

Los Angeles River Bacteria TMDL Work Plan

The Cleaner Rivers through Effective Stakeholder TMDLs (CREST) program is assisting with development of a TMDL for bacteria on the Los Angeles River. This Work Plan outlines the approach for developing a Preliminary TMDL Report.

It should be noted that an effort will be made to conduct many of these tasks in parallel (as indicated in the task descriptions and the schedule that follows). The goal is to accommodate “fast-track” delivery of the Preliminary Draft TMDL based on existing data.

SCOPE OF ANTICIPATED TASKS

Task 1: Develop Detailed TMDL Work Plan and Project Management

This task consists of developing final details, schedule and costs for the work plan. It also includes project management and coordination activities.

Task 2: Review Relevant Studies

The purpose of this task is to identify and understand existing studies that have been conducted or that are ongoing in the watershed that may provide relevant information to the TMDL development process. This is a data mining task that may yield data that may influence the TMDL development process, e.g., provide data for inclusion in the TMDL itself, or provide information that may have bearing on how a TMDL is developed or implemented. Under this task, we will attempt to build a library of data and information about the LA River watershed, including not only bacteria data, but data for other constituents that will be needed for future TMDLs, and data on existing BMP infrastructure and other water quality control efforts.

The following subtasks are programmed for this task:

- Data request: Submit data request to potential information sources. List of sources to be developed in coordination with CREST stakeholders. Data requests will be followed-up with in-person, electronic or telephone communications (up to two communications per source).
- Mine studies for relevant information: Each study will be reviewed to identify relevant technical information that sheds light on the watershed, bacteria sources, flow characteristics, available data, etc.
- Prepare deliverable: A Technical Memorandum will be prepared that includes: (a) summary of data requests made and information received; (b) annotated bibliography of documents reviewed that summarizes relevant findings; (c) new data sources identified; and (d) summary of data obtained. Draft and final TMs will be submitted.

Task 3: Data Compilation

The purpose of this task is to establish a single GIS/database framework for the Los Angeles River watershed and populate it with the types of existing data that are relevant to the development of the TMDL, especially bacteria and flow data. In addition, it may be appropriate to include other potentially relevant data such as nutrients. The deliverable from this task

becomes the primary tool for all subsequent work. Data are linked to a GIS framework, which allows analysis at various levels, e.g., sub-watersheds of varying sizes.

This task also includes the identification of a reference watershed that could be used to describe background bacteria water quality. The reference watershed needs to be representative of the area, in terms of size and geography. Ideally, it would be an urban watershed that can be documented as having achieved bacteria water quality standards, but such a watershed may not exist. Therefore, we may seek to identify a watershed that has met water quality goals to the maximum extent practicable. Efforts are underway by other organizations, e.g., SCCWRP, to identify a reference watershed. CREST will coordinate with these efforts, with the intent of developing a consensus statement on the reference watershed.

The following subtasks are programmed for this task:

- Identify reference watershed: In coordination with other agencies, e.g., SCCWRP, we will identify a reference watershed for the LA River Bacteria TMDL. Activities under this subtask will include meetings with SCCWRP and RWQCB staff, facilitation of discussion at CREST Technical Committee meetings, and some limited data comparisons.
- Develop GIS/databases framework: The framework for the storage of all data in a GIS-based format will be established. This task will include obtaining GIS layers for the LA River watershed. Examples of the types of layers requested include channels, channel attributes, land use, parks and other recreational use areas, infrastructure such as storm water outfalls, wastewater discharges.
- Develop data management protocol: Protocols will be developed that describe how data used for this project will be managed, including the database structure, data entry requirements, how missing data for database fields are handled, how duplicate data are addressed, and how data with different units, measures, or methods are integrated. In addition, this protocol will describe how data will be cataloged so that its source can be readily identified and how new data gathered during the course of the development of the TMDL should be reported for inclusion in the database.
- Populate database: Data received in Task 2 will be entered into the project database. Where possible, data will be entered electronically; however, it is anticipated that a portion of the data will need to be keyed into the database, e.g., data contained in reports or data that cannot be converted into an electronic format compatible with the database.
- Develop data queries, QA/QC checks: Data queries to be used for subsequent data analyses will be set up to test the database and conduct QA/QC checks. This step is necessary prior to conducting data analysis to ensure that the database provides the “correct answers” when queried, e.g., geometric mean of bacteria concentrations at a given location.
- Prepare deliverable: The principal deliverable for this task is the establishment of a LA River watershed GIS-based database for use in TMDL development. The database will be provided electronically along with two Technical Memoranda: one that summarizes activities conducted under this task, and the other specifically outlining the data management protocol and annotation of data sources. Draft and final TMs will be submitted.

