

DATE: March 21, 2019

TO: Watershed Conservation Authority Governing Board

FROM: Bryan Moller, Project Manager

THROUGH: Mark Stanley, Executive Officer

SUBJECT: Item 16: Consideration of a resolution to 1) approve an application to the Rivers and Mountains Conservancy for a grant to fund the Los Angeles River Flow Study project in the amount of \$250,000; and, 2) if awarded, accept funds from the Rivers and Mountains Conservancy; and, 3) award a Professional Service contract to the Southern California Coastal Water Research Project (SCCWRP) to perform the Los Angeles River Environmental Flows Study Supplemental Analysis.

RECOMMENDATION: That the Watershed Conservation Authority Governing Board authorize: 1) an application to the Rivers and Mountains Conservancy for a grant to fund the Los Angeles River Flow Study project in the amount of \$250,000; and, 2) if awarded, accept funds from the Rivers and Mountains Conservancy (RMC); and, 3) award a Professional Service contract to the Southern California Coastal Water Research Project (SCCWRP) to perform the Los Angeles River Environmental Flows Study Supplemental Analysis.

PROJECT DESCRIPTION: Water flow plays a central role in the use of the Los Angeles River by both humans and wildlife, serving as recreation and habitat. In the Los Angeles River, instream flows come from a variety of sources, including stormwater and urban runoff, however, most of the instream flow that is seen year-round comes from upstream wastewater treatment plant discharge. Modification of the instream flow may have the potential to present issues to both human and wildlife use of the river.

As described in detail below in the Background section, given that the reuse and recycling of wastewater is being heavily invested in, the State Water Board partnered with SCCWRP for a science-based study assessing flow needs, known as the Los Angeles River Environmental Flows Study (the scope, budget, and timeline for the Los Angeles River Environmental Flows Study, as it is currently funded, is included as Exhibit A). However, some areas of the scope are not fully funded to completely analyze all the potential impacts to the Los Angeles River. As such, the RMC and Santa Monica Mountains Conservancy (SMMC) engaged each other on how to supplement the Los Angeles River Environmental Flows Study to include analysis of existing and planned recreation and habitat resources for the Lower and Upper Los Angeles River, and directed WCA and Mountains Recreation and Conservation Authority (MRCA), SMMC's joint powers authority (JPA), to engage SCCWRP on a scope of work and budget for the supplemental analysis (included as Exhibit B). WCA and MRCA will jointly pursue funding through Proposition 1 to split the costs evenly for the Los Angeles River Environmental Flows Study Supplemental Analysis.

The Los Angeles River Environmental Flows Study Supplemental Analysis has one overarching goal: To expand the currently funded Los Angeles River Environmental Flows Study to include analysis of potential recreation and wildlife impacts to the Lower Los Angeles River. The ultimate outcome of the Los Angeles River Environmental Flows Study Supplemental Analysis is to provide technically sound recommendations and alternatives to the Water Boards for consideration and implementation of a water flow standard that

takes into consideration the existing and planned recreation and habitat uses of the Los Angeles River. The grant application, if awarded, would fund the following to be included in the Los Angeles River Environmental Flows Study (the grant proposal budget is included as Exhibit C):

- Addition of Watershed Conservation Authority oversight and review of scoping, data, analysis, and findings at all stages of the process relating to the Lower Los Angeles River; as well as leading an expanded community outreach program.
- Augmenting Activity 4 to explore options for lessening lower flow impacts by creating improved physical habitat in key confluence and adjacent areas, such as the Rio Hondo and Compton Creek.
- Addition of Activity 7 – Water Quality Assessment, to model reduced flows effects to water temperature, sediment, salinity, and metals (including Contaminants of Emerging Concern [CECs]) and includes evaluating different water quality management scenarios.
- Addition of third-party technical reviews of data and findings in the study by subject matter experts.
 - The purpose of the third-party technical review is to ensure that the data, analysis, and recommendations of the Los Angeles River Environmental Flows Study serves the WCA's goals for the Lower Los Angeles River.

The purpose for awarding a Professional Service contract to the SCCWRP is that the State Water Board has already partnered with the SCCWRP to commence work on the Los Angeles River Environmental Flows Study, as described below in the Background section. The overall cost of the Los Angeles River Environmental Flows Study Supplemental Analysis is currently \$277,600, with costs being split evenly between the WCA and MRCA, WCA's share equals \$138,800. However, conversations for added analysis are currently ongoing and may increase, as such, the recommendation is to award a Professional Service contract of up to \$150,000 (the MRCA will award a contract in the same amount).

