



RMP

REGIONAL MONITORING
PROGRAM FOR WATER QUALITY
IN SAN FRANCISCO BAY

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May 23, 2019

Memorandum

To: Selenium Workgroup, RMP Technical Review Committee

From: Don Yee, Jay Davis, and Nina Buzby, SFEI

Subject: Selenium Intercomparison and Laboratory Selection

In the first quarter of 2019, five analytical laboratories participated in an intercomparison study, analyzing selenium concentrations in water, clam, and sturgeon samples. The motivation for this study was to identify a new lab that could continue monitoring of North Bay clams and water, historically done by the USGS lab. The five labs that participated were: (1) Brooks Applied Laboratories [BAL], (2) City and County of San Francisco [CCSF], (3) Moss Landing Marine Labs [MLML], (4) Physis Environmental Labs, and (5) the Cutter Lab at Old Dominion University [ODU].

The criteria for laboratory selection (listed below) were presented and approved by the Selenium Workgroup at the annual workgroup meeting on April 26, 2019. Lab results were compared and scored based on adherence within one standard deviation from the mean unless noted otherwise.

- Precision (internal consistency on lab replicates or sturgeon microplugs from the same site)
- Recovery (results relative to intercomparison mean)
- Recovery (results relative to historical value measured by USGS or the Bay RMP)
- CRM performance (past recovery relative to CRMs or other external standards)
- CEDEN reporting ability
- Communication and timely reporting (within one day)
- Cost (less than 10% over mean)

The greatest weight was given to precision and recovery results, followed by CRM performance. Old Dominion University (ODU) participated in the water intercomparison, but they were not scored for other criteria because they are not bidding to analyze samples in the three matrices. However, ODU results for water were used when calculating study means for the intercomparison. The attached table summarizes the evaluation statistics with results differing from the target criteria highlighted in red.

Based on lab performance in the aforementioned categories, RMP staff recommend Brooks Applied Laboratories (BAL) for selection. BAL results had the fewest deviations averaging more than 30% (only one of +43% for dissolved selenium in water) outside the intercomparison means across all five matrices. Additionally BAL showed no deviations averaging more than 30% from the estimated historical concentrations from the USGS lab (for clam) and RMP (sturgeon tissue). BAL also handled sturgeon tissue subsampling for the study, indicating an ability to prepare subsamples for isotope analysis by UC Davis in the future.