Establishing Environmental Flows for the Los Angeles River

Stakeholder Working Group Meeting #1
March 22, 2019

Meeting Objectives and Agenda

Objectives:

- Provide overview of LA River Environmental Flows project
- Discuss and receive input on initial project elements
- Agree on workgroup structure and approach

Agenda

1. Welcome
2. Project background
3. Overview of technical project scope
4. Initial stakeholder interviews
5. Discussion, feedback, and group input
6. Workgroup charter
7. Public comment

PROJECT OVERVIEW

Project Goals

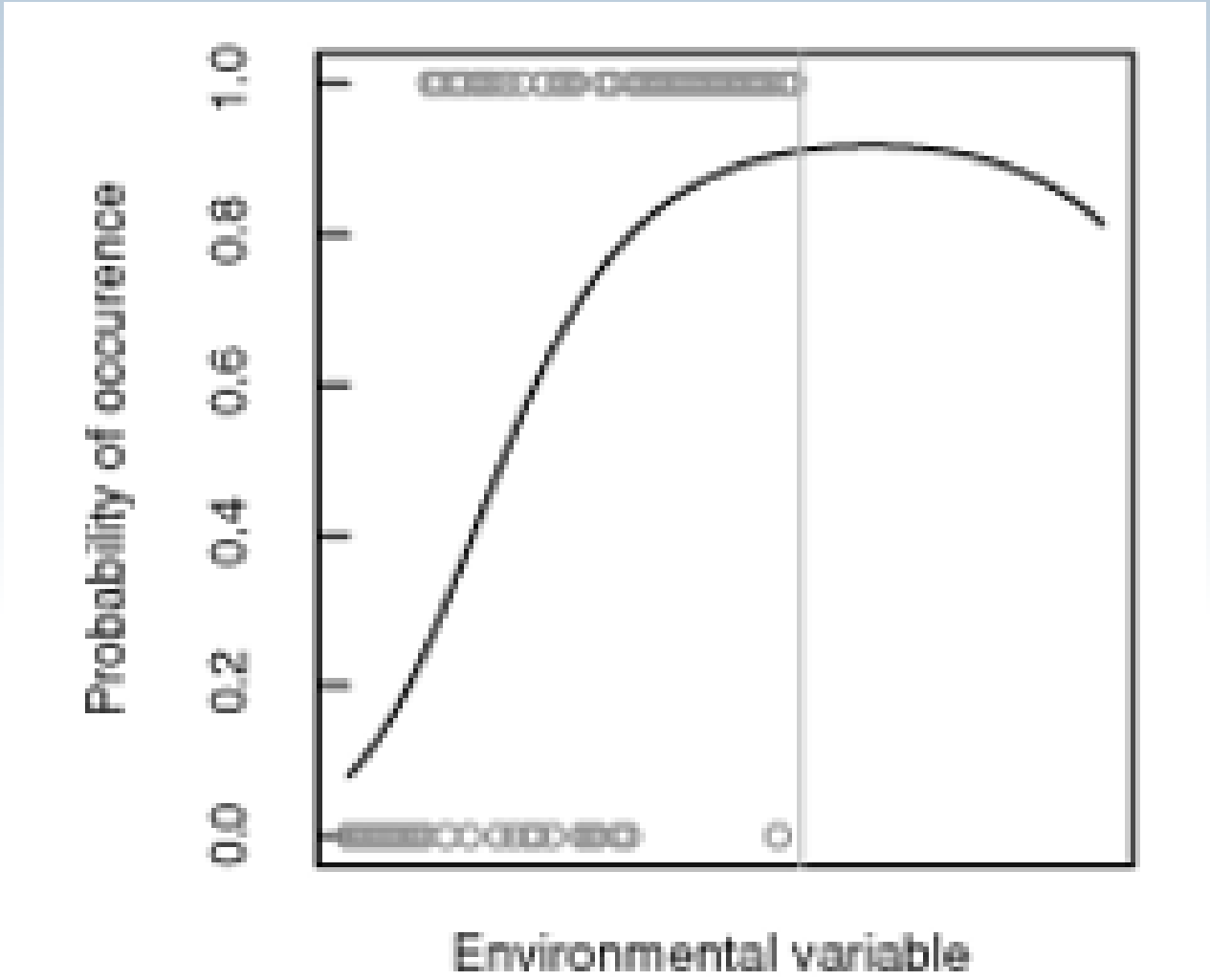
1. Characterize aquatic life and recreational uses in the LA River
2. Quantify flows needed to support uses
3. Model how various flow scenarios would affect uses
4. Develop a set of flow recommendations that optimize use support
5. Incorporate stakeholder input throughout the project
6. Serve as a model for similar situations

Work to Date

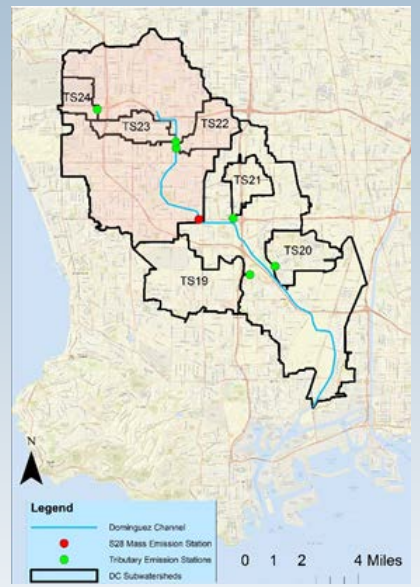
- Data compilation (recreational uses, species, habitats, environmental conditions)
- Mapping of aquatic life and recreational uses by reach
- Preliminary research to quantify flow-use relationships
- Initial work to configure the model
- Held first Technical Advisory Group Meeting
- Organized Stakeholder Working Group

What We Want

- Which species
- Which habitats
- What seasons
- Which flow metrics
- What scenarios
- What management



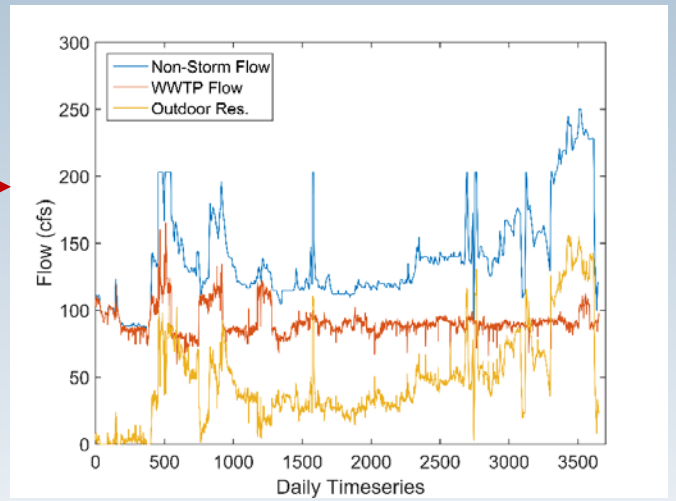
Overall Process for Developing Flow Criteria



Models

Scenario	Description
1	WRP
2	WRP + stormwater
3	WRP + conservation
4	WRP + stormwater + conservation

Scenarios



Time series output

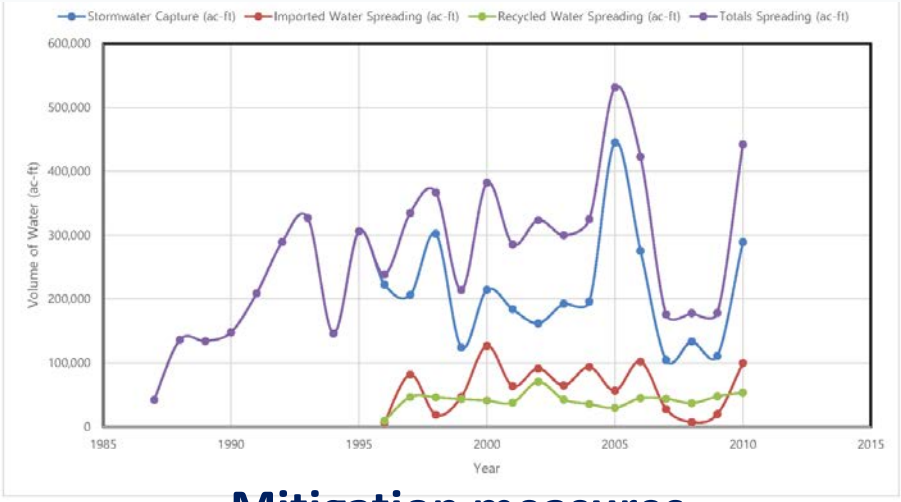
Hydrologic

- Minimum annual flow
- Duration of consecutive minimum annual flow
- Frequency of high winter flows Oct-March
- Frequency of Spring flush flows march-June
- Date of latest flood during the winter
- Decrease in flow per day in Spring following last Winter flood
- Magnitude of summer base flow

Hydraulic

- Presence of riffle (moderate depth, swift current, course substrate) habitat in Spring for spawning
- Percent of habitat as edgewater, riffle, and pools in the Spring and Summer
- Minimum and maximum bottom velocity in the Spring and summer
- Minimum depth of water in Spring, Summer, and Fall

