



The California Environmental Flows Framework (CEFF) for the Los Angeles River

Technical Working Group Meeting #5
December 2, 2025

Mountains Recreation &
Conservation Authority

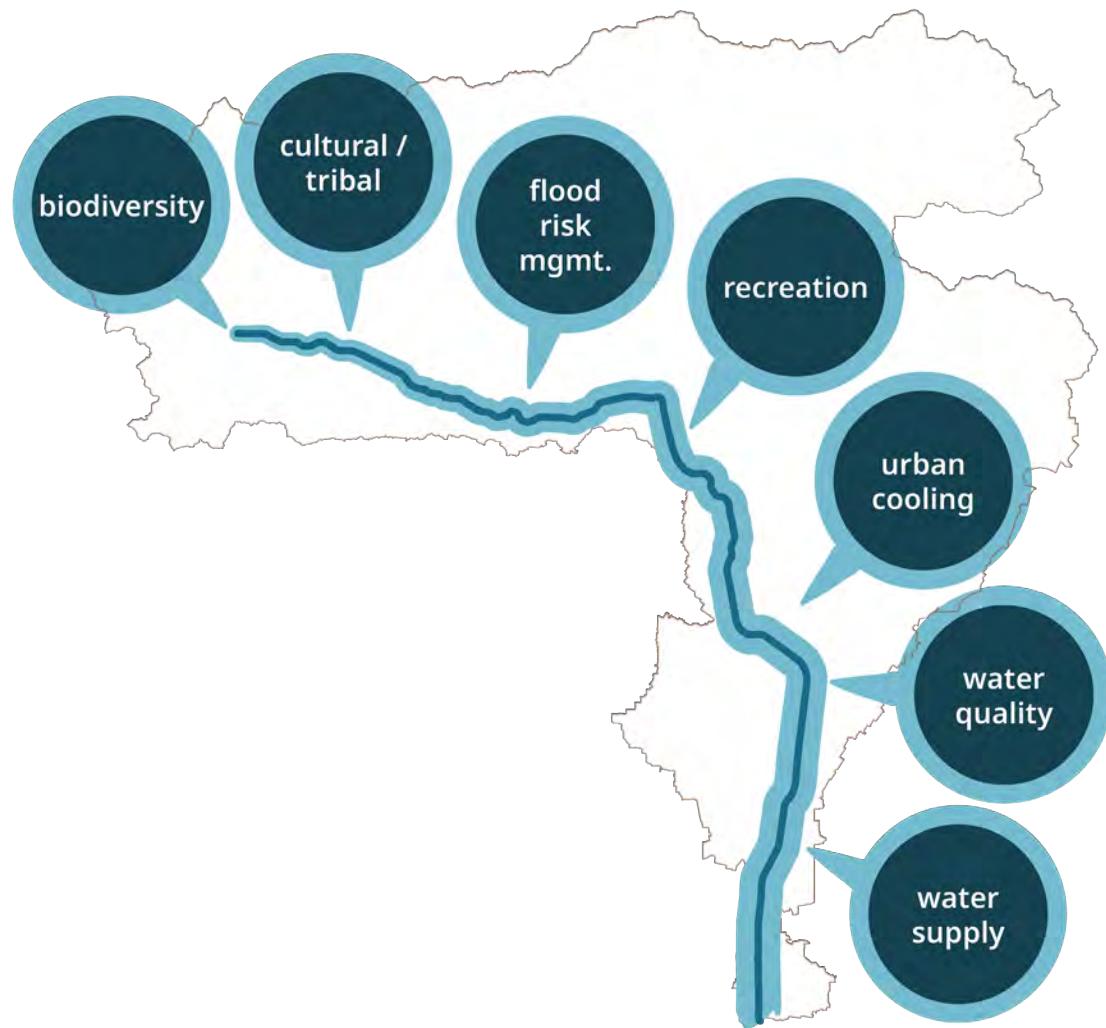



Stillwater Sciences

McMillen

TWG#5 AGENDA

- 1 Introduction**
- 2 Flow Assessment Initial Results**
- 3 Activity: Identification of Management Actions or Levers**
- 4 Lunch**
- 5 Activity: Opportunities and Constraints of Levers**
- 6 Activity: Lever Prioritization**



CEFF Outcome
Flow recommendations
that are aligned with
management goals

THE LA RIVER CALIFORNIA ENVIRONMENTAL FLOWS FRAMEWORK (CEFF)

A vision for coexistence

Previous plans, published documents, and procedures for the LA River

LA RIVER CEFF SECTION A

The LA River watershed as a natural system

LA RIVER CEFF SECTION C

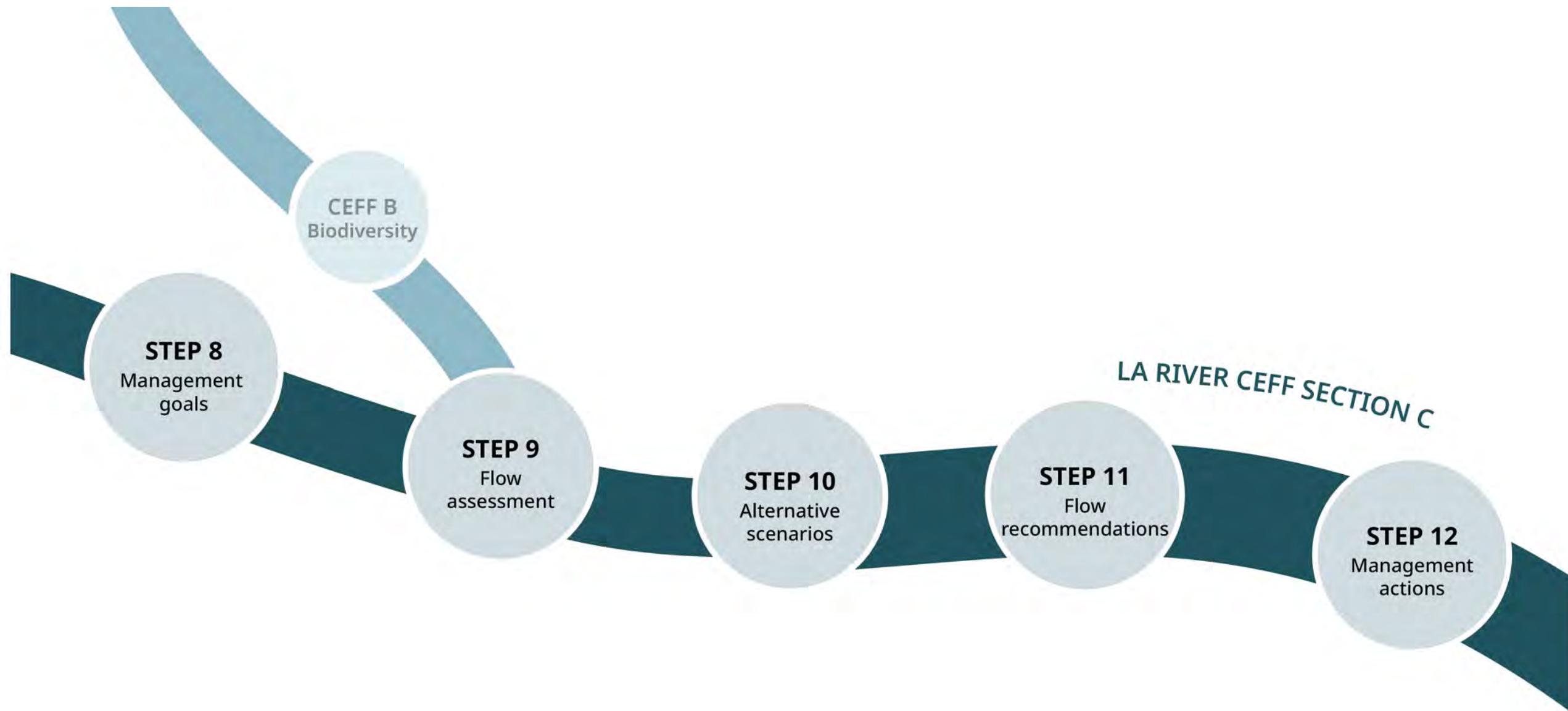
Stakeholder-driven, comprehensive environmental flow recommendations

LA RIVER CEFF SECTION B

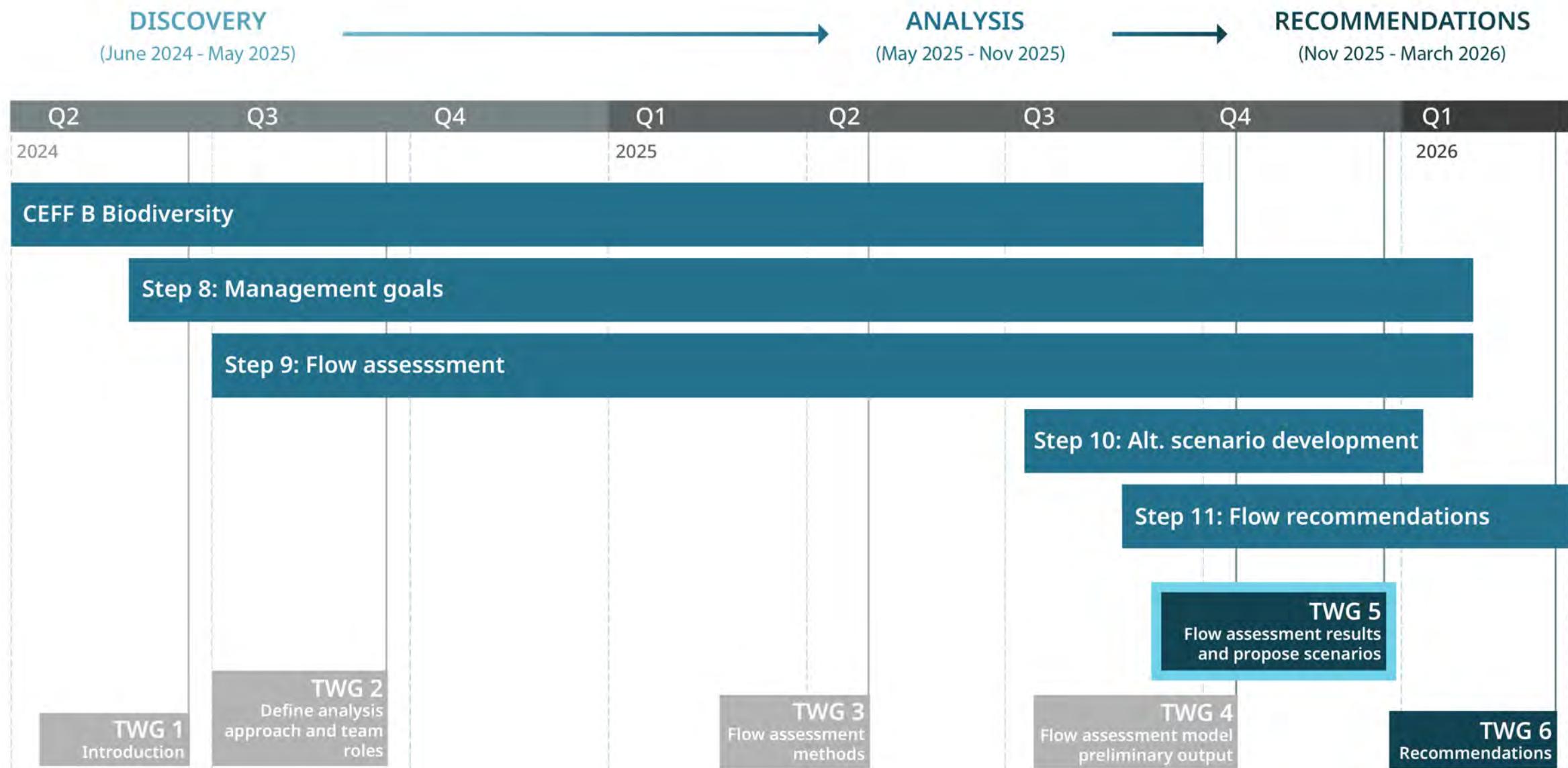
Flow needs for biodiversity and recreation management goals