BACKGROUND: The entities responsible for water and instream flow in the Los Angeles River include the State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (collectively referred to as Water Boards). The Water Boards have invested heavily in promoting water reuse and recycling. Increased reuse could result in a reduction of instream flow, potentially impacting the beneficial uses which the Water Boards must protect via established water flow rates.

When a wastewater treatment plant seeks to reduce the amount of water they discharge into the river, and that reduction could reduce instream flow, they must file a wastewater change petition and obtain approval under Water Code Section 1211 (1211 petition) from the State Water Board. A key provision of the 1211 petition is to demonstrate that the reduced discharge will not unreasonably affect fish and wildlife, or other public trust resources.

The conflicts between increased reuse and maintaining sufficient instream flows are challenging for various reasons. First, the tools and processes for determining flow requirements to protect beneficial uses are still in early stages of development. The State Water Board is currently funding development of the California Environmental Flows Framework (CEFF), a new two-tiered protocol for setting environmental flow criteria. Tier 1 involves defining ecologically protective flow ranges based on reference hydrology for nine general stream classes in the state. The Tier 2 approach, which is just starting, provides a framework to develop specific flow criteria, which may vary seasonally, to protect specific

species, habitats, or beneficial uses. Development of the Tier 2 framework includes case studies demonstrating how watershed-specific analyses can be used to define flow targets for specific beneficial uses.

A second major area of conflict between increased reuse and maintaining sufficient instream flows is one of procedure. There is no established protocol for allocating flow requirements when there are multiple dischargers and/or water users on a single water body. The Los Angeles River has at least 100 point-source permitted dischargers and over 1,000 non-point source dischargers enrolled under the general industrial storm water permit, making it particularly complex to determine who is responsible for maintaining a minimum instream flow. This circumstance has already materialized in the Los Angeles River, where the City of Burbank's 1211 petition for flow reduction associated with reuse was protested by another city. The protest asked the State Water Board to forestall a decision on Burbank's petition until a comprehensive environmental analysis could be completed to determine how much water should remain in the river. Although some challenges have been addressed, the procedural concerns for equitable allocation of permission to reduce discharges for reuse remains.

The State Water Board has partnered with SCCWRP, an aquatic sciences research institute that works to improve management of aquatic systems in Southern California and beyond. SCCWRP's mission is built on conducting research and translating this science into actionable guidance and recommendations for management and policy. In 2018, the State Water Board and SCCWRP developed a scope of work for a science-based study assessing flow needs and evaluating future 1211 petitions and other proposals for water capture, diversion and/or reuse. However, as described above in the Project Description, the WCA and MRCA found the study to be deficient in assessing the existing and planned recreation and habitat resources. As such, the Los Angeles River Environmental Flows Study Supplemental Analysis will provide a more thorough analysis that meets the respective goals of the WCA and MRCA, including the WCA's goals for the Lower Los Angeles River.

FISCAL INFORMATION: This action would allow the WCA to submit a joint application with the MRCA for grant funding for the Los Angeles River Environmental Flows Study for \$500,000. If the grant is awarded, WCA's FY18/19 capital budget will be updated to reflect an increase of up to \$250,000, WCA's share of grant funding. The professional services contract award for up to \$150,000 will be funded from this grant.

Los Angeles River Instream Flow Criteria: Technical Study
Scope of Work and Budget
September 13, 2018

Background

The State Water Resources Control Board (State Water Board) and Regional Water Quality Control Boards (collectively Water Boards) have invested heavily in promoting water reuse and recycling. However, reuse leads to potential reduction in stream flow, and the Water Boards are responsible for establishing flows for a variety of beneficial uses. Wastewater Treatment Plant dischargers seeking to reduce discharges associated with reducing flow in a stream for reuse (or any other purpose) must file a wastewater change petition and obtain approval under Water Code Section 1211 (1211 petition) from the State Water Board prior to reducing discharges. A key provision of the 1211 petition is to demonstrate that the reduced discharge will not unreasonably affect fish and wildlife, or other public trust resources.

Resolving the potential conflict between increased reuse and maintaining sufficient instream flows is challenging for two reasons. The first is technical, as the tools and processes for determining flow requirements that protect various beneficial uses are still in early stages of development. The State Water Board is currently funding development of the California Environmental Flows Framework (CEFF), a two-tier approach for setting environmental flow criteria. Tier 1 involves defining ecologically protective flow ranges based on reference hydrology for nine general stream classes in the state. The Tier 2 approach, which is just starting, provides a framework to develop specific flow criteria for different seasons necessary to protect specific species, habitats, or beneficial uses. Developing the Tier 2 framework includes a series of proposed case studies across the state demonstrating how watershed-specific analyses can be used to define flow targets for specific beneficial uses.