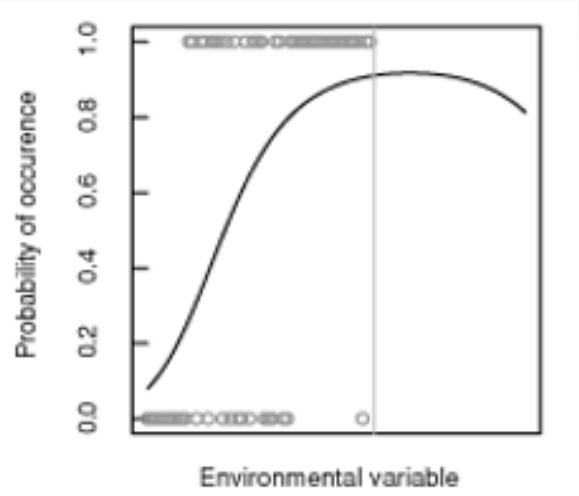
E-flow metrics



Mitigation measures

- **Flow Criteria**
  - ✓ **by reach and season**
- **Management/mitigation recommendations**

Agreed upon criteria



Flow-ecology relationships

Assessing Environmental Flows for LAR

Activity 1: Stakeholder Coordination → **Today and Ongoing**

Activity 2: Non-aquatic life use assessment

Activity 3: Aquatic life use assessment

Activity 4: Assess effects of flow modification/management → **WRP Water Reuse**

Activity 4: Assess effects of flow modification/management → **Options for Other Scenarios**

- Stormwater
- Groundwater
- Conservation
- Environmental restoration

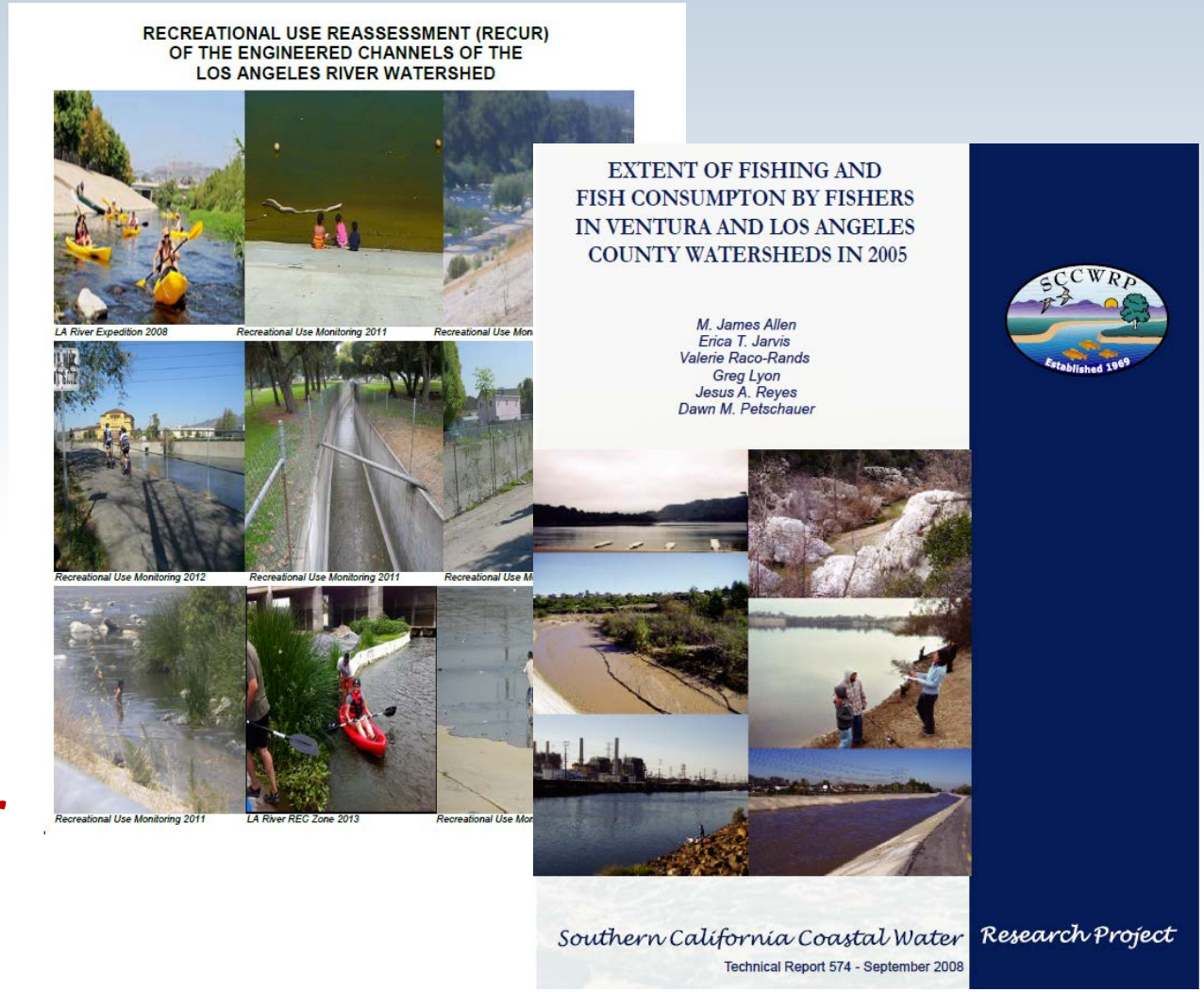
Activity 5: Monitoring and Adaptive Management

Activity 2 – Assessing Non-aquatic Life Uses

Goal: Identify key non-aquatic life uses and determine hydrologic needs for those uses

- Survey existing reports
- Interview key individuals
- Produce list of uses by reach
- Establish flow needs for each use
  - Past reports
  - Interviews/BPJ

Preliminary results to be discussed later in the agenda



Activity 2 – Assessing Non-aquatic Life Uses

Potential Product/Outcome

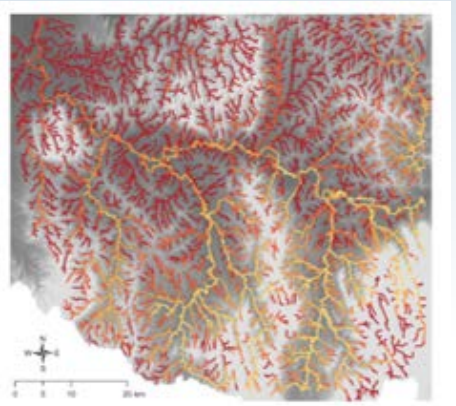
Reach	Uses	Flow Needs
1	a. Fishing b. Bird watching	a. Depth and flow during all seasons b. Minimum depth to provide foraging area during non-storm periods
2	a. Community education b. Recreation/kayaking	a. No substantive flow restrictions b. Min flow and depth during spring and summer
3	a. Fishing b. Recreation/wading	a. Depth and extent of inundation during spring and summer b. Min flow and velocity during spring and summer
4	TBD	
5	TBD	
6	TBD	

- Flow, depth and velocity needs to be quantified to the extent possible
- Season considerations to be included

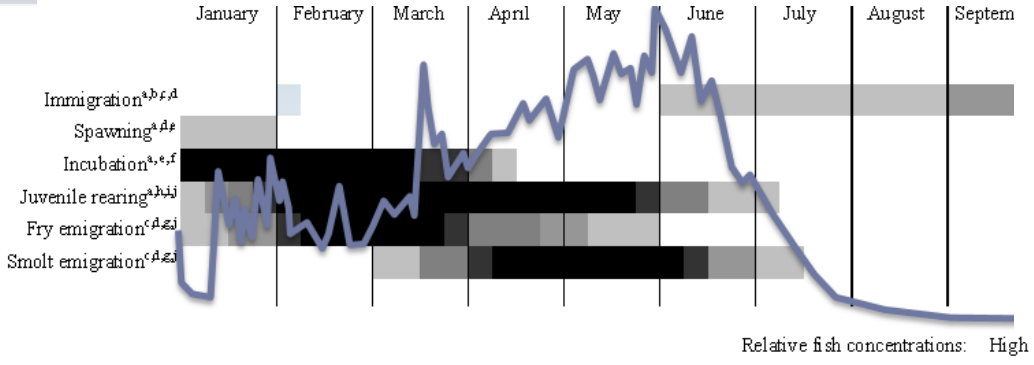
Activity 3 – Aquatic Life Use Assessment:

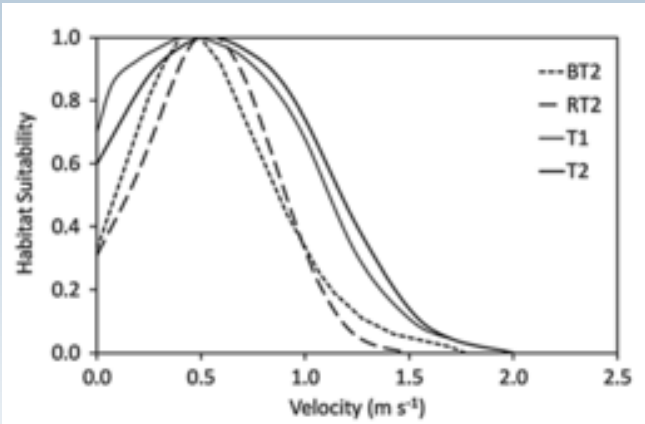
- Choose focal species
- Use existing databases on life history needs
- Augment with additional analysis as needed
- Model relationships between flow needs and probability of occurrence