FLOW RECOMMENDATIONS

LA River CEFF Section C Progress



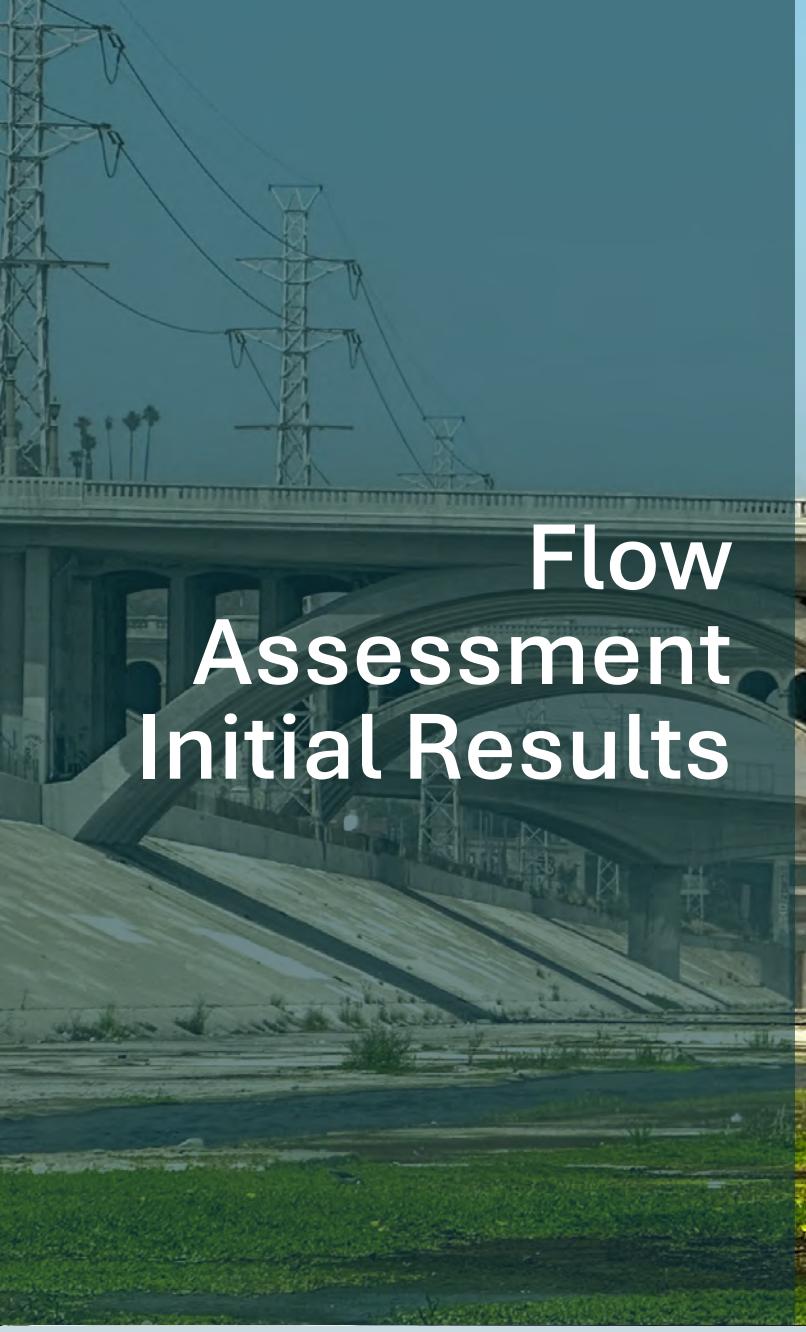
LA River CEFF Project Schedule





TWG#5 Purpose

1. Familiarize TWG with LA River CEFF performance measure initial results in the demonstration reach (LOI 17.23)
2. Explore how LA River CEFF analysis results can be used to develop flow recommendations and identify flow or channel form changes to better support performance measures
3. Group activity to identify management actions (levers) to improve ability to meet watershed goals



Flow Assessment Initial Results



LA River CEFF Section C – Performance Results Overview

Performance measure results presented for the demonstration reach of the LA River.

Summarize key methods and features of the reach discussed in TWG 4 under:

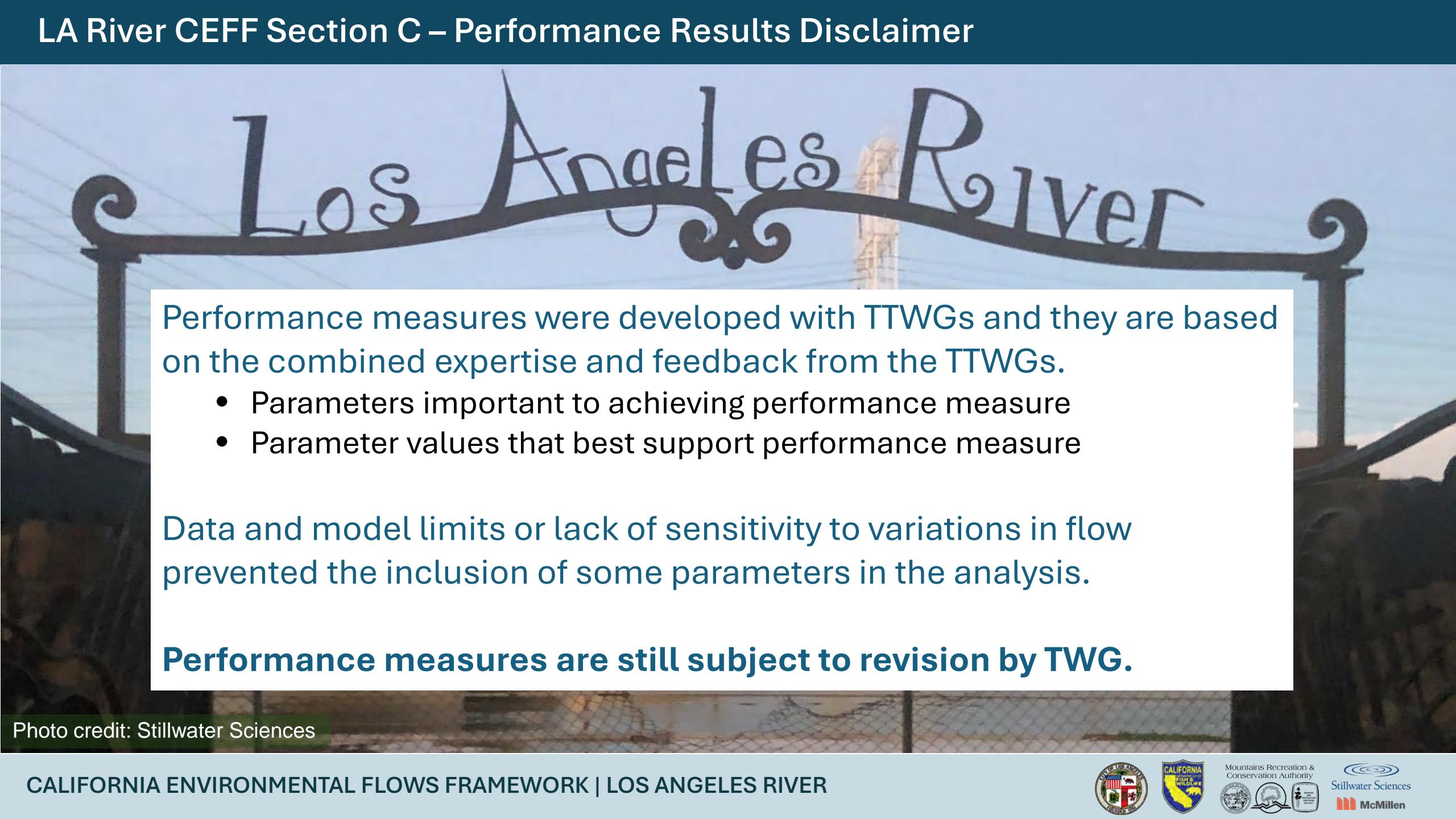
- **Existing** conditions
- **Low Implementation**
- **High Implementation**

Key results for performance measures:

- Summary of TWG 4 performance results
- Additional performance results

Highlight how performance measure results inform development of flow recommendations.





Performance measures were developed with TTWGs and they are based on the combined expertise and feedback from the TTWGs.

- Parameters important to achieving performance measure
- Parameter values that best support performance measure

Data and model limits or lack of sensitivity to variations in flow prevented the inclusion of some parameters in the analysis.

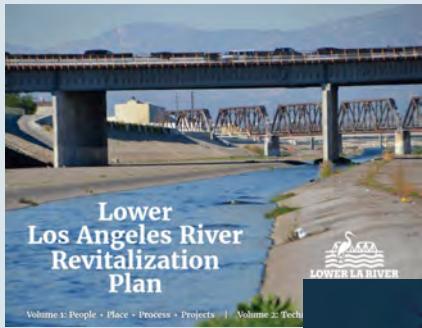
Performance measures are still subject to revision by TWG.

Photo credit: Stillwater Sciences

Channel Form Change Methods Overview

Source plans

What is planned?



LA RIVER MASTER PLAN

Volume 1 of 4: Integrated Feasibility Report



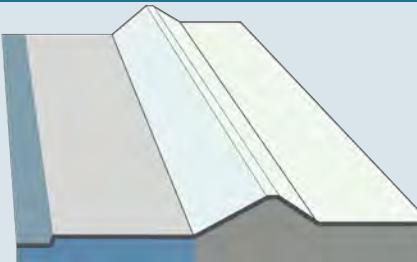
Volume 1 of 4: Integrated Feasibility Report

Other

Known plans/designs
from misc. sources

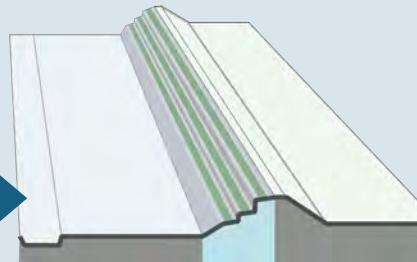
Inventory

*What projects do the plans contain?
How to translate form change?*



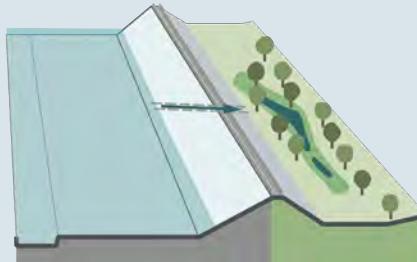
Channel bed

Concrete



Channel walls

Terraced



Overbank

Off-channel wetland

Overlays

Aspect, Capacity, DACs,
Groundwater, etc.

Initial river-wide Scenarios

How will planned projects be built out?