The second reason is procedural, as there is no established protocol for determining allocation of flow requirements when there are multiple dischargers or water users on a single water body. That circumstance has already materialized in the Los Angeles River (LA River), where the City of Burbank's 1211 petition for flow reduction associated with reuse was protested by another city, which asked the State Water Board to forestall that decision until a comprehensive environmental analysis could be completed to determine how much water should remain in the Los Angeles River. Although the most recent challenges have been addressed, the procedural concerns for equitable allocation of permission to reduce discharges for reuse remains.

A series of scoping meetings involving the State and Regional Water Boards, City and County agencies and land conservancies were held to develop an approach to help address the technical and procedural challenges associated with defining environmental flow targets for the LA River. This scope of work represents the outcome of those meetings and provides a science-informed approach for assessing flow needs and evaluating future 1211 petitions and other proposals for water capture, diversion and/or reuse.

Project Goal

The Los Angeles River Flow Study has two overarching goals. The first is to develop technical tools that quantify the relationship between various alternative flow regimes (which may include seasonal or annual needs for flow, such as presence and depth of pools, temperature, or flow timing, duration, frequency, or magnitude) and the extent to which beneficial uses are achieved. The second is to engage multiple affected parties in application of these tools to inform and solicit input about appropriate flow needs in the Los Angeles River. The ultimate outcome of this project is to provide technically sound recommendations and alternatives to the Water Boards for consideration and implementation of flow objectives.

Scope and Tasks

The following provides the scope of work and tasks that will be completed or led by SCCWRP. Note: Community Outreach is an essential activity that is not included in this draft scope of work and budget, but will need to be incorporated into the project.

The process to achieving the project goals involves six activities. Underneath these activities are provided more detailed technical tasks.

Activity 1: Stakeholder and Technical Advisory Group Coordination. Development of both the technical approach and implementation strategy should be informed by a robust stakeholder coordination process. The project will be coordinated through two advisory workgroups; a technical advisory group will be regularly consulted to help guide the analytical approach, and a stakeholder advisory group will provide input on decisions regarding the beneficial uses analyzed, the biological communities focused on, and implementation approaches considered. A series of meetings or workshops will be held with key stakeholders to solicit their input and participation in the overall process and in defining desired outcomes. Stakeholders may include other regulatory agencies, discharger agencies, other public or private entities, or non-governmental organizations. State and regional water board staff will oversee the stakeholder process. Under this task, the technical team will provide summary materials on the project process and products that can support the stakeholder process and will participate in the stakeholder workgroup meetings to help answer technical questions and respond to suggestions.

SCCWRP (technical team) will lead the technical workgroup. This will include providing materials for review and facilitating discussion among the technical workgroup that will serve to provide technical review of analytical approaches and draft products.

Products: Agendas, presentation materials, and meeting summaries for the technical and stakeholder advisory workgroups.

Activity 2: Non-aquatic Life Beneficial Use Assessments. The LA River supports a suite of non-aquatic life beneficial uses, such as recreation, fishing and kayaking. Existing information will be compiled on these uses and the hydrological needs necessary for their support.

Task 2A: Characterize non-aquatic life uses. The goal of this task is to identify the prevalence of non-aquatic life uses, such as recreation and fishing, in various reaches of the LA River. A preliminary set of current and potential uses will be developed by the project team and vetted

through the stakeholder advisory workgroup. The goal of this task is not to “define the beneficial uses” but to summarize activities that occur (or could occur in the future) associated with each use, in each reach of the river. The uses will be related to specific indicators to determine the basis for potential flow criteria.

Product: Map of specific non-aquatic life uses and associated indicators by reach of the LA River

Task 2B: Determine flow-use relationships for priority beneficial uses. A conceptual assessment approach will be developed for each beneficial use that allows changes in flow to be related to changes in use that exceed specific levels designated important from a management perspective. Focused group surveys will be conducted with knowledgeable stakeholder groups to help determine hydrologic needs associated with each use. The ultimate flow-use relationships will be based on the stakeholder input, expert judgement, and/or empirical relationships.

Product: Draft and final technical memo summarizing non-aquatic life beneficial uses, flow-use relationships and the associated flow targets necessary for their support.