Life History	Requirements
Spawning	• Feb-Aug (June-July mostly) • Quiet edge waters or pool • 14-22°C
Fry	• Quiet edge waters with no-slight flow • Aquatic vegetation
Juvenile	• Quiet edge waters • Aquatic vegetation • 0.5%-2.5% gradient
Adult	• 10-24°C • Slow-moving streams or backwater/ponded sec • Sand, gravel, cobble, boulder • Adapted to fast 0.8m/s streams • Depth>40cm • 0.5%-2.5% gradient, <2% in upper San Gabriel • Pools and glides • Emergent vegetation

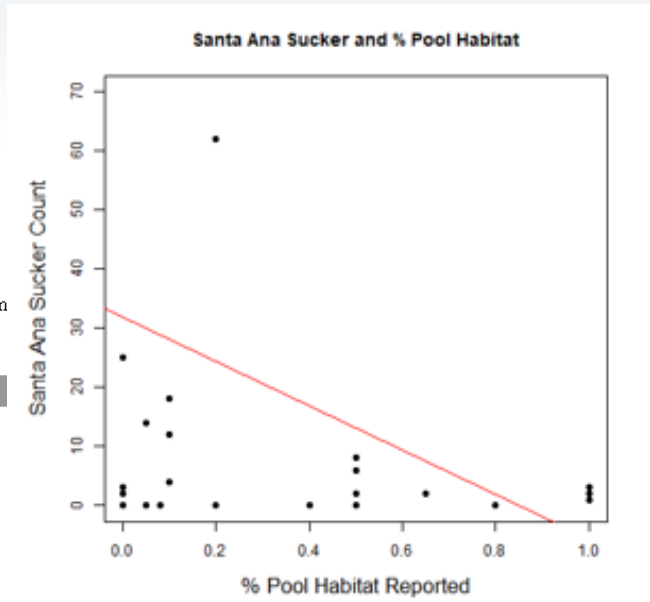


Probability of Occurrence





Habitat suitability curve



Activity 3 – Aquatic Life Use Assessment:

Potential Product of Flow Ecology Assessment

Goal: Develop flow-ecology relationships for key aquatic species or habitats in the LA River

		Flow Needs			
Endpoint	**Reaches**	**Fall**	**Winter**	**Spring**	**Summer**
Great blue heron	1-3		• Peak flow > X • High flow cfs duration between x and y days		• Depth of water between x and y meters
Riparian habitat/vireo	3-5		• Peak flows > X at least every Y years • Sustained high flow > x days	• Recession rates over 3 weeks to promote seed establishment	• Baseflow duration of 3 weeks
SW pond turtle	2, 4, 6	• Flushing flows > X days and Y cfs			• Baseflow > x cfs • Baseflow duration through Aug
Benthic Invertebrates	2-6		• Frequency of high flow events > x • Peak flows between x and y	• Recession rates through June • No scouring flows after X date	• Flow > ponding through Aug

Activity 4 – Quantify Effects of Flow Management

Analyzing Scenarios

Specific scenarios to be discussed later in the agenda

Potential Expansions of Project Scope

- Restoration and recreation opportunities along Rio Hondo, Compton Creeks, and possibly other locations

- Model potential water quality effects
  - Temperature
  - Sediment/TSS
  - Specific conductance
  - Metals
  - CECs (optional)

Activity 4 – Quantify Effects of Flow Management

Flow Recommendation Products

- Develop flow recommendationsthat balance need to support multiple uses / management objectives
  - Specific reaches
  - Specific seasons or climatic conditions
- Optimization based on prioritization or weighting developed in coordination with stakeholder and technical workgroups
- Explore the effects of mitigation measures on reduced flows
  - Habitat restorations / invasive plant removal
  - Supplemental discharges
  - Seasonal management actions (based on critical conditions)
- Develop recommended flow management strategies based on agreed upon criteria

Activity 5 – Monitoring and Adaptive Management

Goal: Develop a recommended monitoring strategy with potential triggers for adaptive management

- **Approach:** work with stakeholders and technical team to develop monitoring strategies
  - Leverage existing monitoring and assessment programs (e.g. SMC)
  - Provide data to improve model performance
  - Evaluate efficacy of criteria and management actions

Major Products

- List of current and potential uses by reach
- Map of key species and habitats
- Flow needs and tolerances associated with aquatic and non-aquatic uses
- Evaluation of potential effects associated with various water use/reuse scenarios
- Suggested mitigation/management measures that could offset potential effects
- Proposed monitoring approach/strategies

Initial Stakeholder Input

- **Interview Questions & SWG Background & Purpose Summary**
  - Sent in advance of meeting

- **Interview Begin & End Dates**
  - March 11, 2019 through March 20, 2019

- **Number of Interviews: 15**
  - 8 Public Agencies & 7 NGOs/University

- **Typical Length of Interview:**
  - 30-45 minutes

- **Range of Familiarity with Topic/Technical Issues**
  - Moderate to Very High levels

Initial Stakeholder Input (cont.)

- AGENCIES
  - County of Los Angeles Department of Public Works/Flood Control District
  - City of Glendale
  - City of Burbank
  - City of Los Angeles
    - Bureau of Sanitation
    - LARiverWorks
  - Mountains Recreation Conservation Authority
  - California Department of Fish & Wildlife
  - U.S. Fish and Wildlife Service

Initial Stakeholder Input (cont.)

- NGOs/UNIVERSITY
  - Heal the Bay
  - LA Waterkeeper
  - The River Project
  - The Nature Conservancy
  - Friends of the Los Angeles River
  - Arroyo Seco Foundation
  - UCLA – Institute of the Environment & Sustainability

LA River Flows
Interview Questions

ORGANIZATION
Representative
Date

1. Tell us a little about the role(s) that you and your agency/organization have and how it could be affected by the development/implementation of LA River flow standards.

2. How would you describe your understanding of and perspective on the current LA River flows now, particularly related to:

   - current quantities
   - associated factors like groundwater related issues and/or tidal influence

3. The Regional Water Quality Control Board's *Los Angeles Region Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* (Basin Plan) designates existing and potential beneficial uses. To what extent are you familiar with the Basin Plan and the beneficial uses assigned to the Los Angeles River reaches?

4. The State Water Board is currently funding development of the California Environmental Flows Framework (CEFF), a two-tier approach for setting environmental flow criteria and that this project (LA River Flows) is part of that effort. How do you view the relationship between flows in the river and water quality (e.g., pollutant loading, stream temperature, etc.)?

5. A number of factors will be considered in setting flow standards these will include:

   - life cycle needs and habitat requirements of the species that live in the River
   - River ecology and how it might be affected by a modified flow regime
   - other types of uses (e.g., recreation such as wading and kayaking, fishing) of the River and how these might be affected by a modified flow regime

   To what extent are you familiar with these issues?

6. A variety of management proposals for wastewater reuse and stormwater capture (which would reduce the amount of water in the River and also increase our local water supply resiliency) are being considered. What, if any, of those proposals do you find promising as it relates to the LA River?

7. What do you consider the major constraints/impediments associated with these management proposals?

8. What, if any, other initiatives and activities are going on that we should be aware of related to this LA River Flow Project and/or your participation?

9. Are there other "hot topics" you and your agency/organization are wrestling with now that might come up in discussion?

10. How would you define success for this project?

11. What last thoughts and/or advice to the facilitators and conveners are you able to offer?

Initial Stakeholder Input (cont.)

Purpose of the Interview Questions:

- Provide the Board with a better understanding of Stakeholder familiarity with current flow quantities in the Los Angeles River (River) and how Stakeholders might be affected
- Familiarity with existing and/or future management plans affecting the River and its flows and constraints/impediments
- Issues currently and/or which could affect the River with a modified flow regime

Initial Stakeholder Input (cont.)

Purpose of the Interview Questions (cont.):

- Identify issues/concerns/"Hot Topics"
- Define how success might be defined for the LA River Flows SWG project
- Input for the facilitators/conveners

Initial Stakeholder Input (cont.)

Key Topics/Issues:

- Historic Nature of River and Baseline
  - Perception of historic level of flows (and species/habitats) versus what is actually flowing in the River needs to be better explained/understood
- Origin and Ownership of Water
  - Flows into River are from imported sources and therefore, are not part of the natural regime
  - Treated wastewater currently being put into the River can and will be diverted for potable and/or groundwater uses

Initial Stakeholder Input (cont.)

- Water Quality/Recharge/Stormwater Capture
  - Understand and/or are familiar with beneficial uses, but not exactly Basin Plan
  - Watershed is interconnected and must be viewed from this perspective when addressing flows and water quality/quantities
  - Changes in flow regime will affect water quality

Initial Stakeholder Input (cont.)

