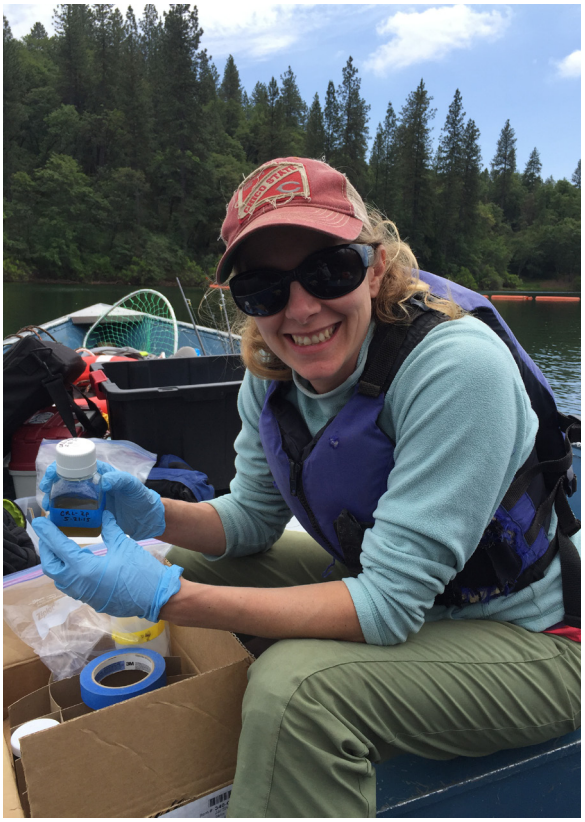
Monitoring Plan

Combie Reservoir



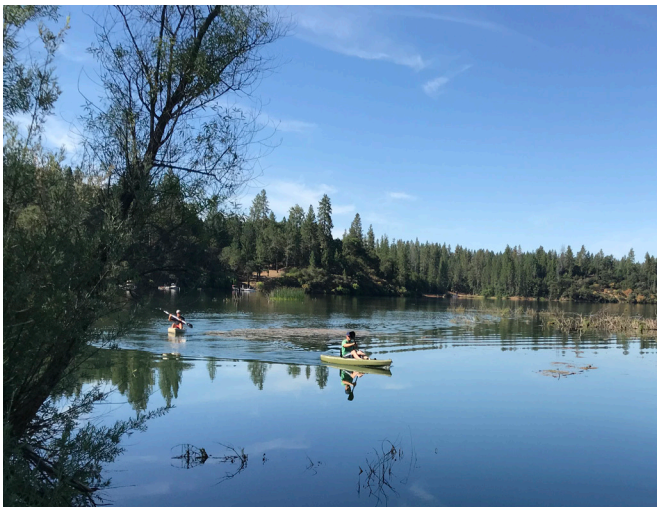
Summary:

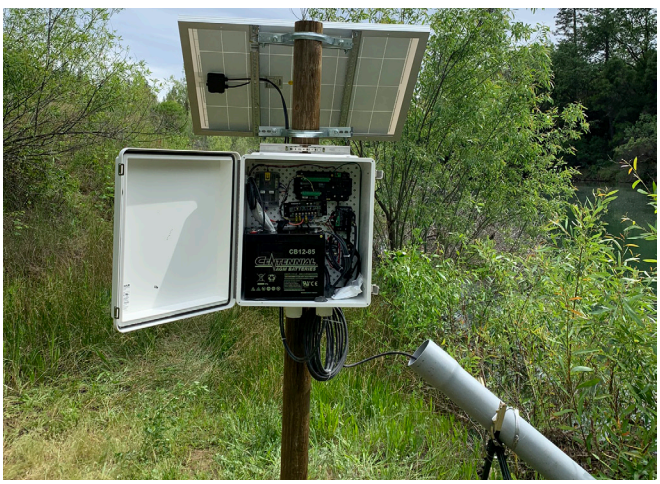
To evaluate the effect of excavating mercury-contaminated sediment from the Combie Reservoir and processing it to remove mercury from the material, a four-part monitoring plan was developed that includes:

1. Regulatory compliance monitoring being conducted by NV5 and Nevada Irrigation District (NID)
2. Effectiveness Monitoring being conducted by NV5 and NID
3. Reservoir Ecosystem Monitoring being conducted by United States Geological Survey (USGS)
4. Real-Time Monitoring being conducted by The Sierra Fund (TSF)

This work is being funded by the Department of Water Resources and is key to developing best-practices that can be scaled up and replicated. The results of the monitoring efforts will enable a thorough evaluation of the project, lessons learned and tools that can be applied to other sediment and mercury removal projects.

Evaluating the methods proposed in this project and documenting its impact provides a path to clean up other similarly impacted contaminated sediments in mining-impacted Sierra Nevada watersheds and elsewhere, and to reduce the threat of mercury exposure across California. The project will serve as a reference to managers, engineers, scientists and regulators involved with maintenance dredging and mercury source reduction.





Monitoring Components:

1. **Regulatory Compliance:** The water quality permits require that a suite of parameters that might be effected by the process be evaluated prior to the start of the project. The Anti-Degradation Report identifies the constituents that need to be monitored during the project. The Clean Water Act Section 401 certification specifies the frequency that these parameters need to be monitored to ensure that the project is within all water quality regulations during operation.

2. **Project Effectiveness:** The amount of sediment that is treated and the amount of mercury removed from the treatment process is being evaluated throughout the process. Liquid elemental mercury and the particulate-bound mercury associated with the fines are being removed by this process. Liquid elemental mercury is removed by the centrifuge and particulate-bound mercury is removed with the coagulants and polymers. The effectiveness of sediment and water treatment steps will be monitored so that an adaptive management approach can be used to improve the engineering processes throughout the project.

3. **Reservoir Ecosystems:** The ecosystem monitoring is being conducted before, during and after the project to see if by removing mercury-contaminated sediment there is a measurable effect on the aquatic food web. Simply put, "are the fish less contaminated?" The dynamic processes in the food web means that many different steps are monitored to be able to detect a difference including: five size classes of phytoplankton, young-of-the-year-fish, and methylmercury in the water near the bottom of the reservoir (benthic exchange).

4. **Real-Time Model:** Real-time monitoring is being used to predict mercury levels in the water based on a suite of parameters that can be monitored continuously. The multivariate predictive model is being developed using parameters that are known to have associations with mercury concentrations including: total suspended solids, total dissolved solids, turbidity, and fluorescence of dissolved organic matter. Real time monitoring enables the project to adaptively manage the removal process if an issue were to ever arise.