ONONDAGA LAKE TISSUE AND BIOLOGICAL MONITORING REPORT FOR 2012

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LIST OF ACRONYMS

CPUE	catch (of fish) per unit of effort
DDT	dichloro diphenyl trichloroethane
DUSR	Data Usability and Summary Report
mg/kg	milligrams per kilogram (or parts per million in water)
NYSDEC	New York State Department of Environmental Conservation
PCBs	polychlorinated biphenyls
PIT	passive integrated transponder
PHM	Permanent Habitat Module
QA/QC	quality assurance / quality control
RI	remedial investigation
ROD	Record of Decision
SMU	sediment management unit
SUNY-ESF	State University of New York College of Environmental Science and Forestry
UFI	Upstate Freshwater Institute
USEPA	United States Environmental Protection Agency

DEFINITIONS

Benthic	Bottom dwelling (*i.e.*, in sediment)
Littoral	Zone within a body of water adjacent to shore where waters do not thermally stratify. In Onondaga Lake, the outer extent of the littoral zone corresponds to a water depth of 30 ft. (9 meters).
ng/L	Nanogram per liter or part per trillion in water. 1 ng/L is the same as 0.000001 milligram per liter (mg/L) or part per million.
Profundal	Offshore zone within a water body where water depths are greater than the depth to which sunlight can penetrate to support aquatic plants, in contrast with the littoral zone closer to shore. In Onondaga Lake, the profundal zone stratifies each year from May to October based on water temperature. The profundal zone of Onondaga Lake occupies 64 percent of the lake surface area based on a minimum water depth of 30 ft. (9 meters).

EXECUTIVE SUMMARY

The objectives of tissue and biological monitoring conducted on behalf of Honeywell in 2012 were to document conditions in Onondaga Lake based on parameters established to evaluate the effectiveness of lake remediation. This report includes results from the 2012 Onondaga Lake tissue monitoring and fish community monitoring efforts consistent with two different work plans approved by the New York State Department of Environmental Conservation (NYSDEC).

Adult sport fish and also alewife and gizzard shad prey fish tissue sampling were completed in June before the first year of lake sediment dredging was initiated in late July 2012; the remaining prey fish tissue sampling was completed in August. Fish community and zooplankton monitoring were conducted before and after the start of dredging.

Preliminary remediation goals as fish tissue chemical concentrations were established for fish in the lake bottom Record of Decision (ROD) issued by the NYSDEC and the United States Environmental Protection Agency (USEPA) in 2005. Fish tissue monitoring that was completed in 2012 included collection and chemical analysis of 75 adult sport fish and 40 composited samples of prey fish, fish community assessments and fish population surveys. Fish community monitoring was conducted to maintain continuity with fish community data collected from 2008 through 2011 that helps to characterize fish community dynamics in Onondaga Lake prior to habitat restoration. Zooplankton mercury concentrations were monitored in 2012 as a continuation of lake monitoring work conducted since 2008 to help assess mercury movement within the lake's food web.

SECTION 1

INTRODUCTION

Tissue and biological monitoring in Onondaga Lake were conducted on behalf of Honeywell in 2012 to document lake conditions during the year when remedial dredging and capping in the lake were initiated. Tissue monitoring forms a portion of the basis for evaluating the effectiveness of the lake bottom remedy identified in the ROD issued by the NYSDEC and the USEPA (NYSDEC and USEPA, 2005) and described in the *Remedial Design Work Plan for the Lake Bottom* (Parsons, 2009). Fish community monitoring provides data to help facilitate an understanding of fish community dynamics in Onondaga Lake. Most of the 2012 tissue and biological monitoring was conducted in the lake before July 17, 2012 when the first year of dredging was initiated. Capping of lake sediment was initiated following the start of dredging.

The program objectives for fish tissue and fish community monitoring completed in 2012 were to provide additional data for future understanding of:

- Remedy effectiveness in achieving remediation goals for Onondaga Lake
- Fish community response to habitat restoration

As in previous years, the 2012 work scope for tissue monitoring efforts was submitted as a work plan approved by NYSDEC (Parsons, Anchor QEA and Exponent, 2012b). The 2012 work scope for fish community monitoring was submitted as a separate work plan also approved by NYSDEC (Parsons and Anchor QEA, 2012). Tissue and fish community monitoring objectives, program elements, and data uses are presented in Table 1.

This report follows the format applied in the Baseline Monitoring Reports for Onondaga Lake for 2008 through 2011 (Parsons, Exponent, and Anchor QEA, 2011a, 2011b, 2011c and 2012). Section 1 provides an introduction. Section 2 presents a summary of the sampling and analytical work. Section 3 provides a summary of data management and data validation. Section 4 presents a brief assessment of the 2012 tissue data. Appendix A provides the 2012 Data Usability and Summary Reports (DUSR) for tissue monitoring and follows the format from prior monitoring years including laboratory data verification, data validation, and data usability.

SECTION 2

SAMPLING AND ANALYSIS SUMMARY FOR 2012

Sample collection, sample management, equipment decontamination, and other lake monitoring field procedures were conducted in accordance with work plans for tissue and biological monitoring approved in advance by NYSDEC (Parsons, Anchor QEA and Exponent, 2012b and Parsons and Anchor QEA, 2012). Field and analytical procedures used to conduct the work reported herein are documented in a quality assurance project plan (Parsons, Anchor QEA and Upstate Freshwater Institute (UFI), 2012). Surface water and sediment trap monitoring completed as part of the work scope for the 2012 portion of the nitrate addition pilot test (Parsons and UFI, 2012) are summarized in the report for 2012 nitrate addition efforts (Parsons and UFI, 2013). Table 2 summarizes the media, sampling locations, and primary activities completed for the 2012 tissue monitoring efforts.

Each of the 2012 tissue monitoring efforts were completed using standard procedures described in a quality assurance project plan (Parsons, Anchor QEA and Upstate Freshwater Institute, 2012).

2.1 FISH SAMPLING

Fish tissue monitoring during 2012 included adult sport fish and prey fish sample collection throughout the lake (Figure 1). Fish sampling for tissue chemical analyses was conducted by Anchor QEA with assistance from the Onondaga County Department of Water Environment Protection and the State University of New York College of Environmental Science and Forestry (SUNY-ESF). Fish population and community assessments (including lake sturgeon) were conducted during 2012 throughout the lake (Figure 2) primarily by SUNY-ESF under the supervision of Dr. Neil Ringler with support and oversight by Anchor QEA.

Sampling locations for fish tissue chemical analyses were the same as those occupied during 2008 through 2011, coinciding with historical locations sampled for fish tissue during the remedial investigation for Onondaga Lake (TAMS Consultants, 2002), as well as locations sampled as part of Onondaga County's Ambient Monitoring Program.

Adult sport fish sampling for tissue chemical analyses was conducted from June 14 through July 3, 2012. Prey fish sampling for tissue chemical analyses was conducted from June 14 to June 20 for alewife and gizzard shad and on August 8 and August 9 for other prey fish. Fish samples for tissue analyses were collected and analyzed using the same methods as prior years, including electrofishing, gill netting, trap netting, and seining. Electrofishing was the preferred method for sampling brown bullhead, because bullhead tend to move inshore during the night and are susceptible to capture. Trap nets were a secondary source for collection of bullhead which can be captured in these passive nets while moving along the shoreline. Walleye and smallmouth bass were primarily captured in gill nets set at the 13- to 23-ft. (4- to 7-meter) water depth also during night time hours when walleye and smallmouth bass are more active.

Occasionally, walleye or smallmouth bass were captured by electroshocking. Prey fish were captured with seines and gill nets along the shoreline where they typically congregate during day time hours.

Samples from three adult sport fish species and three prey fish families were collected for tissue chemical analyses. For adult sport fish, 25 individuals from each of the three species [smallmouth bass (*Micropterus dolomieu*), walleye (*Sander vitreus*), and brown bullhead (*Ameiurus nebulosus*)], were targeted from eight locations (based on a target of three to four individual fish from each species at each location) for a total of 75 adult sport fish tissue samples. The three adult sport fish species were also collected in previous years. Legal size fish were targeted, with a maximum size identified to try to restrict the variability of size on mercury concentration; 305 to 500 mm total length for smallmouth bass, 200 to 350 mm total length for brown bullhead, and 380 mm to 575 mm total length for walleye. Three walleye that were captured exceeded the targeted size range but were retained because they would not have survived capture.

A pectoral spine from each adult brown bullhead and otoliths (small ear bones) from each smallmouth bass and walleye were collected to estimate fish age. Total length and weight of each adult fish sample for tissue chemical analyses were recorded as well.

Prey fish samples collected for tissue chemical analyses included fish from the topminnow, silversides, and shad families (Fundulidae, Atherinidae, Clupeidae). Species of prey fish were determined based on availability and included 21 banded killifish (*Fundulus diaphanus*) composites, 3 brook silversides (*Labidesthes sicculus*) composites, 1 gizzard shad (*Dorosoma cepedianum*) composite, and 15 alewife (*Alosa pseudoharengus*) composites. Alewife and gizzard shad were collected by gill netting at the eight prey fish locations (2 composites per location) in mid-June 2012, because alewife move into shallower waters during the spring and early summer allowing for easier capture at that time. The remaining prey fish composites were collected by seining at each of the eight locations (three composites per location), for a total of 24 composite samples submitted for mercury analysis. Composite samples included 10 to 15 prey fish per sample, depending on weights of individual fish.

Fish population and community composition were assessed again in 2012 as part of the Onondaga Lake fish monitoring effort. In addition to the smaller-mesh gill net used during community surveys, a larger-sized gill net was used to better understand lake sturgeon abundance and distribution. Community sampling was conducted with 5.9-inch stretch mesh netting, and sturgeon gill netting was conducted with an eight-panel experimental gill net with two panels each of 6-, 8-, 10-, and 12-inch stretch mesh in sequence for two series**.** Captured sturgeon were measured for total length in mm, weighed in grams, tagged with an individually marked Carline dangler tag and a passive integrated transponder (PIT) tag, and the basal portion of the pelvic fin ray was removed for age estimation. Double tagging was conducted to minimize the loss of information due to tag loss.

Distributions of adult sport fish were assessed monthly from May through October at 10 locations around the lake using gill and trap netting to determine overall community structure (Figure 2). The trap net location in SMU 2 was only sampled in May and June, because that location became inaccessible when dredging started in that area of the lake.

Sampling using electroshocking equipment on a boat was conducted in June to estimate population density of several species. Individual largemouth bass, pumpkinseed, and bluegill sunfish were measured for total length (mm), marked with a fin clip (for smaller fish) or uniquely numbered t-bar anchor floy tag (for larger fish), and examined for visible marks. Sampling using electroshocking was condensed in 2012 to four events over a two-week period in an attempt to get a more rigorous population estimate, which was different from the monthly sampling conducted in 2008 through 2011. Population estimates for largemouth bass, pumpkinseed sunfish, and bluegill sunfish were calculated using the modified Schnabel estimator (Ricker, 1975), as described in the Book 2 Work Plan for 2008 (Parsons, Exponent, and QEA, 2008). Sample size was not sufficient to conduct smallmouth bass population estimates. These species were assessed based on their dominance over the years in the lake and the likelihood of obtaining enough samples to calculate a population estimate.

2.2 ZOOPLANKTON SAMPLING

Zooplankton samples were collected at South Deep at a frequency ranging from weekly to monthly from June 11 to November 19, 2012. UFI also attempted to collect samples of large *Daphnia* zooplankton (at least 1 millimeter in length); however, similar to 2010 and 2011, quantities of *Daphnia* large enough for chemical analysis were not found during any of the 2012 zooplankton sampling events.

Zooplankton community composition was not assessed in 2012.

2.3 ANALYTICAL WORK SCOPE

Fillet samples (NYSDEC standard fish fillet based on NYSDEC 2000; skin-on except for brown bullhead) were collected from each adult sport fish for mercury analysis. In addition to being analyzed for mercury, a subset of adult sport fish fillet samples (12 per species for a total of 36 samples) were analyzed for polychlorinated biphenyl (PCB) aroclors, dichlorodiphenyl trichlorethane (DDT) and metabolites, hexachlorobenzene, and lipids. Dioxins/furans were also analyzed in five fillet samples from each of the species of adult sport fish for a total of 15 samples. Samples selected for analysis of PCBs, DDT and its metabolites, hexachlorobenzene, lipid content and dioxins/furans were representative of the various locations in the lake and were similar to samples selected annually since 2008 for chemical analyses.

Prey fish samples consisted of 40 composite samples that were analyzed for mercury. Ten composite samples also were analyzed for PCBs, DDT and metabolites, hexachlorobenzene, and lipids.

Zooplankton samples collected at South Deep were analyzed for total mercury and methylmercury.

SECTION 3

DATA MANAGEMENT AND VALIDATION SUMMARY

3.1 DATABASE

Validated results from each of the 2012 tissue monitoring efforts have been stored and accounted for in Honeywell's Locus Focus data management system for Onondaga Lake.

3.2 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

Sample identification, QA/QC procedures, sample collection, data entry, and data validation were conducted in accordance with the three agency-approved work plan addenda. Verification of sampling information and chemical data occurred at several levels during the field and laboratory work. Data verification included checking procedures for compliance with the project plan, correctness of protocols used in the field and at the laboratory, comparability of the data collection and analysis procedures, and completeness of the data set and supporting documentation.

TestAmerica Laboratories located in Pittsburgh, PA; North Canton, OH; and Knoxville, TN performed the 2012 tissue monitoring laboratory analyses on behalf of Honeywell. TestAmerica's laboratory in North Canton, Ohio conducted the analyses of zooplankton for low-level mercury and low-level methylmercury. TestAmerica's laboratory in Knoxville, Tennessee conducted the analyses of fish samples for dioxins and furans. Other analyses of fish samples were performed by TestAmerica in their Pittsburgh, PA laboratory.

3.3 DATA VALIDATION

Chemical analytical data generated by TestAmerica were reviewed and validated by Parsons for usability in accordance with data validation procedures described in the Data Usability and Summary Report (DUSR) that is presented as Appendix A to this report.

SECTION 4

DATA ASSESSMENT

4.1 FISH TISSUE CHEMCIAL RESULTS FOR 2012

Mercury was detected in each of the 75 samples from adult sport fish fillets (0.19 to 3.2 milligram per kilogram or mg/kg [approximately the same as one part per million]), and in each of the 40 whole-body prey fish composite samples (0.027 to 0.61 mg/kg) (Table 3). Mercury concentration versus age in adult sport fish was evaluated to assess trends with age. Mercury concentration tends to increase with age in smallmouth bass and walleye, while no trend is apparent for brown bullhead (Figure 3).

PCB aroclors were detected in each of the 12 of the smallmouth bass, in each of the 12 walleye samples, in 11 of the 12 brown bullhead samples, and in each of the 10 of the prey fish composite samples collected in 2012 that were analyzed for organic compounds. PCB aroclors were detected in 2012 fish tissue samples at concentrations ranging from 0.097 to 1.7 mg/kg in smallmouth bass; 0.51 to 2.7 mg/kg in walleye; non-detect to 0.58 mg/kg in brown bullhead and 0.026 to 0.66 mg/kg in prey fish composites (Table 3).

DDT and metabolites were detected in each of the 12 of the smallmouth bass, walleye, and brown bullhead adult sport fish fillet samples and in each of the 10 of the prey fish composite samples collected in 2012 that were analyzed for organic compounds. DDT and metabolites were detected in 2012 fish tissue samples at concentrations ranging from 0.005 to 0.10 mg/kg in smallmouth bass, 0.026 to 0.13 mg/kg in walleye, 0.002 to 0.014 mg/kg in brown bullhead and 0.004 to 0.028 mg/kg in prey fish composites (Table 3).

Hexachlorobenzene was detected in each of the 12 of the smallmouth bass, in each of the 12 walleye, in 11 of the 12 brown bullhead adult sport fish fillet samples and in 7 of the 10 prey fish composite samples collected in 2012 that were analyzed for organic compounds. Hexachlorobenzene was detected in 2012 fish tissue samples at concentrations ranging from 0.001 to 0.010 mg/kg in smallmouth bass, 0.006 to 0.024 mg/kg in walleye, 0.001 to 0.005 mg/kg in brown bullhead, and 0.0003 to 0.011 mg/kg in prey fish composites (Table 3).

Lipid contents in 2012 fish tissue samples ranged from 0.20 to 3.7 percent in smallmouth bass fillets, 1.2 to 5.1 percent in walleye fillets, and 0.097 to 1.3 percent in brown bullhead fillets and 0.79 to 5.2 percent in prey fish composites (Table 3).

Dioxins and furans were detected in each of the five smallmouth bass, walleye, and brown bullhead adult sport fish fillet samples collected in 2012 that were analyzed for dioxins. Detections of dioxins and furans are reported in Table 4 as toxicity equivalent quotients on a nanogram per kilogram basis. One ng/kg is the same as one part per trillion or 0.000001 part per million.

4.2 FISH COMMUNITY MONITORING RESULTS FOR 2012

4.2.1 Fish Community Assessment

Fish representing 40 species were captured or observed in Onondaga Lake during fish community sampling at 10 locations from May through October of 2012. Fish representing 35 species were captured with trapnets, 17 species with gill nets, 7 species with a boat electroshocker, and 19 species with seines (Table 5).

During trap net sampling, nets were set at each location once per month during the late afternoon/evening and checked the following morning. Trap net locations were sampled from May through October except at the Route 690 location where sampling was conducted in May and June. A total of 3,373 fish representing 35 species were captured during 57 nights of trap netting during 2012 (Table 6). The 2012 fish community from trap net sampling was dominated by bluegill (20 percent of the total catch). Banded killifish made up 16 percent of the community from trap net sampling followed by pumpkinseed (13 percent), and brown bullhead (7 percent). Seven species made up between one and six percent of the catch and 21 species contributed less than one percent of the total catch. The number of species captured with trap nets in 2012 at each location varied from 15 species at the Rte. 690 location (sampled for only two months) to 24 species at the Metro location (Table 6).