- Projects & Mandates
  - Multi-benefit projects are important
  - Flows determine what existing and future projects can be implemented in the River
  - Considering flood risk and management mandates are important

- Biological Resources/Recreation
  - Flows need to consider both biological resources/species and recreation needs

Initial Stakeholder Input (cont.)

- <u>Challenges/Opportunities</u>
  - Challenge will be to balance water recycling, stormwater capture, and water resiliency needs with biological and recreational needs
  - Barrier will be funding and water rights and differing goals and objectives for the River and the associated flows
  - Want a fair and honest and science-based discussion about flows in the River

Initial Stakeholder Input (cont.)

- Challenges/Opportunities (cont.)
  - Once study is completed, follow through for implementation, such as monitoring will be important
  - Need to find an ideal “balance” for flows that considers the full suite of issues (e.g., water quality, recreation, biological resources)

Initial Stakeholder Input (cont.)

- Misc. Topics/Themes
  - Not clear how far tidal reach extends into River
  - Water equity and Climate Change are important
  - Having information in advance of the meetings

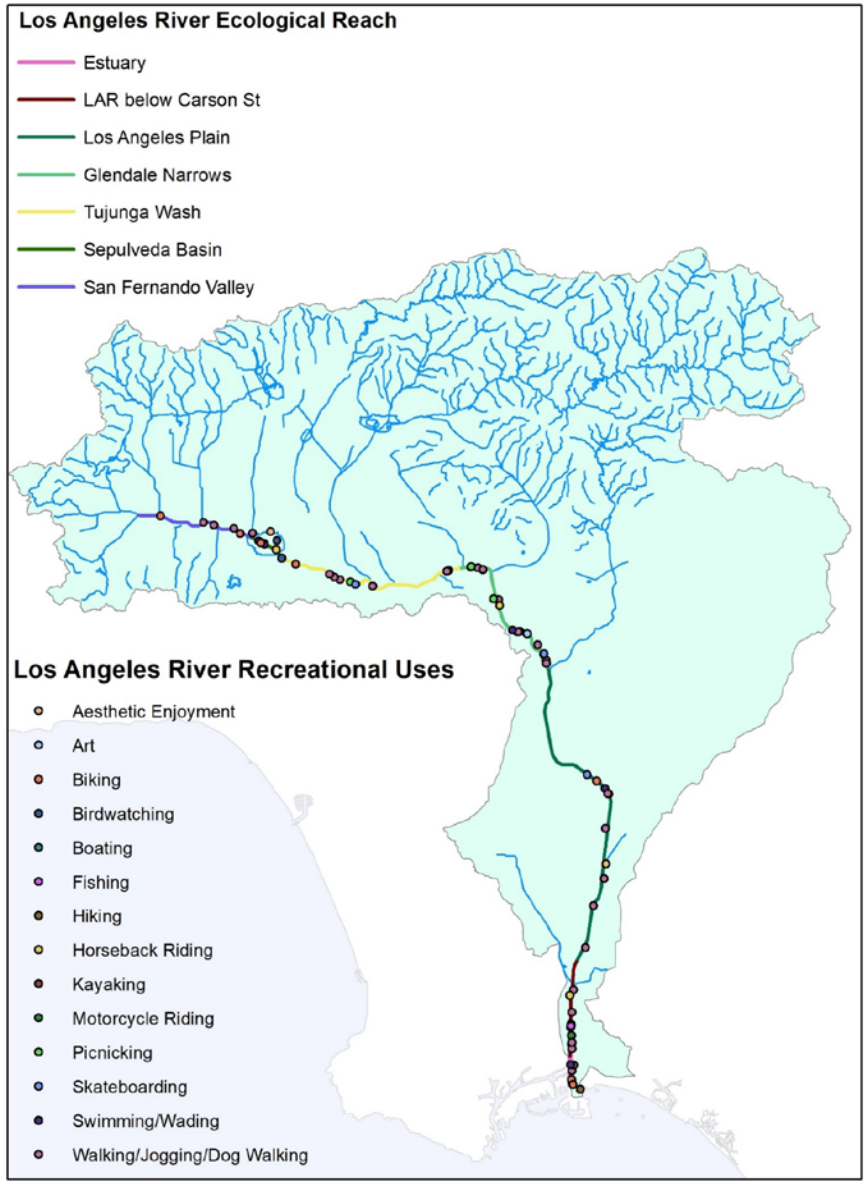
- Basic Meeting Logistics
  - Parking
  - Lunch
  - Webinar (as option to physical attendance)

Topics for Stakeholder Discussion

- Recreational use assessment
- Habitat and species mapping
- Proposed stream reaches for analysis
- Preliminary management scenarios to evaluate

Existing Recreational Uses: Literature Review

River Reach	Wading	Skateboarding	Walking/ Running	Fishing	Biking	Swimming	Horseback Riding	Kayaking / boating	Bird watching	Aesthetic Enjoyment	Picnicking	Arts	Community Event
1													
2													
3													
4													
5													
6													



Captured Data

- Visitor surveys (online and in person)
  - Occurrence
  - Frequency
- Observational data
- Field Reconnaissance (accessibility-signage, fencing, ramp or bridge access, reach descriptions)
- Water Depth (min, max, mean)
- Flow Conditions

Resources

- **LARWQCB. 2014. Recreational Use Reassessment (RECUR) of the Engineered Channels of the Los Angeles River Watershed. Report.**
- **USEPA. 2010. Special Case Evaluation Regarding Status of the Los Angeles River, California, As a Traditional Navigable Water. Report. https://archive.epa.gov/region9/mediacenter/web/pdf/laspecialcaseletterandevaluation.pdf**
- **Los Angeles River Expedition. 2008.**

River Recreation: Group Interview

- Stakeholder list compiled using draft criteria and list from previous planning and outreach efforts (Complete)
- Invite for participation group interview with follow-up survey for participants that are unable to attend (in progress)
  - "snowball" sampling
- Group interview (late March/early April)
  - Open ended questions about recreational activities, seasonality, recreational indicators, and associated flow needs
  - Ranking exercise to quantify extent of agreement

Biological Data Sources

SPECIES

- Center for Biological Diversity
- California Natural Diversity Database (CNDDB)
- Nature Conservancy/Aquarius/Nature Serve
- USFWS – threatened and endangered species
- eBird
- Global Diversity Information Facility (GBIF)
- HerpNET – Natural History Museums
- iNaturalist
- CDFW Wildlife Action Plan
- *Various species survey reports*

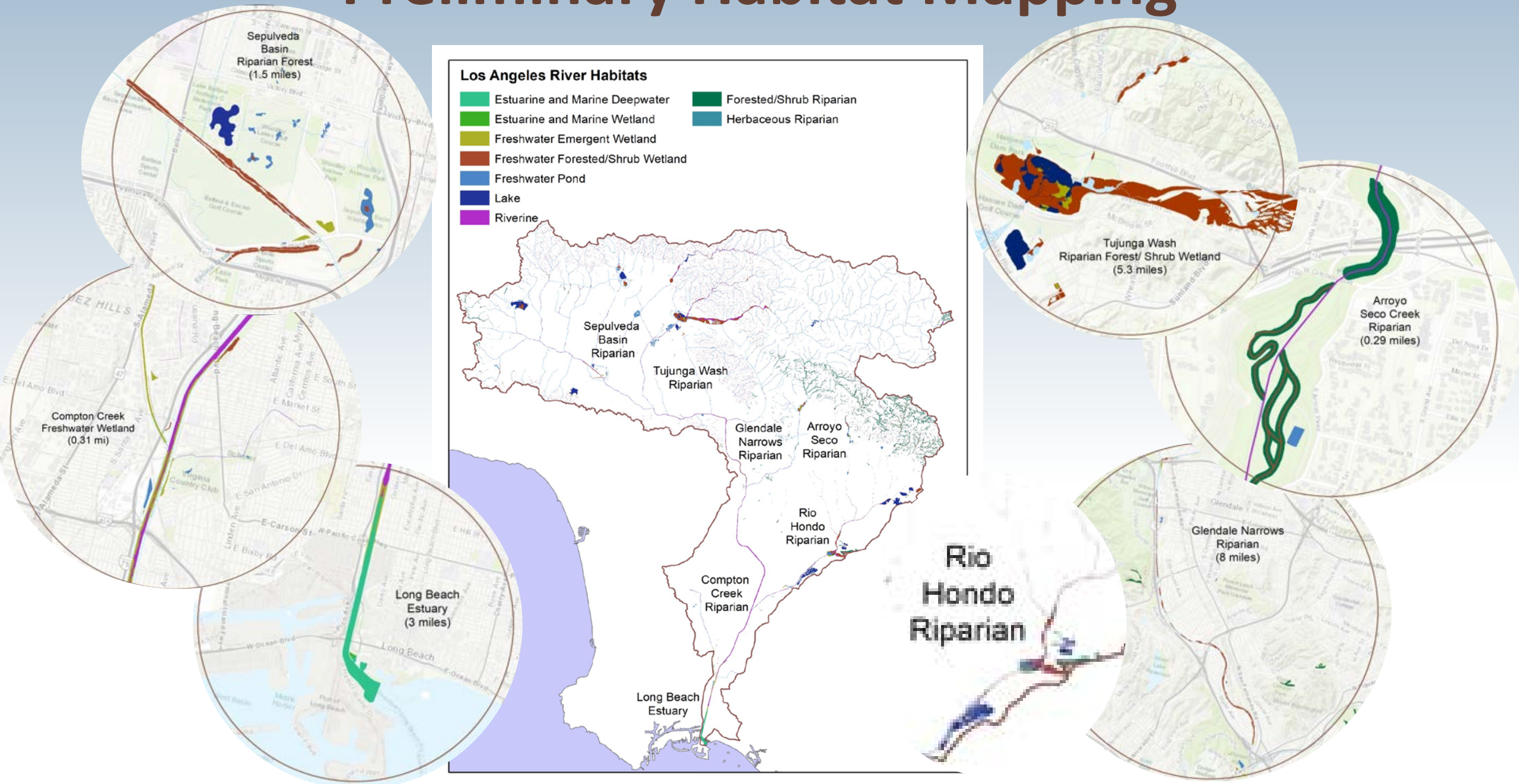
HABITATS

- Significant ecological areas
- National wetlands inventory
- California Native Plant Society
- CalVeg

