

Year 2000 and 2001 Priority Actions

Total Organic Carbon (TOC) Evaluation and Treatment - 33

1. General Description of the Action

Develop a TOC monitoring system for the Delta and conduct pilot scale treatment system studies to remove TOC from agricultural drains.

The goal to identify costs and operational constraints of treating agricultural drain water to meet future standards imposed on drinking water quality. Between pilot scale testing and area TOC monitoring, we will be able to accurately evaluate the feasibility of this option

Total Organic Carbon (TOC) is a water quality constituent that is a precursor to disinfection byproducts which are human health hazards. TOC originates from many sources including vegetation in natural channels, algae, decomposing peat soils, agricultural drain material, and treated sewage effluent. These sources and more are present in the Delta. The relative contributions of each source to the TOC levels in export pumps is not well understood.

Monitoring of TOC in delta waterways has been done on a limited basis but it needs much more refinement. Monitoring of agricultural drains could provide the information necessary to determine if moving a drain would improve export water quality without adversely impacting other beneficial uses Automated TOC samplers could be employed at various locations to get frequent data of discharges and surface water. A complete monitoring system is proposed for the 1999/2000 wet season and irrigation season.

Removal of TOC can be accomplished in a few methods, the most common of which are enhanced coagulation and microfiltration. A pilot scale treatment system is proposed for a agricultural drain from a delta island with peat soils. The pilot project would include selection of the treatment system, operation to steady state, monitoring and evaluation.

TOC removal is proposed to benefit the ecosystem and export water quality. One benefit added to the obvious benefit to water quality is the possibility of being able to use the solid treatment residue for enhancing habitat.

2. Cost Estimates

Monitoring studies of TOC in the Delta would begin at some critical locations at a cost of about \$0.5 million for the first year. If the program is successful, the program could be continued at that level or increased to \$2 million per year for a several years and then decreased to about \$0.5 million a year after about year 5.

The pilot scale treatment project will cost about \$4.0 million dollars after design, permitting, equipment costs, energy costs, sampling, and report generation. Subsequent years may have similar costs for further testing or higher costs for full scale implementation. Full scale

implementation costs could be shared by affected parties.

CALFED Staff for about 1/4 time would be needed to oversee design and implementation as well as evaluation of the data. Additional CALFED time may be used if modeling needed to be done to extrapolate monitoring results to other parts of the delta or to different water years.

3. Program Administration and Governance

The CALFED Water Quality Program should oversee the coordination of pilot scale development and siting of the TOC monitoring locations. The Water Quality stakeholder group (the Water Quality Technical Group) would be given access to the monitoring data as well as various interested parties to independently scrutinize the results.

Design and contracting services should remain with DWR. If required, the US Army Corp of Engineers could act as the contracting agency for this work.

4. Program Coordination

The Department of Water Resources has the engineering staff to contract design and oversee delivery and installation of pilot scale test equipment and related monitoring for test verification.

The Department of Water Resources staff and it's Bryte Chemical Laboratories could provide field staff and necessary reagents for automated sampling. Bryte Chemical Labs could also provide testing for various forms of TOC in samples gathered by DWR. This new sampling program could be incorporated into a DWR sampling program if funds were made available.

5. Schedule

Design and operation of the TOC Delta monitoring system and the pilot scale treatment plant can be accomplished prior to the beginning of Fiscal 1999-2000. Implementation of both programs could begin immediately upon funding. Monitoring efforts should be expanded and extended beyond 2000.

Delays in contracting or equipment delays could slow completion. If advance authorization is given, most delays could be eliminated.