Activity 3: Aquatic Life Beneficial Use Assessments. This activity will involve applying the Tier 2 California Environmental Flows Framework for the Los Angeles River. The State’s Tier 2 framework includes the following basic steps, which will need to be evaluated and possibly adapted for their application to the Los Angeles River:

1. Characterize aquatic life uses
2. Assess hydrologic baseline conditions
3. Identify priority ecological endpoints of management concern
4. Determine flow-ecology relationships for priority ecological endpoints
5. Determine appropriate hydrologic and ecologic tools for analysis

Task 3A: Assess hydrologic baseline conditions. The Los Angeles River has been the subject of past and ongoing hydrologic studies by entities including Colorado School of Mines/UCLA, City of Los Angeles, Cities of Glendale and Burbank, and the Army Corps of Engineers. In addition, there are a range of past reports an analysis ranging from the 1962 Final Report of Referee for the Upper Los Angeles River Area to the recent Enhanced Watershed Management Plan (EWMP). This task will compile and review results from existing hydrologic studies to determine existing conditions relative to ecologically relevant hydrologic metrics. Data gaps associated with differences in the objectives of past studies relative to the goals of this study will be identified to guide subsequent hydrologic analysis.

Product: Summary of baseline hydrology and identification of data gaps

Task 3B: Identify priority ecological endpoints of management concern. The CEFF uses benthic invertebrates and fish as the primary ecological endpoints, largely because of the large amount of data on these organisms. However, other groups, such as amphibians, birds, or riparian habitat may be important for the determination of flow criteria for the Los Angeles River. This task will identify key ecological endpoints and their locations in the river, and prioritize them based on stakeholder interest, relevance to the goals of the study, and availability of data and

analytical tools. Hydrologic needs of each species or habitat will be compiled to support future analysis of flow-ecology relationships.

Product: Ranked list of priority ecological endpoints and summary of available data on species distributions and flow-ecology relationships

Task 3C: Determine flow-ecology relationships and targets for stream and riparian endpoints.

This task will focus on developing (or refining) the conceptual flow-ecology models and targets for riparian ecological endpoints. This task will provide targets for organisms for which the basic flow-ecology relationships have already been (or are currently being) developed as part of an ongoing project on the LA River; specifically, benthic invertebrates and focal vertebrate species identified as part of the ongoing Regional Water Board project investigating climate change induced flow changes on instream vertebrate communities (3 fish, 2 birds, 1 reptile, 1 amphibian). The conceptual models outline the key flow characteristics, seasonality, and desired variability necessary to support the priority ecological endpoints. Flow targets build from flow-ecology relationships by identifying thresholds of response that can serve as quantitative management criteria. They form the foundation for quantitative analysis of flow needs and provide an important platform for discussion among the stakeholders of where analysis should be focused.

Product: Flow-ecology models and preliminary flow targets for each reach of the LA River, based on benthic invertebrate and focal vertebrate communities.

Task 3D: Determine flow-ecology relationships and targets for non-riverine ecological endpoints.

This task will expand the analysis of flow-ecology relationships to include additional habitats and species, specifically those associated with emergent marsh habitats and tidal flats located near the mouth of the river. Similar to Task 3C, this task will develop the conceptual relationships between hydrologic properties and probability of occurrence for marsh and estuarine species. These relationships will be used with hydrologic analysis to produce putative flow-ecology targets for these additional ecological endpoints.

Product: Flow-ecology models and preliminary flow targets for emergent marsh and estuarine habitats and species of the LA River.

Activity 4: Apply Environmental Flows Framework to quantify effects of flow modification on the Los Angeles River and evaluate management scenarios. For this activity, we will apply the CEFF framework to assess the effects of wastewater reuse and other flow management actions on aquatic and non-aquatic life uses in the Los Angeles River. Scenarios that will be analyzed will be developed in coordination with the project's technical advisory and stakeholder committees.

Task 4A: Determine appropriate hydrologic tools and update modeling for analysis. For this task, we will enhance the existing hydrologic model for the LA River watershed to accommodate the goals of this project. Colorado School of Mines (CSM) has an established hydrologic/stormwater model for the LA River watershed that was previously implemented for the LA Sustainable Water Project. The model will be discretized to improve spatial resolution, expanded to include a reach hydraulic model, and refined with new data and information to provide baseline daily flows for all applicable reaches of the LA River. These baseline flows will be used in subsequent tasks to assess potential effects of flow modification.

Product: Hydrologic and hydraulic models for use in scenario analysis for the Los Angeles River

Task 4B: Analyze tolerances of river to flow modifications. Hydrologic models will be used iteratively to evaluate how sensitive different aquatic life and non-aquatic life endpoints are to flow alteration. The resulting tolerances will be used to define a range of flow conditions that should be considered “protective” for each ecological endpoint (i.e. how far can flow deviate from the defined reference targets before ecological impacts occur). These ranges will be used to support development of preliminary flow criteria.