Existing conditions

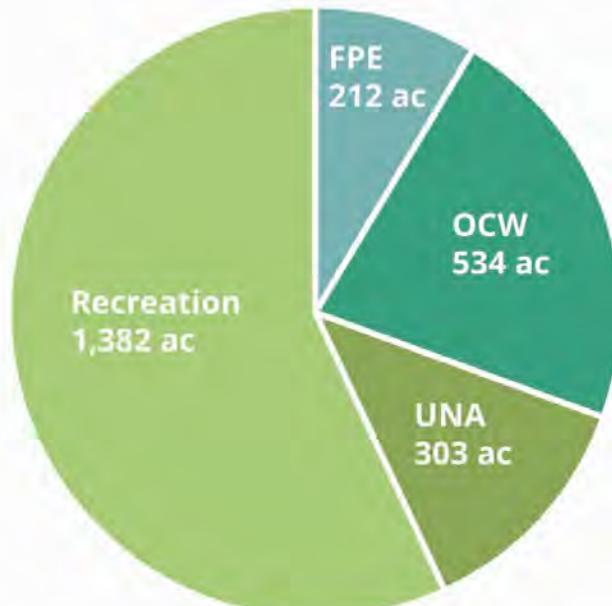
Low implementation

High implementation

Full River Scenarios Summary – Potential Changes to Channel Form

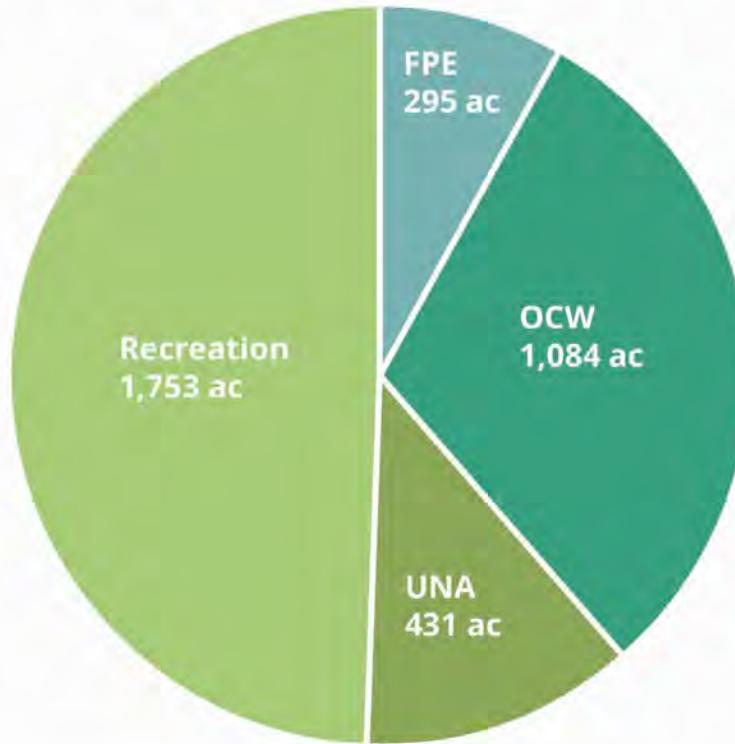
Low Scenario

Total Additional Acres: 2,431*

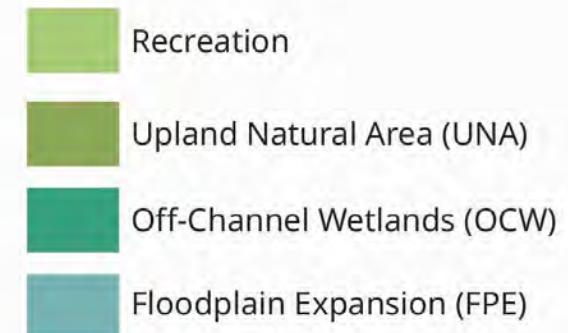


High Scenario

Total Additional Acres: 3,564*



Legend



*Compared to existing condition

11.9 mi 37.5 mi total
Soft Bottom Main Stem (existing) **Fish Passage (ocean to Tujunga Wash confl.)**

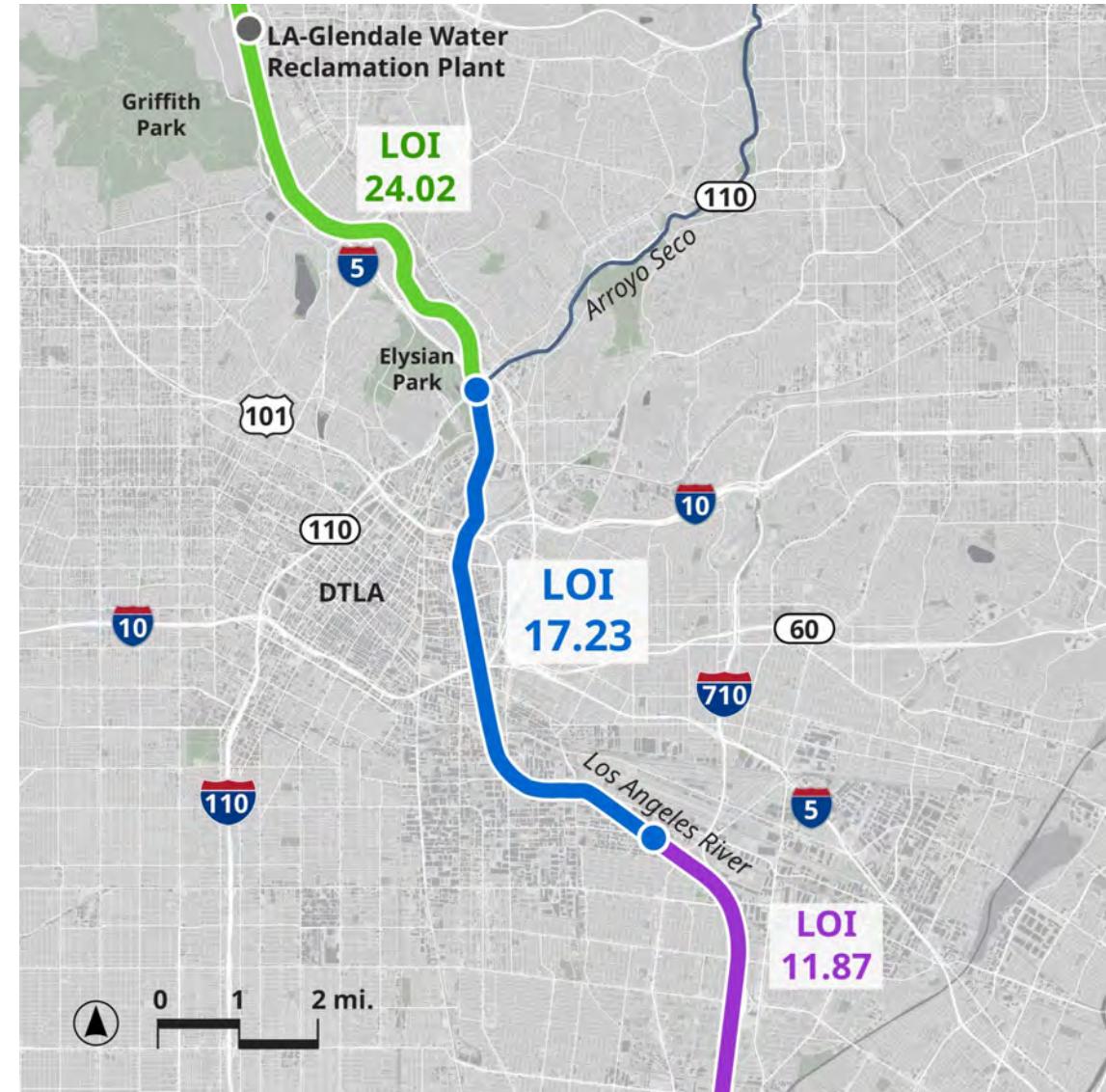
12.5 mi 37.5 mi total
Soft Bottom Main Stem (existing + piggyback yd.) **Fish Passage (ocean to Tujunga Wash confl.)**

LA River CEFF Section C – LOI 17.23

LA River CEFF analysis subdivided the mainstem LA River into 12 reaches (“locations of interest”, or LOIs).

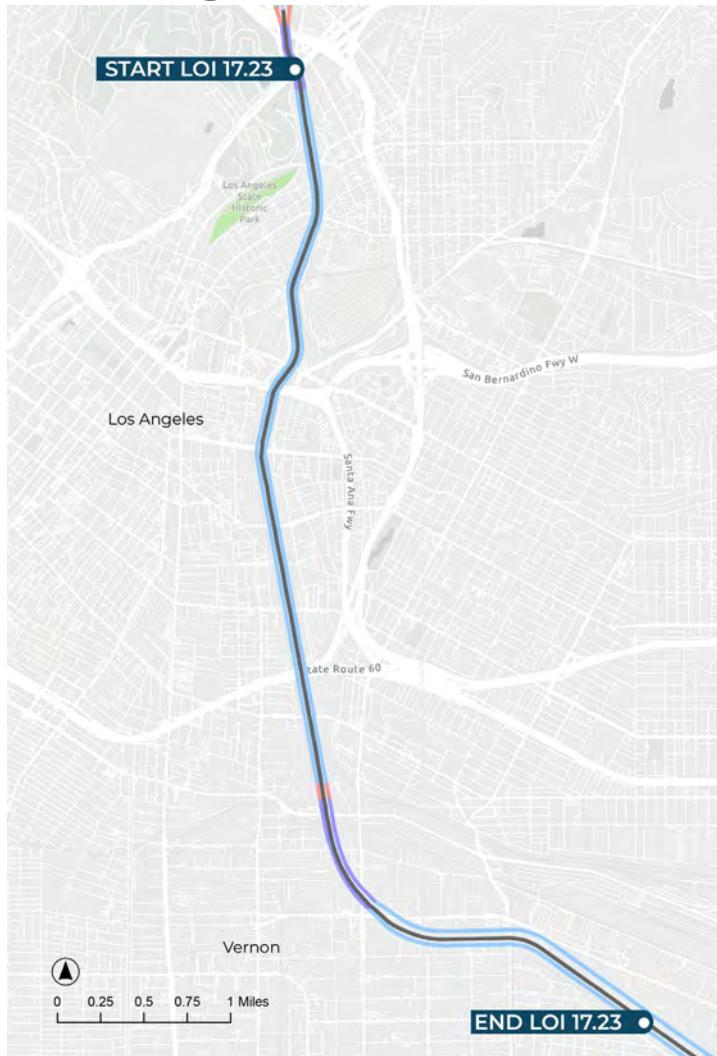
LOI 17.23 was selected as the demonstration reach for performance assessment tool results because:

- Influence of multiple channel form changes can be assessed
- Influence of multiple flow changes can be assessed



LA River CEFF Section C – Potential Changes to Channel Form LOI 17.23

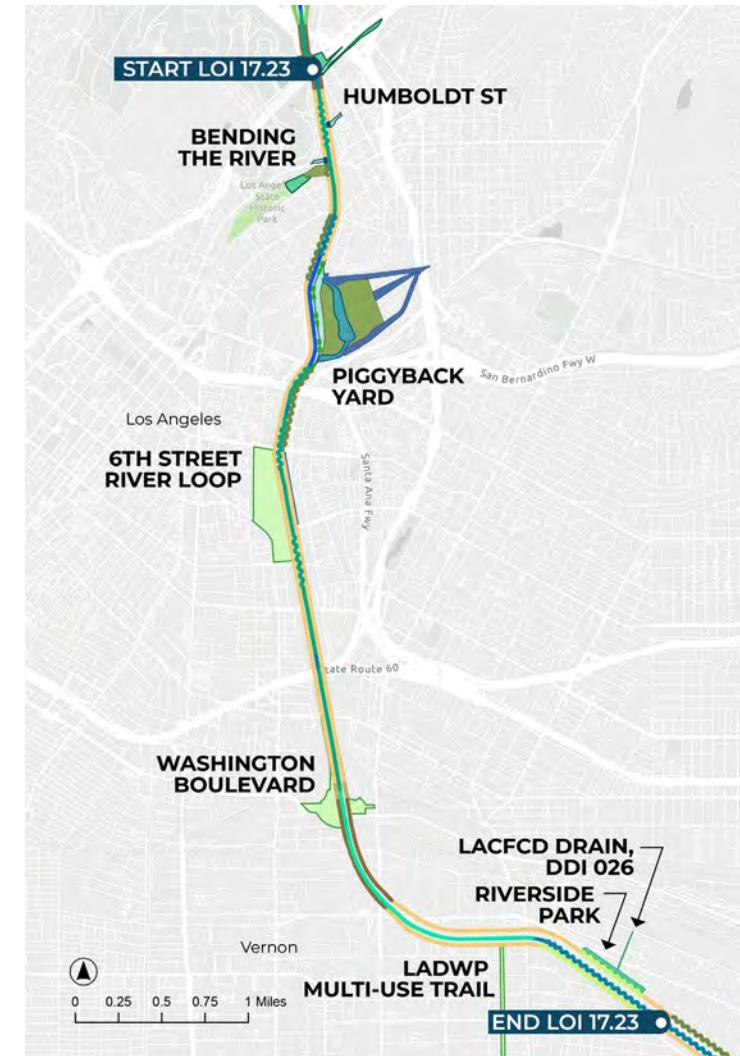
Existing conditions scenario



Low Implementation scenario



High Implementation scenario

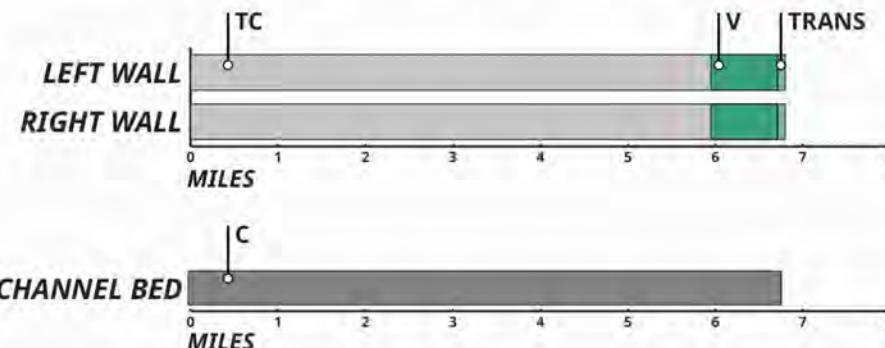


*LEGEND FORTHCOMING - Overbank polygons contain multiple typologies. Symbol color indicates predominant typology.