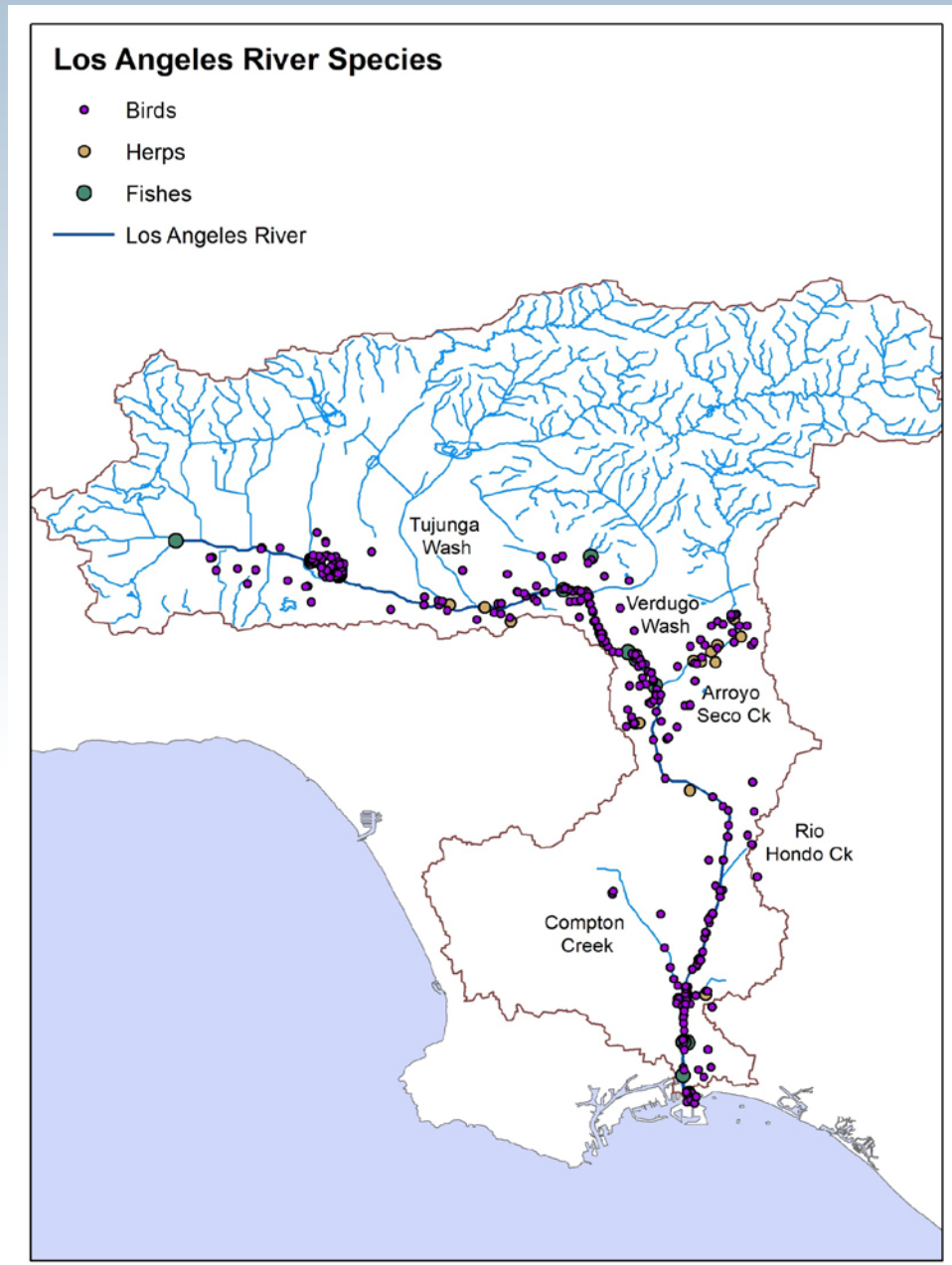
POTENTIAL FUTURE SOURCES

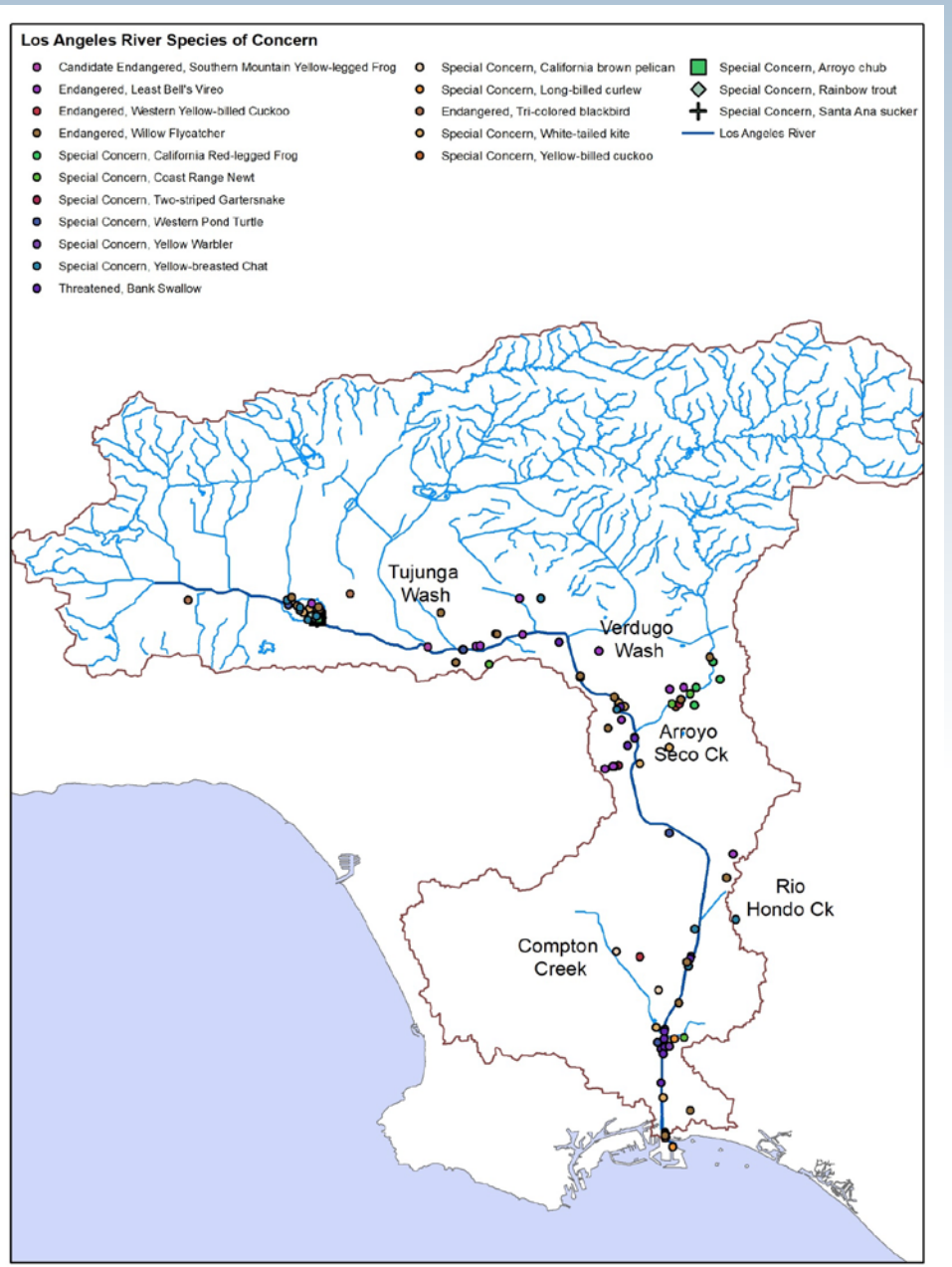
- *Study plans & reports from various planning efforts*
- *CDFW fishing records/surveys*
- *Wading shorebird observations & surveys*
- *Others???*

