk assessment (HHRA) that will be conducted as part of RI/FS for the Site. The HHRA will be completed by the EPA, and the remaining RI/FS tasks will be completed by TAI, with EPA oversight.

1.1 Background

The 2009 Fish Tissue QAPP (Parametrix et al. 2009) identified white sturgeon as a traditional tribal food source and common sport fish in the Columbia River. White sturgeon were not sampled in 2009 as they were not part of a legal fishery in the UCR at the time. Long-term monitoring of hatchery white sturgeon in the UCR from the Grand Coulee Dam upstream to the Hugh L. Keenelyside Dam in Canada has shown that survival rates and abundance of these fish are much greater than anticipated (Golder 2015, as cited in McLellan 2016). As a result, the Upper Columbia White Sturgeon Recovery Initiative (UCWSRI) and the Lake Roosevelt Fishery Co-Managers are planning targeted removal of hatchery white sturgeon to avoid diluting the genetic diversity present in wild sturgeon. The preferred removal approach is to establish recreational and subsistence fisheries in the UCR, along with targeted removal of specific cohorts, with distribution of euthanized hatchery white sturgeon to Tribal membership and local food banks (McLellan 2016). Prior to making these fish available for human consumption, hatchery white sturgeon need to be evaluated to determine whether their consumption would result in human health risks. These data are needed for both the UCR HHRA and to support Washington Department of Health (WDOH) in their review of the potential need for a UCR sturgeon fish consumption advisory.

1.2 Document Organization

This report is organized into the following sections:

- **Section 1** – Introduction. This section provides background information for the study and outlines the report organization.
- **Section 2** – Study Description. This section describes the purpose and objectives of the study and provides an overview of the study design.
- **Section 3** – Field Activities. This section identifies the methods used to collect the UCR sturgeon samples and discusses any changes or deviations from the QAPP and field sampling plan (FSP).

[1] The Site is located wholly within Washington State and includes the portion of the UCR extending from the U.S.-Canadian border to Grand Coulee Dam, including Franklin D. Roosevelt Lake (Lake Roosevelt), and the areal extent of related contamination within the United States adjacent to the UCR.

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- **Section 4** – References. This section presents bibliographic information for the documents cited within this report.
- Figures and data tables are provided following Section 4.

Field records and supporting information for the UCR sturgeon sampling are provided in Appendix A and B. Field change forms are provided in Appendix C. Lake Roosevelt Fisheries Co-manager field records are provided in Appendix D.

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SECTION 2

Study Description

2.1 Purpose of Study

The purpose of the 2016 sturgeon sampling event was to collect white sturgeon tissue to fill a data gap related to the assessment of risk to humans from the consumption of sturgeon. This section presents a brief overview of the study design.

2.2 Study Design

The basis of the study design for the 2016 Sturgeon sampling was detailed in the QAPP Addendum – Sturgeon (SRC, 2016b). Fish tissue samples were obtained from hatchery white sturgeon caught by the Confederated Tribes of the Colville Reservation (CCT) and Spokane Tribe of Indians (STI) as Lake Roosevelt Fisheries Co-Managers[2] as part of a population stock assessment. Approximately 700 fish were expected to be captured during the fall 2016 stock assessment effort based on previous white sturgeon surveys with a subset given to EPA for tissue collection and analysis. Only hatchery fish were to be retained for possible tissue sample collection (wild fish represented 5 to 10 percent of the total catch during previous stock assessments).

The stock assessment was conducted in areas extending from Inchelium/Gifford to the U.S.-Canadian border (Reaches 1 through 4 of the UCR Site), which is where the vast majority of hatchery white sturgeon are distributed (Environment International [EI] 2016). Telemetry data show some sturgeon move substantially among the river reaches (SRC, 2016b) and indicate substantial variability in the range of movement among individual sturgeon. Therefore, the sturgeon tissue samples were not collected and composited by river reach, as was done in the 2009 fish sampling effort (Parametrix et al. 2009). Lake Roosevelt Fisheries Co-Manager personnel used baited set lines placed in a spatially balanced random sampling design (SRC 2016b) to conduct the stock assessment.

Although the stock assessment took place throughout Reaches 1 through 4 of the UCR Site, the sturgeon tissue samples were obtained from fish caught in areas where hatchery sturgeon were thought to abundant (Reaches 2 and 3 of the UCR Site).

Fish from brood years 2001-2010, expected to be abundant throughout the UCR, were targeted for tissue collection. The targeted length range was 50 to 160 cm fork length [FL] [20-63 inches]) (EI 2016).

2.2.1 Composite Samples

Although compositing of sturgeon was not necessary to achieve the mass of tissue required for analysis due to their large size (DOE 2008), the sturgeon tissue samples were to be composited to increase the likelihood of producing data with sufficiently low variability. EPA requested a minimum of 72 hatchery white sturgeon from the Lake Roosevelt Fisheries Co-Managers. This recommended minimum number of samples was sufficient to increase the number of fish per composite from 5 (per the 2009 sampling event) to at least 8 fish (resulting in 9 composite samples of 8 fish each). The increase to 8 fish per composite was designed to reduce variability among the sturgeon composite data, relative to the 2009 data, and therefore to increase reliability of 95% upper confidence limits on estimates of mean concentrations (UCL95).

Sturgeon tissue composites were to be grouped based on three fish sizes: 50-97 cm (A class), 98-137 cm (B class), and 138-160 cm (C class). Table 1 shows the number of composite samples per size range. As noted in

[2] The Washington Department of Fish and Wildlife (WDFW) is also a Lake Roosevelt Fisheries co-manager. However, the WDFW did not participate in 2016 sturgeon stock assessment field activities.

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Section 3.4, the method for assigning tissue samples to different size class composite groups was developed after tissue sampling was complete and consisted of a stratified random approach.

2.2.2 Chemical Analyses

The suite of chemicals for analysis in fish tissues included conventional parameters (total length and mass, percent moisture, percent lipid), common target analyte list (TAL) metals/metalloids identified as COIs in the 2009 HHRA work plan (USEPA 2009), total inorganic arsenic and total arsenic, polychlorinated dibenzo-p-dioxins and furans (i.e., 17 dioxin-like congeners [USEPA 2010]), polychlorinated biphenyls (PCBs) (PCB congeners [209 forms]) and total PCBs (dioxin-like and non-dioxin-like PCBs), and polybrominated diphenyl ethers (PBDEs) (total PBDEs, BDE-47, BDE-99, BDE-153, and BDE-209).

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SECTION 3

Field Activities and Methods

The 2016 sturgeon sampling effort was outlined in the EPA-approved Fish QAPP Addendum - Sturgeon and detailed in Appendix A-1 of the addendum (Field Sampling Plan - Upper Columbia River Sturgeon Tissue Study). Sampling was conducted by CH2M personnel.

This section discusses the methods and procedures used during the 2016 sturgeon tissue sampling event. Field sampling activities were conducted from August 30 to September 13, 2016. All field activities and sample collection methods were performed in accordance to the EPA-approved QAPP and FSP unless otherwise noted in Section 3.3.

3.1 Fish Sampling

Hatchery white sturgeon were collected by Lake Roosevelt Fisheries Co-Managers (CCT & STI) via set lining and whole sturgeon were provided to CH2M for processing. The Lake Roosevelt Co-Manager sampling team recorded the global positioning system (GPS) coordinates (latitude and longitude) where fish were collected (i.e., point coordinates for set lines).

Sampling was performed by one field team consisting of CH2M and EPA personnel. For the first week, the team consisted of one CH2M Field Team Lead (FTL), one CH2M sampling staff, and one EPA representative. CH2M performed all duties and responsibilities for sample preparation, sample collection, and sample handling. EPA staff reviewed and approved sampling changes/deviations, and supported CH2M with sampling. For the remainder of the sampling event, the team consisted of one CH2M Field Team Lead and one CH2M sampling staff (Table 2). A field safety audit was conducted by the CH2M Health and Safety Manager on September 8, 2016.

Sample pick-up and processing was conducted on boats provided by the National Park Service (NPS) from August 30 through September 7, 2016 and by Columbia Navigation on September 8, 9, and 13, 2016.

A total of 72 hatchery white sturgeon were sampled during the field effort. The chronology for sample collection activities is summarized in Table 3.

3.1.1 Equipment

Field equipment and supplies for the CH2M fish processing team included fish fileting equipment, decontamination supplies, sample containers, coolers, shipping containers, logbooks and forms, personal protective equipment (cut-resistant gloves), and personal gear. Nitrile gloves were also worn while fileting and handing sturgeon tissue samples to minimize the possibility of cross-contamination between fish.

Sample containers were clearly labeled at the time the tissue samples were taken from the caught hatchery sturgeon. Labels included the task name, sample location and number, CH2M sampler's initials, analyses to be performed, and sample date and time.

3.1.2 Fish Sizes

Sturgeon tissue composites were grouped based on three fish sizes: 50-97 cm, 98-137 cm, and 138-160 cm. Each size group had 24 hatchery white sturgeon collected for a total of 72 fish. The 24 fish for each size group were divided into 3 composite samples, each with 8 individual fish per composite (Table 1).

3.1.3 Fish Collection Locations

Figure 1 shows the locations recorded by the Lake Roosevelt Fisheries Co-Manager sampling team where the sturgeon transferred to CH2M for tissue sampling were caught (i.e., point coordinates for set lines). These coordinates are listed, along with the fish identification numbers in Table 4.

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3.1.4 Fish Collection and Handling

All sturgeon were measured for FL (cm) and weighed (kg) by the Lake Roosevelt Fisheries Co-Managers upon retrieval from the set line. Wild sturgeon were returned to the water alive. The hatchery white sturgeon were euthanized using a sharp blow to the head with a decontaminated mallet or club, being careful not to break the skin of the fish. Fish were also scanned with a passive integrated transponder (PIT) tag reader to determine the brood year.

Specimens of hatchery white sturgeon that met the size class requirements for tissue sampling were transferred to CH2M for tissue sample processing. Prior to transfer of fish from the Lake Roosevelt Fisheries Co-Managers, internal organs (stomachs and gonad tissue) of some fish were removed for use in separate studies, as indicated in Table 5. The Lake Roosevelt Fisheries Co-Managers provided CH2M with the PIT tag ID, fish brood year, length and weight at the time the fish was transferred (Table 5).

3.1.5 Sample Tissue Processing

All processing was performed on the boat operated by the NPS or Columbia Navigation. The processing boat either traveled to shore and fish processing was conducted on the boat while beached to provide a stable platform, or if calm water permitted, fish were processed while the boat floated in water deeper than 50 ft. The tagged fish were held in decontaminated plastic tubs prior to processing.

Fish were photographed and examined for external abnormalities, filleted with skin removed, and at least 200 g (+/- 20 g) of fillet was collected, wrapped in foil, double-bagged in resealable plastic bags and placed in a cooler on ice. For fish in the C size class 400 g of fillet was collected for some samples because there was a concern that there would not be 24 C class sturgeon caught during the sampling effort. During filleting, no internal organs were punctured. As mentioned in Section 3.1.4, some fish were received with stomachs or gonad tissue removed for separate studies. According to CCT and STI fisheries personnel, removal of the organs did not impact the sturgeon tissue that was sampled because the incisions were small relative to the overall size of the fish and not in the part of the fish that was fileted and sampled. Table 5 shows individual fillet weights and sample weights for each fish and indicates fish that were received with internal organs removed.

3.1.6 Equipment Decontamination Procedures

The field team thoroughly rinsed all sampling equipment that came into contact with fish between samples and upon completion of the study.

Rinsing was done using river water away from the shoreline and any areas where sediment had been disturbed during beaching of the boat. Equipment used for processing the fish was washed with soap (i.e., Alconox™) and rinsed with river water after each use. Cleanroom 100 certified nitrile gloves used for handling fish were discarded, not decontaminated. Clean gloves were worn when handling each fish to avoid transfer of potential contaminants among samples.

Note that the procedures identified above deviate from those identified in Standard Operating Procedure (SOP) 2 for decontamination of sampling equipment in that methanol and nitric acid rinses were not used because of issues with shipment of these chemicals, which are considered hazardous materials. More information about this deviation is provided in Section 3.3.

3.1.7 Sample Numbering

Individual fish were identified with the letters “EPA”, a species abbreviation, brood year, a sequential number, and composite bin/replicate identifier (ID) (e.g., EPA-HS-01-001-A1). The codes included the following information:

- Species = Hatchery sturgeon (HS)
- Brood year designations were as follows:
  - 2001 – 01

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  - 2002 – 02
  - 2003 – 03
  - 2004 – 04
  - 2005 – 05
  - 2006 – 06
  - 2007 – 07
  - 2008 – 08
  - 2009 – 09
  - 2010 – 10

- Sequential fish numbers were expressed as three digits starting with 001 (e.g., 001 or 002).
- Composite bins were:

  - A = 50-97 cm
  - B = 98-137 cm
  - C = 138-160 cm

  With sequential numbering for the replicates for the size class (i.e., 1 through 3)

Therefore, the example EPA-HS-01-001-A1 would have been a hatchery sturgeon, from the 2001 brood year, the first fish that was processed, and in the first group of the 50-97 cm size bin. Note that the group numbers were not used for assigning individual samples to composites (see Section 3.4).

3.1.8 Field Documentation

All sampling and associated field activities were documented on activity-specific field forms, field logbooks, and digital photographs.

3.1.8.1 Field Logbook

Daily field activities were documented through journal entries in a bound field logbook by the field team lead for the duration of the sturgeon sampling effort. The field logbooks contain all pertinent information about staff present, site arrival and departure times, health and safety pre-task meetings, sampling activities, site conditions, field methods, site sketches, general observations, and other pertinent technical information. Field book entries followed general accepted professional standards and procedures described in the FSP. The field logbooks and sampling records are part of the permanent project record and are provided in Appendix B. Lake Roosevelt Fisheries Co-managers field records are provided in Appendix D.

3.1.8.2 Digital Photographs

Digital photographs were taken during sampling activities to document sampling procedures, site locations and conditions, and other pertinent activities. Photographs were taken of each sturgeon. A dry-erase white board bearing the sample name, date and time, was held in the photograph for reference. The photo number and description of the photograph were entered sequentially into the Photo Log, which is included in Appendix A. The photographs are part of the permanent project record and have been scanned and saved in the project folder.

3.1.8.3 Dedicated Field Forms

All sampling and associated activities were documented on activity-specific field forms. The field forms contained information and data specific to each sturgeon. Completed field forms are provided in Appendix B, and a brief description of each form is provided below.

- **Sturgeon Tracking Log:** Sample ID and date collected
- **Daily Field Collection Form**: Sample ID, date, time, pit tag number, photo location, weight of fillet, weight of sample for composite, and collector's initials

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- **Sturgeon External Examination Form:** Sample ID, date, time, weight, length, species and any abnormalities in the following: body surface, eyes, head, opercula, fins, barbels, and gills.

3.1.8.4 Waste Disposal

After processing of the sturgeon tissue, the carcass was resected into two pieces to ensure the swim bladder and other organs were punctured. The carcass and unused fillet tissue was then sunk in the deeper channel of the reservoir.

Limited waste was produced during 2016 sturgeon sampling effort. During decontamination of equipment, an Alconox and distilled water mixture was generated and reserved in a bucket until returning to the Kettle Falls boat launch after each day at which time it was disposed of into the facility's septic system. All general refuse (such as gloves, paper towels, plastic bags) was disposed of in the dumpster at the Kettle Falls boat launch.

3.2 Sample Handling and Custody

The following section describes the handling, storage, and shipment procedures for samples collected for 2016 sturgeon sampling effort. All samples remained in the custody of CH2M, in a locked freezer, or with the transportation courier at all times until delivery to the analytical laboratory. Custody procedures for the sampling event were in accordance with the FSP.

3.2.1 Sample Storage

All samples were temporarily stored on ice in a cooler immediately after collection. For the first week of sampling, due to the unavailability of dry ice, samples were stored on wet ice and locked in a field team member's hotel room until packing and shipping with the courier. The following week, samples were frozen on dry ice and stored in an upright, locked freezer at Columbia Navigation until time of packaging. The freezer key was given to CH2M, and the Columbia Navigation warehouse was locked and secured with an alarm system.

3.2.2 Sample Management

All samples were packaged and labeled for shipment in compliance with the chain of custody procedures described in the FSP. A list of the samples collected by the field team, including the sample date and time, was provided to the off-site sample manager on a sample tracking sheet at the end of each field day. The sample manager used the sample tracking sheet and Scribe sample management software to generate permanent sample labels and chains-of-custody (COCs) for the samples. The labels and COCs were produced and sent to the field manager to affix to the sample containers. Each Scribe label and COC was checked against the list of sample IDs provided on the sample tracking sheet, and again against the temporary label on the sample container to ensure each container was properly label. Clear plastic tape was placed over each Scribe label to protect the label from damage. The labeled samples and COCs were placed in coolers with ice for shipment to the analytical laboratory. Following shipment of samples to the analytical laboratory, the required Scribe sample management documentation was submitted to the EPA via the sample management office (SMO) portal and the laboratory was notified of the shipment.

3.2.3 Sample Transportation

Spokane Courier Service (SCS) of Spokane was hired to transport the samples directly to the ALS analytical laboratory located in Kelso, Washington. Three courier trips were used to ship samples to the lab during the sampling event.

Samples were in the custody of SCS until they were hand-delivered to ALS. For one of the shipments, SCS picked the samples up in Colville in the evening and stored the vehicle at the SCS facility overnight to allow for earlier departure the following morning, thus ensuring samples arrived to the laboratory during business hours. CH2M discussed proper security, storage of the vehicle, and handling with SCS for the time period and confirmed the vehicle was locked and then parked in a secured, locked, indoor facility at SCS until the

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driver returned in the early hours the following day to drive the samples to ALS. For two of the shipments, the samples were dropped off with SCS in Spokane and the same procedure was followed.

Samples were delivered to ALS and custody was transferred from the courier driver to the lab.

3.3 Field Sampling Modifications and QAPP/FSP Deviations

Modifications and deviations to sampling procedures occurred during the field event due to unforeseen conditions. It was anticipated that some changes would be required in the field so a protocol was established to address and approve significant changes to the sampling effort. All changes to sampling procedures were approved by EPA personnel present August 30-September 2, 2016 and were recorded in the field logbook and on Field Change forms. Examples of such changes include the following:

- **Modification to equipment decontamination.** SOP-2 called for a methanol and nitric acid rinse of fish processing equipment. However, shipping was delayed because methanol and nitric acid are considered hazardous materials, and the chemicals did not arrive in a timely manner. Therefore, field equipment used for processing the fish on board was washed with soap (i.e., Alconox™) and rinsed with deionized water and site water prior to the start of sampling each day. The field team thoroughly rinsed all sampling equipment that came into contact with fish between samples and upon completion of the study.
- **Modification to sample packaging.** Dry ice was not available during the first week of sampling. Therefore, samples were packaged and shipped using wet ice. Wet ice was double-bagged in resealable plastic bags and coolers were lined on the top and bottom with ice to ensure samples remained at temperature during shipping.

Copies of the Field Change forms are provided in Appendix C.

3.4 Sturgeon Tissue Composite Assignments

A plan for compositing individual sturgeon tissue samples into size class-specific composites was developed after the field sampling program was complete. The compositing plan, detailed in a letter from EPA to TAI on September 30, 2016, consists of stratified random approach based on fork length in each size class. Table 6 lists the fish sample assignments for each composite.

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SECTION 4

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Tables

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Table 1
Number of Fish per Composite

	Size Range		
	A **50-97 cm**	**B** **98-137 cm**	**C** **138-160 cm**
Composite 1	8	8	8
Composite 2	8	8	8
Composite 3	8	8	8
Total	24	24	24

cm = centimeters

Table 2
2016 Sturgeon Sampling Personnel

Date	CH2M Personnel	Oversight Personnel	Activities
8/30/2016	Cameron Irvine - CH2M Kelly O'Neal - CH2M	Kathy Cerise - EPA	Filleting sturgeon
8/31/2016	Cameron Irvine - CH2M Kelly O'Neal - CH2M	Kathy Cerise - EPA	Filleting sturgeon
9/1/2016	Cameron Irvine - CH2M Kelly O'Neal - CH2M	Kathy Cerise - EPA	Filleting sturgeon
9/2/2016	Cameron Irvine - CH2M Kelly O'Neal - CH2M	Kathy Cerise - EPA	Filleting sturgeon
9/7/2016	Dave Rasmussen - CH2M Kelly O'Neal - CH2M		Filleting sturgeon
9/8/2016	Dave Rasmussen - CH2M Kelly O'Neal - CH2M John Culley - CH2M (safety audit)		Filleting sturgeon
9/9/2016	Dave Rasmussen - CH2M Kelly O'Neal - CH2M		Filleting sturgeon
9/13/2016	Marilyn Gauthier - CH2M Kelly O'Neal - CH2M		Filleting sturgeon

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Table 3

Daily Counts of Sturgeon per Size Class

Date	A (50-97 cm)	B (98-137 cm)	C (138-160 cm)
8/30/16	3	3	1
8/31/16	3	5	1
9/1/16	7	7	2
9/2/16	1	1	1
9/7/16	6	8	3
9/8/16	4		4
9/9/16			1
9/13/16			11
Total	**24**	**24**	**24**

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Table 4

Coordinates for Sturgeon Setlines and Corresponding Fish

Date	Sample ID	Latitude	Longitude	Pit Tag No.
8/30/2016	EPA-HS-07-003-B1	48.68527	-118.01722	985.120032655646
8/30/2016	EPA-HS-08-001-B1	48.67285	-118.03981	985.121012701301
8/30/2016	EPA-HS-10-002-A1	48.68527	-118.01722	985.121023183278
8/30/2016	EPA-HS-03-004-C1	48.72720	-118.04668	985.120019274668
8/30/2016	EPA-HS-10-005-A1	48.75804	-118.05268	985.121023461693
8/30/2016	EPA-HS-05-007-A1	48.75804	-118.05268	985.121006398160
8/30/2016	EPA-HS-09-006-B1	48.75804	-118.05268	985.120030500558
8/31/2016	EPA-HS-10-008-A1	48.68748	-118.02337	985.121023179416
8/31/2016	EPA-HS-08-009-B1	48.68748	-118.02337	985.121012719932
8/31/2016	EPA-HS-02-010-C1	48.72917	-118.04672	985.120013034977
8/31/2016	EPA-HS-07-011-B1	48.76966	-118.02564	985.120032633230
8/31/2016	EPA-HS-07-012-B1	48.76966	-118.02564	985.120032653596
8/31/2016	EPA-HS-06-013-B1	48.76966	-118.02564	985.120030521109
8/31/2016	EPA-HS-08-014-A1	48.81065	-118.00739	985.121012180857
8/31/2016	EPA-HS-08-015-A1	48.81065	-118.00739	985.121012122961
8/31/2016	EPA-HS-05-016-B1	48.81458	-117.94432	985.120026978257
9/1/2016	EPA-HS-10-017-A1	48.67739	-118.02943	985.121023184869
9/1/2016	EPA-HS-09-018-A1	48.67739	-118.02943	985.121006349972
9/1/2016	EPA-HS-08-019-B2	48.67739	-118.02943	985.120032653049
9/1/2016	EPA-HS-06-020-B2	48.69315	-118.02716	985.120030488480
9/1/2016	EPA-HS-10-024-A2	48.69315	-118.02716	985.121022324306
9/1/2016	EPA-HS-06-021-B2	48.69315	-118.02716	985.120030399360
9/1/2016	EPA-HS-01-022-B2	48.69315	-118.02716	985.120014066543
9/1/2016	EPA-HS-07-023-B2	48.69315	-118.02716	985.120032569329
9/1/2016	EPA-HS-09-032-A2	48.78786	-118.00845	985.121006364696
9/1/2016	EPA-HS-07-030-B2	48.78786	-118.00845	985.120032577997
9/1/2016	EPA-HS-08-031-A2	48.78786	-118.00845	985.121006337392
9/1/2016	EPA-HS-10-028-A2	48.78786	-118.00845	985.121023299893
9/1/2016	EPA-HS-08-029-A2	48.78786	-118.00845	985.121005732345
9/1/2016	EPA-HS-07-027-B2	48.78786	-118.00845	985.120031103155
9/1/2016	EPA-HS-03-026-C1	48.78786	-118.00845	985.120013468748