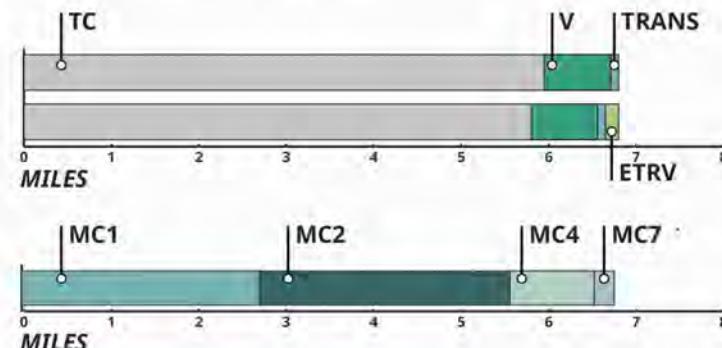
LA River CEFF Section C – Channel Form Variations in LOI 17.23

LOI 17.23 Channel Wall & Bed Typology

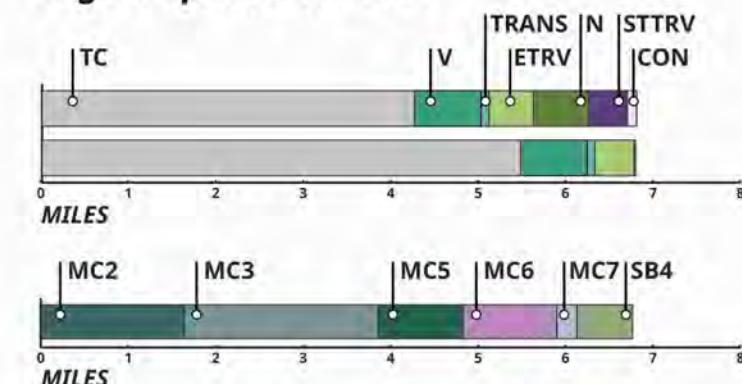
Existing Conditions



Low Implementation



High Implementation



Channel walls **slightly changed** between existing and low implementation.

Channel walls **more substantially changed** between existing and high implementation.

Channel bed **substantially changed** under low and high implementation.

Channel Walls

TC: Trapezoidal Concrete
V: Vertical
TRANS: Transitional
ETRV: Even Terraced Vegetated
N: Natural (moved)
STTRV: Single-top Terraced Vegetated
CON: Confluence

Channel Beds

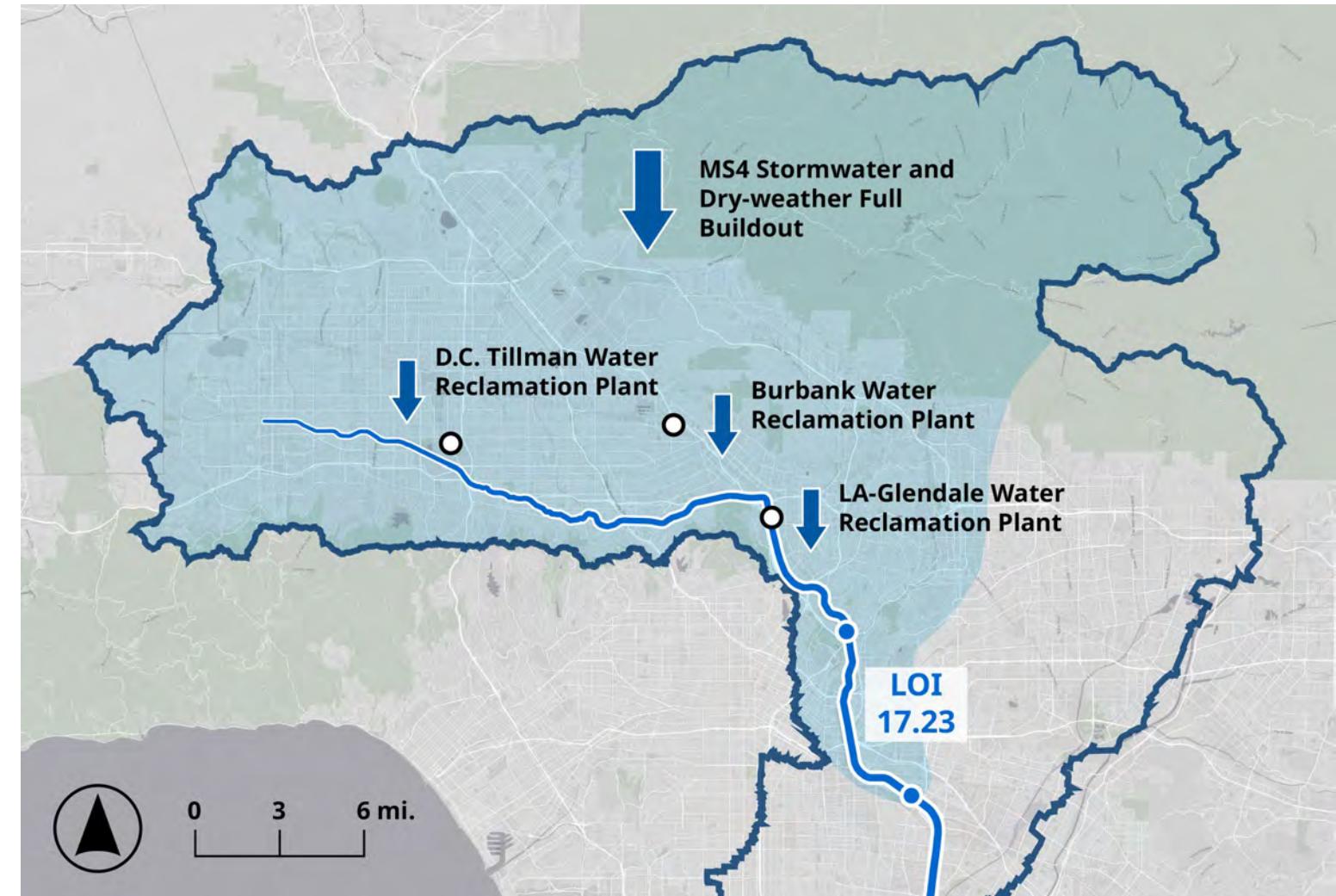
C: Concrete
MC1: Mini Fish Passage
MC2: 44 ft. Passage
MC3: 60 ft. Passage
MC4: 44 ft. Meanders
MC5: 60 ft. Meanders
MC6: Multithread
MC7: Holding Pool
SB4: Mixed Managed

LA River CEFF Section C – Flow Variations in LOI 17.23

Flow entering LOI 17.23 has been reduced under “Low” and “High” Implementation.

Flow reductions at all three water reclamation plants (WRPs)

Flow reductions from MS4 stormwater and dry-weather full buildout.



Water Supply and Water Quality TTWGs each had two performance measures.

Water Supply TTWG

- Increase Local Water Supply (WS-PM-1)
- Sufficient Flow for Lauren Bon Water Right (WS-PM-2)

Water Quality TTWG

- Stormflow and Dry-weather MS4 Compliance (WQ-PM-1)
- Discharge water temperature limits (WQ-PM-2)

Water Supply and Water Quality TTWGs each had two performance measures.

Water Supply TTWG

- Increase Local Water Supply (WS-PM-1)
Achieved under Low and High Implementation scenarios

Water Quality TTWG

- Stormflow and Dry-weather MS4 Compliance (WQ-PM-1)
Achieved under Low and High Implementation scenarios

LA River CEFF Section C – Water Supply and Water Quality Performance Measures

Water Supply and Water Quality performance measures WS-PM-1 and WQ-PM-1 are supported to the extent discussed by their TTWGS under Low and High Implementation scenarios by **changes to flow implemented in those scenarios**.

Low Implementation Changes to Flow

- | | |
|--|--------------------------------------|
| • D.C. Tillman WRP | 4 MGD reduction |
| • Burbank WRP | 1211 petition reductions |
| • LA-Glendale WRP | 1211 petition reductions |
| • MS4 stormwater and dry-weather full buildout | Variable reductions across watershed |

High Implementation Changes to Flow

- | | |
|--|--------------------------------------|
| • D.C. Tillman WRP | 4 MGD reduction |
| • Burbank WRP | <u>Actual</u> reductions |
| • LA-Glendale WRP | 1211 petition reductions |
| • MS4 stormwater and dry-weather full buildout | Variable reductions across watershed |

Water Supply and Water Quality TTWGs each had two performance measures.

Water Supply TTWG

- Sufficient Flow for Lauren Bon Water Right (WS-PM-2)
Pending: Will be implemented in future LA River CEFF modeling results

Water Quality TTWG

- Discharge water temperature limits (WQ-PM-2)
Cannot be assessed in the LA River CEFF at this time:
LA River Water Temperature study still in progress

Biodiversity TTWG

- Adult steelhead migration is supported from Dec 1 to Jun 30, when LA River flow \leq Oct 1 – Jun 30 1% flow exceedance. (BD-PM-1)

Biodiversity TTWG Recommended Parameters Evaluated

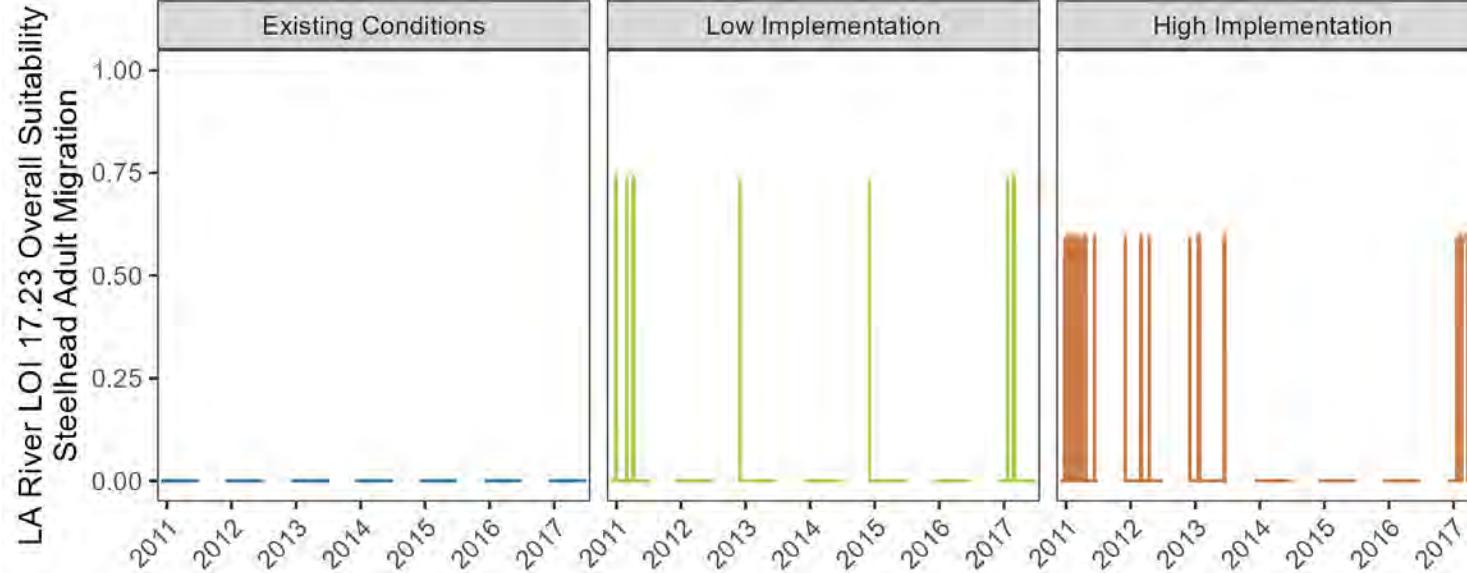
- Water depth
- Water velocity
- Turbulence
- Potential riparian cover