Product: Flow tolerance ranges of riparian habitat, benthic invertebrates and focal vertebrate species

Task 4C: Analyze wastewater reuse scenarios. The effect of changes in discharge and flow in the LA River associated with proposed wastewater reuse scenarios will be evaluated to determine the potential effects on the priority beneficial uses. Changes in flow associated with reduced discharge will be modeled to determine the effect on beneficial use indicators. The results will be used to produce a map of “potential effect” by river reach and beneficial use.

Product: Map of potential effects on beneficial use associated with proposed wastewater reuse scenarios.

Task 4D: Evaluate stormwater capture scenarios. This task would involve modeling the effects of various stormwater management scenarios on ecological endpoints and assessing potential effects on proposed flow criteria. Stormwater capture may occur in tributaries, storm drain conveyance systems, or on the mainstem river (e.g. through use of rubber dams) and can include capturing elements of both dry season and (some) wet season runoff. Stormwater capture scenarios will be developed with the local municipalities and appropriate stakeholder groups and may also include the effects of Low Impact Development (LID) or conservation practices that reduce runoff to the river.

Product: Map of potential beneficial use effects associated with proposed stormwater capture in combination with wastewater reuse scenarios

Task 4E: Evaluate groundwater interactions. This task would expand the watershed model to include groundwater-surface water interactions. Groundwater discharge is a significant component of the hydrology in specific reaches of the LA River (e.g. Glendale Narrows). This task would allow for more direct consideration of the relative influence of changes in recharge or discharge, wastewater reuse or stormwater capture on groundwater discharge and subsequent environmental flows.

Product: Map of potential beneficial use effects associated with groundwater interactions in combination with wastewater reuse scenarios

Task 4F: Evaluate habitat modifications to offset flow reduction impacts. This task would explore options for mitigating flow impacts by creating improved physical habitat. The results could provide a mechanism for enhancing biological conditions (as well as non-aquatic life uses) in the stream as an offset to modified flow regimes. The task would provide a means of

balancing costs for physical habitat alterations against the value of the water that could be recovered. Habitat restoration scenarios would be developed in coordination with stakeholder groups and in consultation of existing restoration/revitalization plans.

Product: List of potential habitat restoration projects; Map of potential beneficial use associated with habitat restoration

Task 4G: Evaluate effects of flow alteration on tidal portions of the river. This task would evaluate the effects of flow alteration on the tidal portion of the LA River. The lowest reaches of the river are subject to bidirectional flow that produces habitat similar to tidal mudflats. This habitat is known to support a diverse assemblage of wading shorebirds. This task would develop a hydrologic model able to simulate bidirectional flow that, along with the flow-ecology relationships for wading shorebirds, would be used to assess the effect of wastewater and stormwater management on estuarine habitat.

Product: Map of potential beneficial use effects on the tidal portion of the LA River associated with the various scenarios evaluated.

Task 4H: Establish recommended flow criteria with stakeholder group. The results from previous tasks will be used to develop recommended flow criteria for each reach of the LA River. Criteria may also vary by season or type of year. This task will be done in conjunction with project partners and will focus on integrating across all beneficial uses vs. being driven by desired conditions for each individual ecological endpoint.

Product: Technical memo/report summarizing the assessment process and providing recommended flow criteria by reach of the LA River (and season).

Activity 5: Adaptive monitoring and management during implementation. Ongoing monitoring will be a key element of any implementation program. A robust monitoring strategy will provide data that can be used to validate model predictions, inform adaptive management strategies, and improve models for future applications or scenario assessments. We will work with the stakeholders and Water Board to develop monitoring recommendations that will provide a way to evaluate the actual effect of altered flow on instream biological communities and other non-aquatic life related beneficial uses. Monitoring data can be used to inform adaptive implementation management strategies and to improve models for future applications.

Product: Proposed monitoring strategy

Activity 6: Summary of Results/Reporting. The products of all project tasks will be compiled into an overall project report that summarizes the process used, technical approach and key findings of the project. Recommendations for implementation and future investigations will also be provided. A draft report will be produced for review by the technical workgroup and the stakeholder workgroup. Comment received from these two groups will be addressed to the extent possible before the report is finalized.