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Table 4

Coordinates for Sturgeon Setlines and Corresponding Fish

Date	Sample ID	Latitude	Longitude	Pit Tag No.
9/1/2016	EPA-HS-06-025-C1	48.78786	-118.00845	985.120030485876
9/2/2016	EPA-HS-04-033-C1	48.751233	-118.058542	985.120023685631
9/2/2016	EPA-HS-09-034-B2	48.69414	-118.02886	985.121012171808
9/2/2016	EPA-HS-10-035-A2	48.69414	-118.02886	985.121012185873
9/7/2016	EPA-HS-10-036-A2	48.56477	-118.12511	985.121022926811
9/7/2016	EPA-HS-03-039-C1	48.564541	-118.127034	985.120013038726
9/7/2016	EPA-HS-06-038-B3	48.57458	-118.10661	985.120030502219
9/7/2016	EPA-HS-06-037-C1	48.57458	-118.10661	985.120030389582
9/7/2016	EPA-HS-06-047-A3	48.63506	-118.08760	985.120029756910
9/7/2016	EPA-HS-08-044-B3	48.63506	-118.08760	985.121012208535
9/7/2016	EPA-HS-03-048-B3	48.63506	-118.08760	985.120019177693
9/7/2016	EPA-HS-08-046-B3	48.63506	-118.08760	985.121012690092
9/7/2016	EPA-HS-08-045-B3	48.63506	-118.08760	985.121012178690
9/7/2016	EPA-HS-10-042-A2	48.63506	-118.08760	985.121023174335
9/7/2016	EPA-HS-10-043-A3	48.63506	-118.08760	985.121012453363
9/7/2016	EPA-HS-08-040-B3	48.59855	-118.13099	985.120032583488
9/7/2016	EPA-HS-08-041-C1	48.59855	-118.13099	985.120030384611
9/7/2016	EPA-HS-10-052-A3	48.67595	-118.08073	985.121023296291
9/7/2016	EPA-HS-07-051-B3	48.67595	-118.08073	985.120032584909
9/7/2016	EPA-HS-08-050-B3	48.67595	-118.08073	985.121012681539
9/7/2016	EPA-HS-10-049-A2	48.67595	-118.08073	985.121013236745
9/8/2016	EPA-HS-06-053-C2	48.56797	-118.13563	985.120030503580
9/8/2016	EPA-HS-05-054-C2	48.617683	-118.123959	985.120030516128
9/8/2016	EPA-HS-08-055-A3	48.61298	-118.12911	985.120032577018
9/8/2016	EPA-HS-09-056-A3	48.645268	-118.098011	985.121006342338
9/8/2016	EPA-HS-10-057-A3	48.64027	-118.09824	985.121012119134
9/8/2016	EPA-HS-10-058-A3	48.64027	-118.09824	985.121023452212
9/8/2016	EPA-HS-04-060-C2	48.67715	-118.08089	985.120018430746
9/8/2016	EPS-HS-04-059-C2	48.67715	-118.08089	985.120023758877
9/9/2016	EPA-HS-04-061-C2	48.663243	-118.097516	985.120018381851
9/13/2016	EPA-HS-06-062-C2	48.421709	-118.201246	985.120030517577

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Table 4

Coordinates for Sturgeon Setlines and Corresponding Fish

Date	Sample ID	Latitude	Longitude	Pit Tag No.
9/13/2016	EPA-HS-06-063-C2	48.457077	-118.211002	985.120030384035
9/13/2016	EPA-HS-05-064-C2	48.484442	-118.180693	985.120030501479
9/13/2016	EPA-HS-02-065-C3	48.507063	-118.179518	999.000000475990
9/13/2016	EPA-HS-02-066-C3	48.516750	-118.167853	985.121025225039
9/13/2016	EPA-HS-05-067-C3	48.49554	-118.17979	985.120030490868
9/13/2016	EPA-HS-06-069-C3	48.536649	-118.140712	985.120030379918
9/13/2016	EPA-HS-06-070-C3	48.539108	-118.145029	985.120030503234
9/13/2016	EPA-HS-07-071-C3	48.523309	-118.143574	985.120032660100
9/13/2016	EPA-HS-01-072-C3	48.525216	-118.142319	985.120014062140
9/13/2016	EPA-HS-05-068-C3	48.539108	-118.145029	985.120030500873

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Table 5

Length, Total Weight, Fillet Weight and Sample Weight for Each Fish

Individual Fish ID	Date	Time	Sampling Location (Reach)	Length (cm)	Total Weight (kg)	Weight of Fillet (kg)	Weight of Increment for Composite (g)	Collector Initial
EPA-HS-07-003-B1	8/30/2016	10:39	3	115.1	10.44	1.11	206	CAI, KLO
EPA-HS-08-001-B1*	8/30/2016	11:40	3	113.8	9.95	1.485	220	CAI, KLO
EPA-HS-10-002-A1*	8/30/2016	12:10	3	81.3	3.73	0.655	215	CAI, KLO
EPA-HS-03-004-C1*	8/30/2016	13:10	2	143.5	19.6	3.64	201	CAI, KLO
EPA-HS-10-005-A1	8/30/2016	14:25	2	66.3	1.93	0.75	209	CAI, KLO
EPA-HS-09-006-B1	8/30/2016	14:46	2	119.8	11.94	2.42	208	CAI, KLO
EPA-HS-05-007-A1	8/30/2016	15:17	2	87.9	5.58	0.9	220	CAI, KLO
EPA-HS-10-008-A1	8/31/2016	10:13	3	76.8	3.31	0.475	203	CAI, KLO
EPA-HS-08-009-B1	8/31/2016	10:47	3	115.6	11.07	1.515	206	CAI, KLO
EPA-HS-02-010-C1	8/31/2016	11:40	2	153	26.6	3.925	211	CAI, KLO
EPA-HS-07-011-B1	8/31/2016	12:30	2	105.3	7.75	1.34	211	CAI, KLO
EPA-HS-07-012-B1	8/31/2016	12:44	2	117.2	13.44	2.01	201	CAI, KLO
EPA-HS-06-013-B1	8/31/2016	13:05	2	115.5	11.02	1.515	209	CAI, KLO
EPA-HS-08-014-A1	8/31/2016	13:58	2	97.4	6.59	1.055	206	CAI, KLO
EPA-HS-08-015-A1	8/31/2016	14:10	2	87.8	4.66	0.665	204	CAI, KLO
EPA-HS-05-016-B1	8/31/2016	14:22	2	113.2	10.1	1.445	209	CAI, KLO
EPA-HS-10-017-A1	9/1/2016	9:15	3	73.6	3.2	0.46	201	CAI, KLO
EPA-HS-09-018-A1	9/1/2016	9:35	3	85.4	4.52	0.77	218	CAI, KLO
EPA-HS-08-019-B2	9/1/2016	9:50	3	109.2	9.75	1.88	211	CAI, KLO
EPA-HS-06-020-B2	9/1/2016	10:26	2	127.1	16.36	3.135	208	CAI, KLO
EPA-HS-10-024-A2	9/1/2016	10:48	2	89.7	5.81	0.97	210	CAI, KLO
EPA-HS-06-021-B2	9/1/2016	11:02	2	120	12.28	2.34	210	CAI, KLO
EPA-HS-01-022-B2	9/1/2016	11:21	2	105.1	7.89	1.14	205	CAI, KLO
EPA-HS-07-023-B2	9/1/2016	11:35	2	104.1	7.92	1.54	210	CAI, KLO
EPA-HS-09-032-A2	9/1/2016	13:26	2	86.8	5.27	0.89	205	CAI, KLO
EPA-HS-07-030-B2	9/1/2016	13:37	2	109.1	9.38	1.62	208	CAI, KLO
EPA-HS-08-031-A2	9/1/2016	13:48	2	81.2	4.04	0.655	208	CAI, KLO
EPA-HS-10-028-A2	9/1/2016	14:00	2	84.5	4.33	0.62	208	CAI, KLO
EPA-HS-08-029-A2	9/1/2016	14:11	2	84.4	4.62	0.72	205	CAI, KLO

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Table 5

Length, Total Weight, Fillet Weight and Sample Weight for Each Fish

Individual Fish ID	Date	Time	Sampling Location (Reach)	Length (cm)	Total Weight (kg)	Weight of Fillet (kg)	Weight of Increment for Composite (g)	Collector Initial
EPA-HS-07-027-B2	9/1/2016	14:23	2	120.9	14.56	1.91	210	CAI, KLO
EPA-HS-03-026-C1	9/1/2016	14:41	2	139.2	19.59	2.84	210	CAI, KLO
EPA-HS-06-025-C1	9/1/2016	14:55	2	138	22.5	2.955	405	CAI, KLO
EPA-HS-04-033-C1	9/2/2016	10:30	2	140	17.5	2.905	408	CAI, KLO
EPA-HS-09-034-B2	9/2/2016	11:11	2	97.8	6.81	1.21	205	CAI, KLO
EPA-HS-10-035-A2	9/2/2016	11:30	2	81.9	4.56	0.82	208	CAI, KLO
EPA-HS-10-036-A2	9/7/2016	9:00	2	79.1	4.21	0.815	210	DR, KLO
EPA-HS-03-039-C1	9/7/2016	10:11	2	146.3	24.08	4.215	420	DR, KLO
EPA-HS-06-038-B3	9/7/2016	10:33	2	131.7	18.7	2.63	215	DR, KLO
EPA-HS-06-037-C1	9/7/2016	10:52	2	142	24.1	3.27	446	DR, KLO
EPA-HS-06-047-A3	9/7/2016	12:30	2	90.8	6.84	0.965	207	DR, KLO
EPA-HS-08-044-B3	9/7/2016	12:41	2	103.5	6.81	1.09	211	DR, KLO
EPA-HS-03-048-B3	9/7/2016	12:53	2	132.2	15.21	2.1	209	DR, KLO
EPA-HS-08-046-B3	9/7/2016	13:06	2	104	8.17	1.25	220	DR, KLO
EPA-HS-08-045-B3	9/7/2016	13:18	2	106.3	8.31	1.345	223	DR, KLO
EPA-HS-10-042-A2	9/7/2016	13:30	2	89.8	6.19	0.77	220	DR, KLO
EPA-HS-10-043-A3	9/7/2016	13:45	2	73.8	3.29	0.47	215	DR, KLO
EPA-HS-08-040-B3	9/7/2016	13:55	2	118.1	10.39	1.83	212	DR, KLO
EPA-HS-08-041-C1	9/7/2016	14:05	2	138.9	24.16	3.805	420	DR, KLO
EPA-HS-10-052-A3	9/7/2016	14:50	2	82.4	4.22	0.7	219	DR, KLO
EPA-HS-07-051-B3	9/7/2016	15:07	2	121	12.82	1.835	217	DR, KLO
EPA-HS-08-050-B3	9/7/2016	15:23	2	105.9	8.06	1.33	220	DR, KLO
EPA-HS-10-049-A3	9/7/2016	15:40	2	75.4	3.02	0.455	207	DR, KLO
EPA-HS-06-053-C2*	9/8/2016	9:12	2	149.9	26.5	3.415	410	DR, KLO
EPA-HS-05-054-C2	9/8/2016	10:22	2	138.4	23.22	3.615	440	DR, KLO
EPA-HS-08-055-A3	9/8/2016	11:05	2	96.8	6.19	0.85	217	DR, KLO
EPA-HS-09-056-A3	9/8/2016	11:33	2	82.2	3.79	0.325	222	DR, KLO
EPA-HS-10-057-A3	9/8/2016	12:10	2	97.2	6.06	0.645	212	DR, KLO
EPA-HS-10-058-A3	9/8/2016	12:27	2	79.6	3.71	0.495	225	DR, KLO
EPA-HS-04-060-C2	9/8/2016	16:19	2	143.7	23.9	3.76	415	DR, KLO

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Table 5

Length, Total Weight, Fillet Weight and Sample Weight for Each Fish

Individual Fish ID	Date	Time	Sampling Location (Reach)	Length (cm)	Total Weight (kg)	Weight of Fillet (kg)	Weight of Increment for Composite (g)	Collector Initial
EPA-HS-04-059-C2	9/8/2016	16:34	2	139.5	20.6	2.48	430	DR, KLO
EPA-HS-04-061-C2	9/9/2016	14:17	2	150.5	27.35	4.41	420	DR, KLO
EPA-HS-06-062-C2	9/13/2016	9:48	4	138.3	22.6	3.9	420	KLO, MG
EPA-HS-06-063-C2*	9/13/2016	10:36	4	148.3	20.98	4.085	450	KLO, MG
EPA-HS-05-064-C2	9/13/2016	11:25	4	146.5	24.5	2.495	456	KLO, MG
EPA-HS-06-065-C3*	9/13/2016	12:41	4	146.8	25.08	4.325	420	KLO, MG
EPA-HS-02-066-C3*	9/13/2016	13:45	4	157.5	25.67	5.55	440	KLO, MG
EPA-HS-05-067-C3*	9/13/2016	14:25	4	146.7	25.6	2.005	425	KLO, MG
EPA-HS-05-068-C3*	9/13/2016	15:14	4	145.4	25.24	4.6	440	KLO, MG
EPA-HS-06-069-C3	9/13/2016	15:36	4	140.8	22.75	3.825	426	KLO, MG
EPA-HS-06-070-C3*	9/13/2016	15:53	4	138.5	21.16	4.175	445	KLO, MG
EPA-HS-07-071-C3*	9/13/2016	16:09	4	140	19.76	2.78	430	KLO, MG
EPA-HS-01-072-C3*	9/13/2016	16:26	4	149.4	27.5	5.05	430	KLO, MG

cm = centimeters

kg = kilograms

g = grams

CAI = Cameron Irvine

KLO = Kelly O'Neal

DR = Dave Rasmussen

MG = Marilyn Gauthier

* = Gonad tissue or stomach removed by Fisheries Co-managers prior to transferring fish to CH2M

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Table 6

Composite Sample Assignments

Size Class	Composite Number	Individual Fish ID	Fish Composite ID
A	1	EPA-HS-05-007-A1	EPA-HS-A1
		EPA-HS-06-047-A3	
		EPA-HS-09-056-A3	
		EPA-HS-10-008-A1	
		EPA-HS-10-017-A1	
		EPA-HS-10-028-A2	
		EPA-HS-10-057-A3	
		EPA-HS-10-058-A3	
	2	EPA-HS-08-014-A1	EPA-HS-A2
		EPA-HS-08-029-A2	
		EPA-HS-08-031-A2	
		EPA-HS-09-032-A2	
		EPA-HS-10-024-A2	
		EPA-HS-10-035-A2	
		EPA-HS-10-036-A2	
		EPA-HS-10-043-A3	
	3	EPA-HS-08-015-A1	EPA-HS-A3
		EPA-HS-08-055-A3	
		EPA-HS-09-018-A1	
		EPA-HS-10-002-A1	
		EPA-HS-10-005-A1	
		EPA-HS-10-042-A2	
		EPA-HS-10-049-A3	
		EPA-HS-10-052-A3	
B	1	EPA-HS-05-016-B1	EPA-HS-B1
		EPA-HS-06-038-B3	
		EPA-HS-07-011-B1	
		EPA-HS-07-030-B2	
		EPA-HS-07-051-B3	
		EPA-HS-08-009-B1	
		EPA-HS-08-040-B3	
		EPA-HS-08-046-B3	
	2	EPA-HS-03-048-B3	EPA-HS-B2
		EPA-HS-06-013-B1	

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Table 6

Composite Sample Assignments

Size Class	Composite Number	Individual Fish ID	Fish Composite ID
		EPA-HS-07-023-B2	
		EPA-HS-07-027-B2	
		EPA-HS-08-019-B2	
		EPA-HS-08-044-B3	
		EPA-HS-08-050-B3	
		EPA-HS-09-006-B1	
	3	EPA-HS-01-022-B2	EPA-HS-B3
		EPA-HS-06-020-B2	
		EPA-HS-06-021-B2	
		EPA-HS-07-003-B1	
		EPA-HS-07-012-B1	
		EPA-HS-08-001-B1	
		EPA-HS-08-045-B3	
		EPA-HS-09-034-B2	
C	1	EPA-HS-02-066-C3	EPA-HS-C1
		EPA-HS-04-059-C2	
		EPA-HS-04-060-C2	
		EPA-HS-05-054-C2	
		EPA-HS-05-067-C3	
		EPA-HS-06-063-C2	
		EPA-HS-06-069-C3	
		EPA-HS-08-041-C1	
	2	EPA-HS-01-072-C3	EPA-HS-C2
		EPA-HS-02-010-C1	
		EPA-HS-03-004-C1	
		EPA-HS-03-026-C1	
		EPA-HS-05-068-C3	
		EPA-HS-06-025-C1	
		EPA-HS-06-065-C3	
		EPA-HS-07-071-C3	
	3	EPA-HS-03-039-C1	EPA-HS-C3
		EPA-HS-04-033-C1	
		EPA-HS-04-061-C2	
		EPA-HS-05-064-C2	
		EPA-HS-06-037-C1	
		EPA-HS-06-053-C2	
		EPA-HS-06-062-C2	
		EPA-HS-06-070-C3	

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Figures

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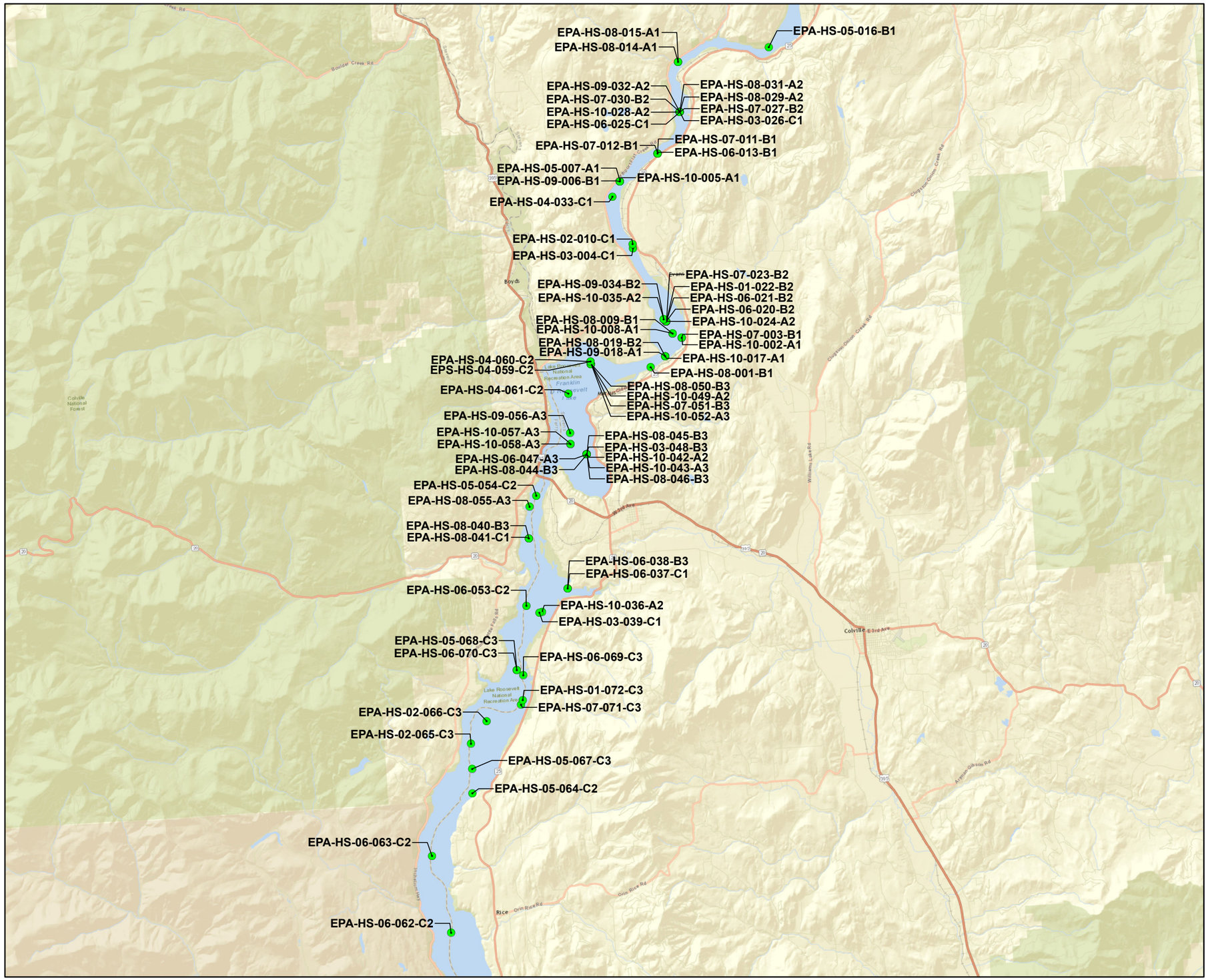
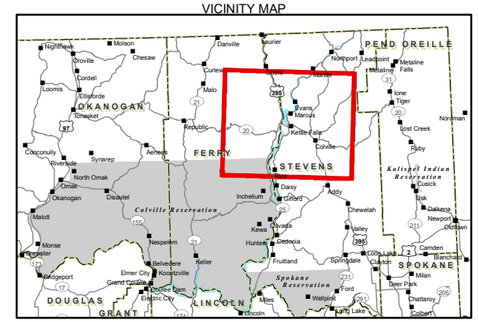


VICINITY MAP



LEGEND

- Sturgeon Tissue Sample Locations

N

0 5

Miles

Sturgeon Tissue Sample Locations
Upper Columbia River RI/FS
– 2016 Field Investigation

