



Oregon

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via electronic delivery

Rob Webb, Principal Engineer
Dalton Olmsted Fuglevand
1236 Finn Hill Road
Poulsbo, WA 98370

RE: DEQ Review – Johnson Lake Fish Tissue Monitoring Study, Monitoring Report
ECSI #2086

Dear Rob Webb:

The Oregon Department of Environmental Quality (DEQ) reviewed the February 1, 2023 *Johnson Lake Fish Tissue Monitory Study – Monitoring Report* (Monitoring Report) prepared by Grette Associates, LLC (Grette) for Dalton Olmsted Fuglevand (DOF) on behalf of Owens Brockway Glass Container, Inc. (Owens-Brockway). The Report was submitted as part of the long-term monitoring of the remedial action implemented by Owens-Brockway as described in the 2012 *Remediation Operations & Maintenance Plan – Sediment Remedial Action* (O&M Plan).

DEQ's comments are presented below.

General Comments:

1. The Monitoring Report does not include all information specified in the *Sampling and Analysis Plan* (SAP). For example, the SAP indicates that inspection of areas near outfalls (Section 2.1) and inspection of warning signs (Section 2.2) would be completed during the 2022 fish collection event. Please review the SAP and ensure all necessary items are included in the Monitoring Report.
2. Various fish sample IDs are inconsistent throughout the report, including inconsistencies with the composite category (e.g., SF, LF) and number indicating the chronological order of fish collection. Please revise all sections of the report (e.g., Table 3, Table 9, Appendix C, and Appendix F) to ensure consistent sample names are provided and that the ID nomenclature follows the methodology specified in the SAP and Section 2.1.1 of the Monitoring Report.
3. In various locations in the report, some results are provided without any definition, discussion, or calculation methods provided. Please define, discuss, and provide equations or methods for calculations for all results (e.g., total PCBs, midpoint PCB TEQ, lipid-normalized results, and the whole-body bass concentration).
4. Additional analysis is needed to evaluate the 2022 fish tissue results and compare the 2022 data to previous sampling events and evaluate trends over time. Comparisons should generally be kept separate by species and fillet versus whole body results. Additional 2004 data is also available for inclusion in these analyses. The following should be considered:

- a. Lipid-normalized data to evaluate trends between species, between locations, and over time, where applicable.
- b. Non-lipid normalized data to evaluate fish consumption risk by comparing results to the ROD standard.

Specific Comments:

5. Section 2.1 Fish Sample Collection. Please provide information on the level of sampling effort by zone (1-8) and sampling method.
6. Section 2.1 Fish Sample Collection, Figure 2. Please clarify in the figure that electro-shocking and hook and line methods occurred throughout the lake.
7. Section 2.1 Fish Sample Collection. This section states that fish were collected to target the categories of fish described in the O&M Plan. Please clarify that while the O&M Plan specified large fish as 125 mm to 300 mm, DEQ's comments on the SAP specified that large fish should be defined as >350 mm in length.
8. Section 2.1 Fish Sample Collection. Please clarify that the compositing plan created by DEQ was based on information provided to DEQ, including species that had been misidentified, and that this misidentification was not discovered until later.
9. Section 2.1 Fish Sample Collection. This section describes "two composites (fillet and whole-body) were created" from the one largemouth bass collected. Please revise this statement to indicate that that the carcass, rather than whole-body, was sampled and that this approach was chosen so that both fillet and whole-body estimations could be made from this one fish, as it was the only largemouth bass collected.
10. Section 2.2 Laboratory Analysis. This section states that "All tissue samples were processed in accordance with the approved compositing plan, the approved SAP, and the Laboratory Standard Operating Procedures." However, various deviations occurred, such as misidentified species resulting in more than one species being included in some composites, less than 5 individual fish included in some composites, and exceedances of fish length similarity criteria within composites. Some of the deviations were approved as part of the DEQ compositing plan in Appendix G. Please describe the deviations that occurred.
11. Section 2.2 Laboratory Analysis. Please clarify whether fish tissue composites were created using equal mass from each individually homogenized sample.
12. Section 3.1.1 Fish Collection. This section provides some information about the success of certain fish collection methods. Please expand this section to discuss the success or lack of success for each fish collection method by zone and species. This discussion would be well supported by including the collection methods corresponding to each fish collected (e.g., Table 3). DEQ notes that no representative fish from zones 6 or 8 were collected. Zone 6 was one of the areas of elevated PCBs identified in the ROD. Further, according to the SAP, "the collection of small whole-fish composites (<125 mm) will prioritize perimeter sampling zones 6, 7, and 8 to evaluate small home range species closest to the Owens facility." Please clarify whether all perimeter zones were sampled with similar level of effort.
13. Section 3.1.1 Fish Collection. This section states that "Common carp was found in all zones where fish were captured," though according to Table 3, carp were only captured in zone 1. Please revise.