Preliminary Habitat Mapping



Preliminary Species Mapping





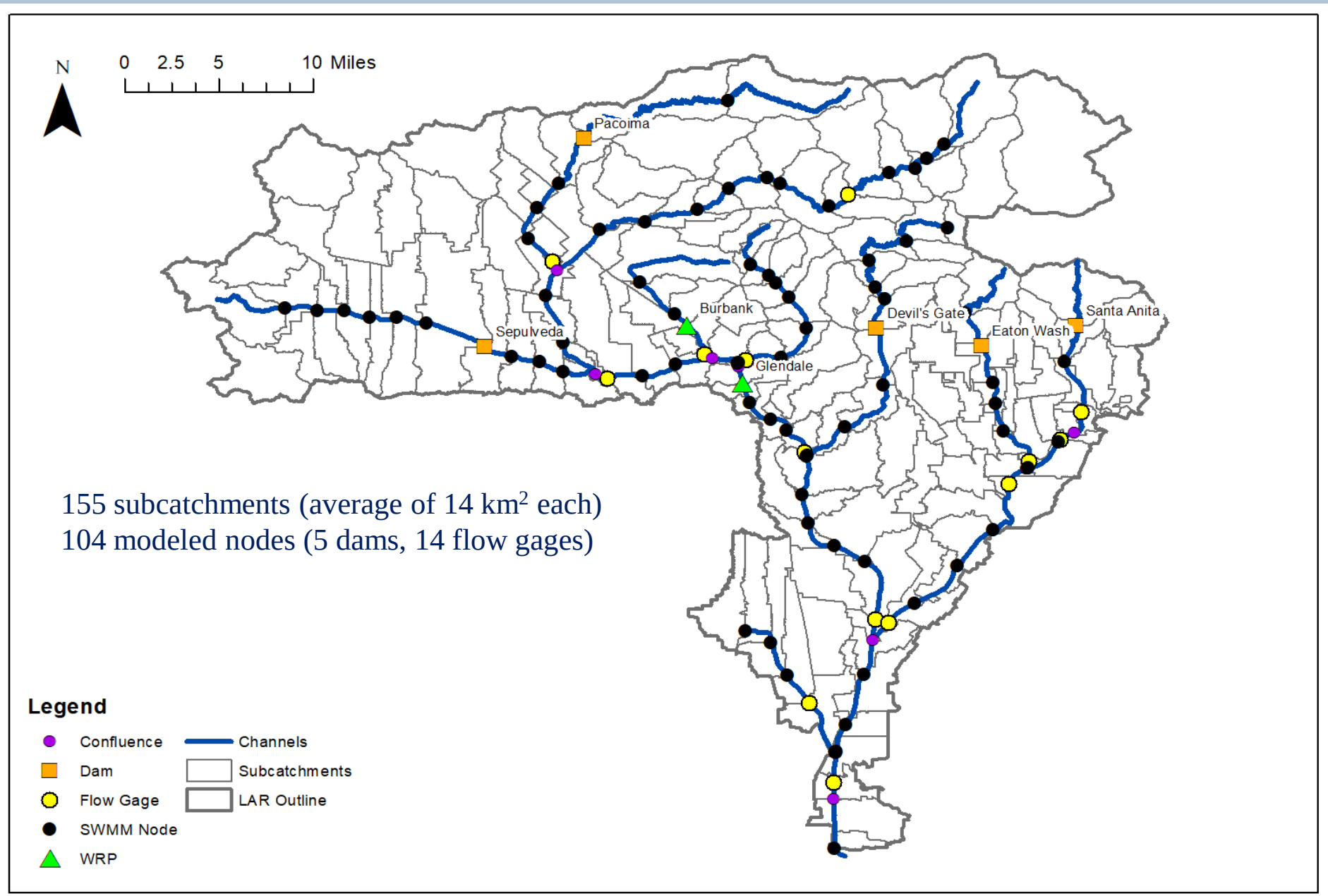
Preliminary Potential Focal Species

- Arroyo chub
- Santa Ana sucker
- Tri-colored blackbird
- Least bells' vireo
- Black crowned night heron
- Black necked stilt
- Long-billed dowitcher
- **Other suggestions**

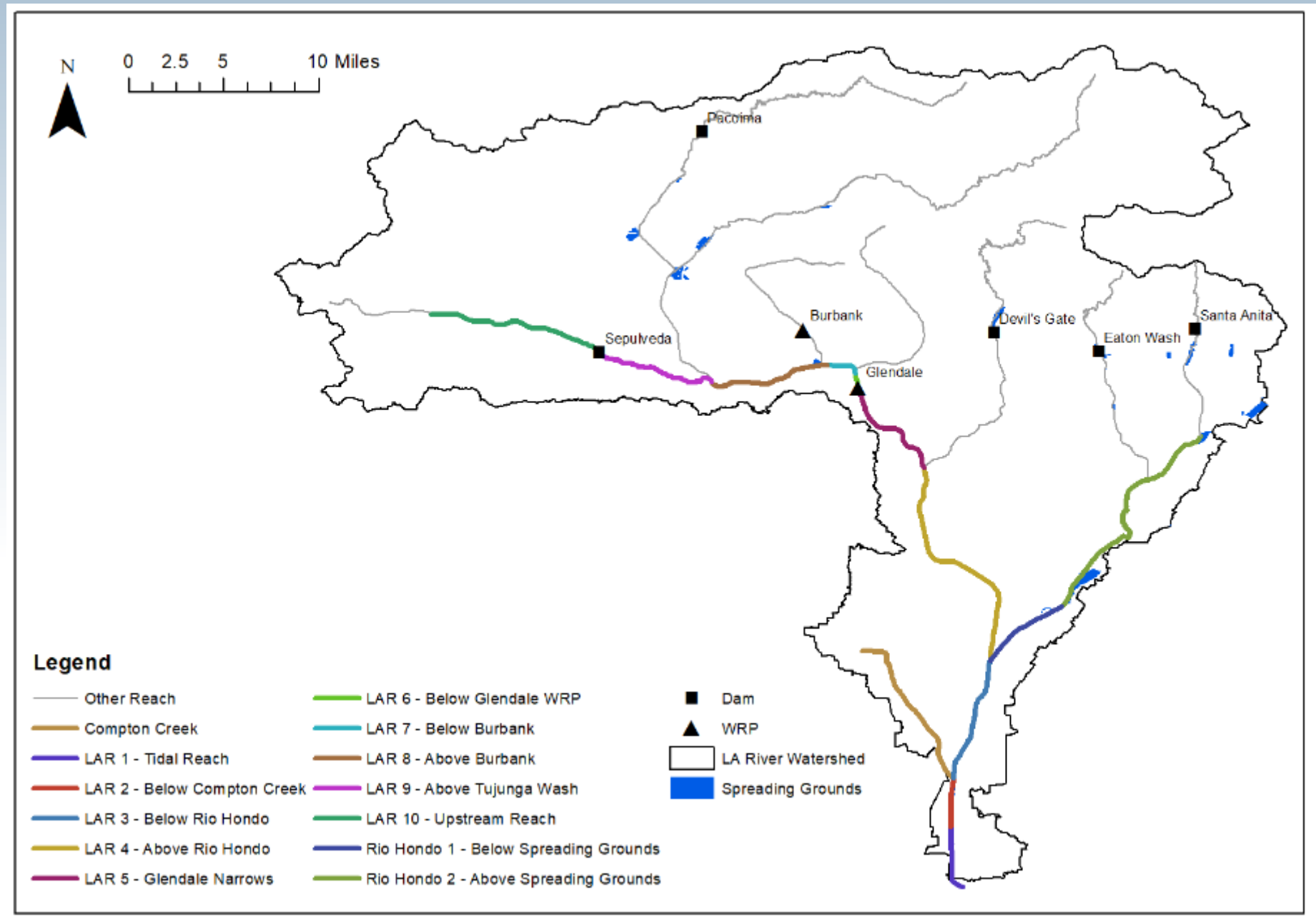
Selection Criteria of Study Reaches for Modeling

- Balance spatial resolution with modeling efficiency
- Represent areas likely to be affected by management actions
- Include current and potential future habitat/species locations
- Include entire study area

Proposed Reaches with Modeling Nodes



Proposed Analysis Reaches



Proposed Management Scenarios

Burbank Reuse	Glendale Reuse	Stormwater Capture	Restoration
0% recycle (6.9 cfs)	0% recycle (12.5 cfs)	Centralized capture (locations?)	Rio Hondo
20% recycle	20% recycle	On-site infiltration	Compton Creek
40% recycle	40% recycle	On-site direct use	Tujunga
60% recycle	60% recycle	Green streets	Arroyo Seco
80% recycle	80% recycle	Subregional infiltration	Glendale Narrows
100% recycle	100% recycle	Subregional direct use	**OTHER LOCATIONS??**

- Proposed in change petition is 60% reduction for Burbank and 65% reduction for Glendale in August
- Stormwater capture scenarios from Stormwater Capture Master Plan
- Can assess combinations of scenarios