Appendix A
Photo Log

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EPA-HS-08-001-B1

EPA-HS-10-002-A1

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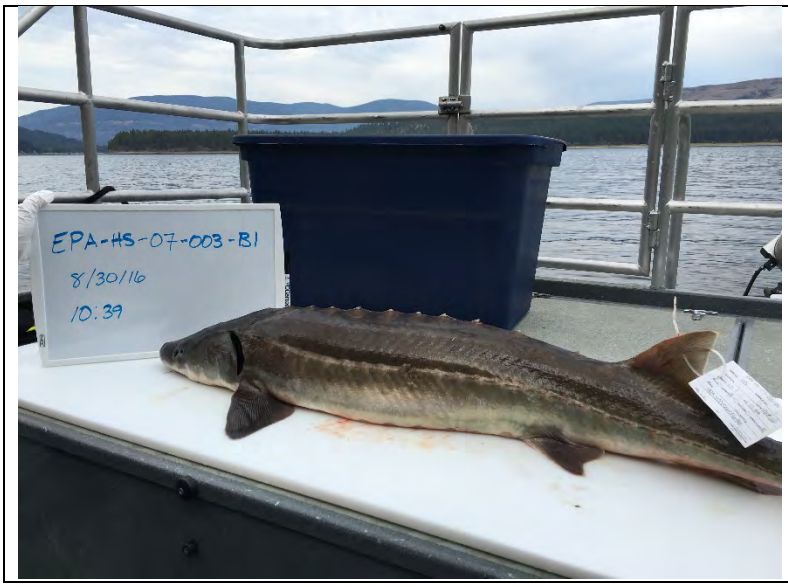

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EPA-HS-03-004-C1

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EPA-HS-10-005-A1

EPA-HS-09-006-B1 - dry erase board in photo mistakenly identifies as A1

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EPA-HS-05-007-A1

EPA-HS-10-008-A1

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EPA-HS-08-009-B1

EPA-HS-02-010-C1

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EPA-HS-07-011-B1

EPA-HS-07-012-B1

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EPA-HS-06-013-B1

EPA-HS-08-014-A1

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EPA-HS-08-015-A1

EPA-HS-08-015-A1 Example of tail fin abnormality

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EPA-HS-05-016-B1

EPA-HS-10-017-A1

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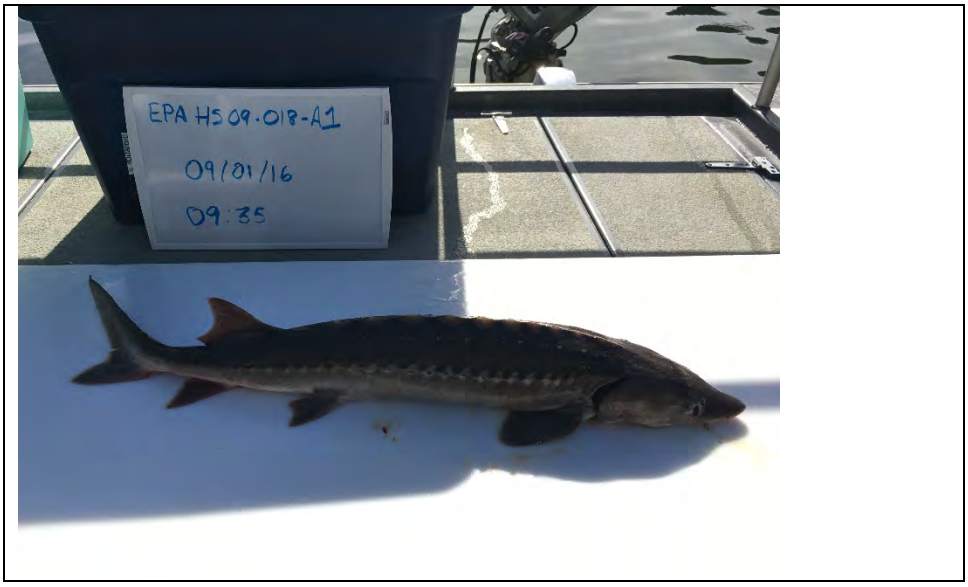

EPA-HS-09-018-A1

EPA-HS-08-019-B2

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EPA-HS-06-020-B2

EPA-HS-06-021-B2

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EPA-HS-01-022-B2

EPA-HS-07-023-B2

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EPA-HS-10-024-A2

EPA-HS-06-025-C1

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EPA-HS-03-026-C1

EPA-HS-07-027-B2

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EPA-HS-10-028-A2

EPA-HS-08-029-A2

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EPA-HS-07-030-B2

EPA-HS-08-031-A2

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EPA-HS-08-031-A2 Signal crayfish in stomach

EPA-HS-09-032-A2

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EPA-HS-04-033-C1

EPA-HS-09-034-B2

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EPA-HS-10-035-A2

EPA-HS-10-036-A2

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EPA-HS-03-037-C1

EPA-HS-06-038-B3

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EPA-HS-03-039-C1

EPA-HS-08-040-B3

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EPA-HS-08-041-C1

EPA-HS-10-042-A2

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EPA-HS-10-043-A3

EPA-HS-08-044-B3

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EPA-HS-08-045-B3 - dry erase board in photo mistakenly identifies fish as B2

EPA-HS-08-046-B3

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EPA-HS-06-047-A3

EPA-HS-03-048-B3

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EPA-HS-10-049-A3 - dry erase board in photo mistakenly identifies fish as A2

EPA-HS-08-050-B3

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EPA-HS-07-051-B3

EPA-HS-10-052-A3

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EPA-HS-06-053-C2 - dry erase board in photo mistakenly identifies fish as C1

EPA-HS-05-054-C2

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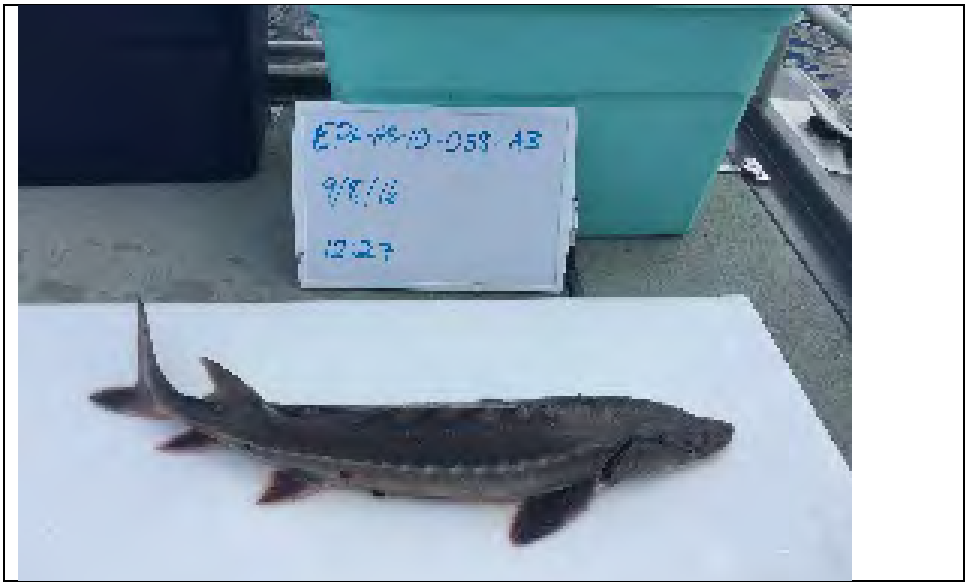
EPA-HS-10-057-A3



EPA-HS-10-058-A3

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EPA-HS-04-059-C2

EPA-HS-04-059-C2 Example of abnormal fin

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EPA-HS-04-060-C2 – Photo has incorrect ID on white board

EPA-HS-04-060-C2 – corrected ID

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EPA-HS-04-061-C2

EPA-HS-06-062-C2

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EPA-HS-06-063-C2

EPA-HS-05-064-C2

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EPA-HS-02-065-C3

EPA-HS-02-066-C3

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EPA-HS-05-067-C3

EPA-HS-05-068-C3

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EPA-HS-06-069-C3

EPA-HS-06-070-C3

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EPA-HS-07-071-C3

EPA-HS-07-071-C3 – Example of abnormal fin

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EPA-HS-01-072-C3

Example of fish tag

Removing scutes

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Example of filleting

Example of filleting

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Example of filleting

Example of filleting

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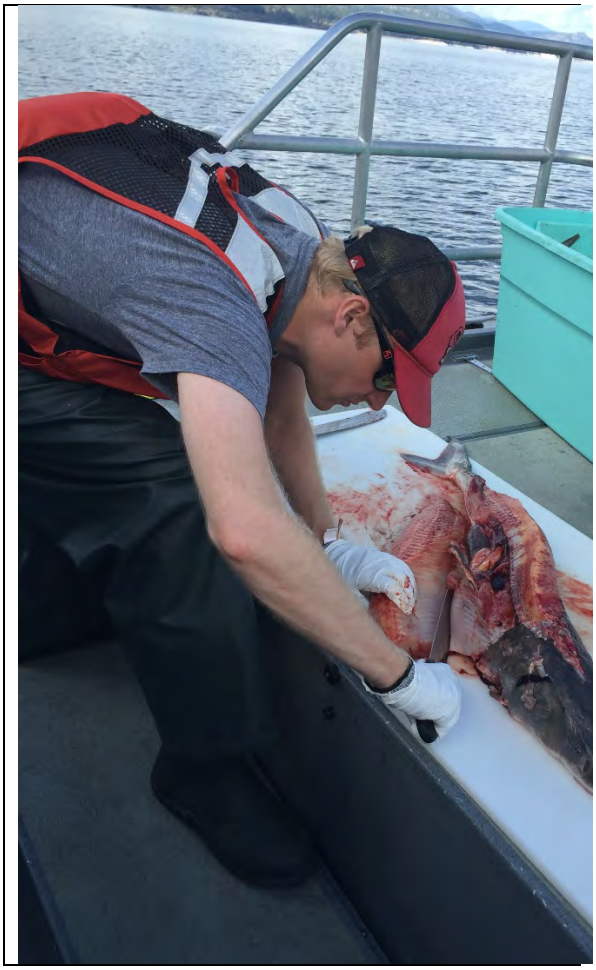

Example of filleting

Example of filleting

Removing skin from fillet

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Sample taken from middle of fillet

Example of sample

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National Parks vessel

Colville boat pulling in setline

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Example of gut content

Example of gut content

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Appendix B
Field Forms

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2016 Hatchery Sturgeon Tissue Collection

(Record the Capture Date/fish Tag number when collected)

Replicate 1

	A: 50-97cm		B: 98-137cm		C: 138-160cm	
1	EPA-HS-10-002-A1	083016	EPA-HS-07-003-B1	08/30/16	EPA-HS-03-004-C1	08/30/16
2	EPA-HS-10-005-A1	083016	EPA-HS-08-001-B1	083016	EPA-HS-02-010-C1	8/31/16
3	EPA-HS-05-007-A1	083016	EPA-HS-09-006-B1	083016	EPA-HS-03-026-C1	9/1/16
* 4	EPA-HS-10-008-A1	083116	EPA-HS-08-009-B1	083116	EPA-HS-06-025-C1	09/1/16
5	EPA-HS-08-014-A1	08/31/16	EPA-HS-07-011-B1	8/31/16	EPA-HS-04-033-C1	09/02/16
6	EPA-HS-08-015-A1	8/31/16	EPA-HS-07-012-B1	8/31/16	EPA-HS-03-039-C1	09/07/16
7	EPA-HS-10-017-A1	090116	EPA-HS-06-013-B1	083116	EPA-HS-06-037-C1	09/07/16
8	EPA-HS-09-018-A1	090116	EPA-HS-05-006-B1	8/31/16	EPA-HS-08-041-C1	9/7/16
	EPA-HS-A1		EPA-HS-B1		EPA-HS-C1	

Replicate 2

	A: 50-97cm		B: 98-137cm		C: 138-160cm	
1	EPA-HS-10-024-A2	090116	EPA-HS-08-019-B2	090116	EPA-HS-06-053-C2	9/8/16
2	EPA-HS-09-030-A2	09/01/16	EPA-HS-06-020-B2	09011/16	EPA-HS-05-054-C2	9/8/16
3	EPA-HS-08-031-A2	09/01/16	EPA-HS-06-021-B2	090116	EPA-HS-04-060-C2	9/8/16
4	EPA-HS-08-029-A2	09/01/16	EPA-HS-01-022-B2	090116	EPA-HS-04-059-C2	9/8/16
5	EPA-HS-10-035-A2	09/02/16	EPA-HS-07-023-B2	090116	EPA-HS-04-061-C2	9/9/16
6	EPA-HS-10-36-A2	09/01/16	EPA-HS-07-030-B2	09/01/16	EPA-HS-06-062-C2	9/13/16
7	EPA-HS-10-042-A2	09/7/16	EPA-HS-07-027-B2	09/01/16	EPA-HS-06-063-C2	9/13/16
8	EPA-HS-10-028 ~~029~~-A2	9/7/16	EPA-HS-09-034-B2	09/02/16	EPA-HS-05-064-C2	9/13/16
	EPA-HS-A2	9/1/16	EPA-HS-B2		EPA-HS-C2	

Replicate 3

	A: 50-97cm		B: 98-137cm		C: 138-160cm	
1	EPA-HS-06-047-A3	9/07/16	EPA-HS-06-038-B3	9/7/16	EPA-HS-02-065-C3	9/13/16
EPA-HS-10-052-A3 2	EPA-HS-~~10-052~~-A3 KD	9/07/16	EPA-HS-08-044-B3	9/7/16	EPA-HS-02-066-C3	9/13/16
3	EPA-HS-10-043-A3	9/7/16	EPA-HS-03-048-B3	9/7/16	EPA-HS-05-067-C3	9/13/16
4	EPA-HS-10-042-A3	9/7/16	EPA-HS-08-046-B3	9/7/16	EPA-HS-05-068-C3	9/13/16
5	EPA-HS-08-055-A3	9/8/16	EPA-HS-08-045-B3	9/7/16	EPA-HS-06-069-C3	9/13/16
6	EPA-HS-09-056-A3	9/8/16	EPA-HS-08-040-B3	9/7/16	EPA-HS-06-070-C3	9/13/16
7	EPA-HS-10-057-A3	9/8/16	EPA-HS-08-050-B3	9/7/16	EPA-HS-07-071-C3	9/13/16
8	EPA-HS-10-058-A3	9/8/16	EPA-HS-07-051-B3	9/7/16	EPA-HS-01-072-C3	9/13/16
	EPA-HS-A3		EPA-HS-B3		EPA-HS-C3	

Notes:

1) insert the brood year code and sequential fish number (3 digits) into the ID

Brood Year = last 2 digits of year

2001 = 01	2006 = 06
2002 = 02	2007 = 07
2003 = 03	2008 = 08
2004 = 04	2009 = 09
2005 = 05	2010 = 10

2) and the date (to the right of fish ID)

2016 Fish Collection Form Date: 8/30/16

Upper Columbia River (UCR) Fish Tissue Study

Reach	Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities see (V)form	Photo ID	Weight of Fillet (g)	Weight of subsample for Composite (g)	Collectors Initials
3	EPAHS 07003B1	985.120032	EPAHS B1	1039	F	✓	Cams iphone 1	1.11	206	CR
3 Marcus Flat	—	855646	—	—	—	—	—	—	—	—
3	EPAHS 08001B1	985.121012701301	EPAHS B1	1140	M	✓	Cams iPhone	1.485	220	CR
2 Evans	EPAHS 10002A1	985.121023183278	EPAHS A1	1210	—	✓	✓	0.655	215	CR
2	EPAHS 0304C1	985.120019274668	EPAHS C1	1310	F Im	✓	✓	3.640	201	CR
2	EPAHS 10005A1	985.121023461693	EPAHS A1	1425 ~~1425~~	—	✓	✓	0.75	209	CR
2 Bossburg	EPAHS 09006A1 B1 CR	985.121006398160	EPAHS B1	1446	—	✓	✓	2.42	208	CR *
2	EPAHS 05007 ~~B1~~ A1 CR	985.120039500558	EPAHS A1	1517	—	✓	✓	0.900	220	CR **
						8/30/16				
			CR		0					

Notes:

* looks bigger than A1 class 3'8" (90+20=110) @ 3'8" > 97cm. confirm conversion & reassign as needed. :44" = 112cm, move to sample B1

** Seems that HS 09006 + 05007 tags were switched. 3'1" ~ 90cm FL for HS 05007 ~~B1~~ → A1. =93cm

2016 Fish Collection Form

Date: 8/31/16

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (√)	Photo ID	Weight of Fillet ~~(g)~~ Kg	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-10-008-A1	985.121023179 416	EPA-HS-A1	10:13	M	✓	Cam's iphone	0.475	203	CAI, KIO
EPA-HS-08-009-B1	985.121012719 932	EPA-HS-B1	10:47		✓	"	1.515	206	CAI KIO
EPA-HS-02-010-C1	985.120013034977	EPA-HS-C1	11:40	F	✓	"	3.925	211	cai, KIO
EPA-HS-07-011-B1	985.120032633230	EPA-HS-B1	12:30	M	✓	"	1.340	211	cai, KIO
EPA-HS-07-012-B1	985.120032653596	EPA-HS-B1	12:44		✓	"	2.010	201	cai, KIO
EPA-HS-06-013-B1	985.120030521109	EPA-HS-B1	13:05		✓	KO phone	11.02 1.515	209	Cai KIO
EPA-HS-08-014-A1	985.121012180857	EPA-HS-A1	13:58		✓	cam phone	1.055	206	cai, KIO
EPA-HS-08-015-A1	985.121012122961	EPA-HS-A1	14:10		✓	cam iphone	0.665	204	cai, KIO
EPA-HS-05-016-B1	985.120026978257	EPA-HS-B1	14:22		✓	"	1.445	209	cai, KIO

Notes:

2016 Fish Collection Form Date: ~~0801~~ 09016

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (V)	Photo ID	Weight of Fillet (g)	Weight of subsample for Composite (g)	Collectors Initials
EPAHS10017A1	985.12102 3184869	EPAHSA1	0915	Im	✓	Cano iPhone	0.46	201	CR/KO
EPAHS09018 A1	985.12100 6349972	EPAHSA1	0935	Im	✓		0.77	218	CR/KO
EPAHS0801982	985.120032 653049	EPAHSB2	0950	—	✓		1.88	211	CR/KO
EPAHS 0620B2	985.120030 488480	EPAHSB2	1026	—	✓		3.135	208	CR/KO
EPAHS10024A2	985.121022 324306	A2	1048	—	✓		0.97	210	CR/KO
EPAHS06021 B2	985.120030 399360	B2	1102	—	✓		2.34	210	CI/KO
EPAHS01022 B2	985.120014 066543	B2	1121	—	✓		1.14	205	CI/KO
EPAHS07023 B2	985.12003 2569329	B2	1135	—	✓		1.54	210	CI/KO
EPA-HS-09-032-A2	985.12D0636 4696	EPA-HS-A2	13:26	-	✓		0.890	205	CI, KO
EPA-HS-07-030 B2	985.120032 577997	EPA-HS-B2	13:37	—	✓	↓	1.628	208	CI, KO

Notes:

2016 Fish Collection Form Date: 9/1/16

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (√)	Photo ID	Weight of Fillet (g)	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-08-021-A2	985.121006 337392	EPA-HS-A2	13:48	–	✓	Cam's iphone	0.655	208	cai, KIO
EPA-HS-10-028-A2	985.121023 2 49893	EPA-HS-A2	14:00	–	✓	"	0.620	208	cai, KIO
EPA-HS-08-029-A2	985.121006 57 32345	EPA-HS-A2	14:11	–	✓	"	0.720	205	cai. KIO
EPA-HS-07-027-B2	985.120031 03155	EPA-HS-B2	14:23	–	✓	"	1.910	210	cai, KIO
EPA-HS-03-026-C1	985.120013 468748	EPA-HS-C1	14:41	F	✓	"	2.840	210 *	cai KIO
EPA-HS-06-025-C1	985.120030 4 85876	EPA-HS-C1	14:55	M	✓	"	2.955	405	cai, KIO

Notes:

* needed to take 400g

2016 Fish Collection Form Date: 9/2/2016

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (V)	Photo ID	Weight of Fillet (g)	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-04-033-C1	985.1200 23685631	EPA-HS-C1	10:30	—	✓	Cam's phone	2.905	408	CAJ, KLO
EPA-HS-09-034-B2	985.1210 12171808	EPA-HS-B2	11:11	M	✓	"	1.210	205	CAJ KLO
EPA-HS-10-035-A2	985.1210121 85873	EPA-HS-A2	11:30	M	✓	"	0.820	208	CAJ, KLO

Notes:

2016 Fish Collection Form Date: 9/7/16

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (√)	Photo ID	Weight of Fillet ~~(g)~~ Kg	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-10-043-A3	985.1210 1245336 3	EPA-HS-A3	13:45		✓	Kelly phone	0.47	215	DR, KO
EPA-HS-08-040-B3	985.1200325 83488	EPA-HS-B3	13:55		✓	Kelly phone	1.83	212	DR, KO
EPA-HS-08-041-C1	985.120030 384611	EPA-HS-C1	14:05		✓	Kelly p	3.805	420	DR, KO
EPA-HS-10-052-A3	~~985.120023~~ DR 985.12102329 6291	EPA-HS-A3	14:50		✓	DR phone	0.7	214	DR, KO
EPA-HS-08-051-B3	985.12003258 4909	EPA-HS-B3	15:07		✓	DR phone	1.835	217	DR, KO
EPA-HS-08-050-B3	985.12/012 68/539	EPA-HS-B3	15:23		✓	DR phone	1.33	220	DR, KO
EPA-HS-10-049-A2	985.12/013 236 745	EPA-HS-A2	15:40		✓	DR phone	0.455	207	DR, KO

Notes:

2016 Fish Collection Form Date: 9/7/16

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (√)	Photo ID	Weight of Fillet (g) Kg	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-10-036-A2	985.1210229 26811	EPA-HS-A2	9:00		✓	DR phone	815g 0.815kg	210	DR
EPA-HS-05-039-C1	985.120013 38726	EPA-HS-C1	10:11		✓	Kelly's phone	4.215	4:20	DR, KIO
EPA-HS-06-038-B3	985.120030 502219	EPA-HS-B3	10:33		✓	Kelly phone	2.63	215	DR, KIO
EPA-HS-06-037-C1	985.1200 30389582	EPA-HS-C1	1052		✓	Kelly phone	KIO ~~2.668~~ 3.270	3 KIO 446	DR, KIO
EPA-HS-06-047-A3	985.120029 756910	EPA-HS-A3	12:30		✓	Kelly phone	0.965	207	DR, KIO
EPA-HS-08-044-B3	985.1210 122085 35	EPA-HS-B3	12:41		✓	Kelly phone	1.09	211	DR, KIO
EPA-HS-03-048-B3	985.1200 19177643	EPA-HS-B3	12:53		✓	Kelly phone	2.10	209	DR, KIO
EPA-HS-08-046-B3	985.1210 12690092	EPA-HS-B3	13:06		✓	"	1.250	220	DR, KIO
EPA-HS-08-045-B3	985.1210 12 786910	EPA-HS-B3	13:18		✓	"	1.345	223	DR, KIO
EPA-HS-10-042-A2	985.121023 174335	EPA-HS-A2	13:30		✓	Kelly phone	0.77	220	DR, KIO

Notes:

