Los Angeles River Instream Flow Criteria: Technical Study
Technical Advisory Committee Meeting – January 28, 2019

Meeting Objectives:

- Provide overview of major project tasks and deliverables
- Discussed roles and expectations of the TAC
- Review approach to hydrologic analysis/modeling

Participants

- Ron Lacayo
- Mike DeGhetto
- William Saunders
- Rosi Dagit
- Jon Bishop
- Ethan Bell
- Doug McPherson
- Sabrina Drill
- Mark Gold
- Derek Booth
- Richard Slade
- Jo Decruyaneaere
- Celine Gallon
- Adena Hepensted
- Nathan Holste
- Katherine Pease
- Wendy Katagi
- Rafael Villegas
- Tatyana Isupov
- Andy Collison
- Joe Decruyenaere
- Shirley Imsand
- Grace David
- Erik Avila
- Richard Ruyle
- Patrizia Hall
- Dian Tanuwidjaja

If you are not currently on the distribution list, email Eric to get added.

Project Team
• Eric Stein
• Jenny Taylor
• Colin Bell
• Jordan Wolfand
• Lori Webber
• Terri Hogue
• Yareli Sanchez
• Liesl Tiefenthaler

Project Background and Overview

- This project was motivated by wastewater change petitions to the SWRCB which requested diversion of treated wastewater for recycled uses. There was concern over the potential effects of reduced flow on species, habitats, and recreational uses in the LAR. This led to the scoping of this project (through a series of scoping meetings). The goal is to develop potential flow targets necessary to support species, habitats and recreation and to investigate the implications of

various water use and reuse scenarios on those endpoints. This information will be used to inform the SWRCB's decisions regarding how much water to allow entities to divert and reuse.
    - We hope to develop technical tools to quantify the relationship between changing flow and LA River beneficial uses that also investigate management scenarios.
        - Product: Tools for State Water Board to process requests for water reuse in the LA river.
    - Jon Bishop: Provide scientific basis for state water board to make a decision RE: the amount of recycled water that can be diverted for other uses, and the amount that needs to stay in the river.
- The focus of our analysis is on flows and habitat in the river channel itself, not the banks or adjacent lands.
- This project is also being done in coordination with a statewide effort to develop a framework for environmental flows in the state of California. This project will provide a S. Ca. case study for water reuse issues.
- Our conceptual approach involves using hydrological modeling from the School of Mines team to understand flow conditions in the river. We will develop scenarios with the TAC and stakeholder advisory group. Hydrologic change will be connected to ecology through flow-ecology relationships tied to species and habitat life history needs and to flow needs for recreational uses. This will allow us to explore potential flow targets and criteria and management actions that might help offset undesirable effects of flow modification. Potential targets may vary by season and reach and could differ based on specific species or habitat. Ultimately, the SWRCB will need to reconcile these issues in their decision making. Our goal is to provide the analysis to inform these decisions.

Questions:

- Nathan Holste: Is the focus on mainstem LA River?
    - Yes, from Tilman discharge to lower tidal portion of the river. We are not focusing on the tributaries except in terms of input, and some of the confluences with the LA river.
- Derek Booth: Is this flows study part of a broader effort that will include non-flow characteristics like water quality, invasive species, etc., to improve overall conditions? Or is it the sole effort to focus on flows?
    - Not addressing water quality but we acknowledge changes in the flow have water quality implications. However, tools we make may help address those questions later. Teri's work does include hydraulic analysis. We are trying to understand the habitat and how the flow supports habitat- native or invasive habitat and species.

Work plan

The project is comprised of five activities, each with several tasks associated with them

- Activity 1: Community outreach and stakeholder coordination
    - Lots of efforts going on with the river like the LA River masterplan. We are not trying to create another community outreach process. Instead we will partner with other efforts to share materials and information and piggy back on their processes and meetings.
    - Lori Weber from state water board: Coordinator/lead on this project for the technical side and the state holder side, state waterboard, and the regional water boards.

        - Lori - Stakeholder group to coordinate with outreach efforts and provide input into the process. As we get technical products, they will be presented to stakeholders to maintain their involvement.
- Activity 2: Assessing non-aquatic life uses
    - Council for Watershed Health is helping with this part of the project (Yareli Sanchez).
    - Yareli:
        - Survey the recreational uses for each reach of the LA river and better understand the hydrologic needs for each of those uses (kayaking, fishing, etc).
        - Recreational uses and flow needs will differ by reach and season.
        - Understand how these uses will be impacted by the various flow scenarios being evaluated.
        - Method:
            - Review of existing reports of recreation uses in river.
            - Group discussion with recreational experts (nonprofits, government entities, businesses, etc that have a program that has to do with rehabilitation, activity, river restoration.
            - Expand the initial list of experts by asking these people who else to include.
        - After initial review of published literature, 1 to 2 meetings with recreational experts, to ask them open ended questions about the activities and the flow requirement. There will be a range of flow parameters important to each recreational activity. We will use either a ranking or scoring method done by each participant for indicators and flow criteria and we can quantify the agreement among participants.
        - For each recreational activity, there will be a summary of the flow needs according to the recreational experts.
        - Eric Stein: this is ***not*** to rank the uses of the river, this is to quantify the flow needs associated with each use.

