

Central Valley Water Board
2010/11 American River Watershed Mercury TMDL Sampling Plan

Sampling Purpose: To support the development of mercury TMDLs for the eight current mercury-listed water bodies and possibly evaluate conditions for other water bodies that will likely be listed in the future.

Primary Goals: Collect water and sediment data to help determine:

- (1) Methylmercury sources and concentrations in the watershed.
- (2) Watershed sources of sediment with elevated mercury concentrations.
- (3) Mercury and methylmercury mass budget for Folsom Lake to determine its relative contribution of mercury and methylmercury compared to its tributary watersheds.
- (4) Bioaccumulation Factors (BAFs), which are ratios of methylmercury concentrations in fish to methylmercury concentration in water

Secondary Goals: Collect water and sediment data to:

- (1) Estimate mass budgets for impaired water body sources and losses.
- (2) Support model development.

Constraints:

- Funding available for only about three water sampling events.

Assumptions:

- All samples are collected and analyzed using guidance from the 2000 CALFED Mercury Program QAPP. Samples will be sent to Moss Landing Marine Laboratories for analyses. Aqueous methylmercury samples will be analyzed with a MDL of ~0.02 ng/L (Method 1630 M), aqueous total mercury samples will be analyzed a MDL ~0.2 ng/L (Method 1631e M), suspended sediment concentration will be analyzed with a MDL ~1.0 mg/L (Method ASTM D3977 M), and total mercury sediment samples will be analyzed with a MDL ~0.004 µg/g dry weight (Method MP SL-107/MP SL-103). Sediment total mercury will be analyzed on the fine grained (<63 micron) fraction, if available.
- Three composite sediment samples will be collected from river and reservoir locations. The laboratory will analyze fine material (<63 micron) for total mercury from samples with adequate amounts of fines. Otherwise, the samples will be analyzed as bulk sediment.
- No additional sediment sampling is planned for the lower American River and Lake Natoma because we have data for these water bodies. We will sample water from outfall of Folsom Lake at the upstream end of Lake Natoma to support developing a mass budget for Folsom Lake.
- Samples collected from the outfall of dams may or may not be representative of water in the upstream reservoirs. As a result, if we need data for reservoir exports and within-reservoir conditions, we shall attempt to sample water from both dam outfalls and within the reservoirs.

- The plan includes sampling water MeHg, THg, and SSC for the North Fork American where it comes into Folsom Lake, as well as, the North Fork and Middle Fork upstream of their confluence because the North Fork/Middle Fork sites give information about where in the upper watershed mercury and methylmercury come from, while the North Fork American River site where it enters Folsom Lake provides a better integration of what actually enters the lake.
- Although it is not 303(d) listed, the sampling plan includes French Meadows Reservoir because a comparison of FMR to Hell Hole Reservoir could help understand why HHR is impaired.
- Because of the variability of water THg and SSC concentrations associated with varying flows, the plan includes samples from a couple storm events for the North and South Fork American Rivers upstream of Folsom Lake and Lake Natoma downstream of Folsom Dam to support development of a mass budget for Folsom Lake.
- Past sampling efforts indicate water MeHg concentrations are often below method detection limits. As a result, we expect that all or nearly all water samples would have NDs for filtered samples and will not analyze filtered water samples for MeHg.
- Small tributaries to the listed water bodies likely will not be flowing during some or all sampling events, and tend to have very flashy flows when there are storm events. As a result, we will sample only water if flowing, and we may have to rely on sediment THg for small tributary inputs such as Slab, Weber, and Greenwood Creeks.

Sampling Locations: See “110118 ARW Monitoring Sites.xls”.