2016 Fish Collection Form Date: 9/8/14

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (√)	Photo ID	Weight of Fillet ~~lbs~~ Kg	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-06-053-C2	985.120030 53580	EPA-HS-C2	9:12		✓	Kelly phone	3.415	410	DR, KIO
EPA-HS-05-054-C2	985.120030516128	EPA-HS-C2	10:22		✓	Kelly phone	3.615	440	DR, KIO
EPA-HS-08-055-A3	985.120032577018	EPA-HS-A3	11:05		✓	Kelly phone	0.850	217	DR, KIO
EPA-HS-09-056 A3	985.121006 342338	EPA-HS-A3	11:33		✓	Kelly phone	0.325	222	DR, KIO, JC
EPA-HS-10-057-A3	985.121012 119134	EPA-HS-A3	12:10		✓	Kelly phone	0.645	212	DR, KIO, JC
EPA-HS-10-058-A3	985.121023452212	EPA-HS-A3	12:27		✓	Kelly phone	0.495	225	DR, KIO, JC
EPA-HS-04-060-C2	985.120018430746	EPA-HS-C2	16:19		✓	Kelly phone	3.760	415	DR, KIO
EPA-HS-04-059-C2	985.120023758877	EPA-HS-C2	16:34		✓	Kelly phone	2.480	430	DR, KIO

Notes:

EPA-HS-05-054-C2 from Spokane (Andy)

005 5:12

138.4 cm

23.22 Kg

2005

985.120030516128

EPA-HS-09-056-A3 from Spokane (Andy)

20 Nsite

82.2 cm

3.79 Kg

2009

985 121006342338

2016 Fish Collection Form Date: 9/9/16

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (√)	Photo ID	Weight of Fillet ~~(g)~~ Kg	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-04-061-C2	985.120018381851	EPA-HS-C2	14:17		✓	Kelly phone	4.410	420	DR, KIO

Notes: From Spokane boat (Andy)

Site 229

150.5 cm

27.35 Kg

2004

985.120018381851

2016 Fish Collection Form Date: 9/13/16

Upper Columbia River (UCR) Fish Tissue Study

Individual Fish ID	Pit tag #	Fish Composite ID	Time	Sex	Abnormalities (V)	Photo ID	Weight of Fillet (g) ~~Kg~~	Weight of subsample for Composite (g)	Collectors Initials
EPA-HS-06-062-C2	985120030517577	EPA-HS C2	9:48		✓	Kelly phone	~~420~~ 3.9	420	KO, MG
EPA-HS-06-063 C2	985.120030384035	EPA-HS-C2	10:36		✓	Kelyphone	4.085	450	KO, MG
EPA-HS-05-064-C2	985.120030500479	EPA-HS-C2	11:25		✓	Kelyphone	2.495	456	KO, MG
EPA-HS-06-065 C3	999.000000475990	EPA-HS-C3	12:11		✓	Kelyphon	4.325	420	KO, MG
EPA-HS-02-066-C3	985.121025225039	EPA-HS-C3	13:45		✓	Kelyphone	5.550	440	KO, MG
EPA-HS-05-067 C3	985.120030490868	EPA-HS-C3	14:25		✓	Kelyphon	2.005	425	KO, MG
EPA-HS-05-068-C3	985.120630500873	EPA-HS-C3	15:14		✓	Kelyphone	4.6	440	KO, MG
EPA-HS-06-069-C3	985.120030379918	EPA-HS-C3	15:36		✓	Kelyphone	3.825	426	KO MG
EPA-HS-06-070-C3	985.120030503234	EPA-HS-C3	15:53		✓	Kelyphon	4.175	445	KO MG
EPA-HS-07-071 C3	985.120032660100	EPA-HS-C3	16:09		✓	Kelyphon	2.78	490	KO, MG

Notes:

EPA-HS-01-072-C3 985.1200 14062140 EPA-HS-C3 ~~16:~~ 16:26 ✓ Kelyphon 5.05 430 KO, MG

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/30/16 Reach: 4 Marcus Indiv. Fish Sample No. EPA-HS-07-CW3B1

Time: 1039

Weight (g): 10.44 Kg Length (cm): 115.1

Species: HWS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 083016 Reach: 4 (Marking) Indiv. Fish Sample No. EPAHS0800IB1

Time: 1140 Weight (g): 995 Length (cm): 113.8

Species: H W S

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify): _____	[ ] other(specify): _____

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 083016 Reach: 4 (Marcus) Indiv. Fish Sample No. EPAHS10002A1

Time: 1210

Weight (g): 3.73 kg Length (cm): 81.3

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

	Left	Right
normal	[x]	[x]
exophalmic	[ ]	[ ]
opaque	[ ]	[ ]
missing	[ ]	[ ]
hemmorrhagic	[ ]	[ ]
emboli	[ ]	[ ]
other(specify):	[ ]	[ ]

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

	Left:	Right:
normal	[x]	[x]
frayed	[ ]	[ ]
marginate	[ ]	[ ]
pale	[ ]	[ ]
other (specify):	[ ]	[ ]

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 083016 Reach: Evans Indiv. Fish Sample No. EPA HS 0304C1

Time: 1310 Weight (kg): 19.6 kg Length (cm): 143.5

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [x] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 083016 Reach: Bossburg Indiv. Fish Sample No. EPAHS10005A1

Time: 1425

Weight (g): 1.93 kg Length (cm): 66.3

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 083016 Reach: Bossburg Indiv. Fish Sample No. EPAHS 09006B1

Time: 1446

Weight (g): ~~5.58 kg~~ 083016 11.94 kg. Length (cm): ~~087.9~~ 83016 from CCT ~~82 cm~~ measured on boat 119.8

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 083016 Reach: Bossburg Indiv. Fish Sample No. EPAHS05i007A1

Time: 1517

Weight (g): ~~11.94 kg~~ 083016 CB 5.58 kg Length (cm): ~~119.8 cm~~ CB 083016 87.9 cm

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify): _____	[ ] other(specify): _____

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/31/2016 Reach: 3 Indiv. Fish Sample No. EPA-HS-10-008-A1

Time: 10:13

Weight (g/kg): 3.31 Length (cm): 76.8

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/31/2016 Reach: 3 (Nespelem) Indiv. Fish Sample No. EPA-HS-08-009-B1

Time: 10:47

Species: HS

Weight (g): 11.07 KS Length (cm): 115.6

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/3/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-02-010-01

Time: 11:40

Weight (g): 26.6 Length (cm): 153.0

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/31/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-07-011-131

Time: 12:30

Species: HS Weight (g): 7.75 kg Length (cm): 105.3 cm

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [ ] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 8/31/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-07-012-131

Time: 12:24

Weight (g): 13.44 Length (cm): 117.2

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 8/3/16 Reach: 2 Indiv. Fish Sample No. ERM5-06-013-B1

Time: 13:05

Weight (g): 11.02 kg Length (cm): 115.5 cm

Species:

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [X] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [X] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [X] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[X] normal	[X] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [X] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[X] normal	[X] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [X] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/31/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-014-A1

Time: 13:58

Weight (~~lb~~ kg): 6.59 Length (cm): 97.4

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[ ] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed mild, tail
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/31/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-015-A1

Time: 14:10

Weight (g): 4.66 Length (cm): 87.8

Species: HS kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [x] other (specify): cut or broken

missing most of dorsal caudal fin

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 08/31/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-05-016-131

Time: 14:22

Species: HS Weight (g/Kg): 1010 Length (cm): 113.2

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

	Left	Right
	[x] normal	[x] normal
	[ ] exophalmic	[ ] exophalmic
	[ ] opaque	[ ] opaque
	[ ] missing	[ ] missing
	[ ] hemmorrhagic	[ ] hemmorrhagic
	[ ] emboli	[ ] emboli
	[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090116 Reach: 3 & 4 (Markus) Indiv. Fish Sample No. EPAHS10017A1

Time: 0915 Weight (g): 3.2 kg Length (cm): 73.6

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify): _____	[ ] other(specify): _____

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090116 Reach: ~~#3~~ (marker) Indiv. Fish Sample No. EPAHS09018A1

Time: 0935 Weight (g): 4.52 kg Length (cm): 85.4

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [x] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): Tail

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/01/16 Reach: 3 (Marcus) Indiv. Fish Sample No. EPAHS0819B2
Time: 0950
Weight (g): 9.75 kg. Length (cm): 109.2
Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed Tail
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090116 Reach: 2 (Evans) Indiv. Fish Sample No. EPAHS06020B2
Time: 1026
Weight (g): 16.36 kg Length (cm): 127.1
Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

nodules on either side of head @ ant dorsal operculum

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [ ] normal
- [ ] slight shortening
- [ ] severe shortening
- [x] Other (specify): Nodules on either side of head at anterior-dorsal part of operculum

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090116 Reach: 2 (Evans) Indiv. Fish Sample No. EPAHS1002442
Time: 1048
Weight (g): 5.81 kg Length (cm): 89.7
Species: HS
Hatchery white Sturgeon

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090116 Reach: 2 (Evans) Indiv. Fish Sample No. EPAHS 06021132
Time: 1102
Weight (g): 12.28 Kg Length (cm): 120
Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090116 Reach: 2 (Evans) Indiv. Fish Sample No. EPAHS01022B2

Time: 1121 Weight (g): 7.89kg Length (cm): 105.1

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090116 Reach: 2 (Evans) Indiv. Fish Sample No. EPAHS07023B2

Time: 1135

Weight (g): 7.92 kg Length (cm): 104.1

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [✓] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [✓] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [✓] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[✓] normal	[✓] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [✓] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[✓] normal	[✓] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [✓] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/1/16 Reach: 2 North Enloe Indiv. Fish Sample No. EPA-HS-09-032-A2

Time: 13:26 Weight (g): 5.27 Kg Length (cm): 86.8

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/01/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-07-030-B2

Time: 13:37

Weight (g/kg): 9.38 Length (cm): 109.1

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/01/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-031-AZ

Time: 13:48

Weight (g): 4.04 kg Length (cm): 81.2

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

	Left	Right
normal	[x]	[x]
exophalmic	[ ]	[ ]
opaque	[ ]	[ ]
missing	[ ]	[ ]
hemmorrhagic	[ ]	[ ]
emboli	[ ]	[ ]
other(specify):	[ ]	[ ]

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

	Left:	Right:
normal	[x]	[x]
frayed	[ ]	[ ]
marginate	[ ]	[ ]
pale	[ ]	[ ]
other (specify):	[ ]	[ ]

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/01/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-10-028-A2

Time: 14:00

Weight (g): 4.33 Length (cm): 84.5

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/01/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-029-A2

Time: 14:11

Weight (g): 4.62 Length (cm): 84.4

Species: HS kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/01/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-07-027-B2

Time: 14:23

Weight (g): 14.56 Length (cm): 120.9

Species: HS kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

Scarin x

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/01/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-03-026-C1

Time: 14:41

Species: HS

Weight ~~(g)~~ kg: 19.59 Length (cm): 139.2

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/1/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-06-025-C1

Time: 14:55

Species: HS

Weight (g): 22.50 Kg Length (cm): 138.0

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 090216 Reach: 2 Indiv. Fish Sample No. EPAHS04033 C1

Time: 1030

Species: HS

Weight (g): 17.5 kg

Length (cm): ~~136~~ 140 measured on board

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/02/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-09-034-BZ

Time: 11:11

Weight (g): 6.81 Length (cm): 97.8

Species: HS KZ

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/02/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-10-035-12

Time: 11:30

Species: HS

Weight (g): 4.56 Kg Length (cm): 81.4

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/2016 Reach: _____ Indiv. Fish Sample No. EPA-HS-10-036-A7

Time: 9:00

Weight (g): 4.21 kg Length (cm): 79.1

Species: WS / HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

_____

_____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

_____

_____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):
_____	_____
_____	_____
_____	_____

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____ _____ _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-03-039-C

Time: 10:11

Species: HS

Weight (g/kg): 2.08 Length (cm): 146.3

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-00-038-B3

Time: 10:33

Species: HS Weight (g): 18.7 kg Length (cm): 131.7

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-06-037-C1

Time: 10:57

Weight (g): 24.1 Kg Length (cm): 142.0

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-06-047-A3

Time: 12:30

Weight (g): 6.84 kg Length (cm): 90.5

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-041-B3

Time: 12:41

Weight (g): 6.81 kg Length (cm): 103.5

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/27/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-03-048-B3

Time: 12:53

Weight (g): 15.21 Length (cm): 132.2

Species: HS kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-046-B3

Time: 13:06

Weight (~~g~~ Kg): 8.17 Length (cm): 104.0

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [x] KIO
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/7/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-045-133

Time: 1318

Weight (g): 8.31 Kg Length (cm): 106.3

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/7/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-10-042-A2

Time: 13:30

Species: HS Weight (g): 6119 Kg Length (cm): 89.8

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/7/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-10-043-A3

Time: 13:45

Weight (g): 3.29 Length (cm): 73.8

Species: HS Kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/7/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-040-B3

Time: 13:55

Weight (g): 10.39 Length (cm): 118.1

Species: HS

kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [x] frayed dorsal, tail
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-041-c1

Time: 14:05

Weight (g): 24.16 Length (cm): 138.9

Species: HS KS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

EPA-HS-10-052-A3

Date (MM/DD/YYYY): 09/07/2016 Reach: 2 Indiv. Fish Sample No. ~~985 12 02329029~~ DR

Time: 1450

Weight (g): 4.22 Length (cm): 82.4

Species: WS LR

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [ ] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [x] other (specify): curled left pectoral fin

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/2016 Reach: 2 Indiv. Fish Sample No. EPA-HS-07-051-B3

Time: 15:57

Weight (g): 12.82 Length (cm): 12.1

Species: WS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [ ] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/2016 Reach: _____ Indiv. Fish Sample No. F-PA-WS-08-050-B3

Time: 15:23

Species: WS

Weight (g): 806 Length (cm): 105.9

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [ ] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [x] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/07/16 Reach: 2 Indiv. Fish Sample No. EPA-ITS-10-049-AZ

Time: 15:40

Weight (g): 3.02 Length (cm): 75.4

Species: WS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [ ] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/08/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-06-053-01

Time: 9:12

Weight (g): 26.5 Length (cm): 149.9

Species: HS Fg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/08/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-05-054-C2

Time: 10:22

Weight (g): 23.22 Length (cm): 138.4

Species: HS Kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/8/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-08-055-A3

Time: 11:05

Weight (g): 10.19 Kg Length (cm): 96.8

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): missing left septum

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/08/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-09-056-A3

Time: 11:33

Weight (g): 3.79 Length (cm): 82.2

Species: HS Kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/8/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-10-057-A3

Time: 12:10

Weight (g): 6.06 Length (cm): 97.2

Species: HS KS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/08/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-10-058-A3

Time: 12:27 Weight (g): 3.71 kg Length (cm): 79.6

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/8/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-04-060-C2

Time: 16:19

Species: HS

Weight ~~(g)~~ Kg: 23.9 Length (cm): 143.7

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:

- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:

- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:

- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:

- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:

- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:

- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/8/14 Reach: 2 Indiv. Fish Sample No. EPA-HS-04-059-C2

Time: 16:34

Weight ~~(g)~~ kg: 20.10 Length (cm): 139.5

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [x] other (specify): curled R. Fin

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/9/16 Reach: 2 Indiv. Fish Sample No. EPA-HS-04-061-CZ

Time: 14:17

Weight (kg): 27.35 Length (cm): 150.5

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [ ] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-06-042-C2

Time: 9:48

Species: HS

Weight (g): 22.6 Kg Length (cm): 138.3

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [ ] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/13/16 Reach: Bernachy island Indiv. Fish Sample No. EPA-HS-06-063-C2

Time: 10:36

Species: WS Weight (g): 20.98 Length (cm): 148.3 Kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-05-064-C2

Time: 11:25

Weight (g): 24.5 Length (cm): 146.5

Species: LL Kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [✓] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [✓] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [✓] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[✓] normal	[✓] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [✓] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[✓] normal	[✓] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [✓] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-02-065-C3

Time: 12:41

Weight (g): 25.08 kg Length (cm): 146.8

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [ ] normal
- [x] missing 1
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [ ] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [x] other (specify): gimpy right f.a

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-02-006-C3

Time: 13:45

Weight (g): 25.67 Length (cm): 57.5

Species: HS kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-05-067-C3

Time: 14:25

Weight (g): 25.6 Length (cm): 146.7

Species: HS Kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/13/16 Reach: _____ Indiv. Fish Sample No. EPA-10-05-068-C3

Time: 15:14

Weight (g): 25.24 Length (cm): 145.4

Species: HS

KS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-06-069-C3

Time: 15:36

Weight (g): 22.75 Length (cm): 140.8

Species: HS Kg

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify):

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/13/2016 Reach: _____ Indiv. Fish Sample No. EPA-HS-06-070-C3

Time: 15:53

Weight (~~g~~ kg): 21.16 Length (cm): 138.5

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - white spots [ ]
  - leech(es) [ ]
  - black spot(s) [ ]
  - Anchor worm(s) [ ]
  - other (specify): [ ]

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify):

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify):

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify):	[ ] other (specify):

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify):

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 09/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-07-071-C3

Time: 16:09

Weight (g/kg): 19.76 Length (cm): 140

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify):	[ ] other(specify):

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[x] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [x] other (specify): right gimpy fin

2016 FISH EXTERNAL EXAMINATION FORM
Upper Columbia River (UCR) Fish Tissue Study

Date (MM/DD/YYYY): 9/13/16 Reach: _____ Indiv. Fish Sample No. EPA-HS-01-072-C3

Time: 16:26 Weight (g): 27.5 Length (cm): 149.4

Species: HS

EXTERNAL EXAMINATION: (check all that apply)

BODY SURFACE:
- [x] normal
- [ ] raised growth(s)
- [ ] reddened lesion(s)
- [ ] spinal deformities
- [ ] hemorrhagic body
- [ ] focul discoloration
- [ ] body fungus
- [ ] parasites(s) (specify):
  - [ ] white spots
  - [ ] leech(es)
  - [ ] black spot(s)
  - [ ] Anchor worm(s)
  - [ ] other (specify): _____

HEAD & ORAL CAVITY:
- [x] normal head
- [ ] deformed head
- [ ] upper lip growth
- [ ] lower lip growth
- [ ] swollen nare

BARBELS:
- [x] normal
- [ ] missing
- [ ] stubbed
- [ ] deformed
- [ ] other (specify): _____

EYES:

Left	Right
[x] normal	[x] normal
[ ] exophalmic	[ ] exophalmic
[ ] opaque	[ ] opaque
[ ] missing	[ ] missing
[ ] hemmorrhagic	[ ] hemmorrhagic
[ ] emboli	[ ] emboli
[ ] other(specify): _____	[ ] other(specify): _____

OPERCULA:
- [x] normal
- [ ] slight shortening
- [ ] severe shortening
- [ ] Other (specify): _____

GILLS:

Left:	Right:
[x] normal	[ ] normal
[ ] frayed	[ ] frayed
[ ] marginate	[ ] marginate
[ ] pale	[ ] pale
[ ] other (specify): _____	[ ] other (specify): _____

DELTS:
- [ ] Deformities
- [ ] Erosion
- [ ] Lesions
- [ ] Tumors

FINS:
- [x] normal
- [ ] mild erosion
- [ ] severe erosion
- [ ] frayed
- [ ] hemorrhagic
- [ ] emboli
- [ ] other (specify): _____

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: UCR sturgeon sampling Location: Kettle Falls Date: 9/10/16

Supervisor: David Rasmussen Job Activity: Sturgeon Sampling

Attendees: Print Name	Sign Name
David Rasmussen	
Kelly Owens	

List Tasks and verify that applicable AHAs have been reviewed:

Travel on boat, working on water, collecting sturgeon, processing / filleting sturgeon, placing samples on wet & dry ice, delivery of samples to courier service

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

Boat, life jackets, fire extinguisher, cutting board, buns, buckets, coolers, knives, washdown equipment, scale, boning & skinning

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
✓ Pressurized lines/equipment	✓ Overexertion	✓ Chemical splash
__ Thermal burns	✓ Pinch points	✓ Poisonous plants/insects
✓ Electrical	✓ Cuts/abrasions	✓ Eye hazards/flying projectile
✓ Weather conditions	✓ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	✓ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	✓ Poor communications

Other Potential Hazards (Describe):

Hazard Control Measures (Check All That Apply):

PPE	Protective Systems	Fire Protection	Electrical
__ Thermal/lined ✓ Eye ✓ Dermal/hand - nitrile gloves __ Hearing __ Respiratory __ Reflective vests ✓ Flotation device __ Hard Hat	__ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections __ Entry Permits/notification	✓ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	__ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected __ Overhead line clearance __ Underground utils ID'd
Fall Protection	**Air Monitoring**	**Proper Equipment**	**Welding & Cutting**
__ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	__ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ No visible dust __ Other	__ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	__ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry	**Medical/ER**	**Heat/Cold Stress**	**Vehicle/Traffic**
__ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	✓ First-aid kit ✓ Eye wash ✓ FA-CPR trained personnel ✓ Route to hospital	✓ Work/rest regime ✓ Rest area ✓ Liquids available ✓ Monitoring ✓ Training	__ Traffic control __ Barricades __ Flags __ Signs
Permits	**Demolition**	**Inspections:**	**Training:**
__ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	__ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	__ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Drill rigs/geoprobe rigs __ Cranes and rigging __ Utilities marked	✓ Hazwaste (current) ✓ Construction __ Competent person ✓ Task-specific ✓ FA/CPR __ Confined Space ✓ Hazcom
Underground Utilities	**Incident Communications**	**AHA's**	
__ Dig alert called __ 3rd Party locater __ As-builts reviewed __ Interview site staff __ Client review __ soft locate necessary?	✓ Work stops until cleared by TM/CM __ Immediate calls to TM/CM ✓ Client notification ✓ 24 hour notification setup ✓ Clear communications	✓ reviewed and approved by HSM ✓ on site and current ✓ applicable for this day's work ✓ Communication and incident processes included?	

Field Notes (including observations from prior day, etc.):

Name (Print): David Rasmussen

Signature: [signature]

Date: 9/20/16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: UCR Location: UCR/Kettle Falls Date: 08/30/16

Supervisor: C. Irvine Job Activity: Sturgeon Sampling

Attendees: Print Name	Sign Name
Cam Irvine	[signature]
Kathy Cerise	[signature]
Kelly O'Neal	[signature]
[signature]	Meghan Lyons
JUSTIN KEMP	[signature]
Olivia Shutts	[signature]

List Tasks and verify that applicable AHAs have been reviewed:

Boating safety, overboard procedure.