14. Section 3.1.1 Fish Collection, Table 3. Some sample names (e.g., SF-7-01, SF-02-40, LF-1-43, and LF-1-44) and dates in this table do not match other portions of the report. Please revise to ensure consistency.
15. Section 3.1.1 Dissolved Oxygen. According to the SAP, water temperature, turbidity, and dissolved oxygen levels were to be collected at each sampling location. Please clarify whether the equipment malfunction discussed in this section impacted temperature and turbidity readings in addition to dissolved oxygen. Please add the water temperature and turbidity readings to Table 4 or a separate table if needed.
16. Section 3.2 Compositing Scheme. Please clarify that the compositing plan created by DEQ was predicated on fish information provided to DEQ, including species that had been misidentified, and that this misidentification was not discovered until later.
17. Section 3.3 Laboratory Results. In the relevant subsections, please include equations or methods for calculations, such as midpoint PCB TEQ and lipid-normalized values. Please note that it is standard for lipid-normalized results to be calculated using the lipid fraction rather than percent (e.g., lipid-normal total PCBs = total PCBs / (percent lipid/100%)). If this was not the method used for calculating lipid-normalized results, please update the calculations and revise all relevant sections and tables.
18. Section 3.3.2 Lipids, Table 6. This table does not include any PCB analysis result information, as the text above indicates. Please add this information so that Table 6 is analogous to Table 8.
19. Section 3.3 Laboratory Results. This section of the report discusses results separately for game (largemouth bass) versus non-game species. Please clarify how the fish were differentiated into these categories, and consider expanding the game fish definition, as some communities may also eat carp.
20. Section 3.3.3 Game Bass Results. Please calculate and provide whole-body PCB results for the largemouth bass using the fillet and carcass data. Please include the calculation method as part of this discussion including the masses of the fillet and carcass.
21. Section 3.3.3 Game Bass Results, Table 8. The percent lipid values displayed in this table are lower than expected for bass. Please describe any differences in lipid analysis between the bass and other fish, or what may account for these results.
22. Section 3.3.4 Results Summary, Table 9. Some sample names (e.g., SWF-7-01) and dates (e.g., dates for SWF-7-01, SWF-7-03, and SWF-7-02) in this table do not match other portions of the report. Please revise to ensure consistency.
23. Section 4.1 Fish Monitoring Study. Please evaluate the results by considering:
 - a. Lipid-normalized data to evaluate trends between species and locations.
 - b. Non-lipid-normalized data to evaluate results compared to the ROD standard.
 - c. Comparing whole body versus fillet results separately.
24. Section 4.3 Comparisons Between Past and Current Studies. This section indicates that the 2004 Arcadis report only included reported values for total PCBs for fish. However, the 2004 study also included fish analyses for PCB congeners and lipids, with results provided in Appendix B. Additionally, the 2004 study included many of the same species that were collected during 2017 and 2022. Please revisit the 2004 report for additional data and use the 2004, 2017, and 2022 datasets to

evaluate trends. This would be well supported by providing tables similar to Table 9 for the 2004 and 2017 data. Fillet versus whole-body results should be kept separate. Please consider:

- a. Lipid-normalized data to evaluate trends between species, between locations, and over time, where applicable.
 - b. Non-lipid normalized data to evaluate fish consumption risk by comparing results to the ROD standard.
25. Section 4.3 Comparisons Between Past and Current Studies, Table 10. Due to differences in number and type of species across the fish collection events, overall mean concentrations may not be the best way to evaluate long-term trends. Further, generally lipid-normalized values should be used to evaluate trends over time.
- a. Please specify the number of fillet and whole-body samples as well as the corresponding species for each fish collection event to contextualize the results in Table 10.
 - b. The second paragraph of this section indicates that total PCB concentrations from 2004 to 2022 generally show a declining trend in Table 10. Please describe how this was determined (e.g., trend line). The number of data points to make this observation are limited (i.e., 3).
26. Section 4.3 Comparisons Between Past and Current Studies, Table 11 and Figure 3.
- a. Please add the sample IDs to this table and indicate the number of fish in each composite.
 - b. The 2004 fish tissue study also included largescale sucker, three-spine stickleback, carp, and largemouth bass. Please add these results to the table.
 - c. Please add the results for other species beyond largescale sucker and three-spine stickleback from 2017 and 2022 that also have results in other sampling events for comparison.
 - d. Please update Figure 3 to include the additional data described above.
27. Appendix G Approved Sample Compositing Plan.
- a. Please consider reinserting the spreadsheet columns that were used in creating the compositing plan, including species, adult/juvenile distinction, length, and mass.
 - b. Please clarify if the sample IDs in red text signify anything.
 - c. Please clarify the meaning of the notes included on the far righthand side that reference a “new SR”. For example, what does “SR” mean?
 - d. Please include an indication of which fish were initially misidentified.
28. Appendix H Coordinates for Fish Sampling. The SAP specifies that “Each sampling location will be recorded using a dGPS.” Please clarify whether GPS locations were recorded for collection methods beyond those currently listed in Appendix H.

Please feel free to contact me with any questions at 503-709-8253 or at Sarah.VanGlubt@deq.oregon.gov.

Sincerely,

Sarah Van Glubt

Sarah Van Glubt

Project Manager & Data Analyst
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Project File – ECSI #2086