Data were collected from fifty-two gill nets that were each set for approximately two hours between May 1 and October 18, 2012. These 52 gill nets were set on three to six different dates at 10 different locations throughout Onondaga Lake (Table 7). A total of 349 fish and 17 species were captured during sampling (Table 8). The most abundant fish captured was walleye (33 percent of the total catch), followed by gizzard shad (17 percent), common carp (15 percent), and channel catfish (15 percent). In addition, seven lake sturgeons were captured during regular gill netting as follows: three from 690 Point, and one each from Parsons, Marina, PHM, and Hiawatha Point. The number of species per location varied between five species at both the Marina and Harbor Brook locations and 10 species at both the Outlet and Iron Bridge locations.

Thirty-nine lake sturgeon gill nets were set at eight locations from May 8 through October 26. They were fished for an average of four hours per net. Twenty-two sturgeon were captured with a catch per unit of effort (CPUE) (fish per hour) of approximately 0.15 (excluding the seven sturgeon captured during community sampling). High temperatures in July resulted in the mortality of two sturgeon, one on July 17 and the other on July 18. Following the first mortality, sampling was reduced to shorter sets and then completely suspended following the second mortality through the month of August (until temperatures were below 25°C). Both of the dead sturgeon were sent to Dr. Dawn Dittman at US Geological Survey's Tunison lab in Cortland, NY. Sixteen lake sturgeon were tagged in 2012 with Carlin dangler tags (Table 9). Mean total length of the 22 sturgeon was 54.5 in. (1384 mm) with a range from 41 to 68.3 in. (1042 mm to 1735 mm). Weights were not collected for each fish because some of the fish surpassed the maximum weight limit (20 kg) of the scale that was used. Eleven lake sturgeon caught with lake sturgeon gill nets were weighed and weights ranging from 17.6 and 53.4 pounds (8 to 24.2 kg) were recorded. At least one sturgeon was collected at each sampling location during targeted sampling with six collected at the marina, three each collected at Hiawatha Point, Iron Bridge,

Ninemile Creek, and Wastebed 1-8 locations, two collected at the Outlet location, and one each collected at the Parsons and the Permanent Habitat Module (PHM) locations (Table 9).

Seining was conducted during the week of August 13 at eight locations (Figure 1 and Table 10). Two thousand six hundred and eighty five (2,685) fish were captured from 20 species. Fish catch was dominated by banded killifish (55 percent of the total catch) and largemouth bass (22 percent), pumpkinseed (8.5 percent), round goby (5.7 percent), bluegill (2.8 percent), and yellow perch (1.2 percent) made up the majority of the other species captured. The other 13 species captured each contributed one percent or less of the total catch and three percent of the total catch combined. The number of species captured at each location ranged from five at the Wastebeds 1 through 8 location to 14 at the PHM location (Table 10).

4.2.2 Fish Population Assessment for Adult Pumpkinseed, Bluegill and Largemouth Bass

A total of 929 pumpkinseed with total lengths of 100 mm [3.9 in.] or more were captured and marked during four electroshocking sampling events in June 2012 with 10 recaptures. The lakewide pumpkinseed population for 2012 was estimated at 28,655 with a 95 percent confidence interval of 18,328 to 65,641 fish.

A total of 833 bluegill with total lengths of 100 mm [3.9 in.] or more were captured and marked during four sampling events in June 2012 with six recaptures. The lakewide bluegill population for 2012 was estimated at 36,415 with a 95 percent confidence interval of 21,600 to 115,920 fish.

A total of 286 largemouth bass with total lengths of 300 mm [11.8 in.] or more were captured and marked during four sampling events in June 2012 with 14 recaptures. The lakewide largemouth bass population for 2012 was estimated at 1,930 with a 95 percent confidence interval of 1,297 to 3,777 fish.

4.3 ZOOPLANKTON MERCURY RESULTS FOR 2012

Table 11 and Figure 4A present total mercury and methylmercury concentrations measured in zooplankton collected at South Deep in 2012. Methylmercury as a percentage of total mercury in the 2012 zooplankton samples is presented in Figure 4B. Figures 4A and 4B do not include results from September 12, 2012, because mercury results from September 12 show a concentration of methylmercury that is relatively small but higher than the concentration of total mercury

The highest total mercury concentration observed in 2012 in zooplankton was 0.27 milligrams per kilogram (or parts per million) (mg/kg) on a wet-weight basis observed on September 4 more than a month prior to fall turnover. The highest methylmercury concentrations observed in 2012 in zooplankton was 0.014 mg/kg on August 6. The highest portion of methylmercury observed in 2012 as a percentage of total mercury was 21 percent prior to the start of fall turnover and ranged from 20 to 39 percent following fall turnover.

SECTION 5

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TABLES

TABLE 1

ONONDAGA LAKE FISH TISSUE, HABITAT AND BIOLOGICAL MONITORING OBJECTIVES, PROGRAM ELEMENTS, AND DATA USES FOR 2012

Element	Objective	Data Uses
Adult sport fish and prey fish tissue sampling and analysis	Establish chemical and physical conditions	Provide basis for comparing concentrations of mercury and organic parameters of interest to prior year results and in the long term to determine when fish tissue target concentrations for human health and wildlife protection are met.
Other biota sampling[a]	Provide additional data for future understanding of remedy effectiveness in achieving PRGs and provide habitat-related baseline information	Assess zooplankton mercury and fish community - fish population that may contribute to variability in fish mercury concentrations. Fish community - fish population data also provide additional baseline prior to re-establishing habitat following dredging and capping.

Adapted from Table ES.1 of draft Onondaga Lake Monitoring and Maintenance Scoping Document (Parsons, Anchor QEA and Exponent, 2012a)

[a]Other than chemical analysis of adult sport fish and prey fish (i.e zooplankton mercury and fish community - fish populations)

PRG - preliminary remediation goal

TABLE 2

SUMMARY OF TISSUE AND BIOLOGICAL MONITORING WORK COMPLETED DURING 2012

WORK PLAN AND MEDIA	LOCATIONS	PRIMARY ACTIVITY (May through October)
Zooplankton	South Deep	Monthly to weekly sampling and analyses for total mercury and methylmercury.
Adult Sport Fish	SMUs 2 through 7 (8 locations)	Collected and analyzed for chemical parameters of interest a total of 75 adult sport fish during June (25 smallmouth bass, 25 walleye, and 25 brown bullhead). Collected fish lakewide with trap nets, gill nets and seines to quantify fish community composition. Collected pumpkinseed, bluegill and largemouth bass lakewide to assess fish populations.
Prey (forage) Fish	SMUs 2 through 7 (same 8 locations as for adult sport fish)	Collected and analyzed three composites of prey fish in August from each of eight locations (24 composites), a total of 15 composites of alewife collected in June, and one composite of gizzard shad also collected in June (40 prey fish composites total).

Note: Fall turnover in Onondaga Lake during 2012 occurred on or about October 22.

Table 3
Summary of 2012 Fish Tissue Chemical Concentrations Measured in Onondaga Lake (wet weight basis)

Parameter	Prep	Species	Sample Size	Number of Detections	Arithmetic Mean[1]	Min[1]	Max[1]	Standard Deviation[2]	Standard Error[3]
Mercury (mg/kg)[4]	whole body	prey fish[5]	40	40	0.217	0.027	0.610	0.161	0.026
	fillet	brown bullhead	25	25	0.330	0.190	0.480	0.097	0.019
	fillet	smallmouth bass	25	25	1.003	0.350	3.200	0.600	0.120
	fillet	walleye	25	25	1.902	0.740	3.200	0.659	0.132
Total PCB (mg/kg)[4]	whole body	prey fish	10	10	0.229	0.026	0.660	0.253	0.080
	fillet	brown bullhead	12	11	0.164	0.013U	0.580	0.147	0.042
	fillet	smallmouth bass	12	12	0.536	0.097	1.700	0.481	0.139
	fillet	walleye	12	12	1.380	0.510	2.700	0.582	0.168
Sum of DDT and metabolites (mg/kg)[4]	whole body	prey fish	10	10	0.012	0.004	0.028	0.010	0.003
	fillet	brown bullhead	12	12	0.006	0.002	0.014	0.004	0.001
	fillet	smallmouth bass	12	12	0.032	0.005	0.101	0.029	0.008
	fillet	walleye	12	12	0.068	0.026	0.134	0.030	0.009
Hexachlorobenzene (mg/kg)[4]	whole body	prey fish	10	7	0.003	0.0003	0.011	0.004	0.001
	fillet	brown bullhead	12	11	0.002	0.001	0.005	0.001	0.0004
	fillet	smallmouth bass	12	12	0.004	0.001	0.010	0.003	0.001
	fillet	walleye	12	12	0.013	0.006	0.024	0.005	0.002
Percent Lipid (% by body weight)[4]	whole body	prey fish	10	10	1.839	0.790	5.200	1.272	0.402
	fillet	brown bullhead	12	12	0.524	0.097	1.300	0.379	0.109
	fillet	smallmouth bass	12	12	1.555	0.200	3.700	0.972	0.281
	fillet	walleye	12	12	2.700	1.200	5.100	1.208	0.349

[1] U means not detected. Minimum and maximum non-detects reported at the reporting limit.

[2] Standard deviation is an estimate of the variability of the data points used to calculate the mean (e.g., approximately 68% of the data points will be within plus or minus one standard deviation of the sample mean and 95% will be within two standard deviations).

[3] Standard error is an estimate of how close the calculated mean is likely to be to the true population mean (e.g., there is approximately a 68% chance that the actual population mean falls within plus or minus one standard error of the sample mean and a 95% chance that it fall within two standard deviations).

[4] For individual non-detects, 1/2 the reporting limit was used in calculations.

[5] The average, minimum, and maximum mercury concentrations for alewife (a prey fish subset) were 0.145, 0.072, and 0.21 mg/kg respectively. Alewife made up 15 of the 40 prey fish composite samples collected and analyzed.

TABLE 4

CALCULATED DIOXIN/FURAN HUMAN/MAMMALIAN TEQs IN 2012 FISH TISSUE SAMPLES

Location ID	Field Sample ID	Fish Type	Date Sampled	TEQ (full dl) (ng/kg)	TEQ (half dl) (ng/kg)	TEQ (ND=0) (ng/kg)
OL-STA-20158	OL-1800-03F	BB	6/14/2012	4.22	3.21	2.20
OL-STA-20158	OL-1805-02F	SMB	6/20/2012	7.86	6.40	4.94
OL-STA-20158	OL-1802-05F	WALL	6/15/2012	5.70	4.66	3.62
OL-STA-20158	OL-1804-16F	WALL	6/20/2012	8.23	5.02	1.82
OL-STA-30093	OL-1804-06F	BB	6/20/2012	8.50	5.31	2.11
OL-STA-40212	OL-1801-06F	WALL	6/14/2012	13.63	12.60	11.56
OL-STA-40212	OL-1801-07F	WALL	6/14/2012	8.29	6.95	5.62
OL-STA-50057	OL-1803-18F	SMB	6/19/2012	4.68	2.85	1.01
OL-STA-50057	OL-1807-01F	SMB	6/26/2012	6.00	4.08	2.16
OL-STA-50058	OL-1802-01F	BB	6/15/2012	3.05	2.24	1.43
OL-STA-50058	OL-1803-05F	WALL	6/19/2012	4.39	3.59	2.78
OL-STA-50059	OL-1804-01F	BB	6/20/2012	4.82	3.12	1.42
OL-STA-50059	OL-1802-04F	SMB	6/15/2012	5.93	4.87	3.81
OL-STA-70124	OL-1800-12F	BB	6/14/2012	4.35	2.94	1.54
OL-STA-70124	OL-1804-12F	SMB	6/20/2012	5.44	4.10	2.77

Notes:

dl - detection limit

TEQ - toxicity equivalent quotient calculated using human and mammalian toxic equivalency factors (TEFs) from Van den Berg et al. (2006)

Fish Types:

BB - Brown Bullhead

SMB - Smallmouth Bass

WALL - Walleye

Table 5

Summary of Species Collected By Gear Type For Onondaga Lake Fish Community Assessment: May - October 2012

Common Name	Scientific Name	Trap Net	Gill Net	Electro-shocker	Seining
Alewife	*Alosa pseudoharengus*	x	x		
Banded killifish	*Fundulus diaphanus*	x			x
Black bullhead	*Ameriurus melas*	x			
Black crappie	*Pomoxis nigromaculatus*	x			
Bluegill	*Lepomis macrochirus*	x		x	x
Bluntnose minnow	*Pimephales notatus*	x			x
Bowfin	*Amia calva*	x	x		
Brook silverside	*Labidesthes sicculus*	x			x
Brown bullhead	*Ameiurus nebulosus*	x	x		x
Channel catfish	*Ictalurus punctatus*	x	x		
Common carp	*Cyprinus carpio*	x	x		x
Common shiner	*Luxilus cornutus*	x			
Creek chub	*Semotilus atromaculatus*	x			x
Emerald shiner	*Notropis atherinoides*	x			x
Fathead minnow	*Pimephales promelas*	x			
Freshwater drum	*Aplodinotus grunniens*	x	x		
Gizzard shad	*Dorosoma cepedianum*	x	x		
Golden shiner	*Notemigonus crysoleucas*	x			x
Goldfish	*Carassius auratus*	x			
Green sunfish	*Lepomis cyanellus*	x			x
Lake sturgeon	*Acipenser fulvescens*		x		
Largemouth bass	*Micropterus salmoides*	x		x	x
Longnose gar	*Lepisosteus osseus*	x	x		
Northern pike	*Esox lucius*	x	x	x	
Pumpkinseed	*Lepomis gibbosus*	x		x	x
Quillback carpsucker	*Carpiodes cyprinus*		x		
Rockbass	*Ambloplites rupestris*	x			x
Round goby	*Neogobius melanostomus*	x			x
Rudd	*Scardinius erythrophthalmus*	x	x		
Shorthead redhorse	*Moxostoma macrolepidotum*	x	x		
Silver redhorse	*Moxostoma anisurum*	x			
Smallmouth bass	*Micropterus dolomieu*	x	x	x	x
Tadpole madtom	*Noturus gyrinus*				x
Tesselated darter	*Etheostoma olmstedi*	x			x
Tiger muskellunge	*Esox lucius x Esox masquinongi*			x	
Walleye	*Sander vitreus*		x	x	
White perch	*Morone americana*	x	x		
White sucker	*Catostomus commersoni*	x	x		
Yellow bullhead	*Ameiurus natalis*	x			x
Yellow perch	*Perca flavescens*	x			x
	Totals	**35**	**17**	**7**	**19**

Table 6
Summary of Number of Individuals Per Species Captured in Trap Nets May-October 2012

		Station Description (Station Identifier OL-STA)											
Common Name	**Scientific Name**	**Metro (70124)**	**Harbor Brook (70124)**	**Rte 690 (20158)**	**Wastebeds 1-8 (30093)**	**Ninemile (40212)**	**Permanent Habitat Module (50057)**	**Maple Bay (50057)**	**Willow Bay (50057)**	**Marina (50058)**	**Iron Bridge (50059)**	**Grand Total**	**Percentage of Community**
Alewife	*Alosa pseudoharengus*	98	19	1	15		24	24	7	23	23	**234**	**6.9**
Banded killifish	*Fundulus diaphanus*	92	168	5	46	100	68	21	3	36		**539**	**16.0**
Black bullhead	*Ameriurus melas*	1					1					**2**	**0.1**
Black crappie	*Pomoxis nigromaculatus*						1				2	**3**	**0.1**
Bluegill	*Lepomis macrochirus*	61	7	43	4	79	196	114	71	54	56	**685**	**20.3**
Bluntnose minnow	*Pimephales notatus*	13	72			1	1	14		7	2	**110**	**3.3**
Bowfin	*Amia calva*	8	5	2	5	3	10	5	6	3	1	**48**	**1.4**
Brook silverside	*Labidesthes sicculus*								2			**2**	**0.1**
Brown bullhead	*Ameiurus nebulosus*	20	4	41	13	26	50	11	55	4	12	**236**	**7.0**
Channel catfish	*Ictalurus punctatus*	6	1									**7**	**0.2**
Common carp	*Cyprinus carpio*	11	8		2	1	2	1	6	2	23	**56**	**1.7**
Common shiner	*Luxilus cornutus*	1										**1**	**0.0**
Creek chub	*Semotilus atromaculatus*		11		1							**12**	**0.4**
Emerald shiner	*Notropis atherinoides*		9		7		1	1	10		1	**29**	**0.9**
Fathead minnow	*Pimephales promelas*	5								2		**7**	**0.2**
Freshwater drum	*Aplodinotus grunniens*	1			2		1	1	1			**6**	**0.2**
Gizzard shad	*Dorosoma cepedianum*	95	12	1	43	4	11	6	13	9		**194**	**5.8**
Golden shiner	*Notemigonus crysoleucas*	8	4	14	1	2	34	61	1	13	11	**149**	**4.4**
Goldfish	*Carassius auratus*		1									**1**	**0.0**
Green sunfish	*Lepomis cyanellus*									1		**1**	**0.0**
Largemouth bass	*Micropterus salmoides*	15	32	2	19	10	86	14	5	15	19	**217**	**6.4**
Longnose gar	*Lepisosteus osseus*		1							1		**2**	**0.1**
Northern pike	*Esox lucius*	2				2	1					**5**	**0.1**
Pumpkinseed	*Lepomis gibbosus*	20	17	27	5	28	160	50	62	39	28	**436**	**12.9**
Rockbass	*Ambloplites rupestris*			1	1	14	3		6	4	1	**30**	**0.9**
Round goby	*Neogobius melanostomus*	4	4	1	1	1	6	1	1			**19**	**0.6**
Rudd	*Scardinius erythrophthalmus*	12	2	3	3		1				1	**22**	**0.7**
Shorthead redhorse	*Moxostoma macrolepidotum*	1			1			1			3	**6**	**0.2**
Silver redhorse	*Moxostoma anisurum*					1						**1**	**0.0**
Smallmouth bass	*Micropterus dolomieu*		1				2	1		3	1	**8**	**0.2**
Tesselated darter	*Etheostoma olmstedi*	1			1				1			**3**	**0.1**
White perch	*Morone americana*	17	2	1	33	1	1	5	4	2	9	**75**	**2.2**
White sucker	*Catostomus commersoni*	8	1	6	6		12	5	2	2	7	**49**	**1.5**
Yellow bullhead	*Ameiurus natalis*				2				10			**12**	**0.4**
Yellow perch	*Perca flavescens*	4	1	5	7	26	24	36	26	5	32	**166**	**4.9**
Grand Total		**504**	**382**	**153**	**218**	**299**	**696**	**372**	**292**	**225**	**232**	**3373**	**100.0**
Number of Species		**24**	**22**	**15**	**22**	**16**	**23**	**19**	**20**	**19**	**18**	**35**	