Biodiversity TTWG Recommended Parameters **Not** Evaluated

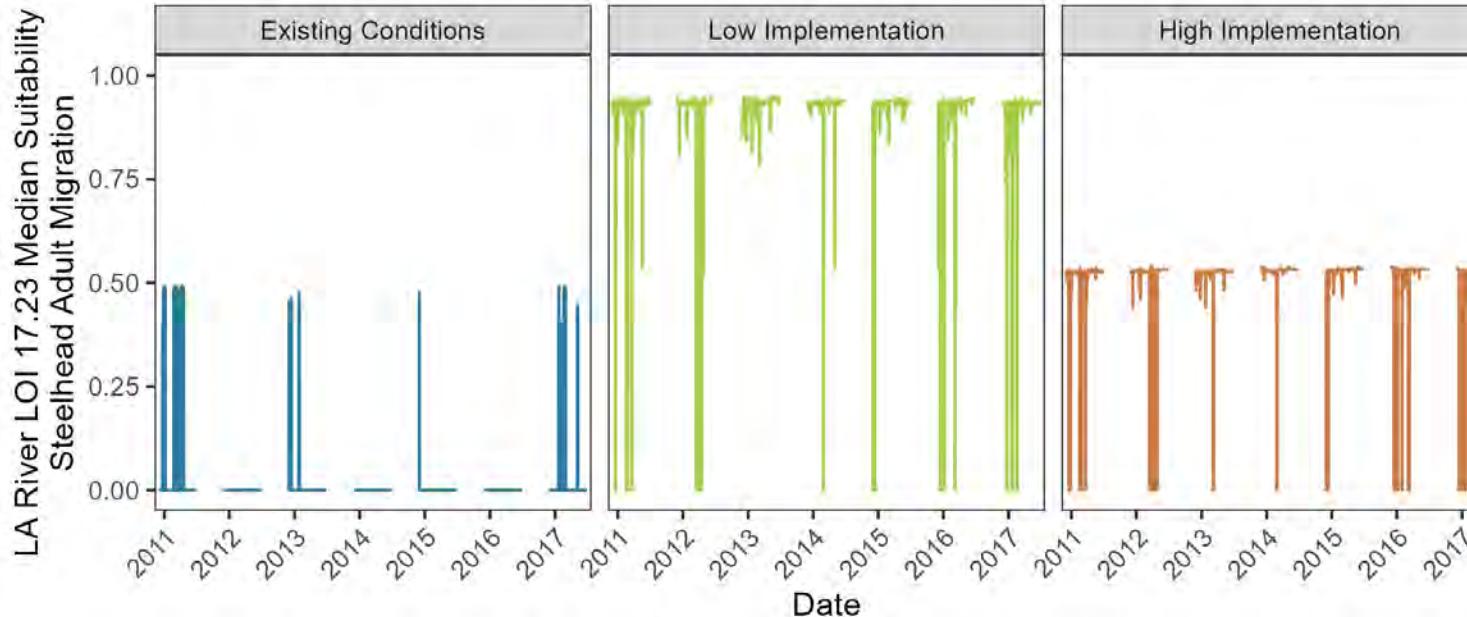
- Hydraulic barriers
- Water temperature

Hydraulic barriers and water temperature were not evaluated at this time due to data and model limitations.

LA River CEFF Section C – Steelhead Adult Migration (BD-PM-1) LOI 17.23 Results

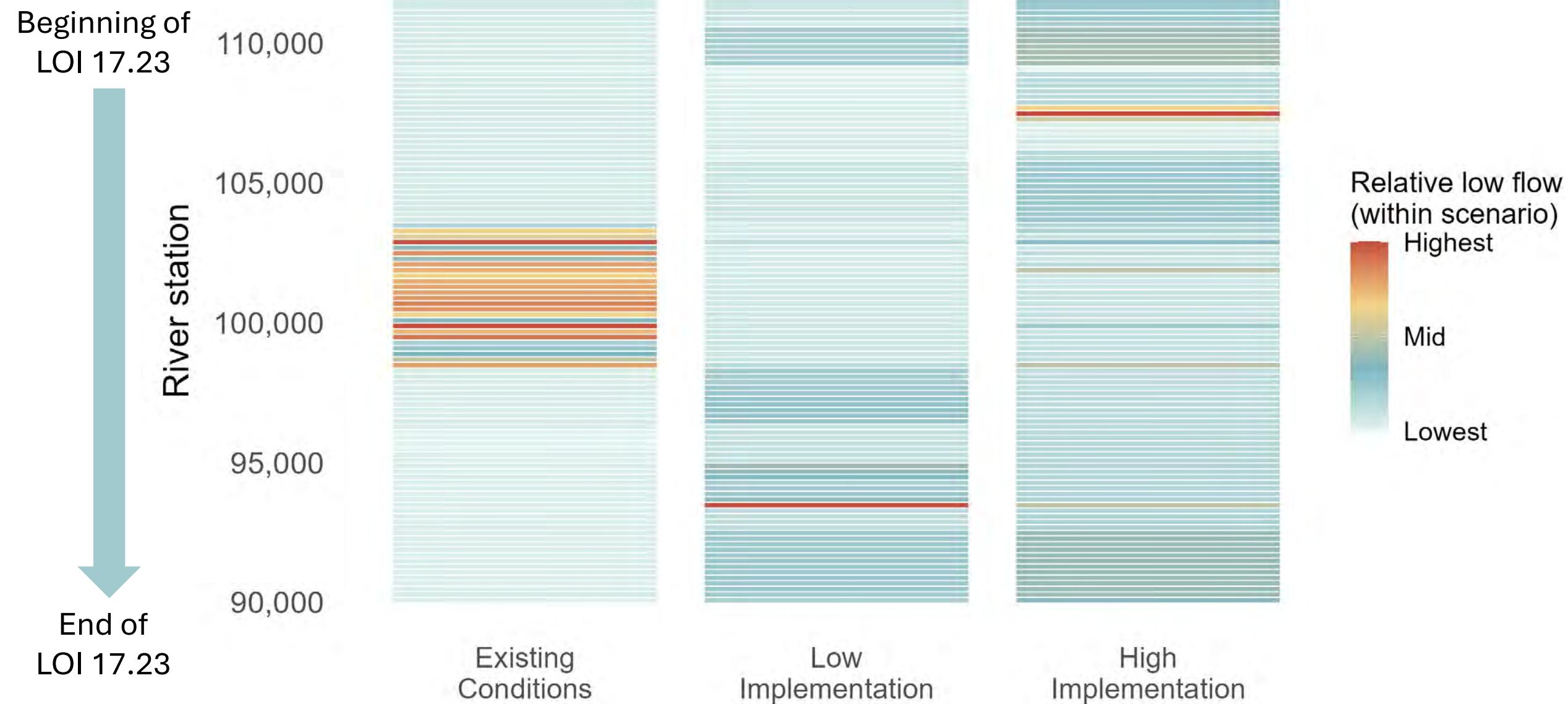


Overall suitability is greater than zero at times for Low and High Implementation, with limited continuous passage through the reach during 4 of 7 years modeled.



Median suitability greater than zero more frequently than overall suitability suggests there is one or more segments of the reach limiting passage.

LA River CEFF Section C – Steelhead Adult Migration (BD-PM-1) LOI 17.23 Results

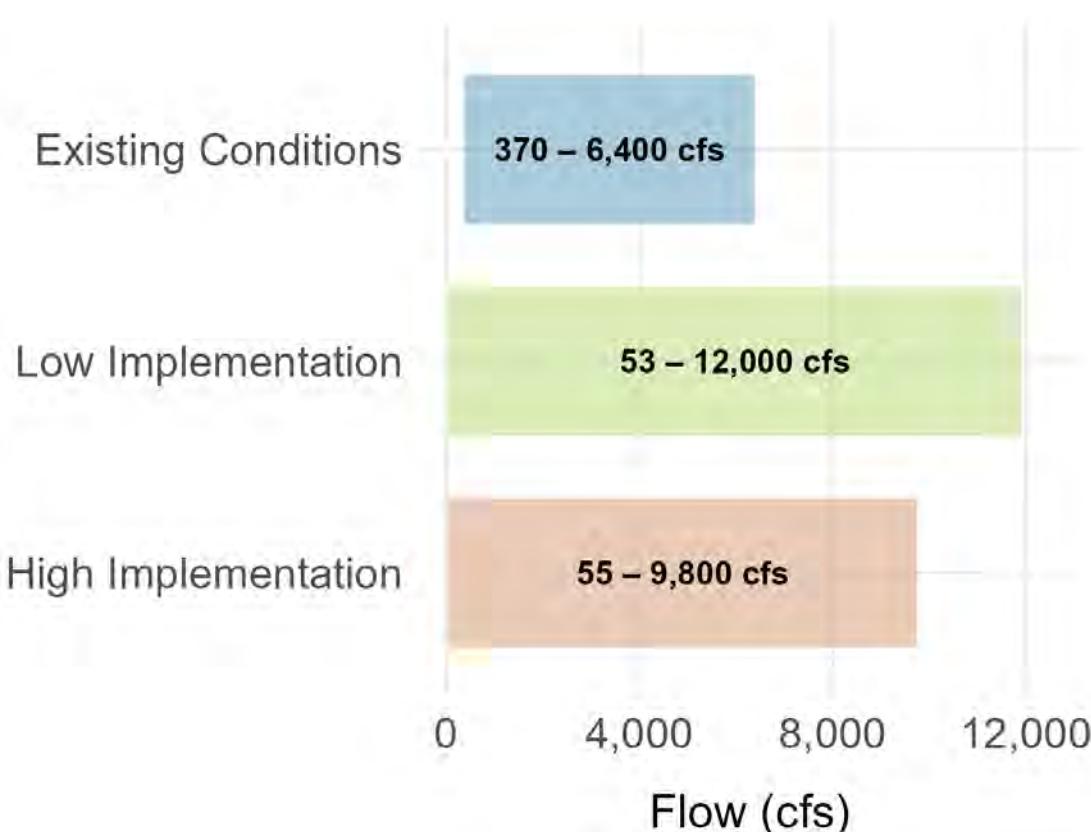


LA River CEFF Section C – Steelhead Adult Migration (BD-PM-1) LOI 17.23 Results

Steelhead Adult Migration
LOI 17.23 Flow Range



Steelhead Adult Migration
LOI 17.23 Average Flow Range



Flow range that provides continuous passage through reach can be calculated from model results.

Average flow range better characterizes trends through reach and what could be achieved with a more refined design.