Product: Draft and final project report

Project Budget and Schedule

A budget for the technical elements of this scope of work is provided in Table 1. The costs are based on implementation through a partnership of the Southern California Coastal Water Research Project Authority (SCCWRP) and the Colorado School of Mines (hydrological modeling). The project costs also assume that the Los Angeles Regional Water Board will be responsible for coordinating stakeholder involvement in the project.

In addition to the technical elements included in this scope, the State Water Resources Control Board and the Los Angeles Regional Water Quality Control Board have already committed \$1.4 million and \$300,000, respectively to support this through existing contracts focused on developing tools for assessment environmental flow requirements. The State and Regional Water Boards will also provide ongoing staff resources to support the project, as described previously in this scope of work. This funding is supporting foundational science products that are directly usable for this project. Costs for any future CEQA analysis that may be necessary are not included in the current budget.

Table 1: Overall project budget

Activity/Task	Cost
Activity 1 - Stakeholder coordination	\$61, 600
Activity 2 - Non-aquatic Life Use Assessment	\$40,000
2A Characterize non-aquatic life uses	\$7,500
2B Determine flow use relationships	\$32,500
Activity 3 - Aquatic Life Beneficial Use Assessment	\$215,000
3A Asses hydrologic baseline condition	\$20,000
3B Identify priority ecological endpoints	\$20,000
3C Determine flow ecology relationships for stream endpoints	\$20,000
3D Determine flow ecology relationships for marsh and estuary endpoints	\$155,000
Activitiy 4 - Apply Environmental Flows and Evaluate Scenarios	\$772,000
4A Update hydrologic modeling	
4B Analyze tolerances to flow modifications	\$262,650
4C Analyze wastewater reuse scenarios	
4D Evaluate stormwater management scenarios	\$72,100
4E Evaluate groundwater interaction scenarios	\$66,950
4F Evaluate habitat restoration effects	\$70,000
4G Evaluate flow alteration effects on tidal portion of LA River	\$267,800
4H Establish recommended flow criteria	\$32,500
Activity 5 - Monitoring and Adaptive Mangement Plan	\$50,000
Activity 6 - Summary of results/reporting	\$25,000

TOTAL

\$1,163,600

The project schedule is shown in Table 2 and assumes a start date of October 1, 2018. Delays in the start date would translate to a shift in the overall project schedule.

Table 2: Project schedule

Activity / Sub-Tasks	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4
Activity 1 - Stakeholder coordination									
Activity 2 - Non-aquatic Life Use Assessment									
2A Characterize non-aquatic life uses									
2B Determine flow use relationships									
Activity 3 - Aquatic Life Beneficial Use Assessment									
3A Asses hydrologic baseline condition									
3B Identify priority ecological endpoints									
3C Determine flow ecology relationships for stream endpoints									
3D Determine flow ecology relationships for marsh/estuary endpoints									
Activitiy 4 - Apply Environmental Flows and Evaluate Scenarios									
4A Update hydrologic modeling									
4B Analyze tolerances to flow modifications									
4C Analyze wastewater reuse scenarios									
4D Evaluate stormwater management scenarios									
4E Evaluate groundwater interaction scenarios									
4F Evaluate habitat restoration effects									
4G Evaluate flow alteration effects on tidal portion of LA River									
4H Establish recommended flow criteria									
Activity 5 - Monitoring and Adaptive Mangement Plan									
Activity 6 - Summary of results/reporting									

Point of Contact:

Eric Stein, Principal Scientist, Southern California Coastal Water Research Project (SCCWRP)
715-755-3233, erics@sccwrp.org

Los Angeles River Instream Flow Criteria: Technical Study
Augmentation to Scope of Work and Budget
March 10, 2019

Background

The Los Angeles River Flow Study has two overarching goals. The first is to develop technical tools that quantify the relationship between various alternative flow regimes (which may include seasonal or annual needs for flow, such as presence and depth of pools, temperature, or flow timing, duration, frequency, or magnitude) and the extent to which beneficial uses are achieved. The second is to engage multiple affected parties in application of these tools to inform and solicit input about appropriate flow needs in the Los Angeles River. The ultimate outcome of this project is to provide technically sound recommendations and alternatives to the Water Boards for consideration and implementation of flow objectives.

A series of scoping meetings involving the State and Regional Water Boards, City and County agencies and land conservancies were held to develop an approach to help address the technical and procedural challenges associated with defining environmental flow targets for the LA River. The resulting scope of work was finalized on September 13, 2018. Subsequent discussions with MRCA and WCA resulted in an agreement to augment the scope of work to add the following elements:

1. Expansion of hydrologic and hydraulic modeling to include Rio Hondo and Compton Creek to allow consideration of habitat restoration options on these tributaries
2. Addition of a water quality model to evaluate potential water quality effects of changes in wastewater discharge

The augmented scope will also include coordination of additional technical review with subject experts identified by the MRCA and WCA.