Table 7. 2012 Gill Net Sampling Locations in Onondaga Lake

Location Name	Sampling Date	Set Time	End Time	Water Depth (m)		Number Times Sampled
				Shallow	Deep	
Route 690 Point (OL-STA-20158)	5/2/2012	10:12 PM	11:12 PM	3.5	7.5	5
	6/14/2012	9:10 PM	10:10 PM	3.7	7.8	
	7/25/2012	9:20 PM	10:25 PM	3.7	9.2	
	9/20/2012	8:50 PM	9:50 PM	4	8.7	
	10/17/2012	7:40 PM	8:40 PM	2	8	
Parsons (OL-STA-20158)	5/2/2012	10:33 PM	11:33 PM	4.4	9.2	3
	6/14/2012	10:30 PM	11:30 PM	3.6	9.2	
	7/25/2012	10:20 PM	11:25 PM	4.0	8.3	
Wastebeds 1-8 (OL-STA-30093)	5/1/2012	8:57 PM	9:57 PM	3.7	8.8	5
	6/13/2012	12:00 AM	1:10 AM	4.2	8.2	
	7/25/2012	9:00 PM	10:00 PM	3.7	8.8	
	9/20/2012	7:15 PM	8:15 PM	3.3	8.1	
	10/17/2012	9:00 PM	10:00 PM	5.2	8.2	
Ninemile (OL-STA-40212)	5/1/2012	10:15 PM	11:15 PM	3.0	11.6	6
	6/13/2012	10:20 PM	11:12 PM	4.5	9.0	
	7/24/2012	9:45 PM	10:45 PM	3.4	9.6	
	8/21/2012	9:15 PM	10:15 PM	5.6	8.7	
	9/19/2012	11:00 PM	11:50 PM	4.3	9.2	
	10/18/2012	9:10 PM	10:10 PM	5.1	8.7	
Outlet (OL-STA-50057)	5/1/2012	8:40 PM	9:40 PM	3.9	6.6	6
	6/13/2012	9:30 PM	10:30 PM	3.1	6.4	
	7/24/2012	9:00 PM	10:00 PM	2.4	6.9	
	8/21/2012	9:40 PM	10:40 PM	3.1	7.7	
	9/19/2012	8:40 PM	10:05 PM	3.4	9.1	
	10/18/2012	6:45 PM	7:45 PM	3.9	6.3	
Permanent Habitat Module (OL-STA-50057)	5/1/2012	9:35 PM	10:35 PM	0.0	9.7	6
	6/13/2012	11:00 PM	12:00 AM	3.8	8.6	
	7/24/2012	8:35 PM	9:35 PM	1.6	8.7	
	8/21/2012	10:25 PM	11:25 PM	3.4	8.6	
	9/19/2012	10:00 PM	11:00 PM	3.2	12.0	
	10/18/2012	7:15 PM	8:45 PM	2.2	8.8	
Hiawatha Pt. (OL-STA-50057)	5/1/2012	8:20 PM	9:20 PM	0.0	3.4	6
	6/13/2012	9:00 PM	10:00 PM	4.2	6.8	
	7/24/2012	10:20 PM	11:20 PM	2.5	5.4	
	8/21/2012	8:22 PM	9:22 PM	3.2	10.1	
	9/19/2012	8:20 PM	9:20 PM	3.9	8.9	
	10/18/2012	8:35 PM	9:35 PM	4.1	10.6	
Marina (OL-STA-50058)	5/14/2012	8:40 PM	9:40 PM	3.0	8.5	6
	6/14/2012	11:45 PM	12:40 AM	3.9	9.6	
	7/24/2012	10:55 PM	11:55 PM	4.0	10.6	
	8/21/2012	8:10 PM	9:10 PM	3.3	10.9	
	9/19/2012	11:30 PM	12:20 AM	3.4	10.0	
	10/17/2012	6:30 PM	7:30 PM	5.3	11.8	
Iron Bridge (OL-STA-50059)	5/14/2012	8:15 PM	9:15 PM	2.2	7.9	5
	6/14/2012	9:35 PM	10:35 PM	3.8	9.4	
	7/25/2012	11:40 PM	12:30 AM	3.8	9.7	
	9/20/2012	7:45 PM	8:55 PM	3.3	8.9	
	10/17/2012	6:50 PM	7:50 PM	4	9.9	
Harbor Brook (OL-STA-70124)	5/2/2012	9:15 PM	10:25 PM	3.5	4.1	4
	6/14/2012	11:00 PM	12:15 AM	4.4	5.2	
	7/25/2012	11:15 PM	12:10 AM	4.3	5.2	
	10/17/2012	8:10 PM	9:10 PM	5.1	6.2	
Total Number of Gill Net Sets						52

Table 8
Summary of Number of Individuals Per Species Captured in Gill Nets May-October 2012

		Station Description (Station Identifer: OL-STA)										
Common Name	Scientific Name	Harbor Brook (70124)	Route 690 Point (20158)	Parsons (20158)	Wastebeds 1-8 (30093)	Ninemile (40212)	Hiawatha Point (50057)	Outlet (50057)	Iron Bridge (50059)	Marina (50058)	Permanent Habitat Module (50057)	Total Fish Captured
Alewife	*Alosa pseudoharengus*							1				1
Bowfin	*Amia calva*							1				1
Brown bullhead	*Ameiurus nebulosus*	1							1			2
Common carp	*Cyprinus carpio*	2			6	7	5	12	7	4	9	52
Channel catfish	*Ictalurus punctatus*	9	6	1	6	4	3	9	7	1	5	51
Freshwater drum	*Aplodinotus grunniens*		9	4	2		3	5	3	1	1	28
Gizzard shad	*Dorosoma cepedianum*	9	10		7	6	3	12	11		1	59
Lake sturgeon	*Acipenser fulvescens*		3	1			1			1	1	7
Longnose gar	*Lepisosteus osseus*					1						1
Northern pike	*Esox lucius*							2	2		1	5
Quillback carpsucker	*Carpiodes cyprinus*								1			1
Rudd	*Scardinius erythrophthalmus*				1							1
Shorthead redhorse	*Moxostoma macrolepidotum*		1		1		2	2	1		4	11
Smallmouth bass	*Micropterus dolomieu*			1	1				1			3
Walleye	*Sander vitreus*	2	12	5	11	11	8	14	22	7	23	115
White perch	*Morone americana*		1								1	2
White sucker	*Catostomus commersoni*		2	2	2	1	1	1				9
	Total Count	23	44	14	37	30	26	59	56	14	46	349
	Number of Species	5	8	6	9	6	8	10	10	5	9	17

Table 9
Lake Sturgeon Catch and Tag Information - 2012

Location	Sampling Date	Coordinates	Total Length (mm)	Weight (kg)	Carlin Tag	Pit Tag	Notes	Recapture?
Nine Mile	5/8/2012	430530 N 4761349 W	1200	20.3	16	20480422		Yes
Wastebeds	6/18/2012	430521 N 4761320 W	1193	8	21	20445186		No
Hiawatha Pt.	6/19/2012	430310 N 4761259 W	1193	8	21	20445186		Yes
Outlet	6/19/2012	430651 N 4761425 W	1320	17.5	22	*20445186*	PIT tag incorrect[1]	No
PHM	6/19/2012	398818 N 4773657 W	1651		23	20557924		No
Marina	6/21/2012	430515 N 4761232 W	1613	24.2	24	20553939		No
Marina	6/21/2012	430515 N 4761232 W	1397	18.7	15	20481711		Yes
Nine Mile	7/17/2012	430530 N 4761349 W	1042	11.75	25			No
Wastebeds	7/17/2012	430521 N 4761320 W	1735				Maxed out scale > 20 kg; dead[2]	No
Marina	7/18/2012	430515 N 4761232 W	1143	9.6	1163	24743576	USGS tag?; Dead[2]	Yes
Hiawatha Pt.	9/25/2012	430310 N 4761259 W	1346	18	17			Yes
Outlet	9/25/2012	430651 N 4761425 W	1499		28	20555579	Did not weigh	No
Marina	9/26/2012	430515 N 4761232 W	1447	20	29	20507833		No
Parsons	9/26/2012	402655 N 4769197 W	1270	13.8	30	20443969		No
Nine Mile	10/25/2012	430530 N 4761349 W	1422		31	20428869	Did not weigh	No
Hiawatha Pt.	10/25/2012	430310 N 4761259 W	1372		32	*20428869*	PIT tag incorrect[1]	No
Marina	10/26/2012	430515 N 4761232 W	1572		33	20561383	Maxed out scale > 20 kg	No
Marina	10/26/2012	430515 N 4761232 W	1316		34	20474896	Did not weigh	No
Iron Bridge	10/26/2012	430524 N 4761139 W	1558		35	20473045	Did not weigh	No
Iron Bridge	10/26/2012	430524 N 4761139 W	1318		36	20437524	Did not weigh	No
Iron Bridge	10/26/2012	430524 N 4761139 W	1470		37	20481769	Did not weigh	No
Wastebeds	10/26/2012	430521 N 4761320 W	1372		38	20505157	Did not weigh	No
Regular Gill Net Catches (Most of these fish were measured and released								
PHM	6/13/2012	398818 N 4773657 W	1500		No tag	20511371		
690 Pt.	6/14/2012	430451 N 4761234 W					Did not get on boat to measure	
Marina	7/24/2012	430515 N 4761232 W	1378					
690 Pt.	7/25/2012	430451 N 4761234 W	1320	19.5	26	20439521		
690 Pt.	7/25/2012	430451 N 4761234 W	1370	19.5	27	20470577		
Parsons	7/25/2012	402655 N 4769197 W					Did not get on boat to measure	
Hiawatha Pt.	9/19/2012	430310 N 4761259 W	1420		27		Also listed at USGS 1190	Yes

[1] Pit tag numbers indicate duplicates, caused by tag reader error.
[2] Both sturgeon that were dead in gillnet were sent to USGS in Cortland for further analysis.

Table 10
Summary of Number of Individuals per Species Captured by Seining - August 2012

Common Name	Scientific Name	Metro (70124)	Rte 690 (20158)	Wastebeds 1-8 (30093)	Ninemile (40212)	Permanent Habitat Module (50057)	Maple Bay (50057)	Willow Bay (50057)	Marina (50058)	Iron Bridge (50059)	Total Fish Captured	Percentage of the Community
Banded killifish	*Fundulus diaphanus*	9	Not sampled due to dredging/capping activity	272	469	58	43	149	398	88	**1486**	**55.3**
Bluegill	*Lepomis macrochirus*	7				38	17	4		10	**76**	**2.8**
Bluntnose minnow	*Pimephales notatus*					1	1				**2**	**0.1**
Brown bullhead	*Ictalurus nebulosus*					5		4	1		**10**	**0.4**
Brook silverside	*Labidesthes sicculus*			2			2			15	**19**	**0.7**
Common carp	*Cyprinus carpio*	1									**1**	**0.0**
Creek chub	Semotilus atromaculatus							1			**1**	**0.0**
Emerald shiner	Notropis atherinoides								1		**1**	**0.0**
Golden shiner	*Notemigonus*					3					**3**	**0.1**
Green sunfish	*Lepomis cyanellus*							3			**3**	**0.1**
Lepomis YOY	*Lepomis spp.*					28	3				**31**	**1.2**
Largemouth bass	*Micropterus salmoides*	32		6	81	173	87	101	47	74	**601**	**22.4**
Pumpkinseed	*Lepomis gibbosus*	20			5	53	29	40	4	76	**227**	**8.5**
Rockbass	*Ambloplites rupestris*				1	5	6	1		4	**17**	**0.6**
Round goby	*Neogobius melanostomus*	9		19	18	2	96	4		5	**153**	**5.7**
Smallmouth bass	*Micropterus dolomieu*			6	2		1	1	1		**11**	**0.4**
Tadpole madtom	*Noturus gyrinus*					1					**1**	**0.0**
Tessellated darter	*Etheostoma olmstedi*	1			2	1	5		1		**10**	**0.4**
Yellow bullhead	Ameiurus natalis					1					**1**	**0.0**
Yellow perch	*Perca flavescens*	8				3	3	3		14	**31**	**1.2**
Total fish Captured		**87**		**305**	**578**	**372**	**293**	**311**	**453**	**286**	**2685**	**100.0**
Number of Species		**8**		**5**	**7**	**14**	**12**	**11**	**7**	**8**	**20**	

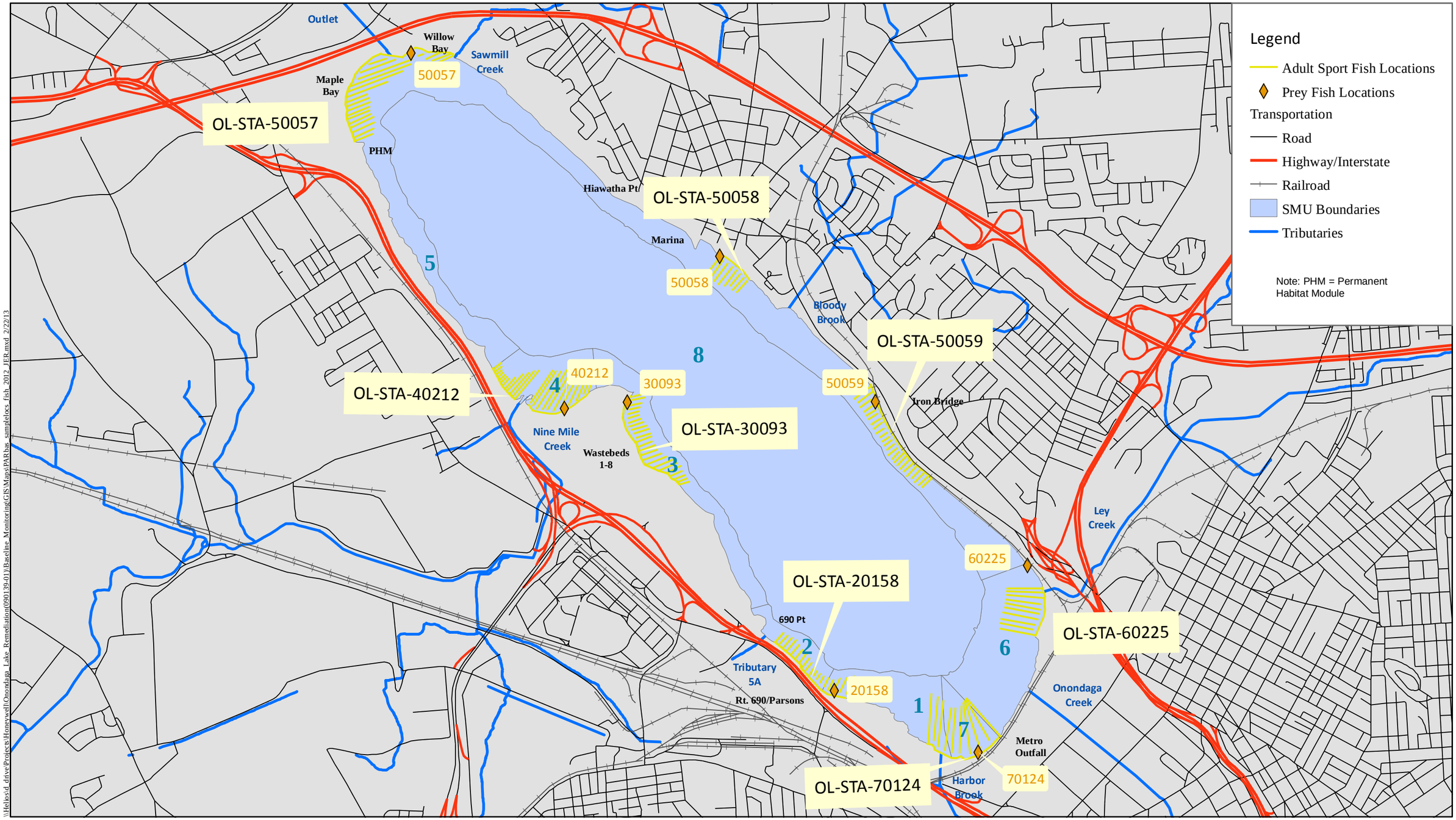
TABLE 11

MERCURY CONCENTRATIONS IN ZOOPLANKTON SAMPLES COLLECTED AT SOUTH DEEP IN 2012

Field Sample ID	Date	Total mercury (mg/kg wet weight)	Methylmercury (mg/kg wet weight)	Methylmercury (Percent of Total Mercury)
OL-1706-01	6/11/12	0.045	0.0047	10
OL-1717-01	7/2/12	0.038	0.0041	11
OL-1721-01	7/9/12	0.065	0.0066	10
OL-1728-01	7/23/12	0.17	0.012	7.1
OL-1735-01	8/6/12	0.066	0.014	21
OL-1743-01	8/20/12	0.13	0.011	8.5
OL-1751-01	9/4/12	0.27	0.0083	3.1
OL-1755-01	9/12/12	0.0011U	0.0023	NA
OL-1759-01	9/17/12	0.15	0.0078	5.2
OL-1763-01	9/24/12	0.087	0.0099	11
OL-1767-01	10/2/12	0.11	0.0063	5.7
OL-1771-01	10/9/12	0.049J	0.0064	13
OL-1775-01	10/16/12	0.033J	0.009	27
OL-1779-01	10/22/12	0.033J	0.010	30
OL-1784-01	11/5/12	0.046J	0.0093	20
OL-1788-01	11/19/12	0.011J	0.0043	39

NA – not applicable; result for total mercury is less than the result for methylmercury.