Recreation TTWG

- Kayaking is supported from May 1 to Sept 30. (RE-PM-2)

Recreation TTWG Recommended Parameters Evaluated

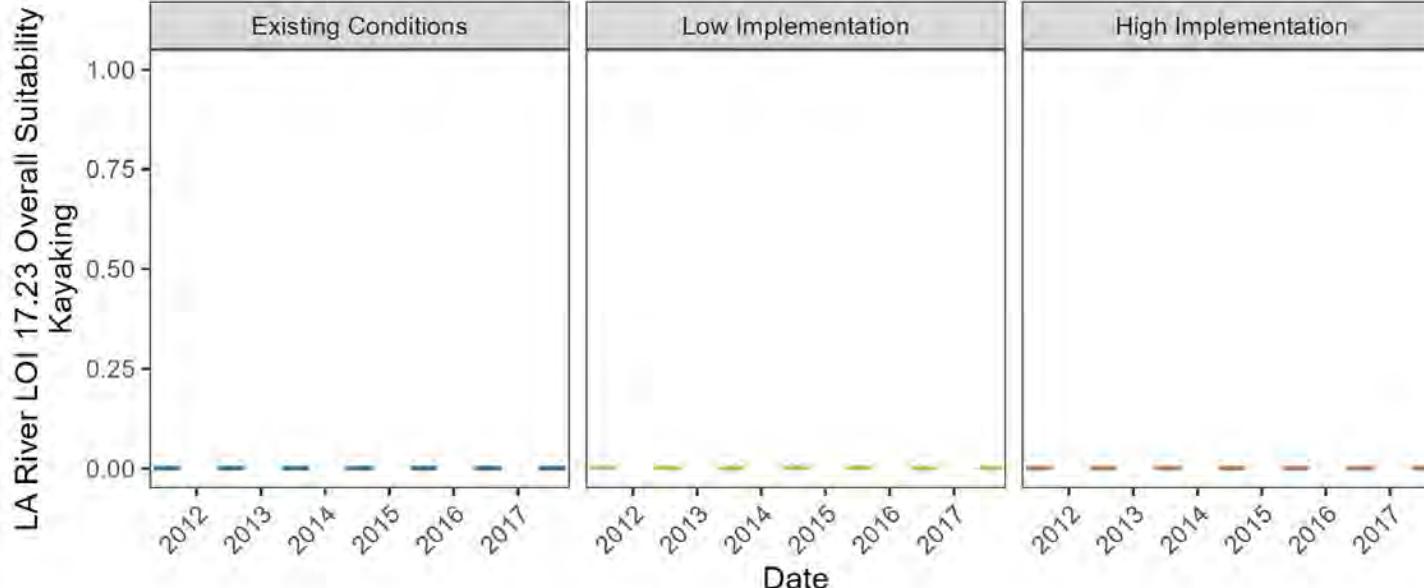
- Water depth
- Water velocity
- Wetted Channel Width
- Unwetted Channel Margin Width
- Access

Recreation TTWG Recommended Parameters **Not** Evaluated

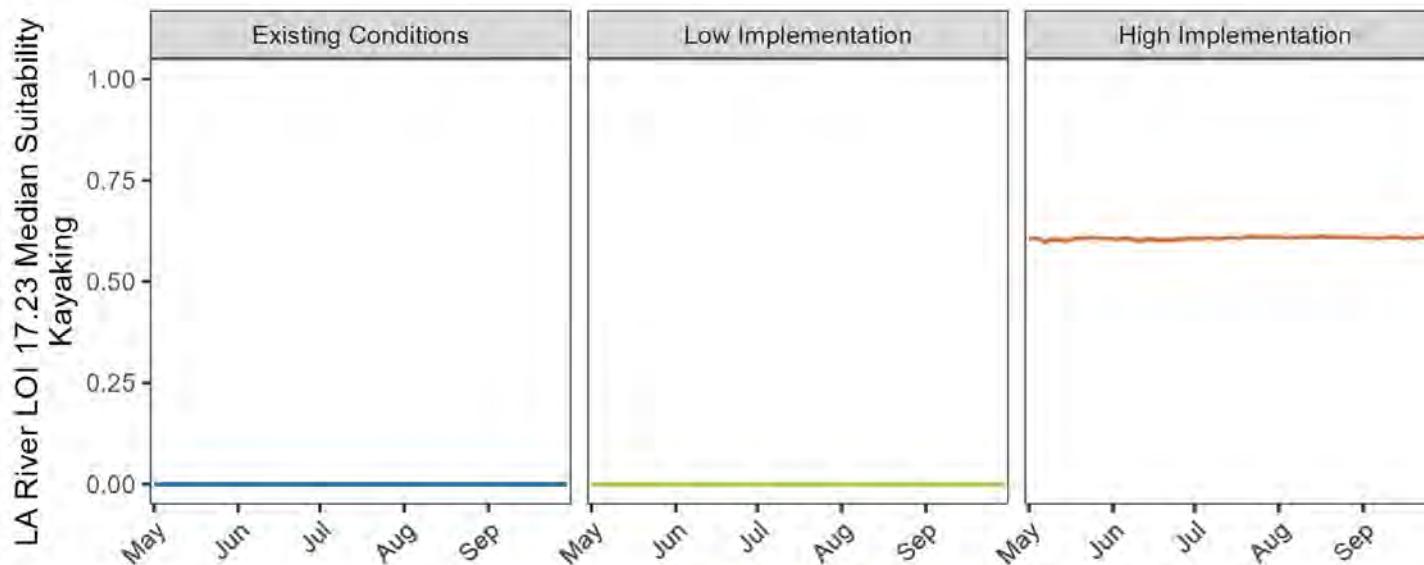
- Channel margin slope
- Basin Plan water quality objectives
- Species diversity
- Functional ecosystems
- Riparian vegetation density
- Parking
- Exposure to traffic
- Usage density

Multiple recommended parameters were not evaluated at this time due to a) data and model limitations, or b) no linkage between flow variations and parameter suitability.

LA River CEFF Section C – Kayaking (RE-PM-2) LOI 17.23 Results

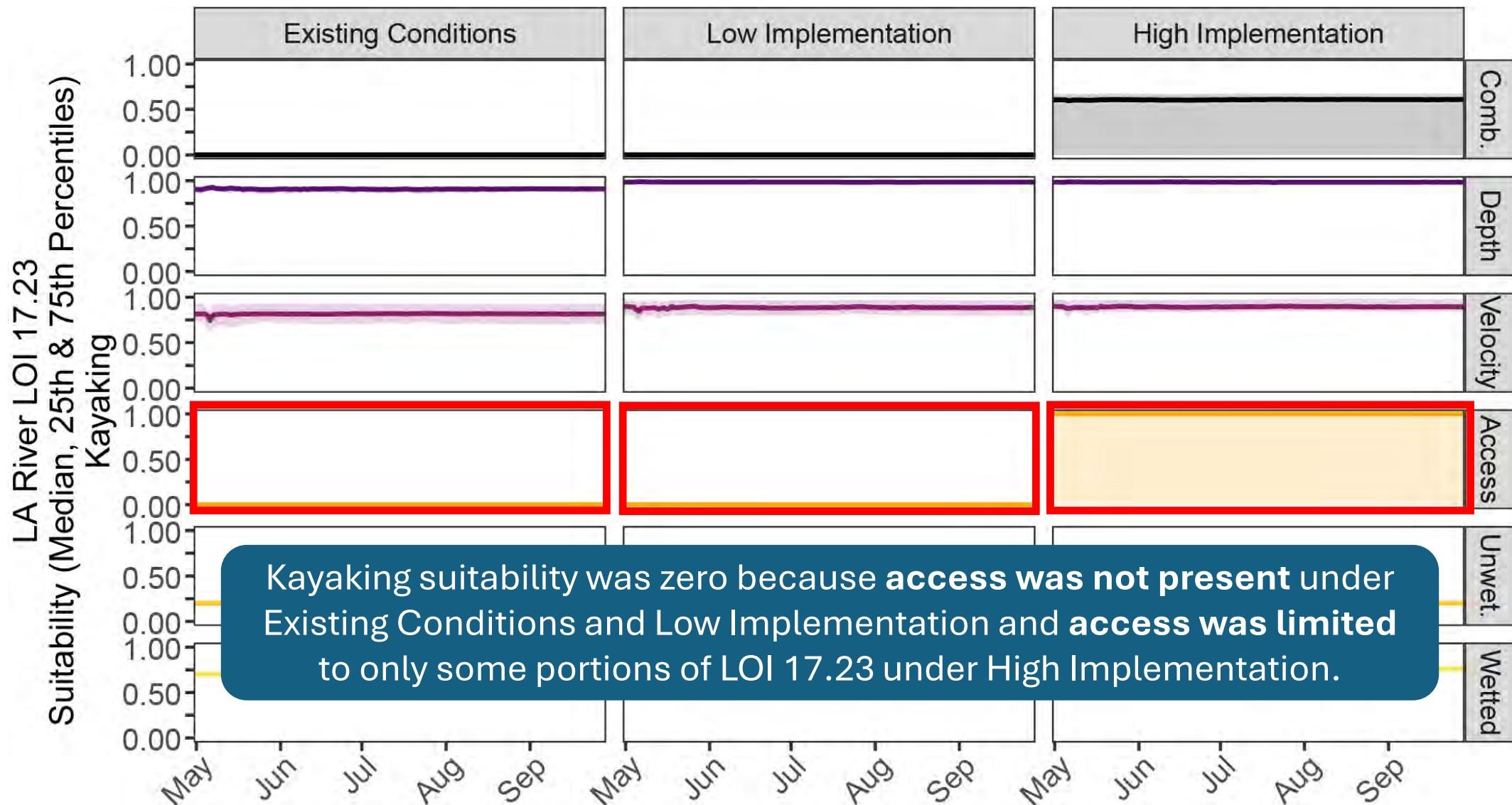


Overall suitability is zero throughout modeling time period under all scenarios.



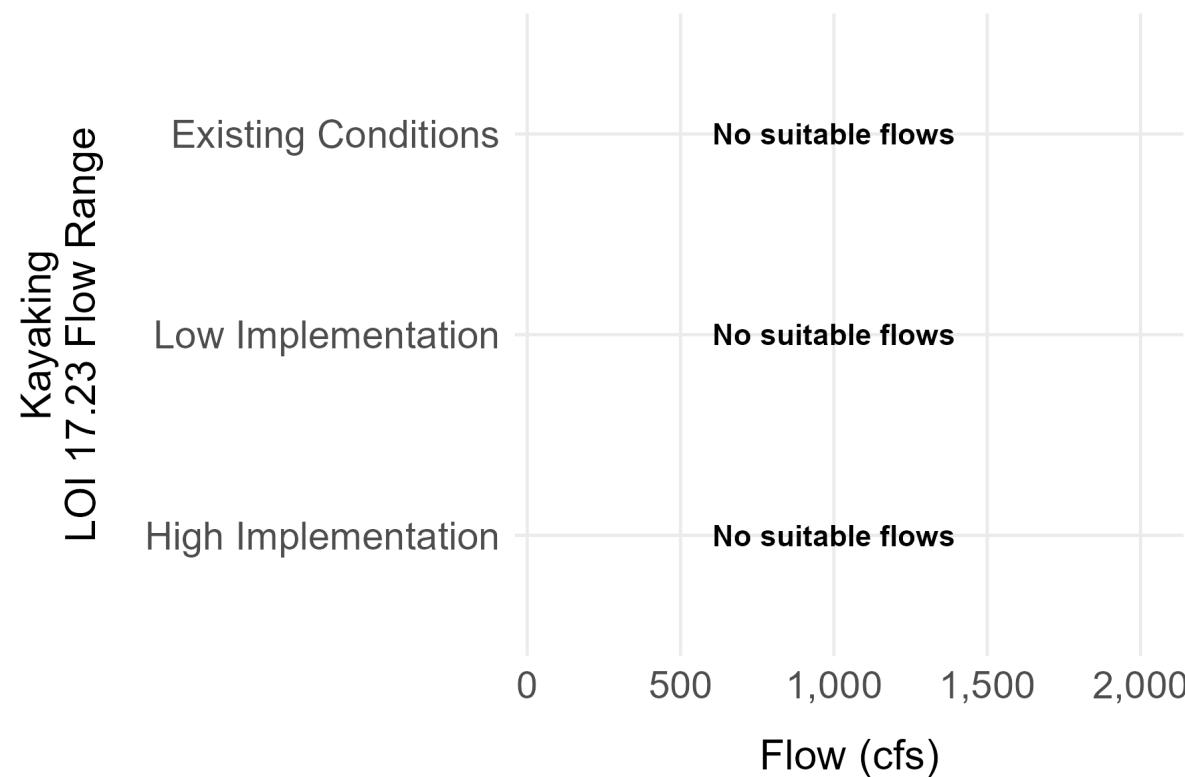
Median suitability is greater than zero under High Implementation, suggesting there is a portion of the reach limiting suitability.