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

boat, pfd

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	✓ Pinch points	__ Poisonous plants/insects
__ Electrical	✓ Cuts/abrasions	__ Eye hazards/flying projectile
✓ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	✓ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	__ Poor communications

Other Potential Hazards (Describe):

Hazard Control Measures (Check All That Apply):

PPE	Protective Systems	Fire Protection	Electrical
__ Thermal/lined	__ Sloping	✓ Fire extinguishers	__ Lockout/tagout
__ Eye	__ Shoring	__ Fire watch	__ Grounded
__ Dermal/hand	__ Trench box	__ Non-spark tools	__ Panels covered
__ Hearing	__ Barricades	__ Grounding/bonding	__ GFCI/extension cords
__ Respiratory	__ Competent person	__ Intrinsically safe equipment	__ Power tools/cord inspected
__ Reflective vests	__ Locate buried utilities		__ Overhead line clearance
✓ Flotation device	__ Daily inspections		__ Underground utils ID'd
__ Hard Hat	__ Entry Permits/notification		

Fall Protection	Air Monitoring	Proper Equipment	Welding & Cutting
__ Harness/lanyards	__ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane with current inspection	__ Flame retardant clothing
__ Warning system	__ No visible dust	__ Proper rigging	__ Appropriate goggles
	__ Other	__ Operator qualified	

Confined Space Entry	Medical/ER	Heat/Cold Stress	Vehicle/Traffic
__ Isolation	✓ First-aid kit	✓ Work/rest regime	__ Traffic control
__ Air monitoring	__ Eye wash	✓ Rest area	__ Barricades
__ Trained personnel	✓ FA-CPR trained personnel	✓ Liquids available	__ Flags
__ Permit completed	✓ Route to hospital	✓ Monitoring	__ Signs
__ Rescue		✓ Training	

Permits	Demolition	Inspections:	Training:
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	✓ Hazwaste (current)
__ Confined space	__ Structure condition	__ Lanyards/harness	__ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	✓ Competent person
__ Excavation	__ Competent person	__ Heavy equipment	__ Task-specific
__ Demolition	__ Hazmat present	__ Drill rigs/geoprobe rigs	✓ FA/CPR
__ Energized work		__ Cranes and rigging	__ Confined Space
		__ Utilities marked	✓ Hazcom

Underground Utilities	Incident Communications	AHA's
__ Dig alert called	__ Work stops until cleared by TM/CM	__ reviewed and approved by HSM
__ 3rd Party locater	✓ Immediate calls to TM/CM	__ on site and current
__ As-builts reviewed	✓ Client notification	__ applicable for this day's work
__ Interview site staff	__ 24 hour notification setup	__ Communication and incident processes included?
__ Client review	✓ Clear communications	
__ soft locate necessary?		

Field Notes (including observations from prior day, etc.):
Kickoff - Megan (NPS) provided boat safety

Name (Print): Cam Irvine
Signature: [signature]

Date: 08/30/16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: UCR - Sturgeon Location: Kettle Falls Date: 8/31/06

Supervisor: Cam Irvine Job Activity: Sturgeon Sampling

Attendees:	Print Name	Sign Name
	Cam Irvine	
	Kelly O'Neal	
	Kathryn Gribe	

List Tasks and verify that applicable AHAs have been reviewed:

Filleting Sturgeon - Knife AHA
Wildlife on roads.

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

Knives, cut resistant gloves

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	✓ Pinch points	✓ Poisonous plants/insects
__ Electrical	✓ Cuts/abrasions	✓ Eye hazards/flying projectile
__ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	✓ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	✓ Poor communications

Other Potential Hazards (Describe):

Hazard Control Measures (Check All That Apply):

PPE	Protective Systems	Fire Protection	Electrical
__ Thermal/lined	__ Sloping	✓ Fire extinguishers	__ Lockout/tagout
✓ Eye	__ Shoring	__ Fire watch	__ Grounded
✓ Dermal/hand	__ Trench box	__ Non-spark tools	__ Panels covered
__ Hearing	__ Barricades	__ Grounding/bonding	__ GFCI/extension cords
__ Respiratory	__ Competent person	__ Intrinsically safe equipment	__ Power tools/cord inspected
__ Reflective vests	__ Locate buried utilities		__ Overhead line clearance
✓ Flotation device	__ Daily inspections		__ Underground utils ID'd
__ Hard Hat	__ Entry Permits/notification		

Fall Protection	Air Monitoring	Proper Equipment	Welding & Cutting
__ Harness/lanyards	__ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane with current inspection	__ Flame retardant clothing
__ Warning system	__ No visible dust	__ Proper rigging	__ Appropriate goggles
	__ Other	__ Operator qualified	

Confined Space Entry	Medical/ER	Heat/Cold Stress	Vehicle/Traffic
__ Isolation	✓ First-aid kit	✓ Work/rest regime	__ Traffic control
__ Air monitoring	__ Eye wash	✓ Rest area	__ Barricades
__ Trained personnel	✓ FA-CPR trained personnel	✓ Liquids available	__ Flags
__ Permit completed	✓ Route to hospital	__ Monitoring	__ Signs
__ Rescue		✓ Training	

Permits	Demolition	Inspections:	Training:
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	✓ Hazwaste (current)
__ Confined space	__ Structure condition	__ Lanyards/harness	__ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	__ Competent person
__ Excavation	__ Competent person	__ Heavy equipment	✓ Task-specific
__ Demolition	__ Hazmat present	__ Drill rigs/geoprobe rigs	✓ FA/CPR
__ Energized work		__ Cranes and rigging	__ Confined Space
		__ Utilities marked	✓ Hazcom

Underground Utilities	Incident Communications	AHA's
__ Dig alert called	__ Work stops until cleared by TM/CM	✓ reviewed and approved by HSM
__ 3rd Party locater	✓ Immediate calls to TM/CM	✓ on site and current
__ As-builts reviewed	✓ Client notification	✓ applicable for this day's work
__ Interview site staff	__ 24 hour notification setup	✓ Communication and incident processes included?
__ Client review	✓ Clear communications	
__ soft locate necessary?		

Field Notes (including observations from prior day, etc.):
wildlife observed en route to site.

Name (Print): Cam Irvine
Signature: Cam Q

Date: 8/31/16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: UCR Location: Kettle Manna Date: 09 01 16

Supervisor: Cam Irvine Job Activity: Sturgeon Sampling.

Attendees:	Print Name	Sign Name
	Cam Irvine	
	Kelly ONeal	
	Kathleen Leslie	

List Tasks and verify that applicable AHAs have been reviewed:

Weather: maybe stormy tomorrow. will get off water if lightning near. 3 points of contact - especially during chop or if in motion. Sun screen. Boat.

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

filleting knives - cut proof gloves. Boating safety - general

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	✓ Chemical splash alcanox.
__ Thermal burns	✓ Pinch points	__ Poisonous plants/insects
__ Electrical	✓ Cuts/abrasions	✓ Eye hazards/flying projectile
✓ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	✓ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	✓ Security	✓ Poor communications

Other Potential Hazards (Describe):

Cell phones when radio down. NPS boat not able to transmit on radio

Hazard Control Measures (Check All That Apply):			
PPE __ Thermal/lined __ Eye ✓ Dermal/hand __ Hearing __ Respiratory __ Reflective vests ✓ Flotation device __ Hard Hat	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections __ Entry Permits/notification	Fire Protection ✓ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected __ Overhead line clearance __ Underground utils ID'd
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ No visible dust __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER ✓ First-aid kit __ Eye wash ✓ FA-CPR trained personnel ✓ Route to hospital	Heat/Cold Stress ✓ Work/rest regime ✓ Rest area ✓ Liquids available ✓ Monitoring ✓ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Drill rigs/geoprobe rigs __ Cranes and rigging __ Utilities marked	Training: ✓ Hazwaste (current) __ Construction ✓ Competent person ✓ Task-specific ✓ FA/CPR ✓ Confined Space ✓ Hazcom
Underground Utilities __ Dig alert called __ 3rd Party locater __ As-builts reviewed __ Interview site staff __ Client review __ soft locate necessary?	Incident Communications __ Work stops until cleared by TM/CM ✓ Immediate calls to TM/CM ✓ Client notification ✓ 24 hour notification setup ✓ Clear communications	AHA's ✓ reviewed and approved by HSM ✓ on site and current ✓ applicable for this day's work ✓ Communication and incident processes included?	

Field Notes (including observations from prior day, etc.):

Name (Print): Cam Irvine

Signature: Cam Irvine

Date: 09 01 16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: UCR RI/FS Location: _____ Date: 090216

Supervisor: C. Irvine Job Activity: Sturgeon Sampling

Attendees:	Print Name	Sign Name
	Cam Irvine	[signature]
	Kathryn Cerise	[signature]
	Ruth R. Thotty	
	Kelly O'Neal	[signature]

List Tasks and verify that applicable AHAs have been reviewed:

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

boat, knives to fillet fish

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
__ Thermal burns	✓ Pinch points	✓ Poisonous plants/insects
__ Electrical	✓ Cuts/abrasions	__ Eye hazards/flying projectile
✓ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	__ Heat/cold stress
__ Noise	__ Elevated loads	__ Water/drowning hazard
__ Explosion/fire	✓ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	__ Poor communications

Other Potential Hazards (Describe):

yellow jackets - benedryl in FA kit.

Hazard Control Measures (Check All That Apply):

PPE	Protective Systems	Fire Protection	Electrical
✓ Thermal/lined	__ Sloping	__ Fire extinguishers	__ Lockout/tagout
__ Eye	__ Shoring	__ Fire watch	__ Grounded
✓ Dermal/hand	__ Trench box	__ Non-spark tools	__ Panels covered
__ Hearing	__ Barricades	__ Grounding/bonding	__ GFCI/extension cords
__ Respiratory	__ Competent person	__ Intrinsically safe equipment	__ Power tools/cord inspected
__ Reflective vests	__ Locate buried utilities		__ Overhead line clearance
✓ Flotation device	__ Daily inspections		__ Underground utils ID'd
__ Hard Hat	__ Entry Permits/notification		

Fall Protection	Air Monitoring	Proper Equipment	Welding & Cutting
__ Harness/lanyards	__ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane with current inspection	__ Flame retardant clothing
__ Warning system	__ No visible dust	__ Proper rigging	__ Appropriate goggles
	__ Other	__ Operator qualified	

Confined Space Entry	Medical/ER	Heat/Cold Stress	Vehicle/Traffic
__ Isolation	✓ First-aid kit	✓ Work/rest regime	__ Traffic control
__ Air monitoring	__ Eye wash	✓ Rest area	__ Barricades
__ Trained personnel	✓ FA-CPR trained personnel	✓ Liquids available	__ Flags
__ Permit completed	✓ Route to hospital	✓ Monitoring	__ Signs
__ Rescue		✓ Training	

Permits	Demolition	Inspections:	Training:
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	✓ Hazwaste (current)
__ Confined space	__ Structure condition	__ Lanyards/harness	__ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	✓ Competent person
__ Excavation	__ Competent person	__ Heavy equipment	✓ Task-specific
__ Demolition	__ Hazmat present	__ Drill rigs/geoprobe rigs	✓ FA/CPR
__ Energized work		__ Cranes and rigging	__ Confined Space
		__ Utilities marked	✓ Hazcom

Underground Utilities	Incident Communications	AHA's
__ Dig alert called	__ Work stops until cleared by TM/CM	✓ reviewed and approved by HSM
__ 3rd Party locater	✓ Immediate calls to TM/CM	✓ on site and current
__ As-builts reviewed	✓ Client notification	✓ applicable for this day's work
__ Interview site staff	__ 24 hour notification setup	✓ Communication and incident processes included?
__ Client review	✓ Clear communications	
__ soft locate necessary?		

Field Notes (including observations from prior day, etc.):
Yellow jackets yesterday 2 killed

Name (Print): Sam Irvine
Signature: [signature]

Date: 09.02.16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: LaCR Sturgeon Sampling Location: Kettle Falls, WA Date: 9/7/16

Supervisor: David Rasmussen Job Activity: Sturgeon Sampling

Attendees: Print Name Sign Name

Kelly O'Neal

List Tasks and verify that applicable AHAs have been reviewed:

Collect Sturgeon Samples, Filet fish, Process Samples
Drive to site, work on boats

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

Gonadons, rubber boots, filet knife, dry & wet ice

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

DR

✓ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
__ Pressurized lines/equipment	__ Overexertion	__ Chemical splash
✓ Thermal burns	✓ Pinch points	✓ Poisonous plants/insects
__ Electrical	✓ Cuts/abrasions	✓ Eye hazards/flying projectile
✓ Weather conditions	__ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	__ Poor communications

Other Potential Hazards (Describe):

Hazard Control Measures (Check All That Apply):

PPE	Protective Systems	Fire Protection	Electrical
__ Thermal/lined	__ Sloping	✓ Fire extinguishers	__ Lockout/tagout
✓ Eye	__ Shoring	__ Fire watch	__ Grounded
✓ Dermal/hand	__ Trench box	__ Non-spark tools	__ Panels covered
__ Hearing	__ Barricades	__ Grounding/bonding	__ GFCI/extension cords
__ Respiratory	__ Competent person	__ Intrinsically safe equipment	__ Power tools/cord inspected
__ Reflective vests	__ Locate buried utilities		__ Overhead line clearance
✓ Flotation device	__ Daily inspections		__ Underground utils ID'd
__ Hard Hat	__ Entry Permits/notification		

Fall Protection	Air Monitoring	Proper Equipment	Welding & Cutting
__ Harness/lanyards	__ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane with current inspection	__ Flame retardant clothing
__ Warning system	__ No visible dust	__ Proper rigging	__ Appropriate goggles
	__ Other	__ Operator qualified	

Confined Space Entry	Medical/ER	Heat/Cold Stress	Vehicle/Traffic
__ Isolation	✓ First-aid kit	__ Work/rest regime	__ Traffic control
__ Air monitoring	__ Eye wash	__ Rest area	__ Barricades
__ Trained personnel	✓ FA-CPR trained personnel	✓ Liquids available	__ Flags
__ Permit completed	✓ Route to hospital	__ Monitoring	__ Signs
__ Rescue		__ Training	

Permits	Demolition	Inspections:	Training:
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	✓ Hazwaste (current)
__ Confined space	__ Structure condition	__ Lanyards/harness	__ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	__ Competent person
__ Excavation	__ Competent person	__ Heavy equipment	✓ Task-specific
__ Demolition	__ Hazmat present	__ Drill rigs/geoprobe rigs	✓ FA/CPR
__ Energized work		__ Cranes and rigging	__ Confined Space
		__ Utilities marked	__ Hazcom

Underground Utilities	Incident Communications	AHA's
__ Dig alert called	__ Work stops until cleared by TM/CM	✓ reviewed and approved by HSM
__ 3rd Party locater	__ Immediate calls to TM/CM	✓ on site and current
__ As-builts reviewed	__ Client notification	✓ applicable for this day's work
__ Interview site staff	__ 24 hour notification setup	✓ Communication and incident processes included?
__ Client review	__ Clear communications	
__ soft locate necessary?		

Field Notes (including observations from prior day, etc.):

Name (Print): David Rasmusson

Signature: [signature]

Date: 9/7/16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: LCR Stingray Sampling Location: Kettle Falls, WA Date: 9/8/16

Supervisor: David Rasmussen Job Activity: Stingray sampling

Attendees: Print Name	Sign Name
David Rasmussen	
Jon Gunn	
Kelly O'Neal	

List Tasks and verify that applicable AHAs have been reviewed:

Stingray retrieval & field sample processing
travel in boat Carrying heavy coolers
work over water use of vehicle

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

life jackets, throw rings
slicks/Gaunlets, rubber boots
knives, cut gloves

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
✓ Pressurized lines/equipment	✓ Overexertion	✓ Chemical splash
__ Thermal burns	✓ Pinch points	✓ Poisonous plants/insects
✓ Electrical	✓ Cuts/abrasions	✓ Eye hazards/flying projectile
✓ Weather conditions	✓ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	__ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	__ Poor communications

Other Potential Hazards (Describe):

Hazard Control Measures (Check All That Apply):

PPE	Protective Systems	Fire Protection	Electrical
__ Thermal/lined ✓ Eye ✓ Dermal/hand - cut resistant gloves __ Hearing __ Respiratory __ Reflective vests ✓ Flotation device __ Hard Hat ✓ manager/guardian	__ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections __ Entry Permits/notification	✓ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	__ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected __ Overhead line clearance __ Underground utils ID'd
Fall Protection	**Air Monitoring**	**Proper Equipment**	**Welding & Cutting**
__ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	__ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ No visible dust __ Other	__ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	__ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry	**Medical/ER**	**Heat/Cold Stress**	**Vehicle/Traffic**
__ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	✓ First-aid kit __ Eye wash ✓ FA-CPR trained personnel ✓ Route to hospital	__ Work/rest regime __ Rest area ✓ Liquids available __ Monitoring ✓ Training	__ Traffic control __ Barricades __ Flags __ Signs
Permits	**Demolition**	**Inspections:**	**Training:**
__ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	__ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	__ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Drill rigs/geoprobe rigs __ Cranes and rigging __ Utilities marked	✓ Hazwaste (current) ✓ Construction __ Competent person ✓ Task-specific ✓ FA/CPR __ Confined Space ✓ Hazcom
Underground Utilities	**Incident Communications**	**AHA's**	
__ Dig alert called __ 3rd Party locater __ As-builts reviewed __ Interview site staff __ Client review __ soft locate necessary?	__ Work stops until cleared by TM/CM __ Immediate calls to TM/CM __ Client notification __ 24 hour notification setup __ Clear communications	✓ reviewed and approved by HSM ✓ on site and current ✓ applicable for this day's work ✓ Communication and incident processes included?	

Field Notes (including observations from prior day, etc.):

Bring bucket for tomorrow's work

Name (Print): David Reynolds

Signature: [signature]

Date: 9/8/16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: UCR Sturgeon Sampling Location: Keene Falls, WA Date: 9/9/16

Supervisor: David Rasmussen Job Activity: Sturgeon Sampling

Attendees:	Print Name	Sign Name
	Kelly O'Neal	Kelly O'Neal

List Tasks and verify that applicable AHAs have been reviewed:

Sturgeon sampling, sturgeon tagging & sample processing working with knives, working on boat on water equipment cleanup

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

cutting boards, net, rulers, buckets, scrub brushes, DI water, knives, life jackets, boat safety equipment

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
✓ Pressurized lines/equipment	✓ Overexertion	__ Chemical splash
__ Thermal burns	✓ Pinch points	✓ Poisonous plants/insects
✓ Electrical	✓ Cuts/abrasions	✓ Eye hazards/flying projectile
✓ Weather conditions	✓ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	✓ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	__ Poor communications

Other Potential Hazards (Describe):

Hazard Control Measures (Check All That Apply):

PPE	Protective Systems	Fire Protection	Electrical
__ Thermal/lined	__ Sloping	✓ Fire extinguishers	__ Lockout/tagout
✓ Eye	__ Shoring	__ Fire watch	__ Grounded
✓ Dermal/hand - hand	__ Trench box	__ Non-spark tools	__ Panels covered
__ Hearing	__ Barricades	__ Grounding/bonding	__ GFCI/extension cords
__ Respiratory	__ Competent person	__ Intrinsically safe equipment	__ Power tools/cord inspected
__ Reflective vests	__ Locate buried utilities		__ Overhead line clearance
✓ Flotation device	__ Daily inspections		__ Underground utils ID'd
__ Hard Hat	__ Entry Permits/notification		

Fall Protection	Air Monitoring	Proper Equipment	Welding & Cutting
__ Harness/lanyards	__ PID/FID	__ Aerial lift/ladders/scaffolds	__ Cylinders secured/capped
__ Adequate anchorage	__ Detector tubes	__ Forklift/heavy equipment	__ Cylinders separated/upright
__ Guardrail system	__ Radiation	__ Backup alarms	__ Flash-back arrestors
__ Covered opening	__ Personnel sampling	__ Hand/power tools	__ No cylinders in CSE
__ Fixed barricades	__ LEL/O2	__ Crane with current inspection	__ Flame retardant clothing
__ Warning system	__ No visible dust	__ Proper rigging	__ Appropriate goggles
	__ Other	__ Operator qualified	

Confined Space Entry	Medical/ER	Heat/Cold Stress	Vehicle/Traffic
__ Isolation	✓ First-aid kit	✓ Work/rest regime	__ Traffic control
__ Air monitoring	✓ Eye wash	✓ Rest area	__ Barricades
__ Trained personnel	✓ FA-CPR trained personnel	✓ Liquids available	__ Flags
__ Permit completed	✓ Route to hospital	✓ Monitoring	__ Signs
__ Rescue		✓ Training	

Permits	Demolition	Inspections:	Training:
__ Hot work	__ Pre-demolition survey	__ Ladders/aerial lifts	✓ Hazwaste (current)
__ Confined space	__ Structure condition	__ Lanyards/harness	✓ Construction
__ Lockout/tagout	__ Isolate area/utilities	__ Scaffolds	__ Competent person
__ Excavation	__ Competent person	__ Heavy equipment	✓ Task-specific
__ Demolition	__ Hazmat present	__ Drill rigs/geoprobe rigs	✓ FA/CPR
__ Energized work		__ Cranes and rigging	__ Confined Space
		__ Utilities marked	✓ Hazcom

Underground Utilities	Incident Communications	AHA's
__ Dig alert called	✓ Work stops until cleared by TM/CM	✓ reviewed and approved by HSM
__ 3rd Party locater	✓ Immediate calls to TM/CM	✓ on site and current
__ As-builts reviewed	✓ Client notification	✓ applicable for this day's work
__ Interview site staff	✓ 24 hour notification setup	✓ Communication and incident processes included?
__ Client review	✓ Clear communications	
__ soft locate necessary?		