FIGURES



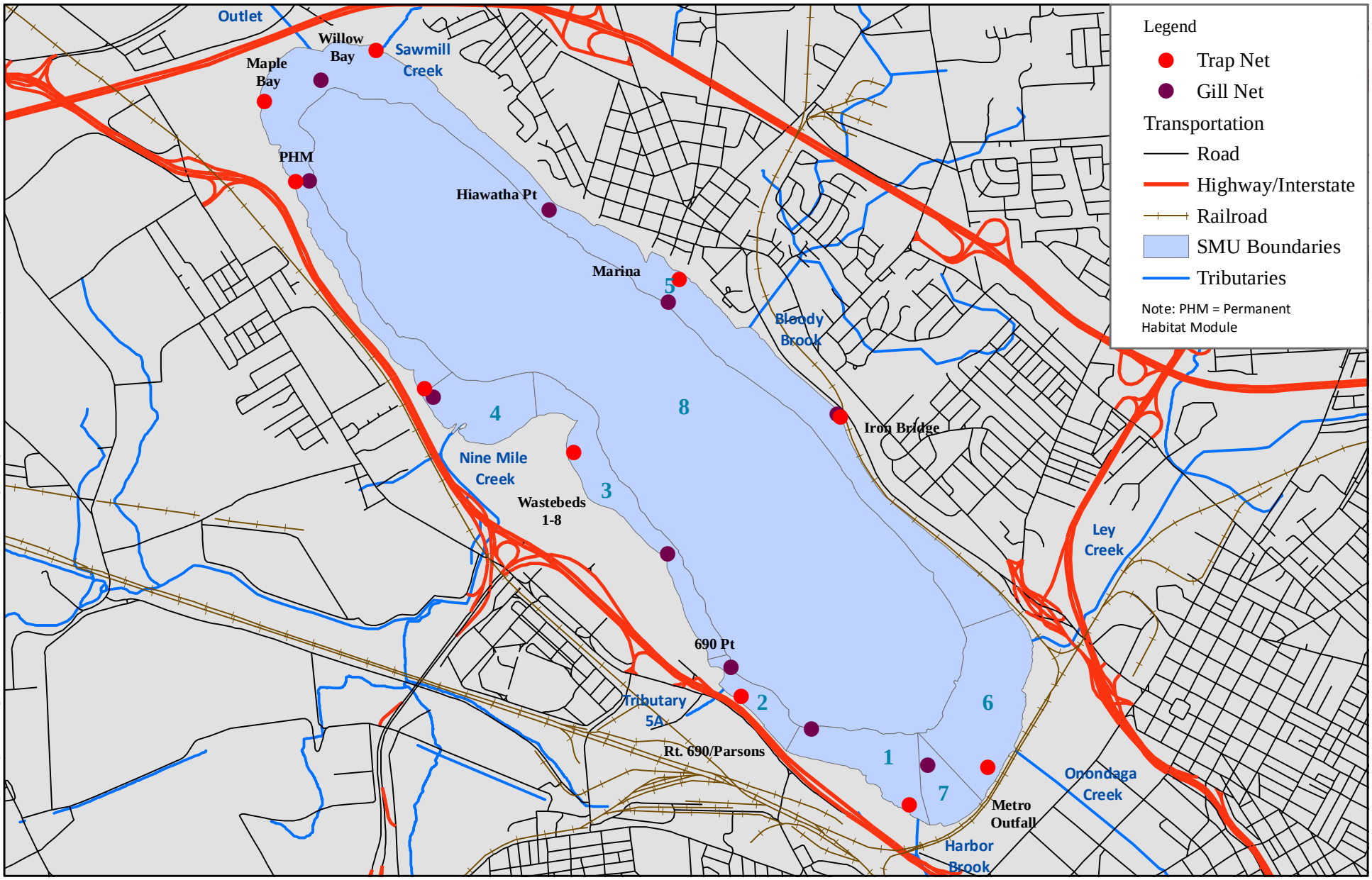
\\Helios\d_drive\Projects\Honeywell\Onondaga_Lake_Remediation\090139-01\Baseline_Monitoring\GIS\Maps\PAR\bas_samplelocs_fish_2012_JER.mxd 2/22/13

ANCHOR QEA

Honeywell PARSONS

0 2,500 5,000 Feet

Figure 1
Fish Sampling Locations for 2012
Tissue Chemical Analyses



\\Helios\d_drive\Projects\Honeywell\Onondaga_Lake_Remediation(090139-01)\Baseline_Monitoring\GIS\Maps\ESF_Fish_Comm_20100708.mxd jer 2/22/13

ANCHOR QEA

Honeywell PARSONS

Figure 2
Sampling Locations for 2012
Fish Community Assessment

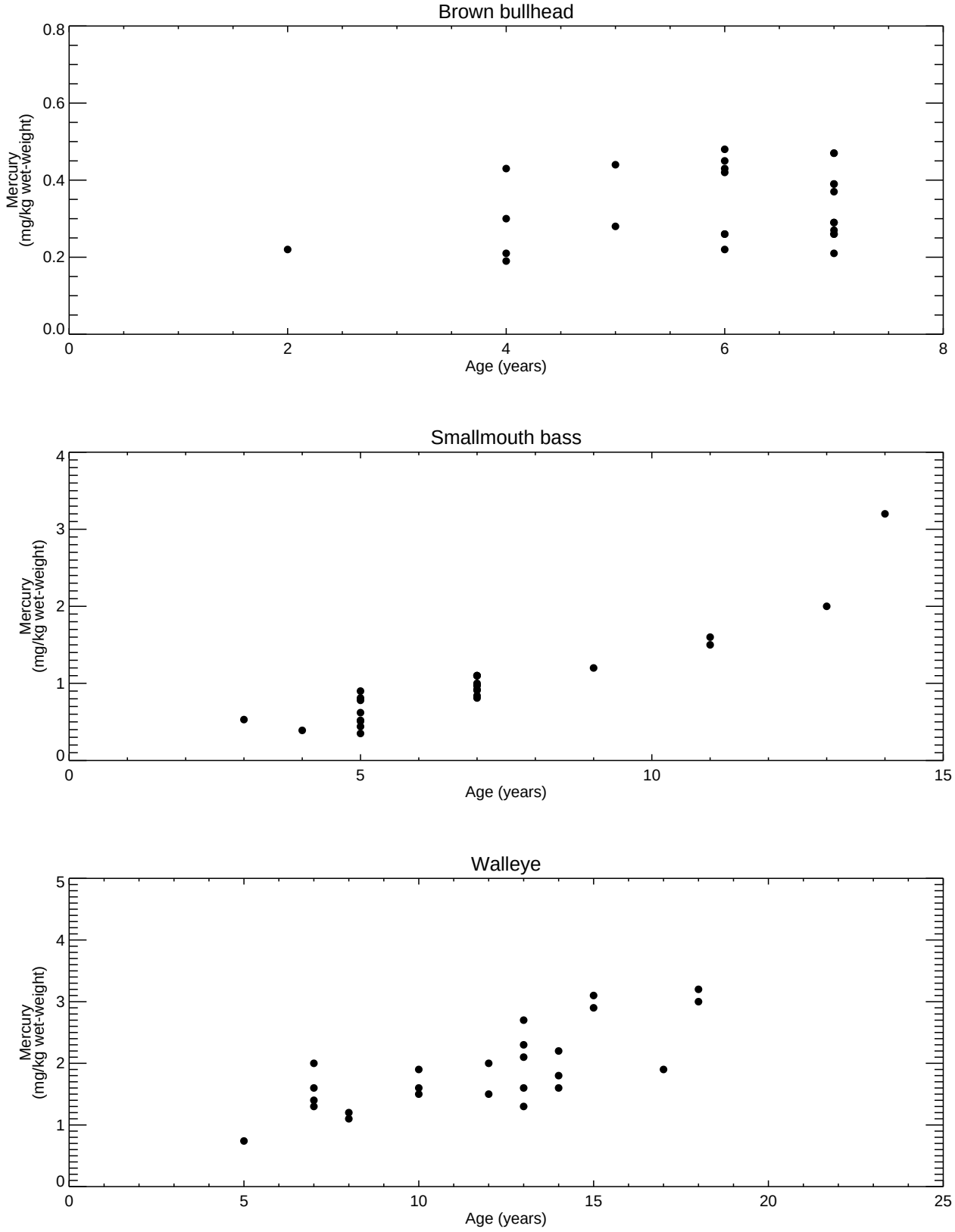


Figure 3
Mercury vs. Age in Onondaga Lake Fish Sampled in 2012.

Data Source: 2012 Operations Maintenance and Monitoring (OMM)

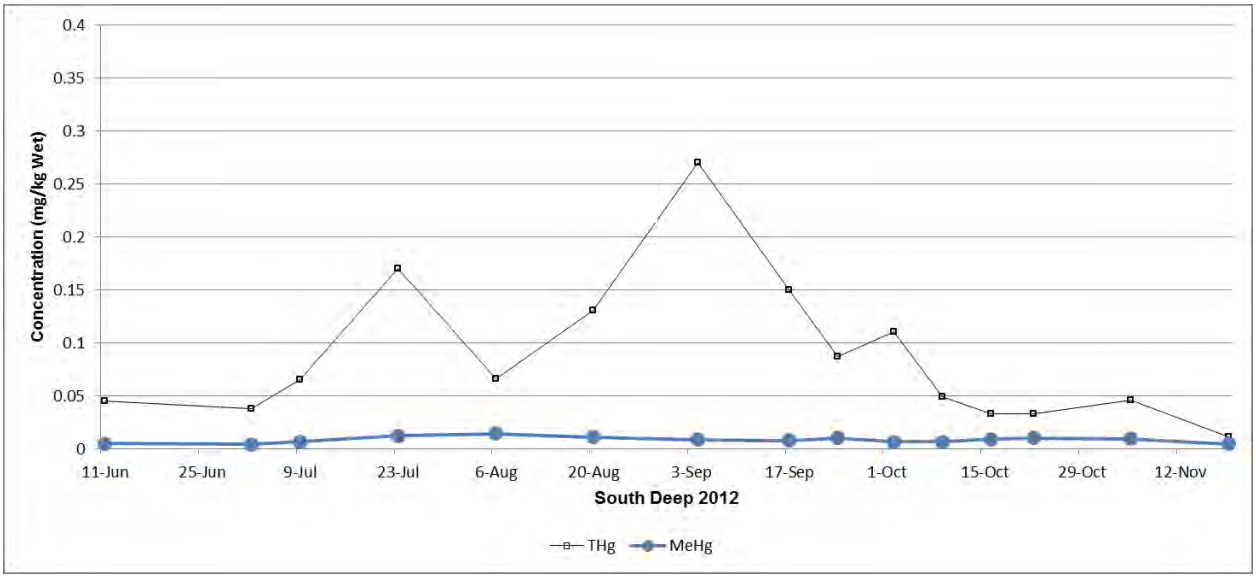


Figure 4A. Total Mercury (Hg) and Methylmercury (MeHg) Concentrations in Zooplankton at South Deep in 2012

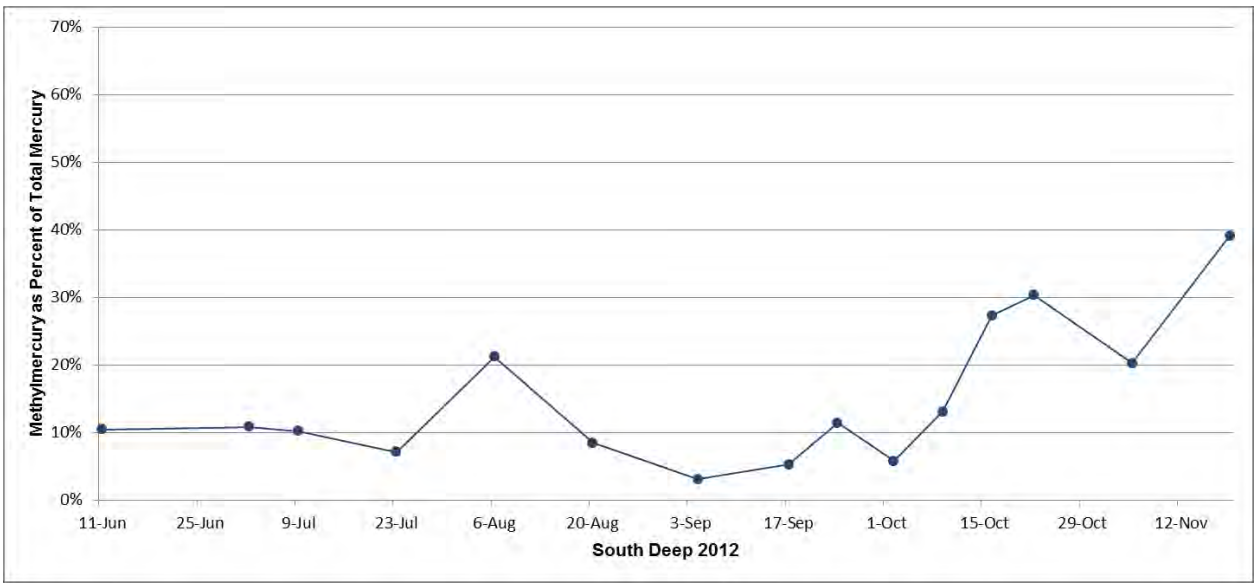


Figure 4B Percent Contribution of Methylmercury (MeHg) to Total mercury (Hg) in Zooplankton at South Deep in 2012

Note: The total mercury and methylmercury results for 12-September (0.0011U and 0.0023 mg/kg, respectively) have been double-checked by the laboratory and are not included in Figures 4A and 4B.

APPENDIX A

DATA USABILITY AND SUMMARY REPORT: ONONDAGA LAKE 2012 TISSUE MONITORING: FISH AND ZOOPLANKTON

APPENDIX A:

DATA USABILITY SUMMARY REPORT

ONONDAGA LAKE 2012 TISSUE MONITORING

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AUGUST 2013

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SECTION A1

DATA USABILITY SUMMARY

Fish tissue samples were collected as part of the 2012 remedial goal monitoring efforts for Onondaga Lake from June 14, 2012 to August 9, 2012, and zooplankton samples were collected from June 11 through November 19, 2012. Analytical results from these samples were validated and reviewed by Parsons for usability with respect to the following requirements:

- Onondaga Lake Tissue Monitoring Work Plan for 2012 (Parsons, Anchor QEA and Exponent, 2012)
- Draft Onondaga Lake Remedial Goal and Construction Water Quality Monitoring Quality Assurance Project Plan (QAPP) (Parsons, Anchor QEA and UFI, 2012)
- USEPA Region II Standard Operating Procedures (SOPs) for organic and inorganic data review (USEPA, see page A2-1 for citations)

Fish samples were collected by Anchor QEA with some assistance from the State University of New York College of Environmental Science and Forestry and Onondaga County. The zooplankton samples were collected by Upstate Freshwater Institute (UFI).

Analytical laboratories for this project were Test America Laboratories (TAL) located in Pittsburgh, PA; Knoxville, TN; and North Canton, OH. These laboratories are certified by the State of New York to conduct laboratory analyses for this project through the National Environmental Laboratory Accreditation Conference (NELAC) and New York Department of Health (NYSDOH) Environmental Laboratory Accreditation Program (ELAP).

A1.1 LABORATORY DATA PACKAGES

Laboratory data package turnaround time, defined as the time from sample receipt by the laboratory to receipt of the analytical data packages by Parsons, was 10 to 101 days for the samples.

Data packages received from the laboratories were paginated, complete, and overall were of good quality. Comments on specific quality control (QC) and other requirements are discussed in detail in the attached data validation report which is summarized in Section A2.

A1.2 SAMPLING AND CHAIN-OF-CUSTODY

Samples were collected, properly preserved, shipped under a COC record, and received at the laboratories within one day of sampling. All samples were received intact and in good condition at TAL.

A1.3 LABORATORY ANALYTICAL METHODS

A total of 75 adult sport fish fillet (tissue) samples and 40 composited prey fish samples collected from Onondaga Lake in 2012 were analyzed for mercury. In addition, 36 of the 75

adult fish tissue samples and 10 of the prey fish samples collected from Onondaga Lake in 2012 were analyzed for hexachlorobenzene, 4,4'-DDT and metabolites, polychlorinated biphenyls (PCBs), and percent lipids. Dioxins and furans were analyzed in 15 of the 75 adult sport fish fillet samples. A total of 16 zooplankton samples were collected from Onondaga Lake in 2012 and analyzed for low level mercury and methyl mercury. Summaries of deviations from the Work Plan, QAPP, or USEPA Region II SOPs concerning these laboratory analyses are presented in Subsections A1.3.1 through A1.3.5. The data qualifications resulting from the data validation review and statements on the laboratory analytical precision, accuracy, representativeness, completeness, and comparability (PARCC) are discussed for each analytical method by matrix in Section A2. The laboratory data were reviewed and may be qualified with the following validation flags:

"U" - not detected at the value given
"UJ" - estimated and not detected at the value given
"J" - estimated at the value given
"N" - presumptive evidence at the value given
"R" - unusable value

The validated laboratory data were tabulated and are presented in Attachment A.

