

Lake Elsinore/Canyon Lake TMDL Compliance Program

San Jacinto River Watershed Sampling Plan Phase 1 Monitoring

April 5, 2007

Lake Elsinore/Canyon Lake TMDL Development Program San Jacinto River Watershed Sampling Plan

Introduction

Lake Elsinore is a natural freshwater lake in Southern California, providing a variety of natural habitats to terrestrial and aquatic species. The beneficial uses of the lake include water contact recreation, non-contact recreation, warm-water habitat and wildlife habitat.

Canyon Lake was constructed in 1928 as the Railroad Canyon Reservoir. It is about 2 miles upstream of Lake Elsinore and water spilled from Canyon Lake is a main source of water for Lake Elsinore. The beneficial uses of Canyon Lake include municipal and domestic water supply (MUN), agricultural supply (AGR), groundwater recharge (GWR), body contact recreation (REC1), non-body contact recreation (REC2), warm freshwater aquatic habitat (WARM), and wildlife habitat (WILD).

In December 2004, the Santa Ana Regional Water Quality Control Board (RWQCB) adopted amendments to the Water Quality Control Plan for the Santa Ana River Basin (Basin Plan) to incorporate nutrient TMDLs for Canyon Lake and Lake Elsinore. The Basin Plan Amendment specifies, among other things, monitoring recommendations to track compliance with TMDL's and associated load allocations, as well as measuring compliance to in-lake numeric water quality targets.

The Objectives of the San Jacinto River Watershed monitoring program are as follows:

1. Determine the total nutrient loads into Lake Elsinore and Canyon Lake from their tributaries, i.e., the San Jacinto River, Salt Creek, and Cottonwood Creek.
2. Determine the total nutrient load from various sources categorized by land use types, namely, agricultural, urban runoff, and open space sources. The sources drain into the above-mentioned tributaries. These tributaries in turn drain into Canyon Lake and Lake Elsinore.
3. Provide water quality data for watershed model update.
4. Provide water quality data to evaluate TMDL compliance with waste load allocations, and load allocations.

To achieve these objectives, the sampling activities will be coordinated by Riverside County Flood Control and Water Conservation District (RCFC&WCD). The sampling activities will involve collecting eight grab samples across the hydrograph for at least three storm events per year. Laboratory services will be provided by Edward S. Babcock and Sons, Inc. (Babcock).

Sampling Period

Because there is no flow in the tributaries during the dry period (June through October), the sampling activities will take place only during the rainy season (November through May). Each organization participating in the sampling activities will be prepared to implement the designated sampling activities by November 20 of each year.

Sampling Location and Station Assignments

There are four sampling stations throughout the San Jacinto River watershed; Lake Elsinore and Canyon Lake area (see QAPP Figure 4). The sampling locations were carefully selected to reflect various types of land use. Many of the sampling stations are at stream gauge stations installed by the US Geological Survey or RCFC&WCD. The stations are described in Table 1:

Table 1 - Station Assignments

Location Number and Description	Database Station Number		Crew Assignment
3- Salt Creek at Murrieta Rd	745		RCFC&WCD
4- San Jacinto River at Goetz Rd	759		RCFC&WCD
6- San Jacinto River at Ramona Expressway	741		RCFC&WCD
30- Canyon Lake Spillway	841		RCFC&WCD

Sampling Crews

The crews participating in the sampling activities will be taken from RCFC&WCD staff. Actual personnel may change from event to event depending on availability and work load.

Equipment

Field equipment will be provided by RCFC&WCD. Sample bottles and labels will be provided by Babcock. The field equipment and supplies necessary for the sampling activities include the following:

- pH meter
- Conductivity meter
- Temperature meter
- Field Notes (water proof paper)
- Pen
- Indelible markers
- Clip board

- Camera with film or disc (35 mm or digital)
- Sample bottles (labeled)
- Ice chest
- Ice or blue ice
- Chain of Custody forms
- Cell phone/radio contact (Hand held radio and vehicle radio)
- Gloves
- Rope
- Telescoping pole
- ISCO sampler with tubing
- Plastic sample bottles cut into scoops to collect water, transfer into collection bottles, and act as a field container for on-site measurements. Dispose after each collection event (i.e., do not re-use).
- Rain coat
- Safety vest
- Boots
- Chest waders
- First Aid Kit
- Flash light
- Extra batteries for flash light and field meters
- Contact list
- **Vehicle:** Each crew is responsible for having a 4-wheel drive vehicle available for the fieldwork. Each crew is also responsible for having backup vehicles ready for use in case of emergencies.