LA River CEFF Section C – Kayaking (RE-PM-2) LOI 17.23 Results

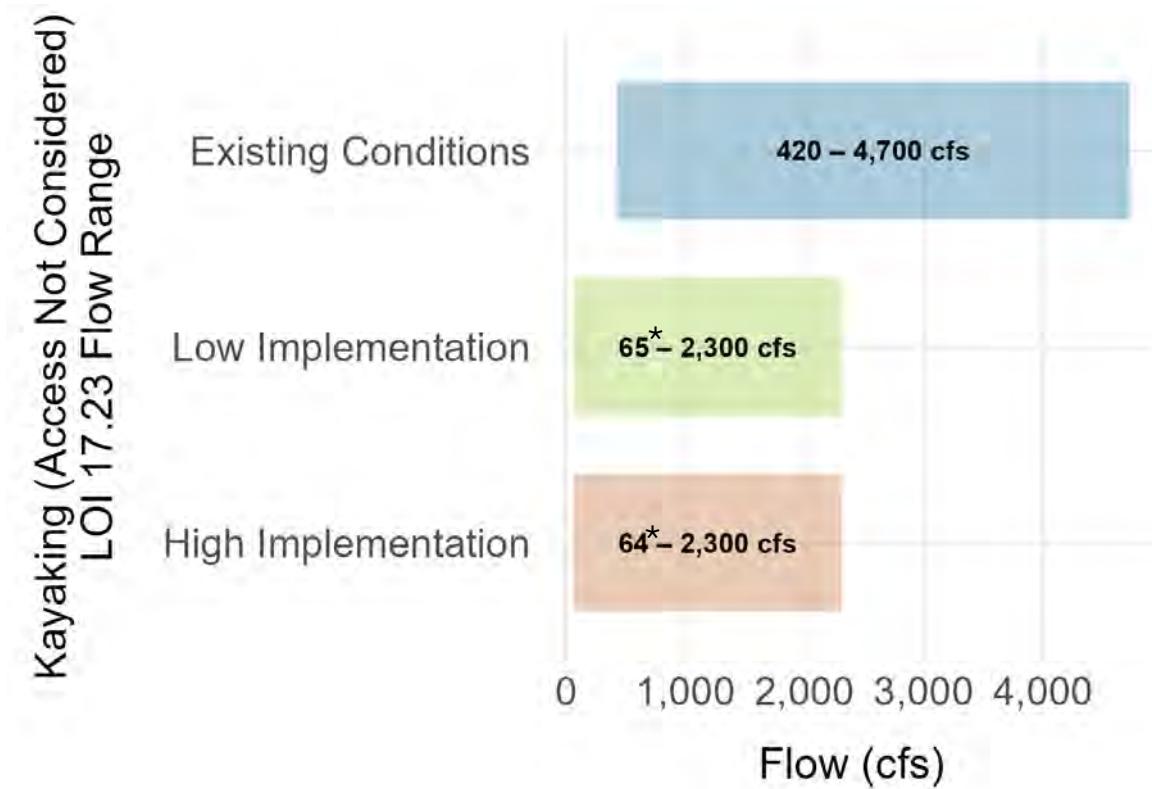


LA River CEFF Section C – Kayaking (RE-PM-2) LOI 17.23 Results

Access limitations result in no flow range supporting suitable conditions for kayaking throughout entire reach.



If access is available, kayaking is suitable throughout reach across a range of flows.



*Kayaking was never unsuitable during modeling period, so this is the lowest flow during modeling period rather than the limiting low flow.

Recreation TTWG

- Nature exposure benefits are supported from Jan 1 to Dec 31 (RE-PM-13)

Recreation TTWG Recommended Parameters Evaluated

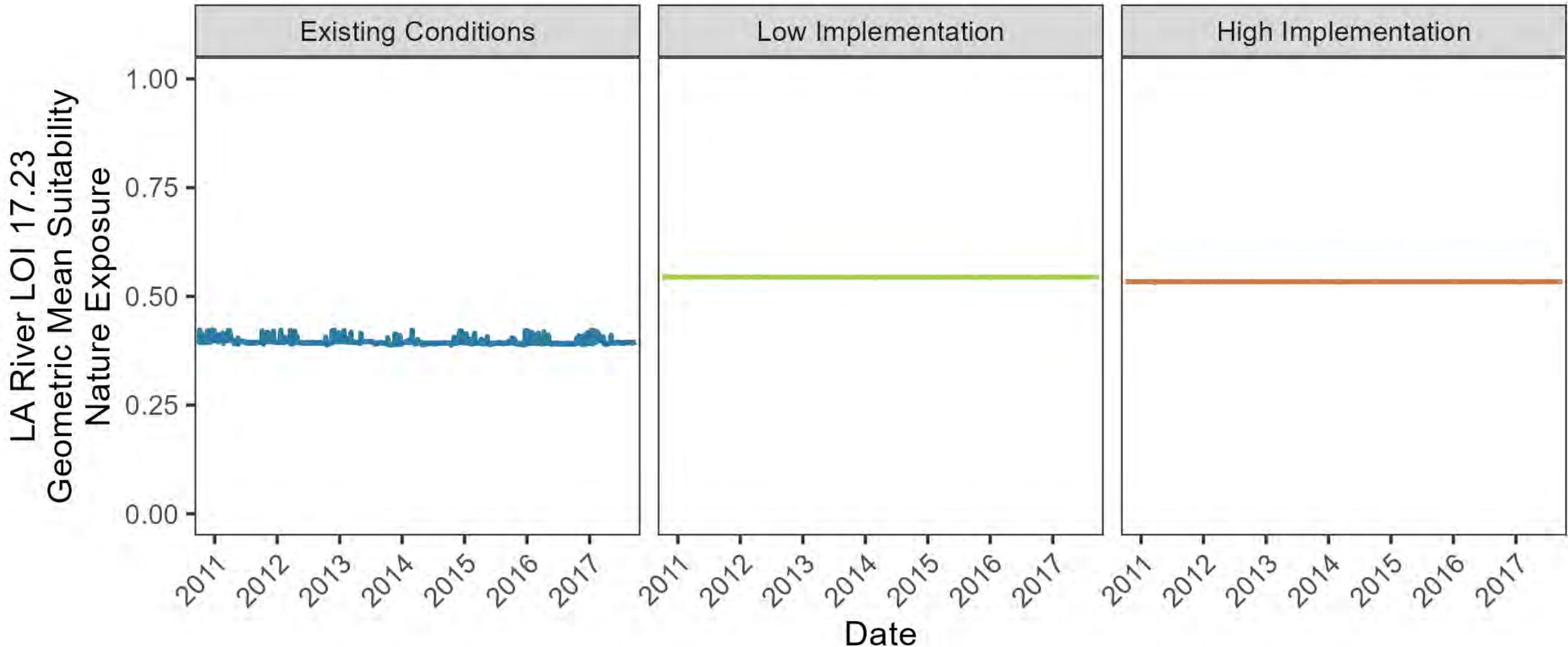
- Water depth
- Water velocity
- Wetted channel width
- Unwetted channel margin width
- Channel bed substrate
- Riparian vegetation canopy
- Riparian vegetation diversity
- Urban noise

Recreation TTWG Recommended Parameters Not Evaluated

- Channel margin slope
- Channel wall substrate
- Basin Plan water quality objectives
- Species diversity
- Fish population density
- Bird population density
- Functional ecosystems
- Riparian vegetation stand density
- Multiple social parameters (e.g., signage, etc)

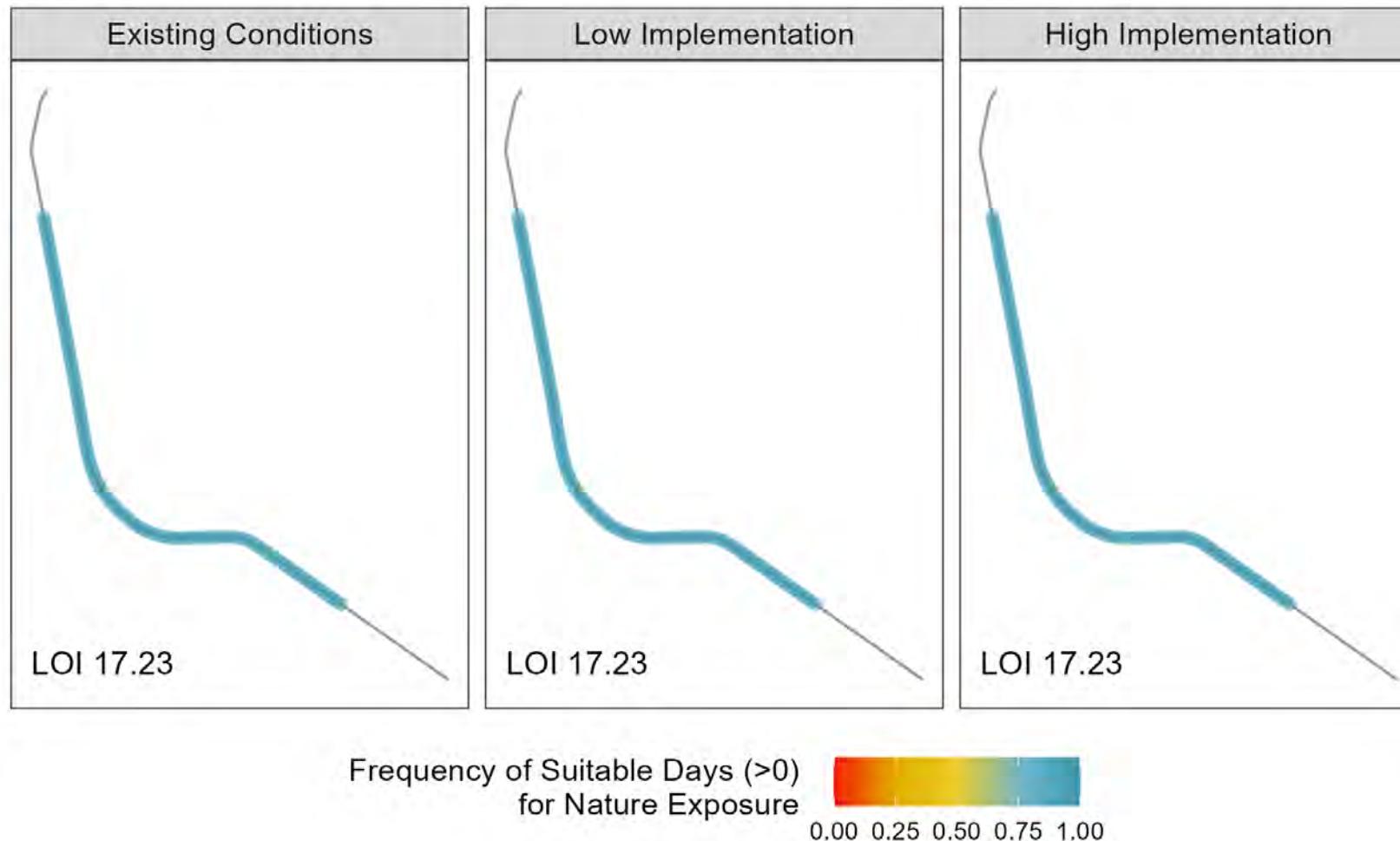
Multiple recommended parameters were not evaluated at this time due to a) data and model limitations, or b) no linkage between flow variations and parameter suitability.