A1.3.1 Mercury, Low Level Mercury, and Methyl Mercury Analysis

Fish samples collected from Onondaga Lake in 2012 were analyzed by TAL's Pittsburgh, PA laboratory for mercury using the USEPA SW846 7471A analytical method. Zooplankton samples collected from Onondaga Lake in 2012 were analyzed by TAL's North Canton, OH laboratory for low level mercury using the USEPA 1631E analytical method; and methyl mercury using the USEPA 1630 analytical method. Certain reported results for the mercury and low level mercury samples were considered estimated based upon matrix spike/matrix spike duplicate (MS/MSD) recoveries and laboratory control sample (LCS) recoveries. The reported mercury, low level mercury, and methyl mercury analytical results were considered 100% complete (i.e., usable) for the data presented by TAL. PARCC requirements were met.

A1.3.2 PCB Analysis

Fish samples collected from Onondaga Lake in 2012 were analyzed by TAL's Pittsburgh, PA laboratory for PCB aroclors using the USEPA SW846 8082 analytical method. The reported results for these samples did not require qualification resulting from data validation. The reported PCB analytical results were considered 100% complete with all data considered usable and valid as reported by TAL. PARCC requirements were met.

A1.3.3 Hexachlorobenzene, 4,4'-DDT, and Metabolites Analysis

Fish samples collected from Onondaga Lake in 2012 were analyzed by TAL's Pittsburgh, PA laboratory for hexachlorobenzene, 4,4'-DDT, and metabolites using the USEPA SW846 8081A analytical method. Certain reported results for these samples were qualified as estimated

based upon sample surrogate recoveries, MS/MSD recoveries, and sample result identifications. The reported analytical results for these samples were considered 100% complete with all data considered usable and valid as reported by TAL. PARCC requirements were met.

A1.3.4 Dioxins and Furans

Fish samples collected from Onondaga Lake in 2012 were analyzed by TAL's Knoxville, TN laboratory for dioxins and furans using the USEPA SW846 8290 analytical method. Certain reported results for these samples were qualified as estimated based upon laboratory control sample recoveries. The reported analytical results for these samples were considered 100% complete with all data considered usable and valid as reported by TAL. PARCC requirements were met.

A1.3.5 Percent Lipids

Fish samples collected from the site were analyzed by TAL's Pittsburgh, PA laboratory for percent lipids using the TAL SOP analytical method. The reported results for these samples did not require qualification resulting from data validation. The reported analytical results for these samples were considered 100% complete with all data considered usable and valid as reported by TAL. PARCC requirements were met.

SECTION A2

DATA VALIDATION REPORT

A2.1 FISH

Data review has been completed for data packages generated by TAL containing fish samples collected from the site. The specific samples contained in these data packages, the analyses performed, and validated laboratory data are tabulated and presented in Attachment A-1. All of these samples were properly preserved, shipped under a COC record, and received intact by the analytical laboratory.

Data validation was performed for all samples in accordance with the project work plan and QAPP as well as the USEPA Region II SOPs HW-44, Revision 1 "Data Validation SOP of Organochlorine Pesticides by Gas Chromatography SW-846 Method 8081B"; HW-45, Revision 1 "Data Validation SOP of Organic Analysis of PCBs by Gas Chromatography SW-846 Method 8082A; HW-2, Revision 13 "Evaluation of Metals Data for the CLP Program"; and HW-19, Revision 1 "USEPA Region II Data Validation SOP for SW-846 Method 8290 Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs) By High-Resolution Gas Chromatography/High-Resolution Mass Spectrometry (HRGC/HRMS)". This data validation and usability report is presented by analysis type.

A2.1.1 Mercury

The following items were reviewed for compliancy in the mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration, and laboratory preparation blank contamination
- Matrix spike/matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Interference check sample recoveries
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of MS/MSD recoveries as discussed below.

MS/MSD Recoveries

All MS/MSD recoveries were considered acceptable and within the 75-125%R QC limit for designated spiked project samples with the exception of the low MSD mercury recovery (58%R) associated with fish samples collected on 6/14/12; and the high MSD mercury recovery (130%R) associated with fish samples collected on 6/21/12. Therefore, mercury results for those samples where the MSD recovery fell below the QC limit were considered estimated, possibly biased low, with positive results qualified "J" and nondetected results qualified "UJ" for the affected samples. The positive mercury results for those samples where the MSD recovery exceeded the QC limit were considered estimated, possibly biased high, and qualified "J" for the affected samples.

Usability

All mercury sample results for the fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The mercury data presented by TAL were 100% complete (i.e., usable). The validated mercury laboratory data are tabulated and presented in Attachment A-1.

A2.1.2 PCBs

The following items were reviewed for compliancy in the PCB analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank contamination
- Initial calibrations
- Verification calibrations
- Chromatogram quality
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols.

Usability

All PCB sample results for the fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The PCB data presented by TAL were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A-1.

A2.1.3 Hexachlorobenzene, 4,4'-DDT, and Metabolites

The following items were reviewed for compliancy in the hexachlorobenzene, 4,4'-DDT, and metabolites analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries
- Laboratory method blank contamination
- Initial calibrations
- Verification calibrations
- 4,4'-DDT breakdown
- Chromatogram quality
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exceptions of surrogate recoveries, MS/MSD precision and accuracy, and sample result identifications as discussed below.

Surrogate Recoveries

All sample surrogate recoveries were considered acceptable and within QC limits with the exception of the low tetrachloro-m-xylene recovery (QC limit 45-130%R) on both the primary quantitation column and secondary confirmation column in samples OL-1803-07F (43%R,

41%R) and OL-1806-03F (42%R, 40%R); the low decachlorobiphenyl recovery (QC limit 45-130%R) on the primary quantitation column in sample OL-1803-07F (44%R); and the high decachlorobiphenyl recovery (QC limit 45-130%R) on the secondary confirmation column in samples OL-1801-05F (185%R), OL-1801-06F (133%R), OL-1802-01F (167%R), OL-1803-05F (133%R), and OL-1804-15F (154%R). Validation qualification was not required for these samples with the exception of OL-1803-07F. The positive results for this sample were considered estimated, possibly biased low, and qualified "J".

MS/MSD Precision and Accuracy

All MS/MSD precision and accuracy measurements for spiked compounds were considered acceptable and within QC limits for designated spiked project samples with the exception of the low MS accuracy result for 4,4'-DDE (60%R; QC limit 70-133%R) during the spiked analyses of sample OL-1801-06F; the low MS/MSD accuracy results for 4,4'-DDE (39%R/13%R; QC limit 70-1333%R), 4,4'-DDT (54%R/41%R; QC limit 61-126%R), and 4,4'-DDD (62%R/50%R; QC limit 70-135%R) during the spiked analyses of sample OL-1803-04F; the high MS/MSD accuracy results for 4,4'-DDE (144%R/155%R; QC limit 70-133%R) during the spiked analyses of sample OL-1804-15F; and the low MS/MSD accuracy results for 4,4'-DDE (-34%R/-9%R; QC limit 70-133%R), 4,4'-DDT (-7%R/8%R; QC limit 61-126%R), and 4,4'-DDD (50%R/63%R; QC limit 70-135%R) during the spiked analyses of sample OL-1805-02F. Validation qualification of the parent sample OL-1801-06F was not required based upon one accuracy result outside the QC limit. However, results for those compounds where MS/MSD accuracy results fell below QC limits were considered estimated, possibly biased low, with positive results qualified "J" and nondetected results qualified "UJ" for the parent sample. Positive results for those compounds where MS/MSD accuracy results exceeded the QC limit were considered estimated, possibly biased high, and qualified "J" for the parent samples.

Sample Result Identifications

Positive sample results were verified and confirmed present using dual column confirmation. The precision (%RPD) between the results on the dual columns was less than 25% with the exception of hexachlorobenzene for samples OL-1810-07 (31.5%RPD) and -10 (176.6%RPD); 4,4'-DDE for samples OL-1800-02F (38.5%RPD), -03F (45%RPD), -06F (47.8%RPD), -07F (49.4%RPD), -11F (40.4%RPD), -12F (29%RPD), OL-1802-01F (49.5%RPD), -04F (28.1%RPD), -05F (28.3%RPD), OL-1803-04F (26%RPD), -05F (28.9%RPD), -13F (33.8%RPD), -18F (27.1%RPD), OL-1804-01F (38.4%RPD), -02F (33.4%RPD), -04 (25.2%RPD), -06F (29.5%RPD), -11F (32.3%RPD), -13F (43.8%RPD), -14F (29.5%RPD), OL-1806-03F (26.8%RPD), -04F (26.3%RPD), and OL-1807-01F (25.2%RPD); 4,4'-DDT for samples OL-1800-02F (142.4%RPD), -03F (142.4%RPD), -06F (150.3%RPD), -07F (152%RPD), -09 (152.8%RPD), -11F (154.8%RPD), -12F (150.7%RPD), OL-1801-05F (150.9%RPD), -06F (151.3%RPD), -07F (148.9%RPD), OL-1802-01F (143.6%RPD), -02F (150.3%RPD), -04F (147.2%RPD), -05F (147.2%RPD), -06F (150.9%RPD), -07F

(151.6%RPD), OL-1803-04F (148.5%RPD), -05F (147.8%RPD), -07F (151.5%RPD), -11 (147.9%RPD), -13F (144.4%RPD), -18F (138.9%RPD), OL-1804-01F (146.9%RPD), -02F (152%RPD), -04 (147.4%RPD), -06F (151.2%RPD), -11F (154%RPD), -12F (139.9%RPD), -13F (140.6%RPD), -14F (159.7%RPD), -15F (159.7%RPD), -16F (167.2%RPD), OL-1805-02F (160.9%RPD), -03F (161.5%RPD), -04F (161.5%RPD), OL-1806-03F (159.2%RPD), -04F (158.7%RPD), OL-1807-01F (157%RPD), and OL-1810-05 (54.7%RPD); and 4,4'-DDD for samples OL-1800-02F (133.2%RPD), -03F (146%RPD), -06F (138.6%RPD), -07F (141.5%RPD), -09 (132.8%RPD), -11F (135.7%RPD), -12F (106.1%RPD), OL-1801-05F (145.9%RPD), -06F (144.8%RPD), -07F (139.6%RPD), OL-1802-01F (138.8%RPD), -02F (149.6%RPD), -04F (151%RPD), -05F (153.2%RPD), -06F (161.1%RPD), -07F (140.6%RPD), OL-1803-04F (143.5%RPD), -05F (155.2%RPD), -07F (146.6%RPD), -11 (113.1%RPD), -13F (135.6%RPD), -18F (138%RPD), OL-1804-01F (128.6%RPD), -02F (141.1%RPD), -04 (185.9%RPD), -06F (153%RPD), -11F (135.2%RPD), -12F (156%RPD), -13F (158%RPD), -14F (143.3%RPD), -15F (160.6%RPD), -16F (143.4%RPD), OL-1805-02F (148%RPD), -03F (153.2%RPD), -04F (152.5%RPD), OL-1806-03F (154%RPD), -04F (156.9%RPD), OL-1807-01F (159.4%RPD), OL-1810-01 (91%RPD), -05 (96.6%RPD), -07 (79%RPD), -10 (130.5%RPD), and -13 (139%RPD). These results were considered estimated and qualified "J" for the affected samples. However, for those compounds where the %RPD was greater than 90%, the results were considered estimated, tentatively identified, and qualified "JN" for the affected samples.

Usability

All hexachlorobenzene, 4,4'-DDT, and metabolite sample results for the fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The hexachlorobenzene, 4,4'-DDT, and metabolite data presented by TAL were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A-1.

A2.1.4 Dioxins and Furans

The following items were reviewed for compliancy in the dioxins and furans analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Matrix spike/matrix spike duplicate (MS/MSD) precision and accuracy
- Laboratory control sample (LCS) recoveries

- Laboratory method blank contamination
- Initial calibrations
- Verification calibrations
- Internal standard recoveries
- Clean-up recoveries
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of LCS recoveries and blank contamination as discussed below.

LCS Recoveries

All LCS recoveries were considered acceptable and within QC limits for all dioxins and furans with the exception of the low LCS recovery for OCDF (62%R; QC limit 70-130%R) associated with all sport fish samples. Therefore, the OCDF results for these samples which were nondetects were considered estimated, possibly biased low, and qualified "UJ".

Blank Contamination

The laboratory method blank associated with all sport fish samples contained OCDD and OCDF below the reporting limit at concentrations of 0.66 and 0.42 pg/g, respectively. Therefore, associated sample results less than validation action concentrations were considered not detected and qualified "U" for the affected samples.

Usability

All dioxin and furan results for the sport fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The dioxin and furan data presented by TAL were 100% complete with all data considered usable and valid. The validated data are tabulated and presented in Attachment A-1.

A2.1.5 Percent Lipids

The following items were reviewed for compliancy in the percent lipids analysis:

- Custody documentation
- Holding times

- Laboratory blank contamination
- Laboratory duplicate precision
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols.

Usability

All percent lipids sample results for the fish samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The percent lipids data presented by TAL were 100% complete (i.e., usable). The validated laboratory data are tabulated and presented in Attachment A-1.

A2.2 ZOOPLANKTON SAMPLES

Data review has been completed for data packages generated by TAL containing zooplankton samples collected from the site. The specific samples contained in these data packages, the analyses performed, and the validated laboratory data were tabulated and are presented in Attachment A-2. All of these samples were shipped under a COC record and received intact by the analytical laboratory.

Data validation was performed for all samples in accordance with the project work plan and QAPP as well as the USEPA Region II SOP HW-2, Revision 13 “Evaluation of Metals Data for the CLP Program”. This data validation and usability report is presented by analysis type.

A2.2.1 Low Level Mercury

The following items were reviewed for compliancy in the low level mercury analysis:

- Custody documentation
- Holding times
- Initial and continuing calibration verifications
- Initial and continuing calibration, and laboratory preparation blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries
- Laboratory duplicate precision

- Laboratory control sample (LCS) recoveries
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination and laboratory control sample recoveries as discussed below.

Blank Contamination

Initial and continuing calibration blanks contained low level mercury below the reporting limit associated with project samples at a concentration ranging 0.128 – 0.269 ng/L. Validation qualification of the project samples was not required since the samples were not affected by the contamination detected in these blanks.

LCS Recoveries

All LCS recoveries were considered acceptable and within the 65-130%R QC limit for low level mercury with the exception of the low LCS recovery (20%R) associated with samples OL-1771-01, OL-1775-01, and OL-1779-01. Therefore, the positive low level mercury results for these samples were considered estimated, possibly biased low, and qualified "J".

Usability

All low level mercury sample results for the zooplankton samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The low level mercury data presented by TAL were 100% complete (i.e., usable). The validated low level mercury laboratory data are tabulated and presented in Attachment A-2.

A2.2.2 Methyl Mercury

The following items were reviewed for compliancy in the methyl mercury analysis:

- Custody documentation
- Holding times
- Surrogate recoveries
- Initial and continuing calibration verifications
- Initial and continuing calibration, and laboratory preparation blank contamination
- Matrix spike / matrix spike duplicate (MS/MSD) recoveries

- Laboratory duplicate precision
- Laboratory control sample (LCS) recoveries
- Sample result verification and identification
- Quantitation limits
- Data completeness

These items were considered compliant and acceptable in accordance with the validation protocols with the exception of blank contamination as discussed below.

Blank Contamination

Initial and continuing calibration blanks contained methyl mercury below the reporting limit associated with project samples at a concentration ranging 0.0105 – 0.0315 ng/L. The methyl mercury sample results did not require qualification since sample concentrations were not affected by the contamination in these blanks.

Usability

All methyl mercury sample results for the zooplankton samples were considered usable following data validation.

Summary

The quality assurance objectives for measurement data included considerations for precision, accuracy, representativeness, completeness, and comparability. The methyl mercury data presented by TAL were 100% complete (i.e., usable). The validated methyl mercury laboratory data are tabulated and presented in Attachment A-2.