Field Notes (including observations from prior day, etc.):

Name (Print): David Rasmussen

Signature: [signature]

Date: 9/9/16

CH2MHILL

Pre-Task Safety Plan (PTSP) and Safety Meeting Sign-in Sheet

Project: UCR 670774.RT.07 Location: Kettle Falls Date: 9/13/16

Supervisor: Marilyn Gauthier Job Activity: Sturgeon Tissue Sampling

Attendees: Print Name	Sign Name
Kelly O'Neal	
Marilyn Gauthier	M. Gauthier

List Tasks and verify that applicable AHAs have been reviewed:

Travel + working on water.
Cutting fish (knives)
Decon equipment

Tools/Equipment Required for Tasks (ladders, scaffolds, fall protection, cranes/rigging, heavy equipment, power tools):

Boat ice life jackets fire extinguisher, knives, cut proof gloves first aid kit, oars

Potential H&S Hazards, including chemical, physical, safety, biological and environmental (check all that apply):

__ Chemical burns/contact	__ Trench, excavations, cave-ins	✓ Ergonomics
✓ Pressurized lines/equipment	✓ Overexertion	✓ Chemical splash
__ Thermal burns	✓ Pinch points	✓ Poisonous plants/insects
✓ Electrical	✓ Cuts/abrasions	✓ Eye hazards/flying projectile
✓ Weather conditions	✓ Spills	__ Inhalation hazard
__ Heights/fall > 6 feet	__ Overhead Electrical hazards	✓ Heat/cold stress
__ Noise	__ Elevated loads	✓ Water/drowning hazard
__ Explosion/fire	✓ Slips, trip and falls	__ Heavy equipment
__ Radiation	✓ Manual lifting	__ Aerial lifts/platforms
__ Confined space entry	__ Welding/cutting	__ Demolition
__ Underground Utilities	__ Security	✓ Poor communications

Other Potential Hazards (Describe):

Hazard Control Measures (Check All That Apply):			
PPE __ Thermal/lined ✓ Eye ✓ Dermal/hand __ Hearing __ Respiratory __ Reflective vests ✓ Flotation device __ Hard Hat	Protective Systems __ Sloping __ Shoring __ Trench box __ Barricades __ Competent person __ Locate buried utilities __ Daily inspections __ Entry Permits/notification	Fire Protection ✓ Fire extinguishers __ Fire watch __ Non-spark tools __ Grounding/bonding __ Intrinsically safe equipment	Electrical __ Lockout/tagout __ Grounded __ Panels covered __ GFCI/extension cords __ Power tools/cord inspected __ Overhead line clearance __ Underground utils ID'd
Fall Protection __ Harness/lanyards __ Adequate anchorage __ Guardrail system __ Covered opening __ Fixed barricades __ Warning system	Air Monitoring __ PID/FID __ Detector tubes __ Radiation __ Personnel sampling __ LEL/O2 __ No visible dust __ Other	Proper Equipment __ Aerial lift/ladders/scaffolds __ Forklift/heavy equipment __ Backup alarms __ Hand/power tools __ Crane with current inspection __ Proper rigging __ Operator qualified	Welding & Cutting __ Cylinders secured/capped __ Cylinders separated/upright __ Flash-back arrestors __ No cylinders in CSE __ Flame retardant clothing __ Appropriate goggles
Confined Space Entry __ Isolation __ Air monitoring __ Trained personnel __ Permit completed __ Rescue	Medical/ER ✓ First-aid kit ✓ Eye wash ✓ FA-CPR trained personnel ✓ Route to hospital	Heat/Cold Stress ✓ Work/rest regime __ Rest area ✓ Liquids available ✓ Monitoring ✓ Training	Vehicle/Traffic __ Traffic control __ Barricades __ Flags __ Signs
Permits __ Hot work __ Confined space __ Lockout/tagout __ Excavation __ Demolition __ Energized work	Demolition __ Pre-demolition survey __ Structure condition __ Isolate area/utilities __ Competent person __ Hazmat present	Inspections: __ Ladders/aerial lifts __ Lanyards/harness __ Scaffolds __ Heavy equipment __ Drill rigs/geoprobe rigs __ Cranes and rigging __ Utilities marked	Training: ✓ Hazwaste (current) __ Construction __ Competent person __ Task-specific ✓ FA/CPR __ Confined Space __ Hazcom
Underground Utilities __ Dig alert called __ 3rd Party locater __ As-builts reviewed __ Interview site staff __ Client review __ soft locate necessary?	Incident Communications ✓ Work stops until cleared by TM/CM __ Immediate calls to TM/CM ✓ Client notification ✓ 24 hour notification setup ✓ Clear communications	AHA's ✓ reviewed and approved by HSM ✓ on site and current ✓ applicable for this day's work __ Communication and incident processes included?	

Field Notes (including observations from prior day, etc.):

Name (Print): [illegible]

Signature: [signature]

Date: 9/13/16

Location UCR Date 8/30/16

Project / Client Sturgeon Sampling

0730 - met Kathy Ceruti/EPA @ Celilo + drove to Kettle falls boat launch

0800 - met Megan
Justin
Olivia
Matt/CCT - survey boat
Denise - data
Hank - captain
Roger - deckhand

Weather: 70-90°F pt. cloudy. light wind.

CCT - Spokane boats will be pulling & resetting ~1200 lines with 40 hooks per line - checked 2x today = 800 hooks. / Safety: boating (see form)

from Marcus to Dalles.

0930 - CCT boat with sturgeon at Marcus campground.

11:14 + FishID EPA HS-07-003-B1

Stomach content - gritty, snails

1230 3 fish collected.

EPA HS 08 001 B1
10 002 A1
07 003 B1

1340 03 004 C1

Location UCR Date ~~8/16~~ 083016

Project / Client Sturgeon Sampling

1400 @ CCT Boat N. of Evans
. U. Large Sturgeon (pics)
. 198 tag - wild
8' long
103 Kg
L, W, Blood, DNA coll by CCT
& released.

1446 EPA HS09006A1
- is very fatty.
Meas @ 3' 8" length but
CCT assigned to A1 and
87.9 cm length
** confirm length class
** assign to A2.
Seems that fish 006 & 007
tags were reversed -
based on wt + LN measures
reported. Switched
006 → A2
007 → A1

- Dumped carcass mid-channel
& they sank.

1600 headed back to KF Marina
from Bossburg area.

Rite in the Rain

Location UCR Date 083016

Project / Client Sturgeon Sampling

To Do upon return
- dry ice / bag ice
- labels → scribe → bags
- COCs (print after get pdf from scribe)
- data entry
- sharpen knives
- PIT tag reader codes

* 530 = 1730 @ hotel after getting ice - only wet ice
no dry ice @ walmart

only ships on Tues + they didn't recieve any this week.
- Ship - courier 2x/week or wet ice?

Drucker cc'd KC on email

emails / calls to Frank + MG to ID change management.

Can of Soda

Location UCR Date 083116

Project / Client Sturgeon Sampling

0730 Meet Kathy + depart for Kettle Falls

0800 @ Kettle Falls boat launch to meet NPS: Megan + Justin

Safety briefing · clean/road hazards + sharps (see form)

0930 Met up with CCT Sturgeon boat at Marcus.

Weather: pt. cloudy + 70°F light wind

2 sturgeon received from CCT: Hank, Denise, Roger.

Processed 9 fish

EPA HS	10	008	A1
	08	009	C1
	02	010	B1
	07	011	B1
	07	012	B1
	06	013	A1
	08	014	A1
	08	015	A1
	05	016	B1

COC

Rite in the Rain

F 56 Location UCR Date 083116

Project / Client Sturgeon Sampling

- All fish were from marcus to north gorge

1435 finished fish processing, had to depart before fillet drew
EPA HS 0817 B2 - Not collected.
→ Tell CG

1520 Returned to Kettle falls Marina
- Processed samples for shipment

1800 - Printed labels & COCs from Scribe @ Comfort Inn

1830 - Gave 2 coolers w/ samples to Spokane Courier for 4 hr drive to ALS Kelso.

08/31/16

Location UCR Date 09016

Project / Client Sturgeon Sampling

- CAPP status? → 2 day extension
- Tell CCT Need to recollect Fish #17

0745 Meet Kathy + drive to Kettle Falls Marina

0815 Meet NPS
Cam, Kelly, Kathy, Olivia
Megan + Justin - NPS

Weather: 70°F, Partly cloudy + light wind

Tail bate: weather (storms Fri) off when lightning

509-634-1597 Hank
- Text to Hank # of fish + timing till return for better coordination
- CCT/STI catching fewer Sturgeon yesterday.

0845 @ marina for first live pull - 1 CCT: Hank, Denise, Roger.
Water temp is 72°F

* 400g of group C requested by Laura.

Rite in the Rain

58 Location UCR Date 090116

Project / Client Sturgeon Sampling

1007 3 fish processed @ Marcum
EPA HS 10 017 A1
09 018 A1
08 019 B2
1207 5 fish processed @ Evans
EPA HS 06 020 B2
06 021 B2
01 022 B2
07 023 B2
10 024 A2
CCT/STI have been hit + miss
North gorge set (Reach 2)
was a good catch w/ ~10
↓ 1520 EPA HS 06 025 C1
03 026 C1
07 027 B2
10 028 A2
08 029 A2
07 030 B2
08 031 A2
09 032 A2
*Big guy ~79 kg we did not keep / released by CCT
- see photos

Location UCR Date 090116

Project / Client Sturgeon Sampling

13:07 - Hank told us next week they will be fishing Tues - Sat but will not have any fish for us until Wednesday (9/7)
- NPS staff? for boat?
- need WA boating license to operate if CIT needs → do we have staff
- Weatherman.

1520 Completed processing the 8 fish

1600 Back at Kettle Marina. Kathy, Car & Rachel to check out North Area of the site - BSB + DME.

1800 Back at Colville

09/01/16 Car

Rite in the Rain.

Location UCR Date 090216

Project / Client Sturgeon Sampling

0745 Depart Colville for Kettle Marina. Weather: pt. cloudy 60°F; high of 70 expected. rain passed over last night. may get more today.

0810 @ Kettle Falls Marina
Met Kirk Holliday/NPS
Kathy C./EPA
w/ Cam Irvine/CH
+ Kelly O'Neal/CH
CCT: Hank, Denise, Roger.
- Going to N. gorge + work Down. only 6 sets to pull

Safety topic. bee stings. saw some yellow jackets at filet stations (on boat where we processed fish) yesterday. Benadryl in FAK.t.

0852 Cougar in water, dead + bloated just N. of Marcus on route to first line pull. 00 photos

0924 - ♀ caught at N. Gorge

Location UCR Date 090216 61

Project / Client Sturgeon Sampling

0935 2nd pull no fish
0945 3rd pull - Ø fish
- these were shallow sets
moving to deeper sets
1004 - 4th pull @ Evans.
Ø fish
- 5th pull CCT
- were going to get a fish from
STI fisheries boat.
- EPA WS 04 033 B2
2004
L 136cm
Wt 17.50
Site 470
11:00 2 more from CCT
EPA HS 09 034 B2
1 10 035 A2
1150 Depart Evans for
Kettle Falls Marina
300 Pack Samples
320 Drive to Spokane &
drop samples @ Courier

090216 Car B

Rite in the Rain

62 Location UCR Date 9/7/16

Project / Client Sturgeon sampling

194 site fish from Spokane s

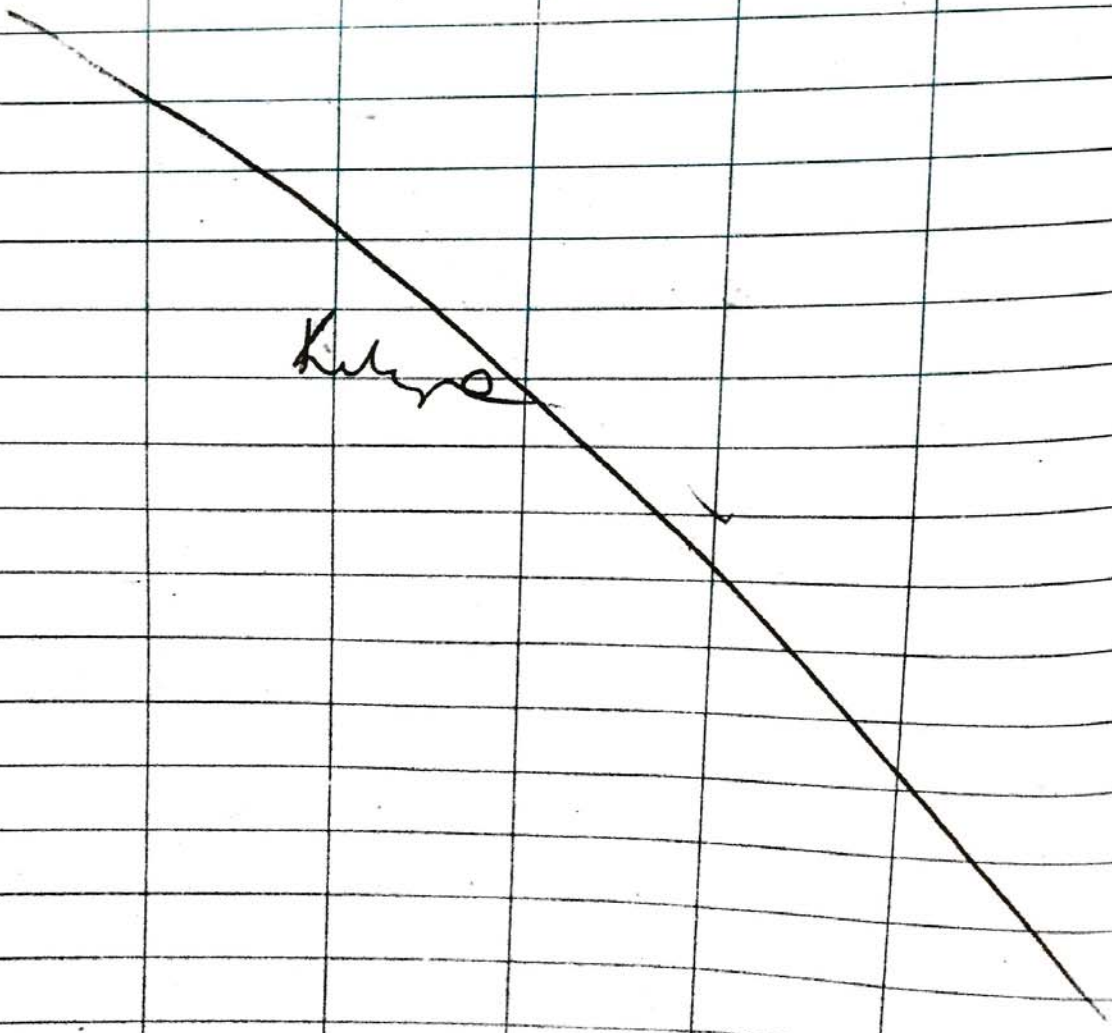
146.4 cm

24.08 Kg

985.120013038726

EPA-HS-03-039-C1

EPA-HS-03-039-C1



Location UCR Date 9/21/16

Project / Client Sturgeon Sampling

08:00 - Met @ Kettle Falls boat launch.
Josh Weatherman captaining boat
w/ deckhand Scott. Following the Colville
tribe: Hank, Denise, & Roger. Spokanes
have two boats on the water today.
CH2M team: Marilyn Gauthier & Kelly O'Neal
09:20 - Chalk grade / Barnaby Island
1st set → no "C" size fish.
09:31 - spokane boat has a fish for us
EPA-HS-06-062-C2
Fork length 138.3cm
weight 22.6 kg
PIT 985120030517577
Brood Yr 2006
10:28 - spokane boat has 2nd fish

EPA-HS-06-063-C2
FL ~~218 cm~~ 148.3cm
20.98 kg
2006
PI 985120030584035
11:07 - Spokanes (Andy) has 3rd fish for us
by French Rock

Rite in the Rain

64

Location VCR Date 9/13

Project / Client Sturgeon Sampling

EPA-HS-05-064-CB2

Site 31

FL = 146.5 cm

W = 24.5 kg

BY = 2005

PIT = 9685120030501479

12:30 - Spokane (Reuben) has ~~3rd~~ 4th (HO) 'C" Asn

EPA-HS-02-065-C3

FL = 146.8 cm

W 25.08 kg

BR - 2002

PIT = 999 000.000475990

13:40 - Spokane (Reuben) has fish

EPA-HS-02-066-C3

FL 157.5 cm

W 25.67 kg

BR 2002

985121025225039

Location UCR Date 9/13/16

Project / Client Sturgeon Sampling

14:16 - Colvilles (Hank) have "C" fish

EPA-HS-05-067-C3

FL 146.7cm
W 25.6 kg
BY 2005

985.120030490868

14:50 - Spokanes (Andy) have 2 more C fish

EPA-HS-01-~~068~~ 072-C3
dark blue tub
FL 149.4cm
W 27.5 kg
BY 2001
Site 214
Pit 985120014062140

~~1426~~
1626

5th fish
processed
072

66 Location CAS UCR Date 9/13/16

Project / Client sturgeon

light blue tub (069)
Site 265 2nd processed
FL 140.8 cm
W 50.15 lbs 1536
→ 22.75 kg
BY = 2006
PIT 985120030379918

Reuben has 3 fish to us
on ~~cutting board~~

#1 070
FL 140
W 19.76
BY 2007
P 985120032660100

#2 FL 138.5 (070) third processed
W 21.14 15:53
BY 2006
PIT 985120030503234

#3 FL 145.4 ~~071~~ MC
W 25.24 first processed
BY 2005 (068)
PIT 985120030500973

Appendix C
Field Change Forms

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FIELD CHANGE REQUEST

Page _1__ of _1__ Field Change No.: _____1_____ Project Number: 670274.FI.02

Project Name: White Sturgeon Tissue Sampling: Upper Columbia River Site CERCLA RI/FS

CHANGE REQUEST

Applicable
Reference: Quality Assurance Project Plan. Upper Columbia River Sturgeon Tissue Study Addendum No. 1 to the Quality Assurance Project Plan for the 2009 Fish Tissue Study

Description of Change: Replace acid/solvent decontamination of sample processing tools with scrubbing with Alconox® at the beginning of each day, followed by DI rinse, and site water rinse/scrub between fish.

Reason for Change: Unavailability of decontamination chemicals at the beginning of sampling.

Impact on Present and Completed Work: No impact expected. Teflon cutting surface and stainless steel knives are not a significant source of potential contamination.

Requested by: _____ Date: 09/18/16
(FTL or SPC)

Acknowledged by: _____ Date: 9/18/16
(STL)

PROJECT MANAGER APPROVAL

Final Disposition:

Approved/Disapproved by: _____ Date: _____

US EPA TOPO APPROVAL

Approved/Disapproved by: _____ Date: _____

FIELD CHANGE REQUEST

Page _1__ of _1__ Field Change No.: _____2_____ Project Number: 670274.FI.02

Project Name: White Sturgeon Tissue Sampling: Upper Columbia River Site CERCLA RI/FS

CHANGE REQUEST

Applicable
Reference: Quality Assurance Project Plan. Upper Columbia River Sturgeon Tissue Study
Addendum No. 1 to the Quality Assurance Project Plan for the 2009 Fish Tissue Study

Description of Change: Tissue storage on dry ice and shipping once a week may be revised in the field to storage on wet ice and shipping to the lab twice each week on wet ice. Tissues stored and shipped on wet ice would be received by the analytical lab within approximately 48 hours after collection.

Reason for Change: Unavailable/ inconsistent supply of dry ice locally.

Impact on Present and Completed Work: No impact expected.

Requested by: _____ Date: 09/08/16
(FTL or SPC)

Acknowledged by: _____ Date: 9/8/16
(STL)

PROJECT MANAGER APPROVAL

Final Disposition:

Approved/Disapproved by: _____ Date: _____

US EPA TOPO APPROVAL

Approved/Disapproved by: _____ Date: _____

Appendix D
Lake Roosevelt Fisheries Co-managers Field Records

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SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / AE, OC, RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION Columbia River Right Near Shore

SET COMMENTS Calm Overcast PICK COMMENTS Overcast Lt Breeze

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	045		upper	048.574518	118.110646	MIN	13.0	160906	0914	17.8	160907	0904	17.5
			lower	048.572299	118.110691	MAX	16.6						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	142.0	24.1	S	N	1,8L	Y	N	N							FDR-WS-2016- /	FDR-WSD-2016- /	985120030369682
2	WS	14	131.7	18.7	S	N	1,8L	Y	N	N							FDR-WS-2016- /	FDR-WSD-2016- /	985120030502219
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY; B.Y. 2006
2	" " ; ~~NO DEFORMS~~ ; " " ; " " ; B.Y. 2006; LEFT OPERCULE HAS EXTRA LOBE (FLAP)
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14	
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SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE. DC. RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION River Right near shore opposite Boise

SET COMMENTS Calm Overcast PICK COMMENTS Turning calm

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	050		upper	048.161298	118.112911	MIN	21.0	160907	1040	16.99	160908	1031	17.29
			lower	048.161132	118.112968	MAX	27.1						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	20	111.6	10.19	S	N	1,10L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121012169675
2	WS	14	103.2	7.34	S	N	1,10L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120032640726
X 3	WS	14	96.8	6.19	S	N	1,10L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120032577018
4	WS	18	191.8	46.5	R	N	—	N	N	Y	N	2L	Y	N	Y	N	FDR-WS-2016-327	FDR-WSD-2016-	985.121006399602
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

16.36
6.17
10.19

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION
2	" " ; NO DEFORMS ; " "
3	" " ; MSLN ; " " ; 2008 ; TRANSFERED TO EPA FOR TOXICITY
4	NEW ADULT ; LIB 590 ; ROB CURLED ; APPLIED PIT, 2L, DNA, BLOOD ; HEALTHY LOOKING FISH
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / — Size 20/0 10 / —

SITE DESCRIPTION River Right Main Chan above HAAG Cove

SET COMMENTS Overcast lt S. Breeze **PICK COMMENTS** Sun Calm

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	082		upper	048.567977	118.113563	MIN	32.1	160907	0855	17.43	160908	0943	16.81
			lower	048.566136	118.113617	MAX	32.9						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	149.9	26.5	SR	N	1,8L	Y	N	N	B						FDR-WS-2016- /	FDR-WSD-2016- /	985 120039503580
2																	FDR-WS-2016-	FDR-WSD-2016-	
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
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PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; 2006; TOOK BLOOD, FIN RAYS, + GONAD; IMM MALE; THIN TESTIS HEAVILY EMBEDDED IN THICK ADIPOSE; TRANSFERED TO EPA FOR TOXICITY
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3	
4	
5	
6	
7	
8	
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10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE, DC, RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION River Right Bay Across from Marcus dbl

SET COMMENTS Sun Calm PICK COMMENTS Wind from NW picking up

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	145		upper	048.677115	118.101808 9	MIN	12.7	16 09 07	1501	18.38	16 09 08	1520	18.00
			lower	048.676765	118.103117	MAX	13.1						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	20	139.5	20.6	S	N	1,6L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120023758577
2	WS	14	143.7	23.9	S	N	1,6L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120018330246
3	WS	14	82.3	4.85	S	N	LAD	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120102515117
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

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PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
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OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; RP1090; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY; 2004
2	HATCHERY FISH; MSRN; " "; " "; 2004
3	HATCHERY FISH; MSLN; " ";
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5	
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SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE, DC, RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION River Right French Rocks mc

SET COMMENTS North Wind Sunny Dropped in deeper main PICK COMMENTS Sunny Lt NW Breeze

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE (Y Y M M D D)	SET TIME (h h m m)	SET TEMP °C	PICK DATE (Y Y M M D D)	PICK TIME (h h m m)	PICK TEMP °C
FDR	262		upper	048.495514	118.139779	MIN	38.1	160912	0958	17.1	160913	1323	17.29
			lower	048.493911	118.118020	MAX	46.8						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	20	90.8	5.83	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121023475306
2	WS	14	126.8	13.56	S	N	1,8L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120932589896
3	WS	18	132.8	16.38	S	N	1,8L	Y	N	N	B						FDR-WS-2016-	FDR-WSD-2016-	985.120030489366
4	WS	16	146.7	25.6	S	N	1,7L	Y	N	N	B						FDR-WS-2016-	FDR-WSD-2016-	985.120030490868
5	WS	18	236.6	20.5	R	N	N	N	N	N	N	2L	Y	N	Y	N	FDR-WS-2016-335	FDR-WSD-2016-	985.121006351551
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION
2	" " ; NO DEFORMS; " "
3	" " ; NO DEFORMS; " " ; TOOK BLOOD, GONAD, BOTH PEC FIN RAYS; 1MM MALE; THIN TESTIS EMBEDDED IN THIN RIBBONS OF ADIPOSE TISSUE
4	" " ; NO DEFORMS; " " ; TOOK BLOOD, GONAD, + BOTH PEC FIN RAYS; 1mm FEMALE; OVARY HEAVILY EMBEDDED IN ADIPOSE TISSUE. 2005 BY; TRANSFERED TO CPA FOR TOXICITY
5	NEW ADULT; APPLIED PIT, 2L, DNA + BLOOD; NO DEFORMS; GIRTH WAS MASSIVE
6	
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SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE. DC. RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION River Right Kettle Falls Bt Launch opposite Main Chan