Development of the GIS framework and data management protocols will begin in parallel with Task 2. As data comes in and has been mined from studies and reviewed, it will be forwarded to the Task 3 team for inclusion in the GIS framework.

Task 4: Data Analysis

The purpose of this task is to characterize bacteria concentrations in the LA River watershed under dry and wet weather conditions. Characterization will include analyses of the magnitude, duration and frequency of exceedances of bacteria water quality objectives and relationship of bacteria exceedances to various flow scenarios, including under the high flow suspension criteria (note: if other data are gathered, e.g., nutrient and temperature data, then bacteria exceedances may be evaluated in the context of these parameters as well). Data can be analyzed in a variety of ways including by season, channel attributes, and long-term trends. Hot spots for elevated bacteria concentrations will be identified.

The following subtasks are programmed for this task:

- Establish data analysis protocols: Specific analyses to be conducted under this task will be coordinated with CREST. Methods will be established for analyzing bacteria data, e.g., use of geometric means (e.g., monthly or rolling means), single sample values, or percent frequency of exceedance.
- Evaluate magnitude, duration and frequency of bacteria exceedances: The protocols established in Task 4 will be applied to the data to evaluate bacteria exceedances. Understanding duration and frequency components are important for the eventual development of compliance strategies. Data may be analyzed under various scenarios including seasonal and long-term trends.
- Evaluate flow and water quality relationships, e.g., wet/dry weather conditions, high flow suspension criteria: Bacteria data will be related to flow and, where appropriate, water quality data such as nutrients and temperature. The flow analysis is especially important as the results may influence how the TMDL and water quality attainment strategy are developed. Evaluation of bacteria data in context of water quality may be important for identification of sources and BMP controls.
- Prepare deliverable: Two Technical Memoranda will be prepared: one that summarizes the data analysis protocol, and one that presents the results of the analyses conducted under the above sub-tasks. Draft and final TMs will be submitted.

Task 5: Source Identification

Source identification will not be conducted as part of this preliminary TMDL work since only existing data is being considered in this phase. Source identification will be conducted in Phase 2 when new sources of data are brought into the mix, e.g., LA River flow and water quality monitoring data from the 2006 dry weather monitoring program (EPA grant work).

Task 6: BMP and Infrastructure Analysis

The purpose of this task is to identify BMPs implemented or other infrastructure improvements that have occurred in recent years that have the potential to improve in-stream bacteria concentrations in the Los Angeles River or tributaries. Examples include low flow diversions, drainage system modifications/improvements, illegal connection/illicit discharge control activities, sewer system rehabilitations, other NPDES permitted discharges, structural and non-structural BMPs (local, regional), and other watershed/subwatershed improvements. This type of information may help identify reasons for existing reaches with either lower bacteria levels or bacteria hot spots, potential areas for bacteria hot spots, or areas where bacteria data are unavailable, and ultimately will support the development of the TMDL implementation plan. This analysis also could provide supplemental information to the trend analyses conducted under

Task 4; i.e., if an area has shown improvement in bacteria concentrations, it may be possible to link that improvement to specific infrastructure or BMP activities.

The following subtasks are programmed for this task:

- Characterize water quality control programs: The information gathered under Task 2 on water quality control programs and infrastructure in the watershed will be summarized. This information will be linked to the GIS framework, e.g., to storm water and wastewater outfalls.
- Evaluate bacteria water quality in context of controls: The information will be evaluated in the context of the data analyses conducted in Task 4. Emphasis of this analysis will be on an attempt to link specific areas or activities to bacteria water quality temporal trends or spatial patterns.
- Prepare deliverable: A Technical Memorandum will be prepared that summarizes data sources and describes the existing water quality control activities active in the watershed that have the potential to reduce bacteria concentrations. This will provide a starting point for developing implementation strategies. In addition, the Technical Memorandum will present the findings as to whether there are any demonstrable links between water quality control activities and in stream bacteria concentrations. Draft and final TMs will be submitted.

This task will be initiated in parallel with data compilation and analysis.

Information will be used to support the data gaps analysis and decide where special studies may be needed or desirable to further evaluate BMP and infrastructure performance. Data will also support decision-making regarding the TMDL implementation plan.

