



Scott McReynolds
Department of Water Resources
2440 Main Street
Red Bluff, CA 96080

September 1, 2004

Dear Scott:

Below is a brief summary of the targeted Toxicity Identification Evaluation (TIE) results for several of the DWR sampling events. Note that the TIEs were targeted toward particulate-associated contaminants (using centrifugation), non-polar organics (using C18 solid phase extraction columns), and divalent cations (using Chelex solid phase extraction columns).

April 2002

There was 10% *Ceriodaphnia* survival for the FRDFH sample collected during April 2002. Based on this testing, and following communication with DWR staff regarding potential contamination sources from the California Department of Fish and Game hatchery, a Phase I TIE was performed on the sample. Unfortunately, the baseline FRDFH sample was not toxic during the TIE, indicating that the toxicity was transient, or fugitive, in nature, and had degraded by the time that the TIE work was performed. In addition, anomalous mortalities were observed in several test replicates. Due to the absence of toxicity and anomalous poor survival in several test replicates at the time of the TIE, and despite the significant effort and cost that this TIE represented, Pacific EcoRisk did not charge DWR for this TIE.

August 2003:

Complete *Ceriodaphnia* mortality was observed for several of the site waters. Based on these results, TIEs were performed on the samples.

FRFBD sample:

Sample remained toxic upon retesting. Survival toxicity was removed in the centrifugation treatment, suggesting that particulate-associated contaminants were contributing to the observed toxicity.

AOCFR sample:

Sample remained toxic upon retesting. Survival toxicity was removed in the Chelex treatment, suggesting that metals were contributing to the observed toxicity.

FRUAO sample:

Sample remained toxic upon retesting. Survival toxicity was removed in the centrifugation treatment, suggesting that particulate-associated contaminants were contributing to the observed toxicity.

FRDAO sample:

Sample remained toxic upon retesting. Survival toxicity was removed in the C18 SPE and Chelex treatments, suggesting that metals and non-polar organic contaminants were contributing to the observed toxicity.



FRDSO sample:

Sample remained toxic upon retesting. Survival toxicity was partially removed in the C18 SPE treatment, suggesting that non-polar organic contaminant(s) were contributing to the observed toxicity.

FRHSP sample:

Sample remained toxic upon retesting. Survival toxicity was removed in the C18 SPE treatment, suggesting that non-polar organic contaminant(s) were contributing to the observed toxicity.

November 2003

Chronic *Ceriodaphnia* reproduction toxicity was observed in several samples during the 11/7/03 and 11/14/03 stormwater sampling events, and toxicity persisted during follow-up pre-TIE testing. Although identifying the causative factors for *Ceriodaphnia* reproduction toxicity is challenging, and performing TIEs on samples with reproductive toxicity is not common in most ambient monitoring studies, DWR staff hoped to identify the cause(s) of the toxicity in the November 2003 samples since reproductive toxicity has been observed during most of the DWR Oroville Reservoir FERC study. Based on the results of the November testing, targeted TIEs were performed on some of the samples, as per guidance from DWR staff.

RSDRN 11/7/03 sample:

The RSDRN sample was not toxic during the TIE, indicating that the reproduction toxicity was transient.

PSDRN 11/7/03 sample:

The PSDRN sample was not toxic during the TIE, indicating that the reproduction toxicity was transient.

RSDRN 11/14/03 sample:

The RSDRN sample was not toxic during the TIE, indicating that the reproduction toxicity was transient.

KRDRN 11/14/03 sample:

The KRDRN sample was not toxic during the TIE, indicating that the reproduction toxicity was transient.

FRDFH 11/14/03 sample:

The FRDFH sample was not toxic during the TIE, indicating that the reproduction toxicity was transient.



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If you have any questions regarding the performance and interpretation of these tests, feel free to contact my colleague Dr. Scott Ogle or myself at (925) 313-8080.

Sincerely,

Stephen Clark
Laboratory Director