ATTACHMENT A

VALIDATED LABORATORY DATA

ATTACHMENT A-1

VALIDATED LABORATORY DATA FOR FISH SAMPLES

		Location	OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158	
		Field Sample ID	OL-1800-01F		OL-1800-02F		OL-1800-03F		OL-1802-05F		OL-1802-06F		OL-1802-07F		OL-1804-15F	
		Sample Date	6/14/2012		6/14/2012		6/14/2012		6/15/2012		6/15/2012		6/15/2012		6/20/2012	
		SDG	180-11601-1		180-11601-1	11601-1|180-11601-2			-11634-1|H2G130407		180-11634-1		180-11634-1		180-11780-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	BB		BB		BB		WALL		WALL		WALL		WALL	
		Specimen Sex	M		M		U		F		M		M		U	
		Specimen Length	330 mm		337 mm		316 mm		669 mm		532 mm		502 mm		548 mm	
		Specimen Weight	467 g		556 g		407 g		3858 g		1708 g		1821 g		1649 g	
		Specimen Age	7 yrs		7 yrs		5 yrs		13 yrs		15 yrs		13 yrs		18 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%			0.49		0.32		1.7		1.2		2.6		2	
SW7471	MERCURY	mg/kg	0.37	J	0.39	J	0.28	J	2.3		2.9		2.1		3.2	
SW8081	4,4'-DDD	ug/kg			0.96	JN	0.36	JN	3.2	JN	8.5	JN	9.8	JN	8.4	JN
SW8081	4,4'-DDE	ug/kg			3.6	J	1.1	J	18	J	60		45		64	J
SW8081	4,4'-DDT	ug/kg			1.2	JN	0.89	JN	5.2	JN	19	JN	12	JN	24	JN
SW8081	HEXACHLOROBENZENE	ug/kg			2.8		1.5		5.6		11		16		6.9	
SW8082	AROCLOR-1016	ug/kg			12	U	12	U	12	U	12	U	12	U	12	U
SW8082	AROCLOR-1221	ug/kg			12	U	12	U	12	U	12	U	12	U	12	U
SW8082	AROCLOR-1232	ug/kg			12	U	12	U	12	U	12	U	12	U	12	U
SW8082	AROCLOR-1242	ug/kg			12	U	12	U	12	U	12	U	12	U	12	U
SW8082	AROCLOR-1248	ug/kg			56		37		310		1200		920		1100	
SW8082	AROCLOR-1254	ug/kg			12	U	12	U	12	U	12	U	12	U	12	U
SW8082	AROCLOR-1260	ug/kg			52		41		200		640		520		610	
SW8082	AROCLOR-1262	ug/kg			12	U	12	U	12	U	12	U	12	U	12	U
SW8082	AROCLOR-1268	ug/kg			12	U	12	U	12	U	12	U	12	U	12	U
SW8082	PCBS, N.O.S.	ug/kg			110		78		510		1800		1400		1700	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg					0.47	J	4.9	U						
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg					0.29	J	0.34	J						
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg					4.9	U	4.9	U						
SW8290	1,2,3,4,7,8-HXCDD	ng/kg					0.11	J	4.9	U						
SW8290	1,2,3,4,7,8-HXCDF	ng/kg					0.87	J	0.75	J						
SW8290	1,2,3,6,7,8-HXCDD	ng/kg					0.5	J	0.38	J						
SW8290	1,2,3,6,7,8-HXCDF	ng/kg					6.4	J	13	J						
SW8290	1,2,3,7,8,9-HXCDD	ng/kg					0.29	J	4.9	U						
SW8290	1,2,3,7,8,9-HXCDF	ng/kg					4.9	U	4.9	U						
SW8290	1,2,3,7,8-PECDD	ng/kg					0.31	J	0.7	J						
SW8290	1,2,3,7,8-PECDF	ng/kg					0.6	J	0.29	J						
SW8290	2,3,4,6,7,8-HXCDF	ng/kg					4.9	U	4.9	U						
SW8290	2,3,4,7,8-PECDF	ng/kg					2.3	J	2.2	J						
SW8290	2,3,7,8-TCDD	ng/kg					0.97	U	0.63	J						
SW8290	2,3,7,8-TCDF	ng/kg					0.42	J	1.1	J						
SW8290	OCDD	ng/kg					9.7	U	9.7	U						
SW8290	OCDF	ng/kg					9.7	UJ	9.7	UJ						

		Location	OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158	
		Field Sample ID	OL-1804-16F		OL-1804-17F		OL-1804-18F		OL-1804-19F		OL-1804-20F		OL-1805-01F		OL-1805-02F	
		Sample Date	6/20/2012		6/20/2012		6/20/2012		6/20/2012		6/20/2012		6/20/2012		6/20/2012	
		SDG	180-11780-1		180-11780-1		180-11780-1		180-11780-1		180-11780-1		180-11780-1		180-11780-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	WALL		SMB		SMB		SMB		SMB		SMB		SMB	
		Specimen Sex	M		U		F		F		F		U		U	
		Specimen Length	503 mm		437 mm		418 mm		431 mm		435 mm		449 mm		467 mm	
		Specimen Weight	1569 g		1315 g		1337 g		1239 g		1144 g		1002 g		1405 g	
		Specimen Age	8 yrs		7 yrs		7 yrs		7 yrs		13 yrs		14 yrs		11 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%	4.6												2.6	
SW7471	MERCURY	mg/kg	1.2		0.91		0.81		0.84		2		3.2		1.6	
SW8081	4,4'-DDD	ug/kg	7.4	JN											15	JN
SW8081	4,4'-DDE	ug/kg	33												60	J
SW8081	4,4'-DDT	ug/kg	9.5	JN											26	JN
SW8081	HEXACHLOROBENZENE	ug/kg	9.6												9.4	
SW8082	AROCLOR-1016	ug/kg	12	U											12	U
SW8082	AROCLOR-1221	ug/kg	12	U											12	U
SW8082	AROCLOR-1232	ug/kg	12	U											12	U
SW8082	AROCLOR-1242	ug/kg	12	U											12	U
SW8082	AROCLOR-1248	ug/kg	580												1000	
SW8082	AROCLOR-1254	ug/kg	12	U											12	U
SW8082	AROCLOR-1260	ug/kg	310												680	
SW8082	AROCLOR-1262	ug/kg	12	U											12	U
SW8082	AROCLOR-1268	ug/kg	12	U											12	U
SW8082	PCBS, N.O.S.	ug/kg	890												1700	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg	5	U											5	U
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg	5	U											5	U
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg	5	U											5	U
SW8290	1,2,3,4,7,8-HXCDD	ng/kg	5	U											5	U
SW8290	1,2,3,4,7,8-HXCDF	ng/kg	0.4	J											0.57	J
SW8290	1,2,3,6,7,8-HXCDD	ng/kg	5	U											5	U
SW8290	1,2,3,6,7,8-HXCDF	ng/kg	8	J											12	J
SW8290	1,2,3,7,8,9-HXCDD	ng/kg	5	U											5	U
SW8290	1,2,3,7,8,9-HXCDF	ng/kg	5	U											5	U
SW8290	1,2,3,7,8-PECDD	ng/kg	5	U											1.1	J
SW8290	1,2,3,7,8-PECDF	ng/kg	5	U											5	U
SW8290	2,3,4,6,7,8-HXCDF	ng/kg	5	U											5	U
SW8290	2,3,4,7,8-PECDF	ng/kg	1.7	J											4.8	J
SW8290	2,3,7,8-TCDD	ng/kg	0.99	U											0.63	J
SW8290	2,3,7,8-TCDF	ng/kg	1.3												0.99	J
SW8290	OCDD	ng/kg	9.9	U											10	U
SW8290	OCDF	ng/kg	9.9	UJ											10	UJ

		Location	OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158	
		Field Sample ID	OL-1805-03F		OL-1805-04F		OL-1805-05F		OL-1809-01F		OL-1809-02F		OL-1809-03F		OL-1809-04F	
		Sample Date	6/20/2012		6/20/2012		6/20/2012		7/3/2012		7/3/2012		7/3/2012		7/3/2012	
		SDG	180-11780-1		180-11780-1		180-11780-1		180-12170-1		180-12170-1		180-12170-1		180-12170-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	SMB		SMB		SMB		SMB		SMB		SMB		SMB	
		Specimen Sex	U		U		U		U		U		U		U	
		Specimen Length	423 mm		464 mm		433 mm		417 mm		387 mm		423 mm		430 mm	
		Specimen Weight	1199 g		1419 g		1298 g		1150 g		1003 g		1030 g		1104 g	
		Specimen Age	9 yrs		11 yrs		7 yrs		7 yrs		5 yrs		7 yrs		7 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%	1.6		2											
SW7471	MERCURY	mg/kg	1.2		1.5		1		0.97		0.78		0.98		1.1	
SW8081	4,4'-DDD	ug/kg	6.3	JN	10	JN										
SW8081	4,4'-DDE	ug/kg	30		42											
SW8081	4,4'-DDT	ug/kg	12	JN	19	JN										
SW8081	HEXACHLOROBENZENE	ug/kg	4.9		7.1											
SW8082	AROCLOR-1016	ug/kg	12	U	12	U										
SW8082	AROCLOR-1221	ug/kg	12	U	12	U										
SW8082	AROCLOR-1232	ug/kg	12	U	12	U										
SW8082	AROCLOR-1242	ug/kg	12	U	12	U										
SW8082	AROCLOR-1248	ug/kg	440		660											
SW8082	AROCLOR-1254	ug/kg	12	U	12	U										
SW8082	AROCLOR-1260	ug/kg	360		540											
SW8082	AROCLOR-1262	ug/kg	12	U	12	U										
SW8082	AROCLOR-1268	ug/kg	12	U	12	U										
SW8082	PCBS, N.O.S.	ug/kg	800		1200											
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg														
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg														
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg														
SW8290	1,2,3,4,7,8-HXCDD	ng/kg														
SW8290	1,2,3,4,7,8-HXCDF	ng/kg														
SW8290	1,2,3,6,7,8-HXCDD	ng/kg														
SW8290	1,2,3,6,7,8-HXCDF	ng/kg														
SW8290	1,2,3,7,8,9-HXCDD	ng/kg														
SW8290	1,2,3,7,8,9-HXCDF	ng/kg														
SW8290	1,2,3,7,8-PECDD	ng/kg														
SW8290	1,2,3,7,8-PECDF	ng/kg														
SW8290	2,3,4,6,7,8-HXCDF	ng/kg														
SW8290	2,3,4,7,8-PECDF	ng/kg														
SW8290	2,3,7,8-TCDD	ng/kg														
SW8290	2,3,7,8-TCDF	ng/kg														
SW8290	OCDD	ng/kg														
SW8290	OCDF	ng/kg														

		Location	OL-STA-30093		OL-STA-30093		OL-STA-30093		OL-STA-30093		OL-STA-30093		OL-STA-30093		OL-STA-30093	
		Field Sample ID	OL-1801-01F		OL-1802-08F		OL-1802-09F		OL-1803-01F		OL-1804-06F		OL-1804-07F		OL-1804-08F	
		Sample Date	6/14/2012		6/15/2012		6/15/2012		6/19/2012		6/20/2012		6/20/2012		6/20/2012	
		SDG	180-11601-1		180-11634-1		180-11634-1		180-11715-1		180-11780-1		180-11780-1		180-11780-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	WALL		WALL		WALL		WALL		BB		BB		BB	
		Specimen Sex	M		M		M		U		U		F		U	
		Specimen Length	528 mm		560 mm		523 mm		555 mm		342 mm		336 mm		305 mm	
		Specimen Weight	2054 g		2066 g		1926 g		2091 g		511 g		550 g		446 g	
		Specimen Age	10 yrs		14 yrs		7 yrs		7 yrs		6 yrs		6 yrs		7 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%									0.28					
SW7471	MERCURY	mg/kg	1.5	J	2.2		2		1.3		0.43		0.48		0.47	
SW8081	4,4'-DDD	ug/kg									0.83	JN				
SW8081	4,4'-DDE	ug/kg									7.1	J				
SW8081	4,4'-DDT	ug/kg									2.6	JN				
SW8081	HEXACHLOROBENZENE	ug/kg									2.6					
SW8082	AROCLOR-1016	ug/kg									13	U				
SW8082	AROCLOR-1221	ug/kg									13	U				
SW8082	AROCLOR-1232	ug/kg									13	U				
SW8082	AROCLOR-1242	ug/kg									13	U				
SW8082	AROCLOR-1248	ug/kg									88					
SW8082	AROCLOR-1254	ug/kg									13	U				
SW8082	AROCLOR-1260	ug/kg									100					
SW8082	AROCLOR-1262	ug/kg									13	U				
SW8082	AROCLOR-1268	ug/kg									13	U				
SW8082	PCBS, N.O.S.	ug/kg									190					
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg									4.9	U				
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg									4.9	U				
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg									4.9	U				
SW8290	1,2,3,4,7,8-HXCDD	ng/kg									4.9	U				
SW8290	1,2,3,4,7,8-HXCDF	ng/kg									0.63	J				
SW8290	1,2,3,6,7,8-HXCDD	ng/kg									4.9	U				
SW8290	1,2,3,6,7,8-HXCDF	ng/kg									7.5	J				
SW8290	1,2,3,7,8,9-HXCDD	ng/kg									4.9	U				
SW8290	1,2,3,7,8,9-HXCDF	ng/kg									4.9	U				
SW8290	1,2,3,7,8-PECDD	ng/kg									4.9	U				
SW8290	1,2,3,7,8-PECDF	ng/kg									4.9	U				
SW8290	2,3,4,6,7,8-HXCDF	ng/kg									4.9	U				
SW8290	2,3,4,7,8-PECDF	ng/kg									2.6	J				
SW8290	2,3,7,8-TCDD	ng/kg									0.98	U				
SW8290	2,3,7,8-TCDF	ng/kg									0.98	U				
SW8290	OCDD	ng/kg									9.8	U				
SW8290	OCDF	ng/kg									9.8	UJ				

		Location	OL-STA-30093		OL-STA-40212		OL-STA-40212		OL-STA-40212		OL-STA-40212		OL-STA-40212		OL-STA-40212	
		Field Sample ID	OL-1804-11F		OL-1801-06F		OL-1801-07F		OL-1801-08F		OL-1801-09F		OL-1803-06F		OL-1803-07F	
		Sample Date	6/20/2012		6/14/2012		6/14/2012		6/14/2012		6/14/2012		6/19/2012		6/19/2012	
		SDG	180-11780-1	11601-1|180-11601-2		11601-1|180-11601-2			180-11601-1		180-11601-1		180-11715-1		180-11715-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	SMB		WALL		WALL		WALL		WALL		WALL		WALL	
		Specimen Sex	U		M		M		M		F		M		U	
		Specimen Length	305 mm		573 mm		572 mm		508 mm		557 mm		475 mm		605 mm	
		Specimen Weight	478 g		2176 g		2591 g		1626 g		2023 g		1421 g		2797 g	
		Specimen Age	5 yrs		13 yrs		14 yrs		8 yrs		12 yrs		13 yrs		7 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%	0.83		3		2.9								5.1	
SW7471	MERCURY	mg/kg	0.44		1.6	J	1.8	J	1.1	J	1.5	J	1.3		1.6	
SW8081	4,4'-DDD	ug/kg	0.96	JN	13	JN	9.2	JN							6.8	JN
SW8081	4,4'-DDE	ug/kg	3.9	J	66		37								33	J
SW8081	4,4'-DDT	ug/kg	7.5		18	JN	11	JN							9.1	JN
SW8081	HEXACHLOROBENZENE	ug/kg	0.89	J	16		16								15	J
SW8082	AROCLOR-1016	ug/kg	12	U	12	U	12	U							12	U
SW8082	AROCLOR-1221	ug/kg	12	U	12	U	12	U							12	U
SW8082	AROCLOR-1232	ug/kg	12	U	12	U	12	U							12	U
SW8082	AROCLOR-1242	ug/kg	12	U	12	U	12	U							12	U
SW8082	AROCLOR-1248	ug/kg	48		1200		810								660	
SW8082	AROCLOR-1254	ug/kg	12	U	12	U	12	U							12	U
SW8082	AROCLOR-1260	ug/kg	49		650		400								340	
SW8082	AROCLOR-1262	ug/kg	12	U	12	U	12	U							12	U
SW8082	AROCLOR-1268	ug/kg	12	U	12	U	12	U							12	U
SW8082	PCBS, N.O.S.	ug/kg	97		1900		1200								1000	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg			0.4	J	4.9	U								
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg			0.58	J	0.32	J								
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg			5	U	4.9	U								
SW8290	1,2,3,4,7,8-HXCDD	ng/kg			5	U	4.9	U								
SW8290	1,2,3,4,7,8-HXCDF	ng/kg			2.4	J	0.97	J								
SW8290	1,2,3,6,7,8-HXCDD	ng/kg			0.78	J	4.9	U								
SW8290	1,2,3,6,7,8-HXCDF	ng/kg			49	J	18	J								
SW8290	1,2,3,7,8,9-HXCDD	ng/kg			5	U	4.9	U								
SW8290	1,2,3,7,8,9-HXCDF	ng/kg			5	U	4.9	U								
SW8290	1,2,3,7,8-PECDD	ng/kg			2.2	J	1.2	J								
SW8290	1,2,3,7,8-PECDF	ng/kg			1.1	J	0.43	J								
SW8290	2,3,4,6,7,8-HXCDF	ng/kg			5	U	4.9	U								
SW8290	2,3,4,7,8-PECDF	ng/kg			6.6		4	J								
SW8290	2,3,7,8-TCDD	ng/kg			1.7	J	1.1	J								
SW8290	2,3,7,8-TCDF	ng/kg			1.8	J	0.98	U								
SW8290	OCDD	ng/kg			10	U	9.8	U								
SW8290	OCDF	ng/kg			10	UJ	9.8	UJ								