SET COMMENTS Calm Overcast Lt South Breeze PICK COMMENTS Calm Overcast

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	270		upper	048.598515	118.130999	MIN	32.1	16 09 06	09 32	17.59	16 09 07	09 49	17.33
			lower	048.596817	118.131312	MAX	34.2						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	104.1	7.60	S	N	4,13L	Y	N	4							FDR-WS-2016-	FDR-WSD-2016-	985.121012168098
2	WS	14	98.3	7.02	S	N	1,11L	Y	N	4							FDR-WS-2016-	FDR-WSD-2016-	985.121006351168
3	WS	16	118.1	10.39	S	N	1,10L	Y	N	4							FDR-WS-2016-	FDR-WSD-2016-	985.120032583488
4	WS	20	125.0	17.64	S	N	1,8L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120032571629
5	WS	16	138.9	24.16	S	N	1,8L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120030384161
6	WS	18	192.16	60.3	R	N	2L	Y	N	N					Y		FDR-WS-2016-324	FDR-WSD-2016-	985.120030486443
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot

DISP (disposition) R = alive and released S = sacrificed D = dead at capture

PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray

SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied

EXTAG (external tag) Y = present S = scar N = none

DEFOM (Deformity) Y = yes (describe in comments) N = no deformities

OTC (25mg/kg) Y = applied N = Not applied

DNA Y = fin tissue collected (record label ID) N = no sample

STOMACH Y = Stomach collected N = Stomach not collected

EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; MSBN; SACRIFICED FOR STOCK REDUCTION; 2008 BY
2	" " ; MSLN; " " ; 2009 BY
3	" " ; DORSAL TIP CURLED; " " ; 2008 BY; TRANSFERED TO EPA FOR TOXICITY; SKINNY FISH BUT LONG
4	" " ; NO DEFORMS; " " ; 2006 BY;
5	" " ; LL CURLED; " " ; 2006 BY; TRANSFERED TO EPA FOR TOXICITY
6	ADULT RECAP; 2L PIT, OLD (healed?) DNA CLIP @ CAP; APPLIED DNA + BLOOD; HEALTHY LOOKING FISH
7	
8	
9	
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14	
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SET AGENCY/PERSONNEL CCT / HE, OC, RF PICK AGENCY/PERSONNEL CCT / HE. OC. RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION River Right opposite Marcus Island

SET COMMENTS Sunny Calm PICK COMMENTS Calm Overcast

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE (Y Y M M D D)	SET TIME (h h m m)	SET TEMP °C	PICK DATE (Y Y M M D D)	PICK TIME (h h m m)	PICK TEMP °C
FDR	283		upper	048.675'95	118.080'73	MIN	10.3	160906	1103	17.55	160907	1415	17.87
			lower	048.674'44	118.081'51	MAX	11.9						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	75.4	3.02	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121013236745
2	WS	16	105.9	8.06	S	N	1,3,11L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121012681539
3	WS	14	121.0	12.82	S	N	1,9L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120032584909
4	WS	16	131.8	17.07	S	N	1,6L	Y	N	N	B						FDR-WS-2016-	FDR-WSD-2016-	985.120018429853
5	WS	14	82.4	4.22	S	N	123LAD	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121023296291
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY; 2010
2	" " ; MSRN ; " " ; " " ; 2008
3	" " ; MSBN ; " " ; " " ; 2007
4	" " ; NO DEFORMS ; " " ; 2004 ; GONAD, BLOOD, + BOTH PEC FIN RAYS TAKEN; 1mm MALE; GONAD HEAVILY EMBEDDED IN ADIPOSE TISSUE
5	" " ; MSRN ; LP CURLED + 40% ; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY; 2010
6	
7	
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SET AGENCY/PERSONNEL CCT / HE, DC, RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION River Left Ricky Point Sail Bt's

SET COMMENTS Calm Overcast **PICK COMMENTS** Overcast Lt South Breeze

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	329		upper	048.56477	118.12511	MIN	15.2	1 6 09 06	09 00	17.47	1 6 09 07	08 33	17.12
			lower	048.56321	118.12567	MAX	17.2						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	79.1	4.21	S	N	12SLAD	Y	N	N							FDR-WS-2016- X	FDR-WSD-2016- X	985.121022926811
2																	FDR-WS-2016-	FDR-WSD-2016-	
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH, SACRIFICED FOR STOCK REDUCTION; 2010 BY; TRANSFERED TO EPA FOR TOXICITY, NO DEFORMS
2	
3	
4	
5	
6	
7	
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10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION R. Jer left Marcus Flat

SET COMMENTS Sunny Clouds Calm **PICK COMMENTS** Sunny Calm Nice

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	LOCATION GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	402		upper	048.614027	118.098219	MIN	11.6	16 09 07	12 18	17.89	16 09 08	11 46	17.61
			lower	048.613873	118.098495	MAX	12.5						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	10	130.5	17.45	S	N	1,10	Y	N	N	B						FDR-WS-2016-	FDR-WSD-2016-	982.120018379585
X 2	WS	18	97.2	6.06	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	982.120121191347
X 3	WS	14	79.6	3.71	S	N	123DAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	982.120234522142
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; TOOK, BLOOD, GONAD + BOTH PEC FIN RAYS; IMM MALE; THIN TESTIS EMBEDDED IN THICK ADIPOSE TISSUE; STOMACH + DT FULL
2	" " ; NO DEFORMS; " " ; 2010 ; TRANSFERED TO EPA FOR TOXICITY
3	" " ; NO DEFORMS; " " ; 2010 ; " "
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION River Right Lower Bossbars

SET COMMENTS North Breeze Sunny Cool **PICK COMMENTS** Calm Overcast

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE (Y Y M M D D)	SET TIME (h h m m)	SET TEMP °C	PICK DATE (Y Y M M D D)	PICK TIME (h h m m)	PICK TEMP °C
FDR	427		upper	048.175804	118.105216	MIN	22.1	160829	1008	17.9	160830	1326	18.7
			lower	048.175681	118.105431	MAX	23.1						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	106.3	1.93	S	N	2R,LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121023416169 3
2	WS	14	87.9	5.58	S	N	1,11L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121006398160
3	WS	18	83.6	4.01	S	N	1,12L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121012609193
4	WS	18	106.7	7.56	S	N	1,8L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120030514876
5	WS	16	119.8	11.94	S	N	1,7L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120030500558
6	WS	16	116.3	11.62	S	N	1,7L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120030502907
7	WS	20	246.2	103.7	R	R	2L,2R,3R	Y	N	N					Y		FDR-WS-2016-317	FDR-WSD-2016-	1.1.16.152.16.16.5A
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot

DISP (disposition) R = alive and released S = sacrificed D = dead at capture

PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray

SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied

EXTAG (external tag) Y = present S = scar N = none

DEFOM (Deformity) Y = yes (describe in comments) N = no deformities

OTC (25mg/kg) Y = applied N = Not applied

DNA Y = fin tissue collected (record label ID) N = no sample

STOMACH Y = Stomach collected N = Stomach not collected

EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA; NO DEFORMS
2	" " ; " " ; RP 40% ; TRANSFERED TO EPA ;
3	" " ; " " ; BP WAVED ; MSBN ; POSSIBLE FEMALE
4	" " ; " " ; LP 30% ; IMM FEMALE
5	" " ; " " ; NO DEFORMS; FAT FISH ; IMM MALE; TRANSFERED TO EPA
6	" " ; " " ; NO DEFORMS; FAT FISH ; IMM FEMALE
7	ADULT RECAP; 2L, 2R, 8R, PIT, LP @ CAP; APPLIED DNA, BLOOD ; HEALTHY LOOKING FISH
8	
9	
10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / ✓ Size 16/0 10 / — Size 18/0 10 / — Size 20/0 10 / —

SITE DESCRIPTION Mid River downstream from Evans swim Beach

SET COMMENTS Calm Warm **PICK COMMENTS** Sun Calm

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	430		upper	048.68748	118.02337	MIN	21.6	1 6 08 30	10 17	18.34	1 6 08 31	09 21	18.41
			lower	048.68586	118.02349	MAX							

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	20	76.8	3.31	S	N	123LAD	4	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121023179416
2	WS	18	115.6	11.07	S	N	1,10L	4	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121012719932
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; SACRIFICED FOR STOCK REDUCTION; MSLN; TRANSFERED TO EPA
2	" " ; " " ; NO DEFORMS; TRANSFERED TO EPA
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / — Size 16/0 10 / — Size 18/0 10 / — Size 20/0 10 / —

SITE DESCRIPTION River Left Shallow" Evan's Corner downstream swim B

SET COMMENTS Calm Sunny **PICK COMMENTS** Calm partial Sun

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	442		upper	048.68527	118.01722	MIN	5.8	1 6 08 29	09 15	18.18	1 6 08 30	09 50	18.23
			lower	048.68374	118.01785	MAX	11.6						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
X 1	WS	14	81.3	3.73	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.12102318 3278
X 2	WS	18	115.1	10.44	S	N	1,9L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120032655 6416
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; SACRIFICED FOR EPA-TOXICITY; NO DEFORMS; SEX UNDETERMINED
2	" " ; " " ; NO DEFORMS; MM FEMALE
3	
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SET AGENCY/PERSONNEL CCT / HE,DC,RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION River Left @ North Gorge

SET COMMENTS Sunny Lt South Breeze **PICK COMMENTS** South Wind Overcast

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	444		upper	048.78786	118.00845	MIN	17.1	1 6 0 8 3 1	1 2 2 4	18.71	1 6 0 9 0 1	1 2 1 4	18.42
			lower	048.78625	118.00848	MAX	19.8						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	220.5	75.7	R	L	2L,2R,8R	Y	N	N					Y		FDR-WS-2016-322	FDR-WSD-2016-	916.163453A
X 2	WS	18	137.0	22.50	S	N	1,8L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120030485876
X 3	WS	20	139.2	19.59	S	N	1,5L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120013468748
X 4	WS	20	120.9	14.56	S	N	1,9L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120031103155
X 5	WS	16	84.5	4.33	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121023299893
X 6	WS	18	84.4	4.02	S	N	10L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121005732345
X 7	WS	U	109.1	9.58	S	N	2,9L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120032577997
X 8	WS	14	81.2	4.04	S	N	10L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121006337392
9	WS	14	57.4	1.15	R	N	123LAD	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121028988219
X 10	WS	14	86.8	5.27	S	N	1,11L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121006364696
11	WS	U	115.2	10.29	S	N	1,6L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120018419251
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	ADULT RECAP; 2L, 2R, 8R, PIT, LP @ CAP; APPLIED DNA, BLOOD; HEALTHY LOOKING FISH
2	HATCHERY FISH; 2006 BY; SACRIFICED FOR STOCK REDUCTION; NO DEFORMS; TRANSFERED TO EPA
3	" "; 2003 BY; " "; NO DEFORMS; " "
4	" "; 2007 BY; " "; NO DEFORMS; " "
5	" "; BY 2010; " "; NO DEFORMS; " "
6	" "; 2008 BY; " "; NO DEFORMS; " "
7	" "; SACRIFICED FOR STOCK REDUCTION; NO DEFORMS; 2007 BY; TRANSFERED TO EPA TOXICITY
8	" "; 2008 BY; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY
9	" "; RELEASED; PIT NOT IN DATABASE; BP WAVED; B PELVIC FINS WAVED
10	" "; MSLN; RP 50%; 2009 BY; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA
11	" "; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE. DC. RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / ~ Size 16/0 10 / ~ Size 18/0 10 / ~ Size 20/0 10 / ~

SITE DESCRIPTION River Right DS Bend above NOAA Gorge @ Hodge Pole Creek

SET COMMENTS Overcast Calm Humid PICK COMMENTS Sunny Calm

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	451		upper	048.811065	111.007339	MIN	12.5	16 0830	1451	18.65	16 0831	1232	18.72
			lower	048.809779	111.009449	MAX	14.2						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	102.3	1.64	S	N	123LAO	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121013451610 8
2	WS	16	97.4	6.59	S	N	1,10L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121012180857
3	WS	14	87.8	4.16	S	N	123LAO	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121012296 1
4	WS	20	244.2	111.1	RB	2L,2R&R		Y	N	N						Y	FDR-WS-2016-320	FDR-WSD-2016-	115.161357 7A
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; SACRIFICED FOR STOCK REDUCTION; NO DEFORMS; TRANSFERED TO EPA FOR TOXICITY
2	" " ; " " ; NO DEFORMS; TRANSFERED TO EPA FOR TOXICITY
3	" " ; " " ; MSRN; UCL STUNTED; TRANSFERED TO EPA TO TOXICITY
4	ADULT RECAP; 2L, 2R, ER, BP, PIT, OLD DNA SCAR @ CAP; TOOK, BLOOD, DNA; HEALTHY FISH
5	
6	
7	
8	
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10	
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SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE, DC, RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION River Left Near Shore above Marcus dsl

SET COMMENTS Lt North Breeze Sunny PICK COMMENTS Clear Calm Sunny

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	453		upper	048.67285	118.03981	MIN	9.8	1 6 08 29	09 01	18.18	1 6 08 30	09 17	18.20
			lower	048.67248	118.04210	MAX	14.0						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
X 1	NS	14	113.8	9.95	S	N	1,1DL	Y	N	Y							FDR-WS-2016- /	FDR-WSD-2016- /	985.121012701301
2																	FDR-WS-2016-	FDR-WSD-2016-	
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

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PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
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OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; SACRIFICED FOR FRA-TOXICITY SAMPLING, MSBN; IMM. FEMALE
2	
3	
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SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE. DC. RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION mid River Evans

SET COMMENTS Calm Sunny PICK COMMENTS South wind Sunny

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	LOCATION GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	4106		upper	048.169315	118.027116	MIN	21.5	16 08 31	09 49	18.43	16 09 01	09 24	18.38
			lower	048.169165	118.026313	MAX	22.3						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	89.6	5.51	S	N	1,10L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121012162151 7
X 2	WS	U	127.1	16.30	S	N	1,8L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120030488450
X 3	WS	16	120.0	12.85	S	N	1,8L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120030399360
X 4	WS	U	105.1	7.89	S	N	1,3L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120014061643
X 5	WS	U	104.4	7.92	S	N	1,9L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120032516932 9
X 6	WS	14	89.7	5.81	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121022324306
7	WS	14	91.3	5.70	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121013144278
8	WS	18	85.3	4.83	S	N	123LAD	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121023379415
9	WS	U	89.9	5.75	S	N	1,8L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120029835144
10	WS	U	86.2	5.25	S	N	123LAD	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121023290466
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
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EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION
2	HATCHERY FISH; BY 2006; RP 60; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR STOCK REDUCTION
3	" " ; BY 2006; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR STOCK REDUCTION
4	" " ; BY 2001; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY
5	" " ; BY 2007; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION; " "
6	" " ; BY 2010; NO DEFORMS; " " ; " " ;
7	" " ; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION;
8	" " ; MSLN, RP 6090; SACRIFICED FOR STOCK REDUCTION
9	" " ; NO DEFORMS; SACRIFICED FOR STOCK REDUCTION
10	" " ; NO DEFORMS; " " ;
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE, DC, RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / ~ Size 16/0 10 / ~ Size 18/0 10 / ~ Size 20/0 10 / ~

SITE DESCRIPTION River Left Near Shore Bassbug off Marks 5m

SET COMMENTS Moved off Mark about 5m at start because of Shallows PICK COMMENTS Calm Clear

RESERVOIR	GRTS SAMPLE #	rkm	LOCATION GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	471		upper	048.176966	118.102516	MIN	6.4	16 0830	1425	18.7	16 0831	1145	13.48
			lower	048.176887	118.102754	MAX	14.9						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	H	106.3	7.75	S	N	1,9L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120032603233230
2	WS	14	117.2	13.44	S	N	1,8L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.120032605369L6
3	WS	14	115.5	11.02	S	N	1,8L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120030521111.09
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot

DISP (disposition) R = alive and released S = sacrificed D = dead at capture

PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray

SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied

EXTAG (external tag) Y = present S = scar N = none

DEFOM (Deformity) Y = yes (describe in comments) N = no deformities

OTC (25mg/kg) Y = applied N = Not applied

DNA Y = fin tissue collected (record label ID) N = no sample

STOMACH Y = Stomach collected N = Stomach not collected

EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; SACRIFICED FOR STOCK REDUCTION; NO DEFORMS; TRANSFERED TO EPA
2	" " ; " " ; NO DEFORMS; UCL LOOKS LIKE IT IS HEALED, OLD GEAR DAMAGE FAT FISH; TRANSFERED TO EPA
3	" " ; " " ; LP WAVED, TRANSFERED TO EPA
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION River Right off Summer Bar

SET COMMENTS South Wind Sunny **PICK COMMENTS** Overcast & South Wind Cool

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	499		upper	048.619414	118.102986	MIN	18.3	160901	1038	18.20	160902	1023	17.91
			lower	048.619245	118.102843	MAX	19.4						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	97.8	6.81	S	N	1,11L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.112101217808
2	WS	18	81.9	4.56	S	N	123LAD	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.112101218573
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH ; 2009 BY ; NO DEFORMS ; SACRIFICED FOR STOCK REDUCTION ; TRANSFERED TO EPA FOR TOXICITY
2	" " ; 2010 BY ; MSBN ; " " ; " " ;
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	

SET AGENCY/PERSONNEL CCT / HE, DC, RF PICK AGENCY/PERSONNEL CCT / HE, DC, RF

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION River Right opposite chinook Bend Log

SET COMMENTS Overcast Calm PICK COMMENTS Lt South Breeze Sun Clear

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE (Y Y M M D D)	SET TIME (h h m m)	SET TEMP °C	PICK DATE (Y Y M M D D)	PICK TIME (h h m m)	PICK TEMP °C
FDR	502		upper	048.8145 8	117.9443 2	MIN	17.3	160830	1649	18.08	160831	1334	18.49
			lower	048.8136 4	117.9465 9	MAX	19.5						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	113.2	10.10	S	N	1.7 L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.112002697825 7
2	WS	16	116.5	10.30	S	N	1,10L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.112003261276 9 0
3	WS	14	43.7	.33	R	N	123RAD	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	900.254000111616166
4	WS	20	106.6	7.86	S	N	1,9L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121012172794
5	WS	18	227.7	94.3	R	R	2L	Y	N	N	N	N	N	N	Y	N	FDR-WS-2016-32	FDR-WSD-2016-	985.112003048749 5
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
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SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
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OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; SACRIFICED FOR STOCK REDUCTION; RP 40 90; TRANSFERED TO EPA 2006 BY
2	" " ; " " ; MSBN ; TRANSFERED TO EPA ; 2008 BY
3	123 RAD; HATCHERY FISH; LP CURLED; RELEASED
4	HATCHERY FISH; SACRIFICED FOR STOCK REDUCTION; MSRN; 2008 BY
5	ADULT RECAP; 2L, PIT, RP, & CAP; DNA, BLOOD APPLIED; FISHING LURE COMING OUT VENT!; NO SPAG TAG SCAR; POSSIBLE LP; POSSIBLE SURGERY SCAR
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7	
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SET AGENCY/PERSONNEL CCT / HE,DC,RF **PICK AGENCY/PERSONNEL** CCT / HE, DC, RF

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / ✓ Size 16/0 10 / ✓ Size 18/0 10 / ✓ Size 20/0 10 / ✓

SITE DESCRIPTION Mid River Left mi Marker 110 Evans

SET COMMENTS Clear Calm Sunny **PICK COMMENTS** Wind from South Sunny

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	509		upper	048.67739	118.02943	23.4 MIN	21.2	1 6 08 31	09 14	18.46	1 6 09 01	08 45	18.45
			lower	048.67636	118.03128	MAX	23.4						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
X 1	WS	16	73.6	3.20	S	N	123LAD	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.121023184869
X 2	WS	14	85.4	4.52	S	N	1,11L	Y	N	N							FDR-WS-2016-	FDR-WSD-2016-	985.121006349972
X 3	WS	18	109.2	9.75	S	N	1,10L	Y	N	Y							FDR-WS-2016-	FDR-WSD-2016-	985.120032653049
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

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EXTAG (external tag) Y = present S = scar N = none
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OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

LINE #	COMMENTS (deformities and other)
1	HATCHERY FISH; MSBN; 2010 BY; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY; SKEWED HEAD
2	HATCHERY FISH; 2009 BY; SACRIFICED FOR STOCK REDUCTION; NO DEFORMS; TRANSFERED TO EPA FOR TOXICITY
3	HATCHERY FISH; 2008 BY; MSLN; SACRIFICED FOR STOCK REDUCTION; TRANSFERED TO EPA FOR TOXICITY
4	
5	
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14	
15	

SET AGENCY/PERSONNEL STI / RS RP DC **PICK AGENCY/PERSONNEL** STI / RS RP DC

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 /10 Size 16/0 10 /10 Size 18/0 10 /10 Size 20/0 10 /10

SITE DESCRIPTION MC south of chalk Grade

SET COMMENTS **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	227		upper	48.442176	118.29096	MIN	39.5	1 6 0 9 1 2	1 1 3 6	16.8	1 6 0 9 1 3	0 8 4 7	16.3
			lower	48.42001	118.79052	MAX	55.0						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	86.1	5.25	S	N	1,11L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F039	985121012670832
2	WS	18	86.7	5.22	S	N	2,12	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F041	985121012744566
3	WS	16	97.8	6.54	S	N	123LAD	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F043	985121023373179
4	WS	16	93.2	6.45	S	N	123LAD	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F045	985121023374479
5	WS	16	121.2	13.43	S	N	1,4L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F047	985120016048026
6	WS	20	105.5	9.43	S	N	1,9L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F049	985120032542261
* 7	WS	16	138.3	22.6	S	N	1,8L	Y	N	N	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016- [illegible]	985120030517572
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10			LN #7 sampled for CCT containments														FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
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OTC (25mg/kg) Y = applied N = Not applied
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STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STI / RS RP DC PICK AGENCY/PERSONNEL STI / RS RP DC

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION West shore above Boundary

SET COMMENTS PICK COMMENTS Clarity

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE (Y Y M M D D)	SET TIME (h h m m)	SET TEMP °C	PICK DATE (Y Y M M D D)	PICK TIME (h h m m)	PICK TEMP °C
FDR	247		upper	48.45691	118.21117	MIN	40.2	160902	1203	16.7	160913	1000	16.5
			lower	48.45616	118.21216	MAX	45.1						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	14	86.0	5.78	S	N	1,10L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-FOS3	985120932626710
2	WS	16	148.3	20.98	S	N	1,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-FOS5	985120303840339
3	WS	16	127.5	18.15	S	N	1,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-FOS7	985120326255733
4	WS	18	218.0	74.5	D	N	N	N	N	N	N	2L	Y	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985120252257114
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7			LN #2 sampled for CCT								contaminants						FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

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EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STI / RS RP DC **PICK AGENCY/PERSONNEL** STI / RS RP DC

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION West Shore above French Rocks