Task 7: Develop Preliminary TMDL Report

The purpose of this task is to develop the preliminary TMDL based on existing data. This step allows CREST to evaluate the current state of knowledge and get a preview of what a TMDL would look like. This information is needed so that CREST can identify areas where the TMDL could be improved through the collection of additional data.

The following subtasks are programmed for this task:

- Summarize problem definition: The basis for water quality impairment, as evidenced by existing data, will be summarized.
- Identify appropriate endpoints or numeric targets: Appropriate targets will be selected for use in the TMDL, e.g., the existing bacteria water quality objectives. These endpoints must be agreed to by CREST prior to implementing the following subtask.
- Summarize preliminary source analysis: A preliminary source analysis will be developed based on the results of Task 2-4 which may include MS4 discharges, other permitted discharges, and other non-permitted non-point sources.
- Define preliminary linkage analysis and calculate TMDL:
 - Establish modeling approach: Identify the modeling approach that will be used to develop the preliminary TMDL. A recommendation will be made to CREST for approval prior to continuing with subsequent steps.
 - Preliminary modeling analysis: A preliminary TMDL will be developed based on the existing data gathered in prior tasks. Preliminary source assessment and linkage analysis will be used to develop preliminary allocations.

Sensitivity Analysis: A sensitivity analysis will be developed to identify and evaluate uncertainties in the preliminary TMDL.

- Establish margin of safety: Uncertainties, seasonal variations and critical conditions will be considered to state how the calculated TMDL includes a margin of safety.
- Define load and wasteload allocations: Load and wasteload allocations will be developed to meet the TMDL and its associated margin of safety.
- State implementation alternatives: A summary of options to meet load and wasteload allocations will be prepared.
- Prepare deliverable: A Technical Memorandum will be developed that includes all elements of the preliminary TMDL analysis prepared for this task. Draft and final TMs will be submitted.

This task will begin as the data review, compilation, and analysis are taking place under tasks 2-6. A strawman based on existing knowledge will be developed and floated to the CREST Technical Committee as the BMP and data analysis tasks are progressing. This strawman will then be refined based on Committee input and additional results of the BMP and data analyses and used to develop the first draft of the Preliminary TMDL Report.

Task 8: Data Gaps Analysis

The purpose of this task is to identify critical data gaps that should be addressed prior to completion of the TMDL. Many data gaps will be identified during this task; however, only those gaps determined to be “critical” will be recommended for additional data collection and special studies. A critical data gap is defined as a one that if filled has a strong likelihood of influencing the outcome of the TMDL development process. Although every effort will be made to make the decision process as quantitative as possible, it is expected that some subjectivity will remain regarding what is truly a “critical” data gap. It will be up to CREST to reach consensus on what gaps should ultimately be filled.

The following subtasks are programmed for this task:

- Identify data gaps: Based on the findings of all analyses conducted to date, data gaps will be identified. Gaps could incorporate a wide range of potential needs, e.g., the need for bacteria data from specific locations, additional bacteria source information (e.g., sewer leaks, decaying vegetation, specific land uses, bird populations), or studies to understand the decay or regrowth rates of bacteria in the LA River.
- Prepare data gaps analysis: A Technical Memorandum will be prepared that summarizes the findings of Tasks 8.1 and provides the basis for the identification of critical data gaps and preparation of draft special study workplans. Draft and final TMs will be submitted.
- Identify critical data gaps: The project team will prioritize the gaps identified in Tasks 8.2 and 8.3 as quantitatively as possible. Data gaps that will have the greatest influence on the TMDL effort will be deemed critical. CREST will deliberate on the identification of critical data gaps.
- Prepare draft special study workplans: Draft workplans with estimated costs and schedules will be developed that provide descriptions of the special studies recommended to fill the critical data gaps. CREST will deliberate to reach a consensus on which of these special studies should be implemented.
- Prepare final special study workplans: CREST comments on selected studies will be incorporated into the draft workplans to produce final special study workplans.

Results of this task will decide what special studies should be conducted. CREST also has the option at this point in the process to decide to either conduct no special studies or defer special studies to the TMDL implementation phase.

SCHEDULE

Attachment 1 displays the anticipated schedule for accomplishing these tasks. As discussed under the task descriptions, many of these tasks will be conducted in parallel in order to accommodate “fast-track” delivery of the Preliminary Draft TMDL based on existing data.