        - Rafael Villegas: RE the open-ended questions to recreational experts: we don't want this to be a wish list because some people will want even more water. We need to be careful not to go in that direction.
            - Eric: Agreed – this is not a planning activity, we are just laying out the flow needs of each existing use; the waterboard gets the make the ultimate decision on how to best support those uses.
- Activity 3: Aquatic life uses (Eric)
    - This activity will focus on developing flow ecology relationships for key aquatic species.
        - Channel/riparian habitat, marsh habitat, and lower part by the estuary with tidal influence is included.
    - We have already compiled lots of species, habitat, and hydrology data along the LA river for a separate project and completed preliminary habitat mapping, documenting key habitats.
    - We will use a combination of clustering based on life history needs and spatial co-occurrence analysis to group species based on similar need – this will allow us to focus our analysis on groups of organisms vs. trying to assess all 65+ taxa individually.
    - We will update and refine our past clustering analysis clustering for just the mainstem of the river. Likely we will add marsh species and the estuarine species like stilts and tri-colored blackbird. List to be discussed with TAC.

    - Based on the clusters, we will develop relationships between life history needs and flow condition for groups of species.
    - Outcome: Ecological endpoints for different reaches and different times of the year so we can determine when and where water can be used for other purposes without substantial effects on species or habitats.
    - Sabrina Drill: Will there be finer scale habitat mapping as opposed to just riverine, forest, etc? What about substrate type, depth profiles etc to map instream habitat? Eric: We may go to focused places in the river to do habitat characterization but can't do field work throughout the entire river.
    - Sabrina Drill: Do we anticipate species endpoints will be limited to native species? It would take a lot to support fishing with native species, so we may need to include nonnative species. Eric: we are not planning to focus on any nonnatives except maybe some of the fishing species for the 'non-ecology' portion of this river. Yareli might focus on fishing as a recreational use vs. specific fish species.
- Activity 4: Quantify effects of flow management on aquatic species and non-aquatic life uses of the river
    - This activity will produce recommended flow targets to support the agreed upon target species, habitats, and recreational uses.
        - We will also assess if there are opportunities for management offsets to enhance habitat to offset the impact of reduced water in the river?
    - Edward: RE final product, will this be a single model, or a series of models? In the future, if we have a different scenario, can we use the same process?
        - Hydrologic model will be set up so we can do future modeling with new scenarios, but there will be coupled models with some of the hydraulic modeling which will be separate.
    - Chris Solek with Army corps: How are we delineating reaches?
        - Current 6 reach designation in the basin plan. However, when School of mines sets up model, they may discretize the mainstem differently, based in part on where the habitat and species are, in addition to physical/hydrologic characterization.
    - Nathan Holste TNC laid out some flow scenarios that are similar that we can consider.
- Activity 5: Monitoring and adaptive management
    - We will develop a conceptual approach for ongoing monitoring and assessment. This will help with adaptive management and to expand our data sets to improve future model performance.
    - Initiate more long-term monitoring of flow, physical habitat, biological responses.
    - We will attempt to leverage existing regional monitoring programs, such as the SMC and the LA River watershed monitoring program.

Questions

- Rafael Villegas: How are we going to consolidate the minimum conditions that might satisfy one reach but harm another?
    - This is an optimization question. We don't have a clear answer yet, we are not doing a formal optimization for this project, and final decision rests with water board, we will just lay out the choices and then if the stakeholders and waterboard are interested in ranking of beneficial uses if they require different flows, that would be a separate analysis.

    - Jon Bishop: If we need different flows in different reaches in the same season, then they are subjective decisions to be made by state waterboard. It is not uncommon to have competing needs for beneficial uses, it's not a science question but a policy question.
- Andy Collinson: Are we talking about species that are there currently or species that have the potential to be here based on historical ecology?
    - Not considering historical ecology. We are looking over the past approx. 30 years starting the 1980s – contemporary species.