Input and Discussion

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									
Activity 3 - Aquatic Life Beneficial Use Assessment									
Activity 4 - Apply Environmental Flows/Evaluate Scenarios									
Activity 5 - Monitoring and Adaptive Mangement Plan									
Activity 6 - Summary of results/reporting									

TAC meetings to occur quarterly

Stakeholder coordination meeting

Questions

Eric Stein & Kris Taniguchi-Quan

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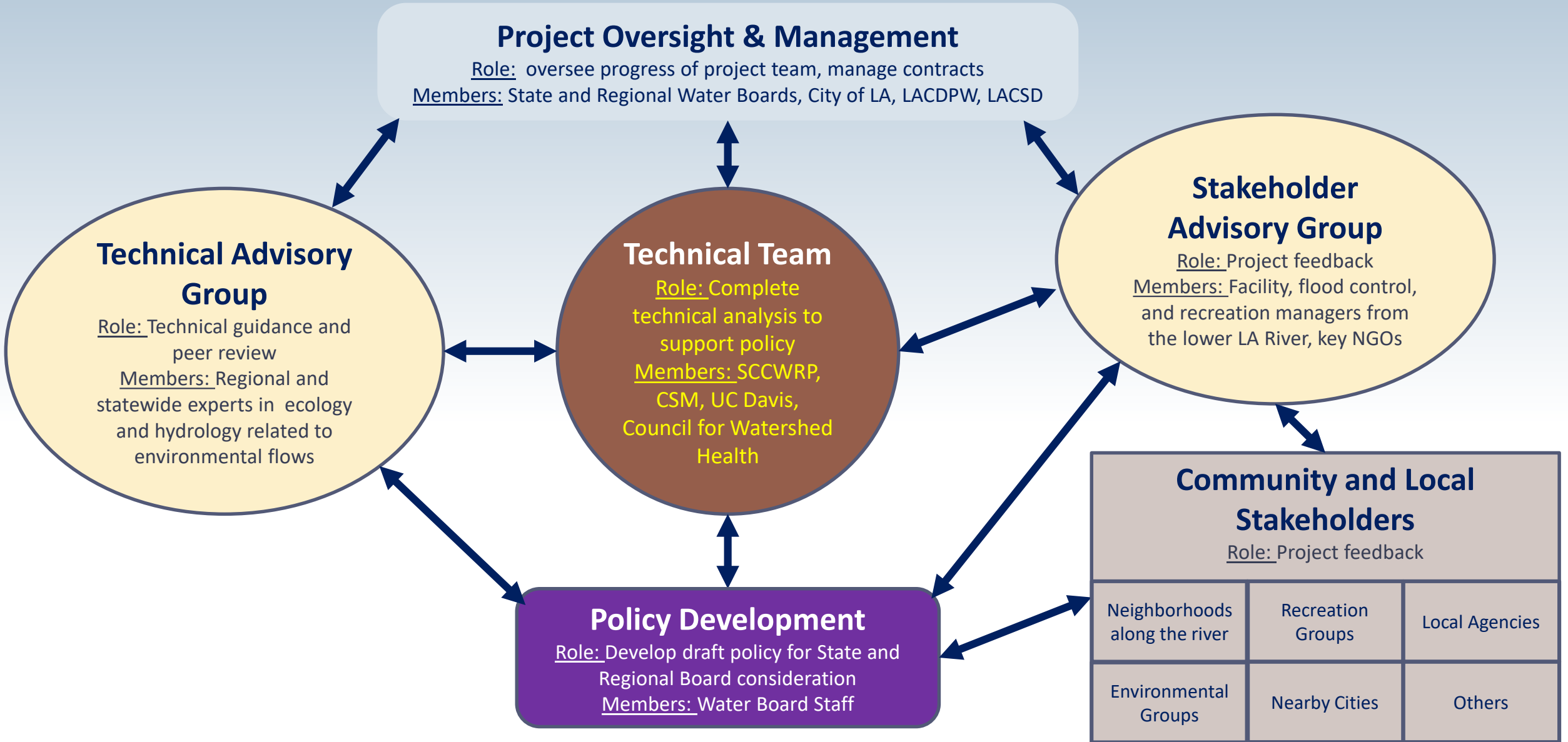
kristinetq@sccwrp.org

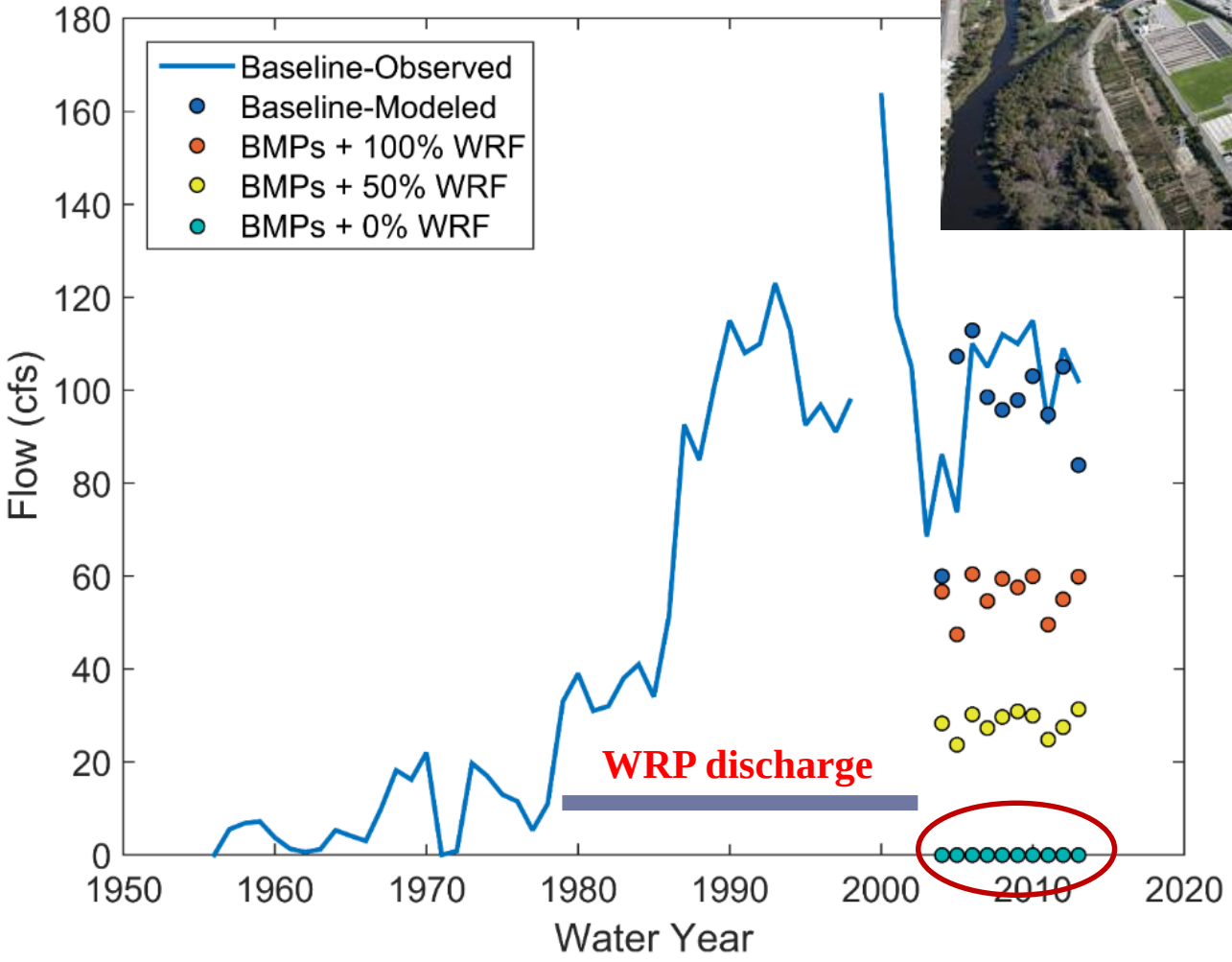
www.sccwrp.org

Relationship of TAC to Other Groups (e.g. SAG)