		Location	OL-STA-40212		OL-STA-40212		OL-STA-40212		OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50057	
		Field Sample ID	OL-1803-08F		OL-1803-09F		OL-1803-10F		OL-1801-02F		OL-1801-03F		OL-1801-04F		OL-1801-05F	
		Sample Date	6/19/2012		6/19/2012		6/19/2012		6/14/2012		6/14/2012		6/14/2012		6/14/2012	
		SDG	180-11715-1		180-11715-1		180-11715-1		180-11601-1		180-11601-1		180-11601-1		180-11601-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	BB		BB		BB		WALL		WALL		WALL		WALL	
		Specimen Sex	U		U		U		M		M		M		M	
		Specimen Length	342 mm		332 mm		353 mm		516 mm		576 mm		555 mm		533 mm	
		Specimen Weight	529 g		461 g		552 g		1821 g		2454 g		2104 g		2002 g	
		Specimen Age	7 yrs		7 yrs		7 yrs		17 yrs		10 yrs		5 yrs		14 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%					0.097	J							2.9	
SW7471	MERCURY	mg/kg	0.29		0.39		0.47		1.9	J	1.9	J	0.74	J	1.6	J
SW8081	4,4'-DDD	ug/kg					1.3	U							16	JN
SW8081	4,4'-DDE	ug/kg					0.34	J							93	
SW8081	4,4'-DDT	ug/kg					1.3	U							25	JN
SW8081	HEXACHLOROBENZENE	ug/kg					1.3	U							24	
SW8082	AROCLOR-1016	ug/kg					13	U							12	U
SW8082	AROCLOR-1221	ug/kg					13	U							12	U
SW8082	AROCLOR-1232	ug/kg					13	U							12	U
SW8082	AROCLOR-1242	ug/kg					13	U							12	U
SW8082	AROCLOR-1248	ug/kg					13	U							1800	
SW8082	AROCLOR-1254	ug/kg					13	U							12	U
SW8082	AROCLOR-1260	ug/kg					13	U							880	
SW8082	AROCLOR-1262	ug/kg					13	U							12	U
SW8082	AROCLOR-1268	ug/kg					13	U							12	U
SW8082	PCBS, N.O.S.	ug/kg					13	U							2700	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg														
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg														
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg														
SW8290	1,2,3,4,7,8-HXCDD	ng/kg														
SW8290	1,2,3,4,7,8-HXCDF	ng/kg														
SW8290	1,2,3,6,7,8-HXCDD	ng/kg														
SW8290	1,2,3,6,7,8-HXCDF	ng/kg														
SW8290	1,2,3,7,8,9-HXCDD	ng/kg														
SW8290	1,2,3,7,8,9-HXCDF	ng/kg														
SW8290	1,2,3,7,8-PECDD	ng/kg														
SW8290	1,2,3,7,8-PECDF	ng/kg														
SW8290	2,3,4,6,7,8-HXCDF	ng/kg														
SW8290	2,3,4,7,8-PECDF	ng/kg														
SW8290	2,3,7,8-TCDD	ng/kg														
SW8290	2,3,7,8-TCDF	ng/kg														
SW8290	OCDD	ng/kg														
SW8290	OCDF	ng/kg														

		Location	OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50057	
		Field Sample ID	OL-1803-13F		OL-1803-14F		OL-1803-15F		OL-1803-18F		OL-1806-01F		OL-1806-02F		OL-1806-03F	
		Sample Date	6/19/2012		6/19/2012		6/19/2012		6/19/2012		6/21/2012		6/21/2012		6/21/2012	
		SDG	180-11715-1		180-11715-1		180-11715-1		11715-1|H2G130406		180-11808-1		180-11808-1		180-11808-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	BB		BB		BB		SMB		SMB		SMB		SMB	
		Specimen Sex	M		U		F		U		F		F		F	
		Specimen Length	292 mm		366 mm		312 mm		290 mm		370 mm		361 mm		407 mm	
		Specimen Weight	327 g		724 g		399 g		409 g		869 g		755 g		1022 g	
		Specimen Age	4 yrs		7 yrs		4 yrs		3 yrs		5 yrs		5 yrs		7 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%	1.3						0.58						2	
SW7471	MERCURY	mg/kg	0.3		0.27		0.43		0.53		0.62	J	0.52	J	1.1	J
SW8081	4,4'-DDD	ug/kg	1.4	JN					0.94	JN					4.3	JN
SW8081	4,4'-DDE	ug/kg	6.6	J					4.5	J					19	J
SW8081	4,4'-DDT	ug/kg	2.1	JN					1.3	JN					8.1	JN
SW8081	HEXACHLOROBENZENE	ug/kg	3.7						1.2	J					3.6	
SW8082	AROCLOR-1016	ug/kg	12	U					12	U					12	U
SW8082	AROCLOR-1221	ug/kg	12	U					12	U					12	U
SW8082	AROCLOR-1232	ug/kg	12	U					12	U					12	U
SW8082	AROCLOR-1242	ug/kg	12	U					12	U					12	U
SW8082	AROCLOR-1248	ug/kg	120						67						320	
SW8082	AROCLOR-1254	ug/kg	12	U					12	U					12	U
SW8082	AROCLOR-1260	ug/kg	88						58						230	
SW8082	AROCLOR-1262	ug/kg	12	U					12	U					12	U
SW8082	AROCLOR-1268	ug/kg	12	U					12	U					12	U
SW8082	PCBS, N.O.S.	ug/kg	210						130						550	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg							5	U						
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg							5	U						
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg							5	U						
SW8290	1,2,3,4,7,8-HXCDD	ng/kg							5	U						
SW8290	1,2,3,4,7,8-HXCDF	ng/kg							0.2	J						
SW8290	1,2,3,6,7,8-HXCDD	ng/kg							5	U						
SW8290	1,2,3,6,7,8-HXCDF	ng/kg							3.6	J						
SW8290	1,2,3,7,8,9-HXCDD	ng/kg							5	U						
SW8290	1,2,3,7,8,9-HXCDF	ng/kg							5	U						
SW8290	1,2,3,7,8-PECDD	ng/kg							0.5	J						
SW8290	1,2,3,7,8-PECDF	ng/kg							0.17	J						
SW8290	2,3,4,6,7,8-HXCDF	ng/kg							5	U						
SW8290	2,3,4,7,8-PECDF	ng/kg							0.58	J						
SW8290	2,3,7,8-TCDD	ng/kg							1	U						
SW8290	2,3,7,8-TCDF	ng/kg							0.82	J						
SW8290	OCDD	ng/kg							10	U						
SW8290	OCDF	ng/kg							10	UJ						

		Location	OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50058		OL-STA-50058		OL-STA-50058		OL-STA-50058	
		Field Sample ID	OL-1806-04F		OL-1807-01F		OL-1808-01F		OL-1800-17F		OL-1800-18F		OL-1802-01F		OL-1803-02F	
		Sample Date	6/21/2012		6/26/2012		6/29/2012		6/14/2012		6/14/2012		6/15/2012		6/19/2012	
		SDG	180-11808-1		180-11928-1		180-12067-1		180-11601-1		180-11601-1		-11634-1|H2G130407		180-11715-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	SMB		SMB		SMB		BB		BB		BB		WALL	
		Specimen Sex	U		U		F		U		M		U		U	
		Specimen Length	382 mm		360 mm		411 mm		290 mm		329 mm		290 mm		599 mm	
		Specimen Weight	881 g		853 g		1122 g		303 g		451 g		341 g		3019 g	
		Specimen Age	7 yrs		5 yrs		7 yrs		4 yrs		6 yrs		4 yrs		10 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%	1.2		3.7								0.46			
SW7471	MERCURY	mg/kg	0.92	J	0.81		1.1		0.21	J	0.45	J	0.19		1.6	
SW8081	4,4'-DDD	ug/kg	3.1	JN	3.4	JN							0.39	JN		
SW8081	4,4'-DDE	ug/kg	16	J	19	J							0.93	J		
SW8081	4,4'-DDT	ug/kg	6.5	JN	7.1	JN							0.72	JN		
SW8081	HEXACHLOROBENZENE	ug/kg	1.9		4.3								0.91	J		
SW8082	AROCLOR-1016	ug/kg	13	U	12	U							12	U		
SW8082	AROCLOR-1221	ug/kg	13	U	12	U							12	U		
SW8082	AROCLOR-1232	ug/kg	13	U	12	U							12	U		
SW8082	AROCLOR-1242	ug/kg	13	U	12	U							12	U		
SW8082	AROCLOR-1248	ug/kg	210		280								32			
SW8082	AROCLOR-1254	ug/kg	13	U	12	U							12	U		
SW8082	AROCLOR-1260	ug/kg	190		200								30			
SW8082	AROCLOR-1262	ug/kg	13	U	12	U							12	U		
SW8082	AROCLOR-1268	ug/kg	13	U	12	U							12	U		
SW8082	PCBS, N.O.S.	ug/kg	400		480								62			
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg			4.9	U							0.23	J		
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg			4.9	U							5	U		
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg			4.9	U							5	U		
SW8290	1,2,3,4,7,8-HXCDD	ng/kg			4.9	U							0.21	J		
SW8290	1,2,3,4,7,8-HXCDF	ng/kg			0.45	J							0.35	J		
SW8290	1,2,3,6,7,8-HXCDD	ng/kg			4.9	U							0.29	J		
SW8290	1,2,3,6,7,8-HXCDF	ng/kg			7	J							2.6	J		
SW8290	1,2,3,7,8,9-HXCDD	ng/kg			4.9	U							5	U		
SW8290	1,2,3,7,8,9-HXCDF	ng/kg			4.9	U							5	U		
SW8290	1,2,3,7,8-PECDD	ng/kg			0.66	J							0.45	J		
SW8290	1,2,3,7,8-PECDF	ng/kg			4.9	U							0.23	J		
SW8290	2,3,4,6,7,8-HXCDF	ng/kg			4.9	U							5	U		
SW8290	2,3,4,7,8-PECDF	ng/kg			1.9	J							1.2	J		
SW8290	2,3,7,8-TCDD	ng/kg			0.98	U							0.2	J		
SW8290	2,3,7,8-TCDF	ng/kg			1.3	J							0.5	J		
SW8290	OCDD	ng/kg			9.8	U							9.9	U		
SW8290	OCDF	ng/kg			9.8	UJ							9.9	UJ		

		Location	OL-STA-50058		OL-STA-50058		OL-STA-50058		OL-STA-50059		OL-STA-50059		OL-STA-50059		OL-STA-50059	
		Field Sample ID	OL-1803-03F		OL-1803-04F		OL-1803-05F		OL-1802-03F		OL-1802-04F		OL-1804-01F		OL-1804-02F	
		Sample Date	6/19/2012		6/19/2012		6/19/2012		6/15/2012		6/15/2012		6/20/2012		6/20/2012	
		SDG	180-11715-1		180-11715-1		11715-1|H2G130406		180-11634-1		11634-1|H2G130407		180-11780-1		180-11780-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	WALL		WALL		WALL		WALL		SMB		BB		BB	
		Specimen Sex	U		U		U		M		F		U		U	
		Specimen Length	564 mm		640 mm		672 mm		585 mm		401 mm		341 mm		337 mm	
		Specimen Weight	2651 g		3603 g		4100 g		2936 g		1098 g		557 g		527 g	
		Specimen Age	7 yrs		13 yrs		18 yrs		15 yrs		5 yrs		7 yrs		7 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%			2.1		1.2				0.96		0.18		0.27	
SW7471	MERCURY	mg/kg	1.4		2.7		3		3.1		0.9		0.21		0.26	
SW8081	4,4'-DDD	ug/kg			9.3	JN	5.4	JN			2.8	JN	0.54	JN	0.78	JN
SW8081	4,4'-DDE	ug/kg			41	J	28	J			14	J	2.6	J	4.3	J
SW8081	4,4'-DDT	ug/kg			13	JN	9.9	JN			4.1	JN	1.3	JN	1.9	JN
SW8081	HEXACHLOROBENZENE	ug/kg			15		7.4				2.6		0.92	J	1.1	J
SW8082	AROCLOR-1016	ug/kg			12	U	12	U			12	U	12	U	12	U
SW8082	AROCLOR-1221	ug/kg			12	U	12	U			12	U	12	U	12	U
SW8082	AROCLOR-1232	ug/kg			12	U	12	U			12	U	12	U	12	U
SW8082	AROCLOR-1242	ug/kg			12	U	12	U			12	U	12	U	12	U
SW8082	AROCLOR-1248	ug/kg			910		600				220		58		66	
SW8082	AROCLOR-1254	ug/kg			12	U	12	U			12	U	12	U	12	U
SW8082	AROCLOR-1260	ug/kg			450		360				160		51		76	
SW8082	AROCLOR-1262	ug/kg			12	U	12	U			12	U	12	U	12	U
SW8082	AROCLOR-1268	ug/kg			12	U	12	U			12	U	12	U	12	U
SW8082	PCBS, N.O.S.	ug/kg			1400		960				380		110		140	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg					0.31	J			5	U	0.34	J		
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg					5	U			0.13	J	4.9	U		
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg					5	U			5	U	4.9	U		
SW8290	1,2,3,4,7,8-HXCDD	ng/kg					5	U			5	U	4.9	U		
SW8290	1,2,3,4,7,8-HXCDF	ng/kg					0.48	J			0.45	J	0.36	J		
SW8290	1,2,3,6,7,8-HXCDD	ng/kg					0.43	J			0.33	J	0.29	J		
SW8290	1,2,3,6,7,8-HXCDF	ng/kg					8.3	J			11	J	4.6	J		
SW8290	1,2,3,7,8,9-HXCDD	ng/kg					5	U			5	U	4.9	U		
SW8290	1,2,3,7,8,9-HXCDF	ng/kg					5	U			5	U	4.9	U		
SW8290	1,2,3,7,8-PECDD	ng/kg					0.91	J			0.86	J	0.58	J		
SW8290	1,2,3,7,8-PECDF	ng/kg					0.36	J			0.28	J	4.9	U		
SW8290	2,3,4,6,7,8-HXCDF	ng/kg					0.17	J			5	U	4.9	U		
SW8290	2,3,4,7,8-PECDF	ng/kg					1.2	J			2.6	J	1.2	J		
SW8290	2,3,7,8-TCDD	ng/kg					0.68	J			0.79	J	0.98	U		
SW8290	2,3,7,8-TCDF	ng/kg					0.81	J			0.94	J	0.98	U		
SW8290	OCDD	ng/kg					9.9	U			10	U	9.8	U		
SW8290	OCDF	ng/kg					9.9	UJ			10	UJ	9.8	UJ		

		Location	OL-STA-50059		OL-STA-60225		OL-STA-60225		OL-STA-60225		OL-STA-60225		OL-STA-60225		OL-STA-70124	
		Field Sample ID	OL-1804-03F		OL-1800-06F		OL-1800-07F		OL-1800-08F		OL-1804-13F		OL-1804-14F		OL-1800-11F	
		Sample Date	6/20/2012		6/14/2012		6/14/2012		6/14/2012		6/20/2012		6/20/2012		6/14/2012	
		SDG	180-11780-1		180-11601-1		180-11601-1		180-11601-1		180-11780-1		180-11780-1		180-11601-1	1160
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	BB		BB		BB		BB		SMB		SMB		BB	
		Specimen Sex	F		M		M		M		U		U		U	
		Specimen Length	274 mm		327 mm		348 mm		336 mm		301 mm		286 mm		312 mm	
		Specimen Weight	260 g		521 g		593 g		551 g		414 g		429 g		434 g	
		Specimen Age	2 yrs		6 yrs		6 yrs		6 yrs		5 yrs		4 yrs		7 yrs	
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%			0.57		1.1				0.2		2		0.33	
SW7471	MERCURY	mg/kg	0.22		0.42	J	0.26	J	0.22	J	0.51		0.39		0.29	J
SW8081	4,4'-DDD	ug/kg			0.86	JN	2	JN			0.75	JN	2.2	JN	0.38	JN
SW8081	4,4'-DDE	ug/kg			3	J	7	J			2.8	J	8.4	J	1.2	J
SW8081	4,4'-DDT	ug/kg			1.9	JN	4.9	JN			1.7	JN	3.3	JN	0.75	JN
SW8081	HEXACHLOROBENZENE	ug/kg			2.3		5.3				0.67	J	2.4		0.59	J
SW8082	AROCLOR-1016	ug/kg			12	U	12	U			12	U	13	U	13	U
SW8082	AROCLOR-1221	ug/kg			12	U	12	U			12	U	13	U	13	U
SW8082	AROCLOR-1232	ug/kg			12	U	12	U			12	U	13	U	13	U
SW8082	AROCLOR-1242	ug/kg			12	U	12	U			12	U	13	U	13	U
SW8082	AROCLOR-1248	ug/kg			130		400				190		170		42	
SW8082	AROCLOR-1254	ug/kg			12	U	12	U			12	U	13	U	13	U
SW8082	AROCLOR-1260	ug/kg			73		180				12	U	100		35	
SW8082	AROCLOR-1262	ug/kg			12	U	12	U			12	U	13	U	13	U
SW8082	AROCLOR-1268	ug/kg			12	U	12	U			12	U	13	U	13	U
SW8082	PCBS, N.O.S.	ug/kg			200		580				190		270		77	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg														
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg														
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg														
SW8290	1,2,3,4,7,8-HXCDD	ng/kg														
SW8290	1,2,3,4,7,8-HXCDF	ng/kg														
SW8290	1,2,3,6,7,8-HXCDD	ng/kg														
SW8290	1,2,3,6,7,8-HXCDF	ng/kg														
SW8290	1,2,3,7,8,9-HXCDD	ng/kg														
SW8290	1,2,3,7,8,9-HXCDF	ng/kg														
SW8290	1,2,3,7,8-PECDD	ng/kg														
SW8290	1,2,3,7,8-PECDF	ng/kg														
SW8290	2,3,4,6,7,8-HXCDF	ng/kg														
SW8290	2,3,4,7,8-PECDF	ng/kg														
SW8290	2,3,7,8-TCDD	ng/kg														
SW8290	2,3,7,8-TCDF	ng/kg														
SW8290	OCDD	ng/kg														
SW8290	OCDF	ng/kg														

