

Effects of Sediment Dredging on Contaminant Levels in Fish from the Buffalo River Area of Concern

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Background/Objectives. The United States and Canada agreed to restore the chemical, physical, and biological integrity of the Great Lakes ecosystem under the first Great Lakes Water Quality Agreement in 1972. Under this agreement, 43 Areas of Concern (AOCs) were designated in the U.S. and Canada, with as many as 14 Beneficial Use Impairments (BUIs) identified in each AOC. Several BUIs, including “Restrictions on Fish and Wildlife Consumption” (BUI No. 1) in the Buffalo River AOC were directly linked to contaminated sediments. As part of the AOC’s Remedial Action Plan, sediments were removed (dredged) from several highly-contaminated reaches between 2011 and 2015. The present study was initiated during summer 2017 to quantify contaminant levels in resident fish species at 2 (and 5) years post remediation. The primary objectives of this effort are to determine if current AOC-specific fish-consumption advisories differ from the general region-wide advisories, if the AOC-specific advisories should be changed, and if the “Restrictions on Fish and Wildlife Consumption” BUI may be removed in the near future.

Approach/Activities. The New York State Department of Environmental Conservation (NYSDEC) and the U.S. Geological Survey (USGS) used day-time boat electrofishing to collect as many as 10 common carp, 10 brown bullhead, 10 largemouth bass, and 10 minnow composites (or alternates) from each of the four zones in the AOC during June 2017. Fillets or composites (minnows) from each of the four species groups from each zone were analyzed by contract laboratories during 2017 and 2018 for PCBs, PAHs, metals, pesticides, lipids, and water content.

Results/Lessons Learned. Although data are just now becoming available and a second post-remediation survey will be required in 2020 before the BUI removal can be considered, data from this first set of samples will help: (a) quantify the present-day contaminant loads in resident fish, (b) provide data for the direct comparison between pre- (baseline) and post-remediation contaminant levels, (c) determine if changes in local fish-consumption advisories could be anticipated, and (d) indicate whether the Restrictions on Fish and Wildlife Consumption BUI might be removed in the near future. Study results will provide specific details needed to assess removal criteria. There are no AOC-specific fish and wildlife consumption advisories by New York State (e.g., carp for PCBs) for BUI No. 1 in the Buffalo River AOC at 2- and 5-years post dredging.