Responsible Parties

RCFC&WCD

Steve Clark at the RCFC&WCD is responsible for notifying the sampling crews to prepare for sampling. Steve Clark will notify the laboratory for sample dropoff. David Ortega is responsible for coordinating staff training, update of sampling protocol, and ensuring that all field data sheets and chain-of-custody forms are filled out properly.

Edward S. Babcock and Sons, Inc.

Maria Maestas is responsible for supplying the sample bottles, coolers and chain of custody forms to the RWQCB and RCFC&WCD.

Larry Chrystal is responsible for coordinating the sample analyses and for addressing any changes with respect to sample analyses.

Sampling Strategy

The following sample collection protocols are intended to result in approximately 12 discrete sample collections for monitoring sites associated with the larger tributary sub-watersheds and approximately 8-12 sample collections for monitoring sites associated with the smaller sub-watersheds. Ideally, an attempt should be made to collect four samples on the rising limb and four samples on the falling limb of the hydrograph. The most representative eight samples will be selected and sent to the laboratory for analysis. These guidelines are subject to revision as the hydrologic response of each sub-watershed is more accurately characterized. If the storms generate local flow that does not reach the lakes, water quality samples will still be taken at the tributaries that do have flow. Such information is valuable for water quality model calibration.

Field staff will install automatic sampling equipment at the monitoring locations the day before the predicted storm event. Prior to initiating sampling, the automatic samplers will be programmed to collect a sample after a predetermined amount of flow (in acre feet) has passed by the sensor. This flow volume will be determined by reviewing the 24-hour QPF (Qualitative Precipitation Forecast) and, based on rainfall/runoff values from past events, determine the flow volume from the predicted precipitation. The predicted storm volume will be divided such that 12 samples will be collected across the hydrograph, with equal flow volumes attributed to each sample. After the storm has passed, the sampler will be taken down, cleaned, and stored for the next use.

*In the event of unusual or irregular storm or flow conditions, the sampling crews should consult with Steve Clark and determine if a revised sampling schedule should be followed. **Some sampling sites are likely to convey flow for extended periods due to the hydrologic response of the large tributary drainage area. Monitoring at these sites may involve collecting samples over longer intervals, for example, every 12 hours over a period of two days or more, to properly distribute the samples across the storm hydrograph. These sites include:***

- **Site 3** ***Salt Creek at Murrieta Rd***
- **Site 4** ***San Jacinto River at Goetz Rd***
- **Site 6** ***San Jacinto River at Ramona Expressway***
- **Site 30** ***Canyon Lake Spillway***

Crew Mobilization

The steps that will be followed for mobilizing the crews will be as follows:

1. Steve Clark will contact all of the crew members upon an impending storm event. Primary contact information is contained in Table 3.
2. All of the crew members will be notified when they will be put on stand-by status and that they should be prepared for sampling activities. All of the equipment should be ready for field work and the vehicles should be fueled.
3. Steve Clark will contact crew leaders when sampling activities for their respective locations will commence.
4. The crew leaders will notify each crew member to mobilize to the sampling locations for sampling.

5. Each sampling crew should either deliver the samples to Babcock or coordinate with Steve Clark for sample drop off and notify Steve Clark when they have completed sampling activities.
6. Steve Clark will notify Cindy Li after each sampling activity about the progress of each sampling event (e.g., whether samples were collected, if there were any anomalies or other issues that need to be resolved, etc.).

The factors that Steve Clark will use to proceed with sampling mobilization are:

- antecedent moisture conditions,
- National Weather Station local forecasts,
- quantitative precipitation forecasts, and
- elapsed time since the last TMDL sampled storm event

Field Sampling and Measurements

Sampling will be done using ISCO 3700 automatic samplers that are pre-programmed (see Sampling Strategy) to sample at uniform flow volumes once the flow has started and continue this sampling regime for 12 sample events. The samples will be picked up by RCFC&WCD staff and labeled for delivery to Babcock Labs.

Analytes measured are summarized in Appendix C.

Data from previous sampling events indicate that many BOD results are either at or below the detection limit of the current analytical method, rendering the BOD data less useful. As a result, only the first sample from each storm will be analyzed for BOD.