Augmented Tasks

Augmentation to Activity 4 to include evaluation of restoration opportunities on Rio Hondo and Compton Creeks. The previously scoped hydrologic and hydraulic models will be expanded to include Rio Hondo and Compton Creek. Additional reaches will be included in the models to allow for evaluation of riparian restoration opportunities to offset flow reductions along these two tributaries. Specific scenarios will be developed in coordination with the MRCA, WCA, and the existing stakeholder advisory group.

Product: evaluation of proposed management scenarios along Rio Hondo and Compton Creek

Activity 7: Assess Water Quality Effects of Flow Modifications on the LA River. We will develop, calibrate, and validate a water quality model for the LA River to evaluate how changes in treated wastewater discharge may affect key water quality constituents. The water quality model will be coupled to the hydrologic model developed under Activity 4 and will have similar spatial resolution. Output from the water quality models will be used to evaluate direct effects of changing wastewater

discharge on key water quality parameters and to provide input to the flow-ecology models to allow consideration of potential effects on aquatic species.

Task 7A: Develop, calibrate, and validate water temperature model. A water temperature model will be developed to predict water temperature based on air temperature and river characteristics. Existing temperature models will be evaluated and modified as necessary to accommodate conditions in the LA River and objectives of this study. Temperature observations will be compiled to support model calibration and validation and to demonstrate model performance.

Product: water temperature model and summary of model performance

Task 7B: Develop, calibrate, and validate water quality model for sediment/TSS, specific conductance, salinity, and metals. This task will focus on development of a water quality model to predict non-storm (dry weather) concentrations of suspended sediment (TSS), specific conductance (as a surrogate for salinity) and trace metals. Existing data will be compiled and used for model calibration and validation and to demonstrate model performance. We will focus on dry weather concentrations as the primary model outputs as they are likely the most sensitive to changes in wastewater discharge and are the most relevant for assessing potential effects on aquatic species

Product: water quality model for sediment, specific conductance, and metals and summary of model performance

Optional Task 7C: Develop, calibrate, and validate water quality model for contaminants of emerging concern (CECs). This optional task will focus on developing a model for the priority CECs identified in the report from the Science Advisory Panel to the State Water Board on CEC monitoring. Available data from wastewater discharge, local city and county monitoring, and results of a current SCCWRP study on CECs in the LA River will be used to calibrate and validate the CEC model focusing on dry weather concentrations of priority CECs. Additional field work is likely necessary to supplement the currently available data.

Product: water quality model for priority class of CECs and summary of model performance

Task 7D: Evaluate effects of changes in wastewater discharge on water quality parameters. The water quality and temperature models developed under the previous tasks will be applied to the scenarios developed under Task 4 to predict potential changes associated with changes in wastewater discharge. Predicted water quality and temperature changes will be included in the species response models to the extent possible based on established species tolerances that have been previously document or published.

Product: water quality and temperature effects of proposed management scenarios

Updated Project Budget and Schedule

The total cost of all additional tasks under this augmented scope is \$277,600 (Table 1). Without, the optional CEC modeling (Task 7C), the total cost is \$205,600 (\$158,600 for Activity 7 + \$47,000 for the expanded scope of Activity 4).

Table 1: Budget for Augmented Tasks

Activity/Task	Cost
Activity 4 - Expansion to Rio Hondo and Compton Creek	\$47,000
Activity 7 - Water Quality Assessment	\$230,600
7A Temperature model	\$61,800
7B Sediment, conductance, metals model	\$61,800
7C <i>OPTIONAL - CEC model</i>	\$72,000
7D Evaluate effects of changes in discharge on water quality parameters	\$35,000

The additional tasks would extend the overall completion date of the project by six months to Q2 of 2021 (Table 2). Modeling results would be available at the end of the first quarter of 2021, while written products would be released at the end of the second quarter of 2021.