Role of the TAC

- TAC members were selected to have expertise in hydrology/hydraulics/modeling and/or in ecology of species and habitat in the LA river. We ask that the TAC help review and critique the results of the statistical analysis, ensure conclusions are rooted in ecology, assist with scenario development for flow changes or management options.
- Process for TAC: 7 quarterly meetings over ~2 years.
    - Webinar mostly. Is there value in in person meetings?
        - 1 this spring for the details of the hydrology modeling and 1 for the scenarios of flow and interpretation of flow scenarios - all day meetings?
            - Rosi - when we are further along in modeling and better sense of what we want to recommend, that is a good time to get people together in person.
            - Always maintain phone in capabilities even with in person meeting is important.
            - Sabrina: Benefit to hosting the meeting closer to the river? Might be interest in looking at sites to have field trips.
            - Colin Bell: In person meetings will be helpful early on to get modeling strategy and one later to discuss results.
            - **Decision**: a couple in person meetings seems helpful and we can decide logistics later.
    - Is there benefit in having a summary of major findings and recommendations from the TAC?
        - Jon: May be useful but not sure how to do it. There are lots of people on the phone and not sure we could get everyone to agree on recommendations.
        - Lori: Summary of the notes from the TAC would be helpful
        - **Decision:** No formal TAC report, just use the meeting summaries to memorialize the TAC input
    - Is there a need for additional expertise or key individuals on the TAC?
        - Katherine Pease: Are meetings open to public?
            - Meetings are not subject to public notice or open to public. The TAC is designed to include people with technical knowledge that can contribute to project and we want those people within reason. The community outreach or the stakeholder group can include more people.
        - Michael: Question for Lori: When will stakeholder advisory group start up?
            - End of Fed/early march. In the process of looking to get an outside facilitator.
        - Lori- Yareli is conducting interviews with the community groups, but she is on the technical side. She is **not** in the stakeholder advisory group. It is a recreational work group to help define flow needs of recreational activities.

Hydrologic/Hydraulic Modeling Overview

- Terri and her team have been working in LA basin last 10-15 years. They worked with LACSD on a sustainable water project with Marc Gold at UCLA to develop plan for LA river basin.

Colin:

- Processes to model:
  - Hydrology: surface water, rain runoff, point sources, diversion, effluent, etc.
    - Used for scenario testing
  - Hydraulics (channel flow) this simulates water flowing in the channel to get ecologically relevant paraments in river - velocity, depth, etc,
  - Groundwater interactions - local infiltration will augment flows?
  - Tidal hydrodynamics
- Reviewed documents related to these modeling processes.
  - Looked for tools/datasets that have been developed.
  - Looked at their conclusions, what scenarios were tested, why, what was found
  - Can someone send him the TNC report or other reports they are missing?
- Hydrology model:
  - LSPC(WMMS) is the county model that is good for scenario testing and is very common.
    - **Questions for TAC:** When was is last updated? Calibration methods? Run time?
  - The SWMM+ SUSTSAIN is what Colin's group has used before - more familiar with the software and are working on a ground water model to incorporate with the SWMM model.
- Hydraulics:
  - Turn flows into ecologically relevant endpoints
  - USACE HECRAS
    - Couple runoff modeling to reach models of HEC RAS software
  - SWMM or LSPC
    - Build in the hydraulics to the hydrology modeling so it's a single software. This would help future users. Does LSPC have channel hydraulics?
- Groundwater:
  - Want to couple SWMM model to groundwater. Need studies of groundwater in the area. Have people used LSPC model with shallow or deep groundwater?
  - Teri Hogue: project with UCLA and San Diego that modeled the LA basin. Working to couple water management with SWMM model. Funded by state water board.
    - Eric: get list of detailed questions on the modeling approach and follow up with key individuals.
- Tidal Hydrodynamics:
  - WRAP model - robust and calibrated. Not sure if publicly available. But would incorporate the whole estuary
  - HEC RAS model - simple. Would just work with the lower portion of the river.
  - Where are the tidal limits of estuary into the LA river? Where does HECRAS model end? – we believe Willow Street, but need to confirm
  - Has anyone on the phone dealt with the estuary?
    - Chris Solek - project with Port of Long Beach and Port of LA - he can put you in touch with the right folks
    - Jenny Newman - they work with the Port of Long Beach on WRAP model
- Nathan: HEC RAS model might only go to reach 3.
- Andy Collinson: They (ESA) used core model for Glendale and Burbank - two models for Glendale narrows through downtown LA and ones that goes to estuary, but there was a gap in the middle. It wasn't intended as a low flow model but for 100-year flood. Can discuss further.

- Bill - LA county public works - He would need to collaborate with hydrology dept to get guidance on the LSPC on the model, he would like the copy of the PowerPoint to determine who to contact within the LA county.
    - Eric: has been coordinating with TJ and Amenu. Bill: TJ is a great asset.
- Chris Solek: Two new modeling efforts. Additional hydrology/hydraulic modeling efforts of Glendale narrows for ecosystem restoration. Dominguez channel with some hydrology modeling which can inform downstream channel. He can put you in touch with the correct people.

General Scheduling

- Two-year process.
- Quarterly TAC meetings.
- In person meeting maybe quarter 2 or 3 of 2019.

General Questions:

- Katherine - Concerns that addressing beneficial uses without water quality is difficult. How will different flows impact water quality. Can there be parallel efforts to look at water quality.
    - Eric: Its beyond our current scope, but SWMM model can be used for water quality down the road. Jenny Newman - this project is in response to change petitions requested about removing flow from river. Regional board will then see what impact this has on water quality and then state board can adjust water quality related tools or TMDLs. It's not the focus of this project but we understand the interplay.
- Sabrina - Temperature should be included in water quality. It is an extreme limit on fish and amphibians. Eric: We are looking at temperature for the RB4 project because it's on climate change. We are not looking at temperature here but perhaps we could use some of the tools from that project.
- Can we set up an information repository for meeting notes? Lori – we will set up a google doc folder