Table 3 - Important Telephone Numbers

Name	Agency	Office Phone	Pager	Cell
Steve Clark	RCFC&WCD RCFC&WCD Front Desk (daytime emergencies)	(951) 955-1346 (951) 955-1200		(951) 323-1786
David Ortega	RCFC&WCD	(951) 955-4390		(951) 961-9574
Linda Garcia	RCFC&WCD	(951) 955-1248		
Cindy Li	SARWQCB	(951) 782-4906		(951) 961-3582
Cathleen S. Iijima	Edward S. Babcock and Sons, Inc.	(951) 653-3351		
Maria Maestas	Edward S. Babcock and Sons, Inc.	(951) 653-3351		
Pat Boldt	San Jacinto River Watershed Council	(951) 808-8531		

Sample Bottles and Labels

Two bottles per grab sample will be required for the laboratory to carry out the chemical analyses. Edward S. Babcock and Sons, Inc. will supply the bottles to the appropriate field staff. The field staff will complete the portion of the sample labels and affix them to the sample bottles. After collection of the samples, the following information will be identified on each sample label:

- 1) Analyses to be performed on the sample- to be completed by the sampling crew in the field. For this project, use “SJ TMDL” and Babcock will understand the parameters to be analyzed.
- 2) Date and Time sample collected - to be completed by the sampling crew in the field
- 3) Sample Number which identifies sample location, date, and aliquot (see sample assignment numbers shown in Table 5) - to be completed by the sampling crew in the field
- 4) Initials of individuals who collected the sample - to be completed by field sampling crew

Each crew will be supplied with the bottles necessary to collect the samples at each site prior to the anticipated storm event.

Field Data Sheets

Each crew will complete the field data sheets and turn them in to Steve Clark. These sheets will then be submitted to Cindy Li at the Regional Board for inclusion in the Lake Elsinore/Canyon Lake TMDL file.

Chain of Custody Forms

Edward S. Babcock and Sons, Inc. will supply the chain of custody forms to the Regional Board and each sampling crew. Steve Clark or David Ortega will assist the sampling crews in filling out these forms with the following information:

- 1) Contact Person and telephone numbers: Cindy Li, (951) 782-4906.
- 2) Name of study: San Jacinto River Watershed TMDL.
- 3) Analyses to be done on each sample, use “SJ TMDL”.
- 4) Type of sample collected, matrix “Liquid”.
- 5) Number of bottles per sample and preservatives used (2 nutrient bottles, 2 bacteria bottles).

Each sampling crew will complete the following information on the chain of custody form:

- 1) Sample number
- 2) Date and time sample collected
- 3) Name of sampling staff and signature

Transportation of Samples to Edward S. Babcock and Sons, Inc.

At the end of the sampling activities, each crew will deliver the samples for chemical analyses with the respective chain of custody forms to Babcock or coordinate with Steve Clark for sample drop off. Table 4 provides contact information for Babcock and those responsible for sample transportation.

Table 4 – Sample Transportation Contacts

Sample Drop off point/responsible Staff
Maria Maestas Babcock 6100 Quail Valley Court Riverside, CA 92507 (951) 653 – 3351
RCFC & WCD/ Steve Clark (951) 955 – 1346 1995 Market St, Riverside
RCFC & WCD/ David Ortega (951) 955 – 4390 1995 Market St, Riverside

Driving direction to the Babcock from I-215: Exit on Eastridge/Eucalyptus; Turn on Eastridge to the west; Turn right (north onto and stay on it for half a mile; Turn left on Box Spring Blvd., Turn right to Quail Valley Ct.

Assignment of Sample Numbers

The first letter will be **S** for San Jacinto River Watershed. The next two characters will be the sampling location numbers. The next 6 characters will be for the date of the sampling event (mmddy). The next alpha character will be for the sample order within the event. *For example, sample number S03 010603 E stands for a sample that was collected in the San Jacinto River Watershed at location 3, and on January 6, 2003; this sample was also the fifth sample of that storm event that was taken.*

The sample numbers will be assigned as follows.

Table 5 - Sample Assignment Numbers

Location Number and Description	Zone	Database Station Number	Sample Number
3- Salt Creek at Murrieta Rd	Eastern	745	S 03 mmddy A, B, C, D, E, ...
4- San Jacinto River at Goetz Rd	Central	759	S 04 mmddy A, B, C, D, E, ...
6- San Jacinto River at Ramona Expressway	Central	741	S 06 mmddy A, B, C, D, E, ...
30- Canyon Lake Spillway	Western	841	S 30 mmddy A, B, C, D, E, ...