Table 2: Schedule showing Augmented Tasks. Highlighted cells have been added or updated from the original projects schedule

Activity / Sub-Tasks	2018 Q4	2019 Q1	2019 Q2	2019 Q3	2019 Q4	2020 Q1	2020 Q2	2020 Q3	2020 Q4	2021 Q1	2021 Q2
Activity 1 - Stakeholder coordination											
Activity 2 - Non-aquatic Life Use Assessment											
2A Characterize non-aquatic life uses											
2B Determine flow use relationships											
Activity 3 - Aquatic Life Beneficial Use Assessment											
3A Asses hydrologic baseline condition											
3B Identify priority ecological endpoints											
3C Determine flow ecology relationships for stream endpoints											
3D Determine flow ecology relationships for marsh/estuary endpoints											
Activitiy 4 - Apply Environmental Flows and Evaluate Scenarios											
4A Update hydrologic modeling											
4B Analyze tolerances to flow modifications											
4C Analyze wastewater reuse scenarios											
4D Evaluate stormwater management scenarios											
4E Evaluate groundwater interaction scenarios											
4F Evaluate habitat restoration effects											
4G Evaluate flow alteration effects on tidal portion of LA River											
4H Establish recommended flow criteria											
Activity 5 - Monitoring and Adaptive Mangement Plan											
Activity 6 - Summary of results/reporting											
Activity 7 - Water Quality Assessment											
Temperature model											
Sediment, conductance, metals model											
OPTIONAL - CEC model											
Evaluate changes in water quality parameters											

Los Angeles River Environmental Flows Study Supplemental Analysis		
Cost Summary		
Task	Lead	Cost
Task 1: Project Management	Watershed Conservation Authority	\$25,000
Task 2: Stakeholder Outreach	Watershed Conservation Authority	\$30,000
Task 3: Los Angeles River Environmental Flows Study Supplemental Analysis (Technical)	Southern California Coastal Water Research Project	\$150,000
Task 4: Third-Party Consultant Review of Study	Future Third-Party Consultant(s)	\$20,000
Indirect Costs (10%)		\$25,000
Total Cost		\$250,000

March 21, 2019 – Item 16

RESOLUTION 2019-17

RESOLUTION TO 1) APPROVE AN APPLICATION TO THE RIVERS AND MOUNTAINS CONSERVANCY FOR A GRANT TO FUND THE LOS ANGELES RIVER FLOW STUDY PROJECT IN THE AMOUNT OF \$250,000; AND, 2) IF AWARDED, ACCEPT FUNDS FROM THE RIVERS AND MOUNTAINS CONSERVANCY; AND, 3) AWARD A PROFESSIONAL SERVICE CONTRACT TO THE SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT (SCCWRP) TO PERFORM THE LOS ANGELES RIVER ENVIRONMENTAL FLOWS STUDY SUPPLEMENTAL ANALYSIS.

WHEREAS, The Watershed Conservation Authority has been established as a joint powers agency between the Rivers and Mountains Conservancy (RMC) and the Los Angeles County Flood Control District (District); and

WHEREAS, the Watershed Conservation Authority (WCA) has further been established to focus on projects which will provide open space, habitat restoration, and watershed improvement projects in both the San Gabriel and Lower Los Angeles Rivers watershed; and

WHEREAS, this action approves the WCA to submit a grant application for the Los Angeles River Environmental Flows Study Supplemental Analysis to the RMC for Proposition 1 funding for an amount of \$250,000; and

WHEREAS, if awarded, this action approves the WCA to accept funds for an amount of \$250,000 from the RMC; and

WHEREAS, this action approves the award of a professional services contract to the Southern California Coastal Water Research Project (SCCWRP) to perform the Los Angeles River Environmental Flows Study Supplemental Analysis, for total not to exceed a value of \$150,000; and

WHEREAS, the proposed action is exempt from the provisions of the California Environmental Quality Act; NOW

Therefore be it resolved that the WCA hereby:

1. **FINDS** that this action is consistent with the purposes and objectives of the WCA.
2. **FINDS** that the actions contemplated by this resolution are exempt from the environmental impact report requirements of the California Environmental Quality Act (CEQA).
3. **ADOPTS** the staff report dated March 21, 2019.
4. **APPROVES** grant application for the Los Angeles River Environmental Flows Study Supplemental Analysis to the RMC for Proposition 1 funding for an amount of \$250,000.
5. **ACCEPTS** funds for an amount of \$250,000 from the RMC for the Los Angeles River Environmental Flows Study Supplemental Analysis.

Resolution 2019-17

- 6. **AWARDS** professional services contract to the SCCWRP to perform the Los Angeles River Environmental Flows Study Supplemental Analysis, for total not to exceed a value of \$150,000

~ End of Resolution ~

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Motion: _____ Second: _____

Ayes: _____ Nays: _____ Abstentions: _____

Passed and Adopted by the Board of the
WATERSHED CONSERVATION AUTHORITY
On March 21, 2019

Herlinda Chico,
Governing Board Vice Chair

ATTEST: _____
David Edsall, Jr.
Deputy Attorney General