SET COMMENTS choppy **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	138		upper	48.50621	118.17974	MIN	44.9	16 09 12	12 49	16.6	16 09 13	12 11	16.5
			lower	48.50503	118.18029	MAX	46.3						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
* 1	WS	20	146.8	25.08	S	N	1,4L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F061	9990009004759900
2	WS	16	125.3	16.16	S	N	1,7L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F063	9851200304793000
3	WS	18	122.3	12.32	S	N	1,10	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F065	9851210121268668
4	WS	14	118.3	12.42	S	N	1,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016- F067	9851200325947448
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8			LN#1	sampled	for	CCT		containment									FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

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DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STI, RS RP DC **PICK AGENCY/PERSONNEL** STI, RS RP DC

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 16 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION Mc Bradbury BL

SET COMMENTS **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	166		upper	48.51668	118.16788	MIN	24.0	16 09 12	12 59	16.7	16 09 13	13 40	10.6
			lower	48.51506	118.16878	MAX	25.0						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	99.0	7.43	S	N	2,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016- —	FDR-WSD-2016-F069	98512003242800 9
* 2	WS	14	157.5	25.67	S	N	1,4L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F071	98512102522503 9
3	WS	16	110.5	8.70	S	N	1,9L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F073	98512101268952 5
4	~~WS~~																FDR-WS-2016-	FDR-WSD-2016-	
5			LN#2	sampled		for	CCT		containments								FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

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DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
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OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STI / RS RP DC PICK AGENCY/PERSONNEL STZ / RS RP DC

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION East shore above Bradburn BC

SET COMMENTS PICK COMMENTS

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE (Y Y M M D D)	SET TIME (h h m m)	SET TEMP °C	PICK DATE (Y Y M M D D)	PICK TIME (h h m m)	PICK TEMP °C
FDR	343		upper	48 15 21 29 21	118 14 38 18	MIN	20.3	160912	1314	16.5	160913	1356	16.6
			lower	48 15 12 18	118 14 49 7	MAX	46.1						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1																	FDR-WS-2016-	FDR-WSD-2016-	
2																	FDR-WS-2016-	FDR-WSD-2016-	
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

See Page 2 For Fish Data

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

STI, RSRP DC

SET AGENCY/PERSONNEL / **PICK AGENCY/PERSONNEL** /

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION

SET COMMENTS **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	343		upper	46		MIN		1 6 0 9 1 3			1 6		
			lower			MAX							

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	18	99.3	9.81	S	N	1,10L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F075	985121012210210
2	WS	16	140.0	19.76	S	N	1,9L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F079	985120032660100
3	WS	14	119.8	15.26	S	N	1,9L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F081	985120030494494
4	WS	18	129.0	15.08	S	N	1,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F083	985120032626884
5	WS	16	137.8	19.16	S	N	1,7L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F085	985120030505105
6	WS	16	109.5	9.28	S	N	1,5L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F087	985121012200412
7	WS	18	114.8	10.25	S	N	1,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F089	985120032652237
8	WS	20	98.7	7.55	S	N	1,9L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F091	985120029920827
9																	FDR-WS-2016-	FDR-WSD-2016-	
10			LN #2	sampled		for	CCT	containment									FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

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DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STI / RS RP DC PICK AGENCY/PERSONNEL STI / RS RP DC

GEAR 600 ft setline. No. HOOKS SET/LOST Size =14/0 10 / Size 16/0 10 / Size 18/0 10 / Size 20/0 10 /

SITE DESCRIPTION Mc Nary Point

SET COMMENTS choppy wind PICK COMMENTS

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	198		upper	48.538923	118.145016	MIN	33.0	160912	1320	16.5	160913	1430	16.5
			lower	48.537333	118.145210	MAX	34.0						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	93.3	6.02	S	N	1,10C	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F093	985112109126382912
2	WS	14	133.0	19.26	S	N	1,7C	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F095	985120930491251916
* 3	WS	20	138.5	21.4	S	N	1,8C	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F097	985112010305032304
4	WS	14	145.4	25.24	S	N	1,7L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F099	985112010305010323
* 5	WS	20	202.7	62.8	R	N	3L	N	N	N	N	2L	Y	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985112102509451
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8			LN#3,5 sampled for CCT containments														FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

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OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL Stoff / Amcrm. **PICK AGENCY/PERSONNEL** Stoff / AMIRMIDJ

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 0

SITE DESCRIPTION East shore just below French Rocks.

SET COMMENTS strong N. wind, sunny, rough both **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	031		upper	48.48447	118.18072	MIN	22.9	1 6 0 9 1 2	1 2 2 4	16 6	1 6 0 9 1 3	1 1 0 5	16 6
			lower	48.48333	118.18246	MAX	25.4						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
* 1	WS	20	146.5	24.5			1L,7L	Y	N	N	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985120030501479
2																	FDR-WS-2016-	FDR-WSD-2016-	
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

transferred to EPA

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

PIT Y = present/applied (record number in provided box) N = not present/not applied
EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STOF / AMIRMIDY **PICK AGENCY/PERSONNEL** STOF / AMIR GIDY

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION East shore just below Ripley Point

SET COMMENTS strong N. wind. ~~[illegible]~~ bottom, sunny slopy **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	214		upper	48.52520	118.14221	MIN	36.5	16 09 12	13 09	166	16 09 13	13 14	166
			lower	48.52368	118.14247	MAX	48.5						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg) pds	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	149.4	27.5	S	N	1L,3L	Y	N	N	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016- X	985120014062140
2	WS	14	99.6	16.91	S	N	1L,10L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F646	985120032585280
3	WS	20	114.0	23.64	S	N	1L,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F648	985120032640488
4	WS	14	128.5	34.90	S	N	1L,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F650	985120029770500
5	WS	16	117.4	35.04	S	N	1L,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F652	985120030524585
6	WS	14	119.6	27.29	R	N	7L	Y	N	Y	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016- X	985120032639751
7	WS	14	94.0	15.90	S	N	123LAD	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F654	985121012448429
8	WS	14	106.6	22.62	S	N	1L,10L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F656	985121012672562
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13			LN II														FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

LN II transferred to EP8

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
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EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

62.4

SET AGENCY/PERSONNEL STOF / AM/RMDT **PICK AGENCY/PERSONNEL** STOF / AM/RMDT

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 /10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION Rickey Point

SET COMMENTS strong N. wind, rough bottom, sunny **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	265		upper	48.53666	118.14059	MIN	42.1	1 6 0 9 1 2	1 3 1 8	16 6	1 6 0 9 1 3	1 3 5 7	16 6
			lower	48.53498	118.14036	MAX	44.2						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg) for all pds catchment fish	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	20	198.7	52.0	R	N	N	N	N	Y	N	2L	Y	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985121006357768
2	WS	20	242.5	95.5	R	N	N	N	N	N	N	2L	Y	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985121006383953
3	WS	16	195.1	55.4	R	N	N	N	N	N	N	2L	Y	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985121006350141
4	WS	14	207.9	64.6	R	N	2L	N	N	N	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985121012480110
* 5	WS	16	140.8	50.15	S	N	1L,8L	Y	N	N	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016- X	985120030379918
6	WS	14	135.0	38.99	S	N	1L,6L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F658	985120023682404
7	WS	18	129.9	39.88	S	N	1L,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F660	985120030505871
8	WS	18	118.0	29.33	S	N	1L,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F662	985120032588983
9	WS	14	125.5	34.22	S	N	1L,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F664	985120030482998
10	WS	16	100.2	21.30	S	N	1L,10L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F666	985120032419955
11	WS	16	130.2	40.92	S	N	1L,8L	Y	N		N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F668	985120030501661
12																	FDR-WS-2016-	FDR-WSD-2016-	
13			LN #5	transfered	to	CCT	for		containment								FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
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STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STOF / AM/RM/DJ **PICK AGENCY/PERSONNEL** STOF / AM/RM/DJ

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION East shore at Rocky Point Yant Club

SET COMMENTS smooth bottom, overcast. **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	194		upper	48.56459	118.12709	MIN	19.4	1 6 09 06	13 18	17 2	1 6 09 07	09 20	16 3
			lower	48.56266	118.12742	MAX	19.7						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	83.1	5.12	S	N	123LAD	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F478	985121022350187
* 2	WS	14	146.4	24.08	S	N	1L,3L	Y	N	Y	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016- ~~F480~~	985120013038726
3	WS	14	100.2	7.28	S	N	1L,10L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F480	985120032613276
4	WS	14	197.6	62.3	R	N	2L	Y	N	Y	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985120030498053
5																	FDR-WS-2016-	FDR-WSD-2016-	
6																	FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9		LN#2 transferred to EET					EPA for contaminants study										FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

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OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

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SET AGENCY/PERSONNEL SMF / AM/RM/DT **PICK AGENCY/PERSONNEL** Stat / AM/RM/DT

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION mid-channel just below Hwy 395 bridge

SET COMMENTS smooth bottom, light wind, overcast **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	LOCATION GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	005		upper	46.616710	118.612404	MIN	36.0	16 09 07	11 16	163	16 09 08	09 50	164
			lower	46.616010	118.612484	MAX	38.7						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
1	WS	16	88.8	5.96	S	N	123 LAD	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F548	985 121 013 261 465
2	WS	14	77.7	3.42	S	N	123 LAD	N	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016-F550	985 121 023 452 792
3	WS	14	111.6	10.22	S	N	1L,10L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-F552	985 120 326 246 967
4	WS	20	133.1	18.44	S	N	1L,6L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-F554	985 120 304 873 711
5	WS	16	91.1	5.53	S	N	1L,11L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-F556	985 121 005 697 895
6	WS	14	114.0	11.37	S	N	1L,6L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-F558	985 120 304 847 904
7	WS	16	122.9	14.38	S	N	1L,6L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-F560	985 120 304 993 111
8	WS	14	138.4	23.22	S	N	1L,7L	Y	N	Y	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-—	985 120 305 161 288
9	WS	16	132.7	18.99	S	N	1L,6L	Y	N	N	N	N	N	N	N		FDR-WS-2016-	FDR-WSD-F562	985 120 305 145 200
10	WS																FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12			LWT	6 transferred to EPA													FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

SPECIES WS = white sturgeon; NP = Northern Pikeminnow; BB = Burbot
DISP (disposition) R = alive and released S = sacrificed D = dead at capture
PECT (pectoral fin ray) L = left ray R = right ray B = both rays N = neither ray
SCUTE SCARS/REMOVED e.g., 1R,3R 1,2,3 RAD/LAD (right/left anterior dorsal fin origin)

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EXTAG (external tag) Y = present S = scar N = none
DEFOM (Deformity) Y = yes (describe in comments) N = no deformities
OTC (25mg/kg) Y = applied N = Not applied
DNA Y = fin tissue collected (record label ID) N = no sample
STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

SET AGENCY/PERSONNEL STOF / AM (EMKD) **PICK AGENCY/PERSONNEL** STOF / AM/RM/DJ

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION Just out from Money Creek

SET COMMENTS Smooth bottom, no wind, overcast **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	LOCATION GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	201		upper	46.164525	116.109808	MIN	17.3	160907	1230	17.2	160905	1116	16.7
			lower	46.164358	116.097995	MAX	17.7						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
* 1	LS	14	82.2	3.79	S	N	14,11L	Y	N	Y	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985120106342335
2	WS	16	101.1	8.41	S	N	14,8L	Y	Y	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F564	985120304989101
3	WS	14	105.1	7.84	S	N	14,10L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F566	985120127005335
4	WS	16	119.2	14.42	S	N	1L,8L	Y	N	N	N	N	N	N	—	Y	FDR-WS-2016-	FDR-WSD-2016- F568	985120305118118
5	WS	20	119.6	14.01	S	N	1L,8L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F570	985120305032755
6	WS	14	126.5	16.49	S	N	1L,6L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F572	985120018109884
7	LS	16	135.0	14.55	S	N	1L,6L	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F574	985120236430215
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10			LN # transferred to EPA														FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

KEY TO FIELDS

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STOMACH Y = Stomach collected N = Stomach not collected
EXTERNAL TAG DETAILS (type/color/number) Please enter in **comments section**

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SET AGENCY/PERSONNEL STDF / AM/RM/DJ **PICK AGENCY/PERSONNEL** STDF / AM/RM/DJ

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION mid-channel just above Nancy Creek

SET COMMENTS smooth bottom, light W. wind, overcast **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE (Y Y M M D D)	SET TIME (h h m m)	SET TEMP °C	PICK DATE (Y Y M M D D)	PICK TIME (h h m m)	PICK TEMP °C
FDR	229		upper	46.66324	116.09753	MIN	16.3	160908	1300	17.5	160909	1400	17.6
			lower	46.66265	116.09991	MAX	16.5						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	AT CAPTURE SCUTE SCARS	AT CAPTURE PIT	AT CAPTURE EXTAG	AT CAPTURE DEFOM	APPLIED PECT	APPLIED SCUTES REMOVED	APPLIED PIT	APPLIED OTC	APPLIED DNA	APPLIED STOMACH	DNA ID	STOMACH ID	PIT NUMBER
* 1	WS	18	150.5	27.35	S	N	1L,6L	Y	N	Y	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016- X	985120018381851
2	WS	16	83.6	4.16	S	N	123LAD	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F606	985121013251894
3	WS	16	99.8	7.45	S	N	1L,9L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F608	985121012718314
4	WS	14	93.5	6.05	S	N	1L,9L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F610	985120324170106
5	WS	20	>46	2.75	S	N	3 3 LAD	Y	N	Y	N	N	N	N	N	X	FDR-WS-2016-	FDR-WSD-2016- F612	985121012498617
6	WS	16	104.8		S	N	1L,8L	Y	N	Y	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F614	985120029786700
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9			LN #1	transferred		to	CCT	contaminant									FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

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SET AGENCY/PERSONNEL STOI / AM/RP/DT **PICK AGENCY/PERSONNEL** STOI / AM/RP/DT

GEAR 600 ft setline. **No. HOOKS SET/LOST** Size =14/0 10 / 10 Size 16/0 10 / 10 Size 18/0 10 / 10 Size 20/0 10 / 10

SITE DESCRIPTION midchannel just above Snag Cove

SET COMMENTS smooth bottom, 1 stag S. wind. overcast **PICK COMMENTS**

RESERVOIR	GRTS SAMPLE #	LOCATION rkm	GPS (WGS84) decimal degrees/minutes (circle one) Line end	Latitude	Longitude	SET DEPTH (m)		SET DATE Y Y M M D D	SET TIME h h m m	SET TEMP °C	PICK DATE Y Y M M D D	PICK TIME h h m m	PICK TEMP °C
FDR	470		upper	48.75124	118.05863	MIN	17.6	1 6 09 01	1059	176	1 6 09 02	1014	172
			lower	48.74965	118.05943	MAX	18.0						

LINE NUMBER	SPECIES	HOOK SIZE	FORK LENGTH (cm)	WEIGHT (kg)	DISP	AT CAPTURE PECT	SCUTE SCARS	PIT	EXTAG	DEFOM	APPLIED PECT	SCUTES REMOVED	PIT	OTC	DNA	STOMACH	DNA ID	STOMACH ID	PIT NUMBER
* 1	WS	14	136.0	17.50	S	N	2L,6L	Y	N	N	N	N	N	N	N	N	FDR-WS-2016-	FDR-WSD-2016-	985120023685631
2	WS	14	76.0	3.24	S	N	123LAD	Y	N	N	N	N	N	N	N	Y	FDR-WS-2016-	FDR-WSD-2016- F228	985121022590236
3																	FDR-WS-2016-	FDR-WSD-2016-	
4																	FDR-WS-2016-	FDR-WSD-2016-	
5																	FDR-WS-2016-	FDR-WSD-2016-	
6	LN	1	transferred	to EPA	for	contaminants											FDR-WS-2016-	FDR-WSD-2016-	
7																	FDR-WS-2016-	FDR-WSD-2016-	
8																	FDR-WS-2016-	FDR-WSD-2016-	
9																	FDR-WS-2016-	FDR-WSD-2016-	
10																	FDR-WS-2016-	FDR-WSD-2016-	
11																	FDR-WS-2016-	FDR-WSD-2016-	
12																	FDR-WS-2016-	FDR-WSD-2016-	
13																	FDR-WS-2016-	FDR-WSD-2016-	
14																	FDR-WS-2016-	FDR-WSD-2016-	
15																	FDR-WS-2016-	FDR-WSD-2016-	

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APPENDIX B

HATCHERY WHITE STURGEON
FILLET COMPOSITING PLAN

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 10
HANFORD/INL PROJECT OFFICE
825 Jadwin Avenue, Suite 210
Richland, Washington 99352

September 30, 2016

Kris McCaig
Project Manager
Teck American Incorporated
501 North Riverpoint Boulevard, Suite 300
Spokane, Washington 99202

RE: Hatchery White Sturgeon Fillet Compositing Approach

Dear Ms. McCaig,

Please see the enclosed tables that show the compositing approach for the hatchery white sturgeon fillets. The composites were determined using a stratified random approach, based off of sturgeon fork length. There are eight individual sturgeon in each composite. The twenty four sturgeon in each size class were first sorted by fork length. Then the smallest three sturgeon were randomly assigned composite number 1, 2, or 3. This was repeated in sets of three. There is an inconsistency in the Individual Fish ID and the Fish Composite ID. The Individual Fish ID assigned a composite in the field but this should not be used. Please use the Composite Number column, which correctly corresponds to the Fish Composite ID.

As stated in the QAPP, each individual fillet will be homogenized first, then the same mass from each of the eight fillets will be combined to make a composite. The composite will then be homogenized and subsampled for analysis. The homogenates from the individual fillets must be archived at the laboratory. Since there will be enough of the original fillet left over to repeat all analysis if needed, the leftover composite samples may be discarded.

If you have any questions, please contact me at 509-376-5466 or buelow.laura@epa.gov.

Sincerely,

Laura C. Buelow
Project Manager

cc: Dustan Bott, U.S. Environmental Protection Agency (electronic)
Kathryn Cerise, U.S. Environmental Protection Agency (electronic)
Dan Audet, U.S. Department of Interior (electronic)
Patti Bailey, Confederated Tribes of the Colville Reservation (electronic)
Randy Connolly, Spokane Tribe of Indians (electronic)
John Roland, Washington Department of Ecology (electronic)

Table 1. Composite Plan for “A” size Hatchery White Sturgeon.

Composite Number	Individual Fish ID	Fish Composite ID
1	EPA-HS-05-007-A1	EPA-HS-A1
1	EPA-HS-06-047-A3	EPA-HS-A1
1	EPA-HS-09-056-A3	EPA-HS-A1
1	EPA-HS-10-008-A1	EPA-HS-A1
1	EPA-HS-10-017-A1	EPA-HS-A1
1	EPA-HS-10-028-A2	EPA-HS-A1
1	EPA-HS-10-057-A3	EPA-HS-A1
1	EPA-HS-10-058-A3	EPA-HS-A1
2	EPA-HS-08-014-A1	EPA-HS-A2
2	EPA-HS-08-029-A2	EPA-HS-A2
2	EPA-HS-08-031-A2	EPA-HS-A2
2	EPA-HS-09-032-A2	EPA-HS-A2
2	EPA-HS-10-024-A2	EPA-HS-A2
2	EPA-HS-10-035-A2	EPA-HS-A2
2	EPA-HS-10-036-A2	EPA-HS-A2
2	EPA-HS-10-043-A3	EPA-HS-A2
3	EPA-HS-08-015-A1	EPA-HS-A3
3	EPA-HS-08-055-A3	EPA-HS-A3
3	EPA-HS-09-018-A1	EPA-HS-A3
3	EPA-HS-10-002-A1	EPA-HS-A3
3	EPA-HS-10-005-A1	EPA-HS-A3
3	EPA-HS-10-042-A2	EPA-HS-A3
3	EPA-HS-10-049-A3	EPA-HS-A3
3	EPA-HS-10-052-A3	EPA-HS-A3

Table 2. Composite Plan for “B” size Hatchery White Sturgeon.

Composite Number	Individual Fish ID	Fish Composite ID
1	EPA-HS-05-016-B1	EPA-HS-B1
1	EPA-HS-06-038-B3	EPA-HS-B1
1	EPA-HS-07-011-B1	EPA-HS-B1
1	EPA-HS-07-030-B2	EPA-HS-B1
1	EPA-HS-07-051-B3	EPA-HS-B1
1	EPA-HS-08-009-B1	EPA-HS-B1
1	EPA-HS-08-040-B3	EPA-HS-B1
1	EPA-HS-08-046-B3	EPA-HS-B1
2	EPA-HS-03-048-B3	EPA-HS-B2
2	EPA-HS-06-013-B1	EPA-HS-B2
2	EPA-HS-07-023-B2	EPA-HS-B2
2	EPA-HS-07-027-B2	EPA-HS-B2
2	EPA-HS-08-019-B2	EPA-HS-B2
2	EPA-HS-08-044-B3	EPA-HS-B2
2	EPA-HS-08-050-B3	EPA-HS-B2
2	EPA-HS-09-006-B1	EPA-HS-B2
3	EPA-HS-01-022-B2	EPA-HS-B3
3	EPA-HS-06-020-B2	EPA-HS-B3
3	EPA-HS-06-021-B2	EPA-HS-B3
3	EPA-HS-07-003-B1	EPA-HS-B3
3	EPA-HS-07-012-B1	EPA-HS-B3
3	EPA-HS-08-001-B1	EPA-HS-B3
3	EPA-HS-08-045-B3	EPA-HS-B3
3	EPA-HS-09-034-B2	EPA-HS-B3

Table 3. Composite Plan for “C” size Hatchery White Sturgeon.

Composite Number	Individual Fish ID	Fish Composite ID
1	EPA-HS-02-066-C3	EPA-HS-C1
1	EPA-HS-04-059-C2	EPA-HS-C1
1	EPA-HS-04-060-C2	EPA-HS-C1
1	EPA-HS-05-054-C2	EPA-HS-C1
1	EPA-HS-05-067-C3	EPA-HS-C1
1	EPA-HS-06-063-C2	EPA-HS-C1
1	EPA-HS-06-069-C3	EPA-HS-C1
1	EPA-HS-08-041-C1	EPA-HS-C1
2	EPA-HS-01-072-C3	EPA-HS-C2
2	EPA-HS-02-010-C1	EPA-HS-C2
2	EPA-HS-03-004-C1	EPA-HS-C2
2	EPA-HS-03-026-C1	EPA-HS-C2
2	EPA-HS-05-068-C3	EPA-HS-C2
2	EPA-HS-06-025-C1	EPA-HS-C2
2	EPA-HS-02-065-C3	EPA-HS-C2
2	EPA-HS-07-071-C3	EPA-HS-C2
3	EPA-HS-03-039-C1	EPA-HS-C3
3	EPA-HS-04-033-C1	EPA-HS-C3
3	EPA-HS-04-061-C2	EPA-HS-C3
3	EPA-HS-05-064-C2	EPA-HS-C3
3	EPA-HS-06-037-C1	EPA-HS-C3
3	EPA-HS-06-053-C2	EPA-HS-C3
3	EPA-HS-06-062-C2	EPA-HS-C3
3	EPA-HS-06-070-C3	EPA-HS-C3