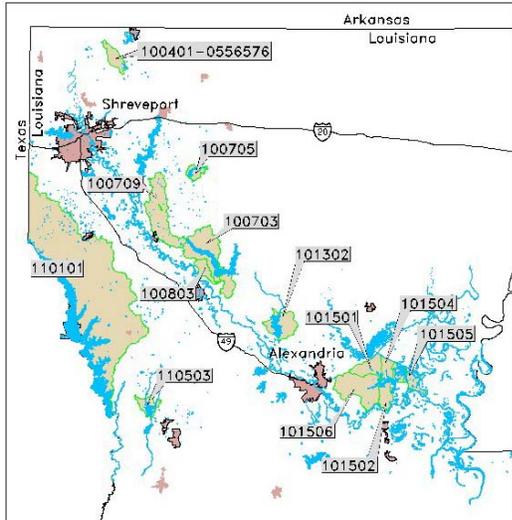


TMDLS FOR MERCURY FOR SELECTED SEGMENTS IN THE RED RIVER AND SABINE RIVER BASINS, LOUISIANA

Fact Sheet



Section 303(d) of the Federal Clean Water Act and the U.S. Environmental Protection Agency's Water Quality Planning and Management Regulations (Title 40 of the code of Federal Regulations [CFR] Part 130) requires states to develop total maximum daily loads (TMDLs) for waterbodies that are not meeting water quality standards. A TMDL establishes the amount of a pollutant that a waterbody can assimilate without exceeding the water quality standards for that pollutant. TMDLs provide the scientific basis for a State to establish water quality-based controls to reduce pollution from both point and nonpoint sources to restore and maintain the quality of the State's water resources.

A TMDL for a given pollutant and waterbody is composed of the sum of individual wasteload allocations (WLAs) for point sources and load allocations (LAs) for nonpoint sources and natural background levels. In addition, the TMDL must include an implicit or explicit margin of safety (MOS) to account for the

uncertainty in the relationship between pollutant loads and the quality of the receiving waterbody, and may include a future growth (FG) component.

This report presents TMDLs that have been developed for mercury for several subsegments associated with lakes with mercury fish consumption advisories in the Red and Sabine River basins in Louisiana (Figure 1). These subsegments are listed in Table 1 along with a summary of their characteristics.

Table 1. Mercury TMDL subsegments characteristics.

Subsegment Number	Waterbody Description	Subsegment Area (km ²)	Dominant Land Use (%)
100401-0556575	Ivan Lake	88	Forest (75.1%)
100703	Black Lake & Clear Lake	350	Forest (49.1%)
100705	Kepler Creek Lake	55	Forest (53.5%)
100709, 100709-001	Grand Bayou & Grand Bayou Reservoir	322	Forest (49.0%)
100803	Saline Bayou	139	Grassland/pasture/hay (38.6%)
101302	Iatt Lake	176	Forest (57.7%)
101501	Big Saline Bayou	124	Wetlands (61.8%)
101502	Saline Lake	157	Cultivated crops (46.2%)
101504	Saline Bayou	61	Wetlands (79.4%)
101505	Larto Lake	85	Cultivated crops (50.4%)
101506	Big Creek	312	Forest (30.4%)
110101	Toledo Bend Reservoir	3,000	Forest (41.6%)
110503	Vernon Lake	78	Forest (34.4%)

These waterbodies were included on the Louisiana Department of Environmental Quality (LDEQ) final 2004 303(d) list as not supporting their fish and wildlife propagation designated uses, and were ranked as priority #1 for TMDL development. Atmospheric deposition of mercury was identified as the suspected cause of impairment for the subsegments. The Mercury Action Level in Louisiana for fish consumption advisories is 0.5 mg/kg. There have been no known violations of the numeric mercury water quality standard in any of the listed subsegments.

These TMDLs were developed by applying a load reduction factor to the estimated existing mercury load to the waterbodies. The load reduction factor was estimated based on the difference between the fish tissue mercury concentrations measured in the waterbodies and the Louisiana Mercury Action Level, 0.5 mg/kg. The load reduction factors to achieve 0.5 mg/kg mercury in the listed waterbodies ranged from 0.31 to 0.83. This method assumes that reducing mercury loads to the waterbodies will result in an equal reduction in the fish tissue mercury concentration. This assumption is based on what is known of how mercury moves through the environment and into fish, and has been verified by field studies of the response of fish tissue mercury concentrations to changes in mercury loading to waterbodies.

The estimated mercury load to the listed waterbodies included mercury atmospheric deposition from local emission sources, regional atmospheric deposition, mercury previously deposited in the watershed and transported to the waterbody via erosion, inflows from upstream subsegments, and point sources. The largest sources of mercury load to the listed subsegments were erosion and atmospheric deposition.

In TMDL development, allowable loadings for all pollutant sources are determined so that they add up to no more than the TMDL. The WLAs for permitted point source discharges were set to the existing permit limit or Louisiana mercury water quality criterion (whichever was lower) multiplied by the point source flow. The MOS for these TMDLs is implicit as a result of conservative assumptions made in their calculation. A 10% FG was included in the TMDLs. The LAs include background loading and human-induced nonpoint sources. The LAs were set to the TMDL minus the WLA and the FG. The TMDLs and percent reductions needed are summarized in Table 2.

Table 2. Summary of TMDLs and percent reductions.

Subsegment	TMDL (g/day)	MOS (g/day)	FG (g/day)	WLA (g/day)	LA (g/day)	Reduction
100401-0556575	3.5	implicit	0.4	0	3.1	62%
100705	5.9	implicit	0.6	0	5.3	60%
100703	22.5	implicit	2.2	0	20.2	50%
100709	22.0	implicit	2.2	0.005	19.8	50%
100803	9.3	implicit	0.9	0	8.4	50%
101302	3.0	implicit	0.3	0	2.7	68%
101501	1.8	implicit	0.2	0	1.6	68%
101502	8.0	implicit	0.8	0	7.2	68%
101504	1.9	implicit	0.2	0	1.7	68%
101505	5.6	implicit	0.6	0	5.0	68%
101506	11.0	implicit	1.1	0	9.9	68%
110101	59.2	implicit	5.9	0.08	53.3	51%
110503	5.5	implicit	0.5	0	5.0	17%