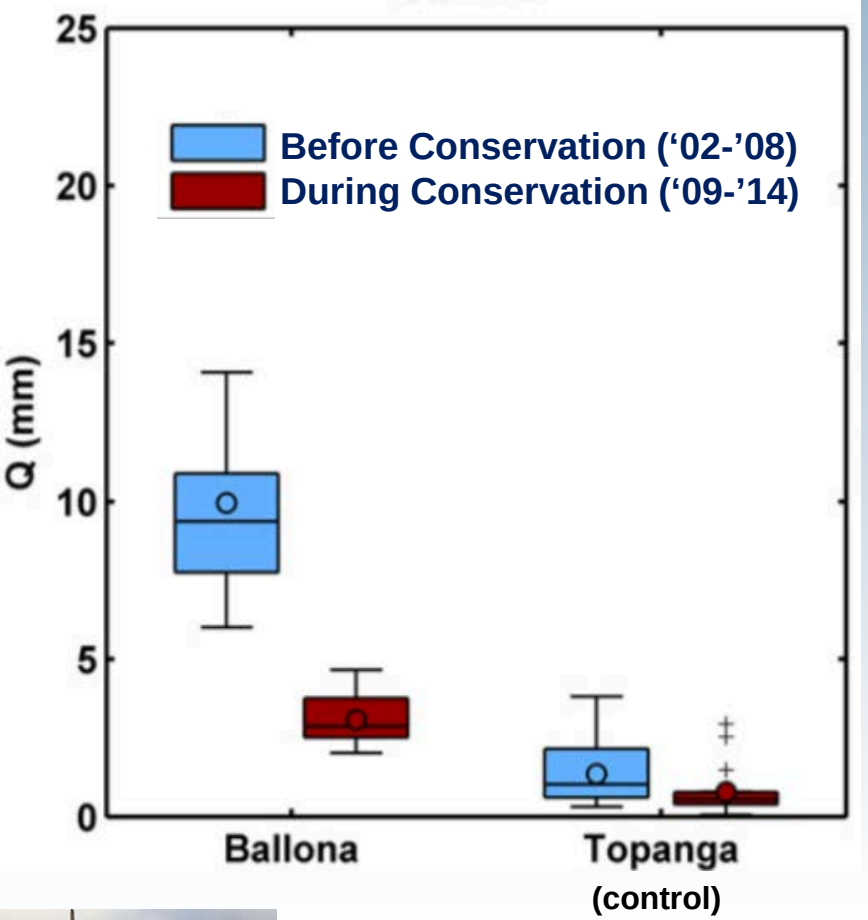


Management Effects on Flows

Annual minimum flows
LA River at Wardlow



Mika et al. 2017



Manago and Hogue (2017)

Alternate (Detailed) Schedule

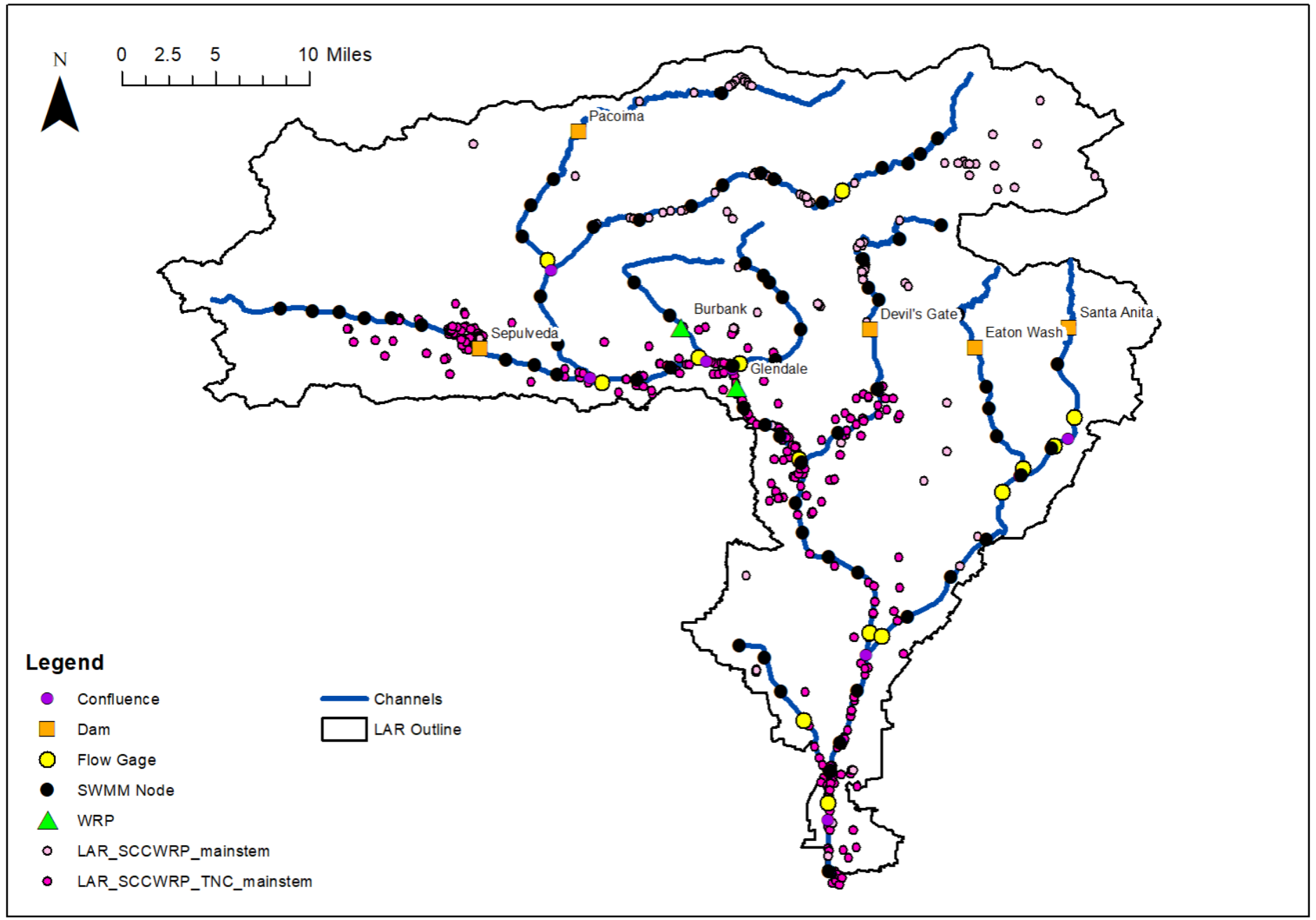
Activity / Sub-Task	Products	2018	2019				2020			
		Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Activity 1 - Stakeholder coordination										
Stakeholder Advisory Group (SAG) Meetings	Charter, needs assessment, meeting notes		S1		S2		S3		S4	
Technical Advisory Committee (TAC) Meetings	Meeting notes, feedback		T1	T2	T3	T4	T5	T6	T7	
Activity 2 - Non-aquatic Life Use Assessment										
2A Characterize non-aquatic life uses	Map of NAL uses/indicators by reach									
2B Determine flow use relationships	Flow-use relationships & targets									
Activity 3 - Aquatic Life Beneficial Use Assessment										
3A Asses hydrologic baseline condition	Baseline hydrology/data gaps									
3B Identify priority ecological endpoints	List of priority endpoints, data summary									
3C Determine flow ecology relationships for stream endpoints	Flow eco models/targets by reach for BMI & verts									
3D Determine flow ecology relationships for marsh/estuary	Flow eco models/targets for marsh/est habitats									
Activitiy 4 - Apply Environmental Flows and Evaluate Scenarios										
4A Update hydrologic modeling	Hydro & hydraulic models of LAR									
4B Analyze tolerances to flow modifications	Flow tolerance ranges for riparian hab, BMI, verts									
4C Analyze wastewater reuse scenarios	Map wastewater reuse scenario effects on uses									
4D Evaluate stormwater management scenarios	Map of stormwater/wastewater scenarios effects									
4E Evaluate groundwater interaction scenarios	Map of groundwater/wastewater scenarios effects									
4F Evaluate habitat restoration effects	List of potential hab rest projs and map of uses									
4G Evaluate flow alteration effects on tidal portion of LA River	Map of scenario effects on tidal portion of LAR									
4H Establish recommended flow criteria	Recommended flow criteria by reach & season									
Activity 5 - Monitoring and Adaptive Mangement Plan	Proposed monitoring strategy									
Activity 6 - Summary of results/reporting	Draft and final project report									

Activity 2 – Assessing Non-aquatic Life Uses

Potential Product/Outcome

Reach	Uses	Flow Needs
a. 1	a. Fishing b. Bird watching	a. Depth and flow during all seasons b. Minimum depth to provide foraging area during non-storm periods
2	a. Community education b. Recreation/kayaking	a. No substantive flow restrictions b. Min flow and depth during spring and summer
3	a. Fishing b. Recreation/wading	a. Depth and extent of inundation during spring and summer b. Min flow and velocity during spring and summer
4	TBD	
5	TBD	
6	TBD	

- Flow, depth and velocity needs to be quantified to the extent possible
- Season considerations to be included


N
0 2.5 5 10 Miles
Pacoima
Sepulveda
Burbank
Glendale
Devil's Gate
Eaton Wash
Santa Anita
Legend
Confluence
Dam
Flow Gage
SWMM Node
WRP
LAR_SCCWRP_mainstem
LAR_SCCWRP_TNC_mainstem
Channels
LAR Outline

Activity 4 – Aquatic Life Use Assessment:

Potential Product of Flow Target Determination

Goal: Evaluate effect of flow management/alteration on both aquatic life and non-aquatic life uses in the LA River

Reach	Season	Flow Target	Species or Habitat	General Relationship to Non-aquatic Life Use
1	Fall	Target 1	Wading shorebirds	Promotes fishing
	Winter	Target 2	Shorebirds, riparian habitat (scour)	No winter uses
	Spring	Target 3	Benthic invertebrates, pond turtle	Potential conflict with recreational uses
	Summer	Target 4	Pond turtle	Consistent with recreation
2	Fall			
	Winter			
	Spring			
	Summer			

- Number of endpoints and targets based on input from workgroups
- Relationship to non-aquatic life uses will help inform scenario analysis