		Location	OL-STA-70124		OL-STA-70124		OL-STA-70124		OL-STA-70124		OL-STA-70124	
		Field Sample ID	OL-1800-12F		OL-1800-15F		OL-1800-16F		OL-1802-02F		OL-1804-12F	
		Sample Date	6/14/2012		6/14/2012		6/14/2012		6/15/2012		6/20/2012	
		SDG	01-1|180-11601-2		180-11601-1		180-11601-1		180-11634-1		180-11780-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	BB		BB		BB		WALL		SMB	
		Specimen Sex	F		U		M		M		F	
		Specimen Length	319 mm		283 mm		331 mm		527 mm		286 mm	
		Specimen Weight	428 g		343 g		454 g		1967 g		340 g	
		Specimen Age	7 yrs		6 yrs		5 yrs		12 yrs		5 yrs	
Method	Parameter Name	Units										
Percent Lipids	%LIPIDS DETERMINATION	%	0.89						3.1		0.99	
SW7471	MERCURY	mg/kg	0.26	J	0.26	J	0.44	J	2		0.35	
SW8081	4,4'-DDD	ug/kg	2.2	JN					6.1	JN	1.4	JN
SW8081	4,4'-DDE	ug/kg	6.5	J					35		8.4	
SW8081	4,4'-DDT	ug/kg	1.6	JN					9.2	JN	2.3	JN
SW8081	HEXACHLOROBENZENE	ug/kg	1.6						11		9.5	
SW8082	AROCLOR-1016	ug/kg	13	U					12	U	12	U
SW8082	AROCLOR-1221	ug/kg	13	U					12	U	12	U
SW8082	AROCLOR-1232	ug/kg	13	U					12	U	12	U
SW8082	AROCLOR-1242	ug/kg	13	U					12	U	12	U
SW8082	AROCLOR-1248	ug/kg	100						670		150	
SW8082	AROCLOR-1254	ug/kg	13	U					12	U	12	U
SW8082	AROCLOR-1260	ug/kg	98						390		89	
SW8082	AROCLOR-1262	ug/kg	13	U					12	U	12	U
SW8082	AROCLOR-1268	ug/kg	13	U					12	U	12	U
SW8082	PCBS, N.O.S.	ug/kg	200						1100		240	
SW8290	1,2,3,4,6,7,8-HPCDD	ng/kg	0.47	J							5	U
SW8290	1,2,3,4,6,7,8-HPCDF	ng/kg	0.19	J							5	U
SW8290	1,2,3,4,7,8,9-HPCDF	ng/kg	5	U							5	U
SW8290	1,2,3,4,7,8-HXCDD	ng/kg	5	U							5	U
SW8290	1,2,3,4,7,8-HXCDF	ng/kg	0.4	J							0.35	J
SW8290	1,2,3,6,7,8-HXCDD	ng/kg	0.62	J							5	U
SW8290	1,2,3,6,7,8-HXCDF	ng/kg	5.3	J							5.5	J
SW8290	1,2,3,7,8,9-HXCDD	ng/kg	5	U							5	U
SW8290	1,2,3,7,8,9-HXCDF	ng/kg	5	U							5	U
SW8290	1,2,3,7,8-PECDD	ng/kg	0.84	J							0.84	J
SW8290	1,2,3,7,8-PECDF	ng/kg	5	U							0.49	J
SW8290	2,3,4,6,7,8-HXCDF	ng/kg	0.14	J							5	U
SW8290	2,3,4,7,8-PECDF	ng/kg	0.9	J							2.4	J
SW8290	2,3,7,8-TCDD	ng/kg	0.99	U							0.32	J
SW8290	2,3,7,8-TCDF	ng/kg	0.14	J							2.2	J
SW8290	OCDD	ng/kg	9.9	U							9.9	U
SW8290	OCDF	ng/kg	9.9	UJ							9.9	UJ

		Location	OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-20158		OL-STA-30093		OL-STA-30093	
		Field Sample ID	OL-1810-13		OL-1810-14		OL-1810-15		OL-1800-04		OL-1800-05		OL-1810-10		OL-1810-11	
		Sample Date	8/8/2012		8/8/2012		8/8/2012		6/14/2012		6/14/2012		8/8/2012		8/8/2012	
		SDG	180-13242-1		180-13242-1		180-13242-1		180-11601-1		180-11601-1		180-13242-1		180-13242-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	MIN		MIN		MIN		ALE		ALE		MIN		MIN	
		Specimen Sex														
		Specimen Length	79.4 mm		77.6 mm		76.6 mm		128.6 mm		112.8 mm		66.2 mm		60.1 mm	
		Specimen Weight	5.05 g		4.66 g		4.56 g		14.6 g		10.6 g		2.99 g		2.27 g	
		Specimen Age														
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%	1.2										1.9			
SW7471	MERCURY	mg/kg	0.61		0.58		0.56		0.21	J	0.15	J	0.15		0.17	
SW8081	4,4'-DDD	ug/kg	0.95	JN									1	JN		
SW8081	4,4'-DDE	ug/kg	2.5										3.1			
SW8081	4,4'-DDT	ug/kg	1.3	U									1.3	U		
SW8081	HEXACHLOROBENZENE	ug/kg	0.61	J									0.61	JN		
SW8082	AROCLOR-1016	ug/kg	13	U									12	U		
SW8082	AROCLOR-1221	ug/kg	13	U									12	U		
SW8082	AROCLOR-1232	ug/kg	13	U									12	U		
SW8082	AROCLOR-1242	ug/kg	13	U									12	U		
SW8082	AROCLOR-1248	ug/kg	38										52			
SW8082	AROCLOR-1254	ug/kg	13	U									12	U		
SW8082	AROCLOR-1260	ug/kg	33										32			
SW8082	AROCLOR-1262	ug/kg	13	U									12	U		
SW8082	AROCLOR-1268	ug/kg	13	U									12	U		
SW8082	PCBS, N.O.S.	ug/kg	71										84			

		Location	OL-STA-30093		OL-STA-30093		OL-STA-30093		OL-STA-40212		OL-STA-40212		OL-STA-40212		OL-STA-40212	
		Field Sample ID	OL-1810-12		OL-1804-09		OL-1804-10		OL-1810-07		OL-1810-08		OL-1810-09		OL-1803-11	
		Sample Date	8/8/2012		6/20/2012		6/20/2012		8/8/2012		8/8/2012		8/8/2012		6/19/2012	
		SDG	180-13242-1		180-11780-1		180-11780-1		180-13242-1		180-13242-1		180-13242-1		180-11715-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	MIN		ALE		ALE		MIN		MIN		MIN		ALE	
		Specimen Sex														
		Specimen Length	72.8 mm		130 mm		108.4 mm		90.6 mm		80.4 mm		81.6 mm		108.2 mm	
		Specimen Weight	3.78 g		16.4 g		10.6 g		8 g		5.66 g		5.64 g		11 g	
		Specimen Age														
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%							1.3						5.2	
SW7471	MERCURY	mg/kg	0.21		0.21		0.13		0.47		0.26		0.32		0.072	
SW8081	4,4'-DDD	ug/kg							0.94	J					5.8	JN
SW8081	4,4'-DDE	ug/kg							1.9						18	
SW8081	4,4'-DDT	ug/kg							1.3	U					3.8	JN
SW8081	HEXACHLOROBENZENE	ug/kg							1.3	J					10	
SW8082	AROCLOR-1016	ug/kg							12	U					13	U
SW8082	AROCLOR-1221	ug/kg							12	U					13	U
SW8082	AROCLOR-1232	ug/kg							12	U					13	U
SW8082	AROCLOR-1242	ug/kg							12	U					13	U
SW8082	AROCLOR-1248	ug/kg							14						450	
SW8082	AROCLOR-1254	ug/kg							12	U					13	U
SW8082	AROCLOR-1260	ug/kg							12						150	
SW8082	AROCLOR-1262	ug/kg							12	U					13	U
SW8082	AROCLOR-1268	ug/kg							12	U					13	U
SW8082	PCBS, N.O.S.	ug/kg							26						600	

		Location	OL-STA-40212		OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50057		OL-STA-50058	
		Field Sample ID	OL-1803-12		OL-1810-04		OL-1810-05		OL-1810-06		OL-1803-16		OL-1803-17		OL-1810-01	
		Sample Date	6/19/2012		8/8/2012		8/8/2012		8/8/2012		6/19/2012		6/19/2012		8/8/2012	
		SDG	180-11715-1		180-13242-1		180-13242-1		180-13242-1		180-11715-1		180-11715-1		180-13242-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	ALE		MIN		MIN		MIN		ALE		ALE		MIN	
		Specimen Sex														
		Specimen Length	121.2 mm		70.8 mm		85.1 mm		90 mm		106.75 mm		126.4 mm		87 mm	
		Specimen Weight	13.6 g		4.24 g		6.37 g		7.76 g		10.5 g		14.4 g		8.26 g	
		Specimen Age														
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%					1.1								1.2	
SW7471	MERCURY	mg/kg	0.17		0.096		0.11		0.16		0.094		0.17		0.21	
SW8081	4,4'-DDD	ug/kg					0.89	JN							0.85	JN
SW8081	4,4'-DDE	ug/kg					1.8								1.7	
SW8081	4,4'-DDT	ug/kg					3.2	J							1.3	U
SW8081	HEXACHLOROBENZENE	ug/kg					1.3	U							1.3	U
SW8082	AROCLOR-1016	ug/kg					12	U							13	U
SW8082	AROCLOR-1221	ug/kg					12	U							13	U
SW8082	AROCLOR-1232	ug/kg					12	U							13	U
SW8082	AROCLOR-1242	ug/kg					12	U							13	U
SW8082	AROCLOR-1248	ug/kg					20								17	
SW8082	AROCLOR-1254	ug/kg					12	U							13	U
SW8082	AROCLOR-1260	ug/kg					15								16	
SW8082	AROCLOR-1262	ug/kg					12	U							13	U
SW8082	AROCLOR-1268	ug/kg					12	U							13	U
SW8082	PCBS, N.O.S.	ug/kg					35								33	

		Location	OL-STA-50058		OL-STA-50058		OL-STA-50058		OL-STA-50058		OL-STA-50059		OL-STA-50059		OL-STA-50059	
		Field Sample ID	OL-1810-02		OL-1810-03		OL-1800-19		OL-1800-20		OL-1811-04		OL-1811-05		OL-1811-06	
		Sample Date	8/8/2012		8/8/2012		6/14/2012		6/14/2012		8/9/2012		8/9/2012		8/9/2012	
		SDG	180-13242-1		180-13242-1		180-11601-1		180-11601-1		180-13328-1		180-13328-1		180-13328-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	MIN		MIN		ALE		ALE		MIN		BRSI		BRSI	
		Specimen Sex														
		Specimen Length	92 mm		86.8 mm		126.6 mm		113.2 mm		73.1 mm		52.5 mm		51.1 mm	
		Specimen Weight	9.54 g		7.28 g		16.8 g		12.4 g		4.69 g		0.72 g		0.67 g	
		Specimen Age														
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%									1.9					
SW7471	MERCURY	mg/kg	0.29		0.18		0.17	J	0.13	J	0.14		0.16		0.13	
SW8081	4,4'-DDD	ug/kg									1	JN				
SW8081	4,4'-DDE	ug/kg									2.3					
SW8081	4,4'-DDT	ug/kg									1.3	U				
SW8081	HEXACHLOROBENZENE	ug/kg									1.3	U				
SW8082	AROCLOR-1016	ug/kg									12	U				
SW8082	AROCLOR-1221	ug/kg									12	U				
SW8082	AROCLOR-1232	ug/kg									12	U				
SW8082	AROCLOR-1242	ug/kg									12	U				
SW8082	AROCLOR-1248	ug/kg									34					
SW8082	AROCLOR-1254	ug/kg									12	U				
SW8082	AROCLOR-1260	ug/kg									34					
SW8082	AROCLOR-1262	ug/kg									12	U				
SW8082	AROCLOR-1268	ug/kg									12	U				
SW8082	PCBS, N.O.S.	ug/kg									68					

		Location	OL-STA-50059		OL-STA-50059		OL-STA-60225		OL-STA-60225		OL-STA-60225		OL-STA-60225		OL-STA-60225	
		Field Sample ID	OL-1804-04		OL-1804-05		OL-1811-01		OL-1811-02		OL-1811-03		OL-1800-09		OL-1800-10	
		Sample Date	6/20/2012		6/20/2012		8/9/2012		8/9/2012		8/9/2012		6/14/2012		6/14/2012	
		SDG	180-11780-1		180-11780-1		180-13328-1		180-13328-1		180-13328-1		180-11601-1		180-11601-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	ALE		ALE		MIN		MIN		BRSI		ALE		ALE	
		Specimen Sex														
		Specimen Length	127.6 mm		110.8 mm		57.2 mm		75.9 mm		48.77 mm		101 mm		121 mm	
		Specimen Weight	15.2 g		12.4 g		2.1 g		5.26 g		0.65 g		8.4 g		13.6 g	
		Specimen Age														
Method	Parameter Name	Units														
Percent Lipids	%LIPIDS DETERMINATION	%	0.79						1.4				2.4			
SW7471	MERCURY	mg/kg	0.2		0.097		0.037		0.086		0.046		0.082	J	0.15	J
SW8081	4,4'-DDD	ug/kg	1.1	JN					1.6	JN			4.1	JN		
SW8081	4,4'-DDE	ug/kg	18	J					2.3	J			14			
SW8081	4,4'-DDT	ug/kg	5.7	JN					15				3.7	JN		
SW8081	HEXACHLOROBENZENE	ug/kg	3.6						0.25	J			11			
SW8082	AROCLOR-1016	ug/kg	12	U					12	U			12	U		
SW8082	AROCLOR-1221	ug/kg	12	U					12	U			12	U		
SW8082	AROCLOR-1232	ug/kg	12	U					12	U			12	U		
SW8082	AROCLOR-1242	ug/kg	12	U					12	U			12	U		
SW8082	AROCLOR-1248	ug/kg	230						180				500			
SW8082	AROCLOR-1254	ug/kg	12	U					12	U			12	U		
SW8082	AROCLOR-1260	ug/kg	250						51				160			
SW8082	AROCLOR-1262	ug/kg	12	U					12	U			12	U		
SW8082	AROCLOR-1268	ug/kg	12	U					12	U			12	U		
SW8082	PCBS, N.O.S.	ug/kg	480						230				660			

		Location	OL-STA-70124		OL-STA-70124		OL-STA-70124		OL-STA-70124		OL-STA-70124	
		Field Sample ID	OL-1810-16		OL-1810-17		OL-1810-18		OL-1800-13		OL-1800-14	
		Sample Date	8/8/2012		8/8/2012		8/8/2012		6/14/2012		6/14/2012	
		SDG	180-13242-1		180-13242-1		180-13242-1		180-11601-1		180-11601-1	
		Matrix	TISSUE		TISSUE		TISSUE		TISSUE		TISSUE	
		Sample Purpose	Regular sample		Regular sample		Regular sample		Regular sample		Regular sample	
		Sample Type	Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish		Tissue - fish	
		Taxon	MIN		MIN		MIN		ALE		GZS	
		Specimen Sex										
		Specimen Length	69 mm		88.6 mm		82.2 mm		116.25 mm		157 mm	
		Specimen Weight	3.98 g		7.78 g		5.92 g		11.5 g		36 g	
		Specimen Age										
Method	Parameter Name	Units										
Percent Lipids	%LIPIDS DETERMINATION	%										
SW7471	MERCURY	mg/kg	0.53		0.46		0.53		0.14	J	0.027	J
SW8081	4,4'-DDD	ug/kg										
SW8081	4,4'-DDE	ug/kg										
SW8081	4,4'-DDT	ug/kg										
SW8081	HEXACHLOROBENZENE	ug/kg										
SW8082	AROCLOR-1016	ug/kg										
SW8082	AROCLOR-1221	ug/kg										
SW8082	AROCLOR-1232	ug/kg										
SW8082	AROCLOR-1242	ug/kg										
SW8082	AROCLOR-1248	ug/kg										
SW8082	AROCLOR-1254	ug/kg										
SW8082	AROCLOR-1260	ug/kg										
SW8082	AROCLOR-1262	ug/kg										
SW8082	AROCLOR-1268	ug/kg										
SW8082	PCBS, N.O.S.	ug/kg										

ATTACHMENT A-2

VALIDATED LABORATORY DATA FOR ZOOPLANKTON SAMPLES

2012 Tissue Monitoring
Validated Zooplankton Results

						Parameter	MERCURY		METHYL MERCURY
						Units	mg/kg		ng/g
Location ID	Field Sample ID	Sample Date	Sample Delivery Group	Matrix	Purpose	Samp Type			
W1	OL-1706-01	6/11/2012	240-12200-1	TISSUE	REG	T-ZP	0.045		4.7
W1	OL-1717-01	7/2/2012	240-12888-1	TISSUE	REG	T-ZP	0.038		4.1
W1	OL-1721-01	7/9/2012	240-13040-1	Tissue	REG	T-ZP	0.065		6.6
W1	OL-1728-01	7/23/2012	240-13443-1	Tissue	REG	T-ZP	0.17		12
W1	OL-1735-01	8/6/2012	240-13882-1	Tissue	REG	T-ZP	0.066		14
W1	OL-1743-01	8/20/2012	240-14350-1	Tissue	REG	T-ZP	0.13		11
W1	OL-1751-01	9/4/2012	240-14793-1	Tissue	REG	T-ZP	0.27		8.3
W1	OL-1755-01	9/12/2012	240-15101-1	Tissue	REG	T-ZP	0.0011	U	2.3
W1	OL-1759-01	9/17/2012	240-15243-1	Tissue	REG	T-ZP	0.15		7.8
W1	OL-1763-01	9/24/2012	240-15546-1	Tissue	REG	T-ZP	0.087		9.9
W1	OL-1767-01	10/2/2012	240-15858-1	Tissue	REG	T-ZP	0.11		6.3
W1	OL-1771-01	10/9/2012	240-16140-1	Tissue	REG	T-ZP	0.049	J	6.4
W1	OL-1775-01	10/16/2012	240-16506-1	Tissue	REG	T-ZP	0.033	J	9
W1	OL-1779-01	10/22/2012	240-16721-1	Tissue	REG	T-ZP	0.033	J	10
W1	OL-1784-01	11/5/2012	240-17135-1	Tissue	REG	T-ZP	0.046	J	9.3
W1	OL-1788-01	11/19/2012	240-17858-1	Tissue	REG	T-ZP	0.011	J	4.3