LA River CEFF Section C – Nature Exposure (RE-PM-13) Results



Nature exposure is supported year-round under all scenarios, but it is improved under Low and High Implementation.

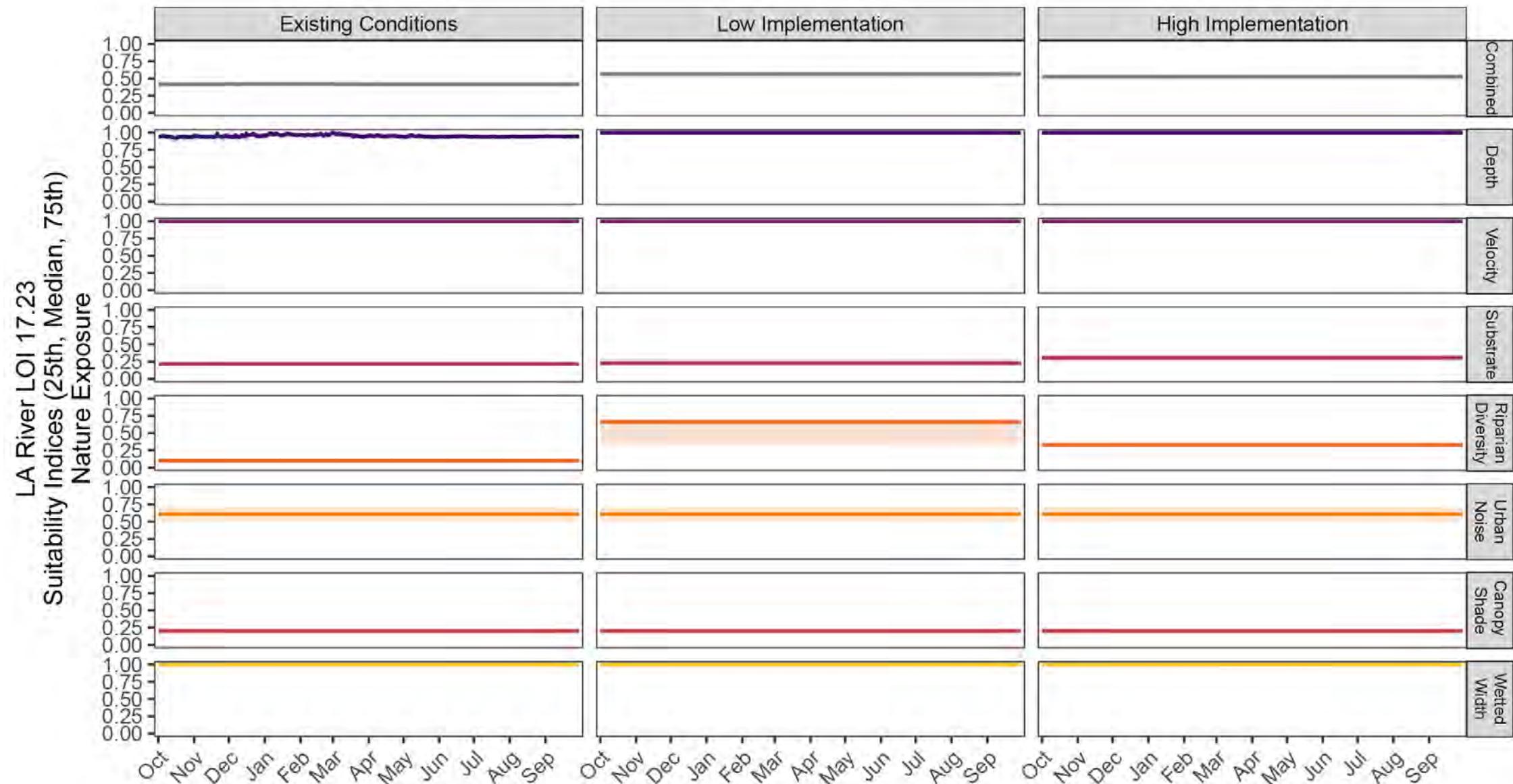
LA River CEFF Section C – Nature Exposure (RE-PM-13) Results



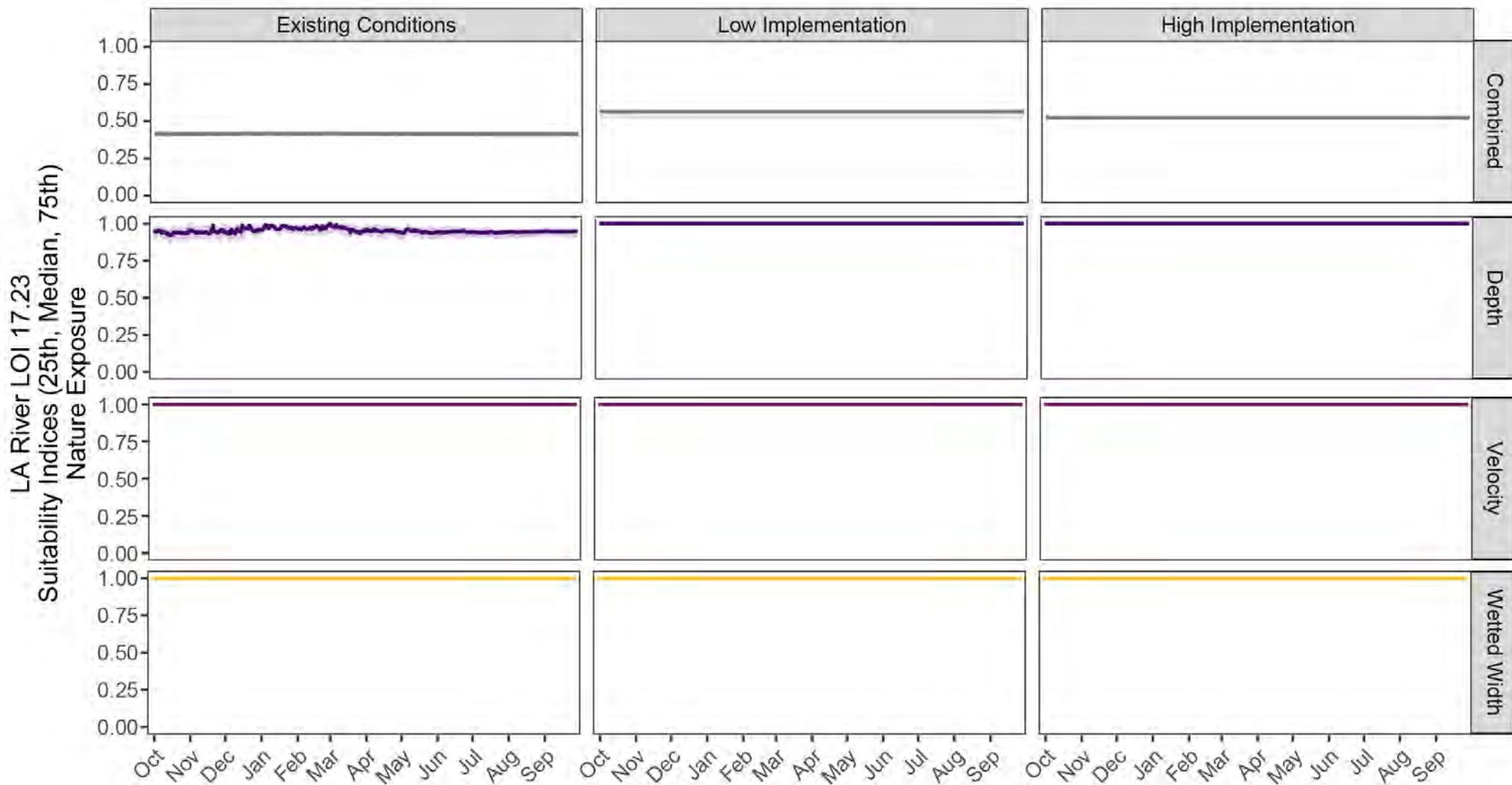
Frequency of suitable days for nature exposure benefits is assessed for each 200 ft segment.

Frequency of days when suitability is greater than zero for nature exposure between WY 2011 – 2017 is **similar** under all scenarios.

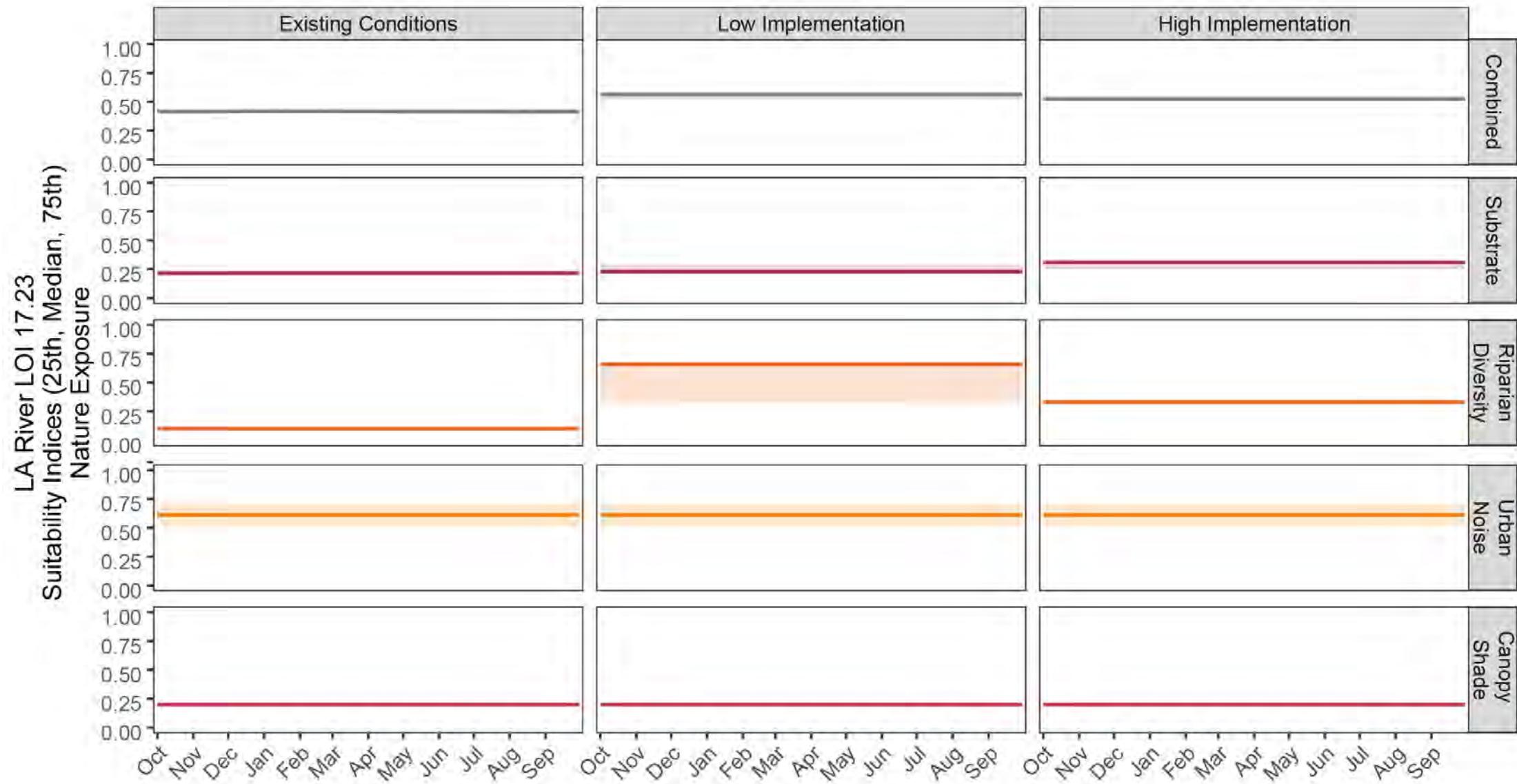
LA River CEFF Section C – Nature Exposure (RE-PM-13) Results



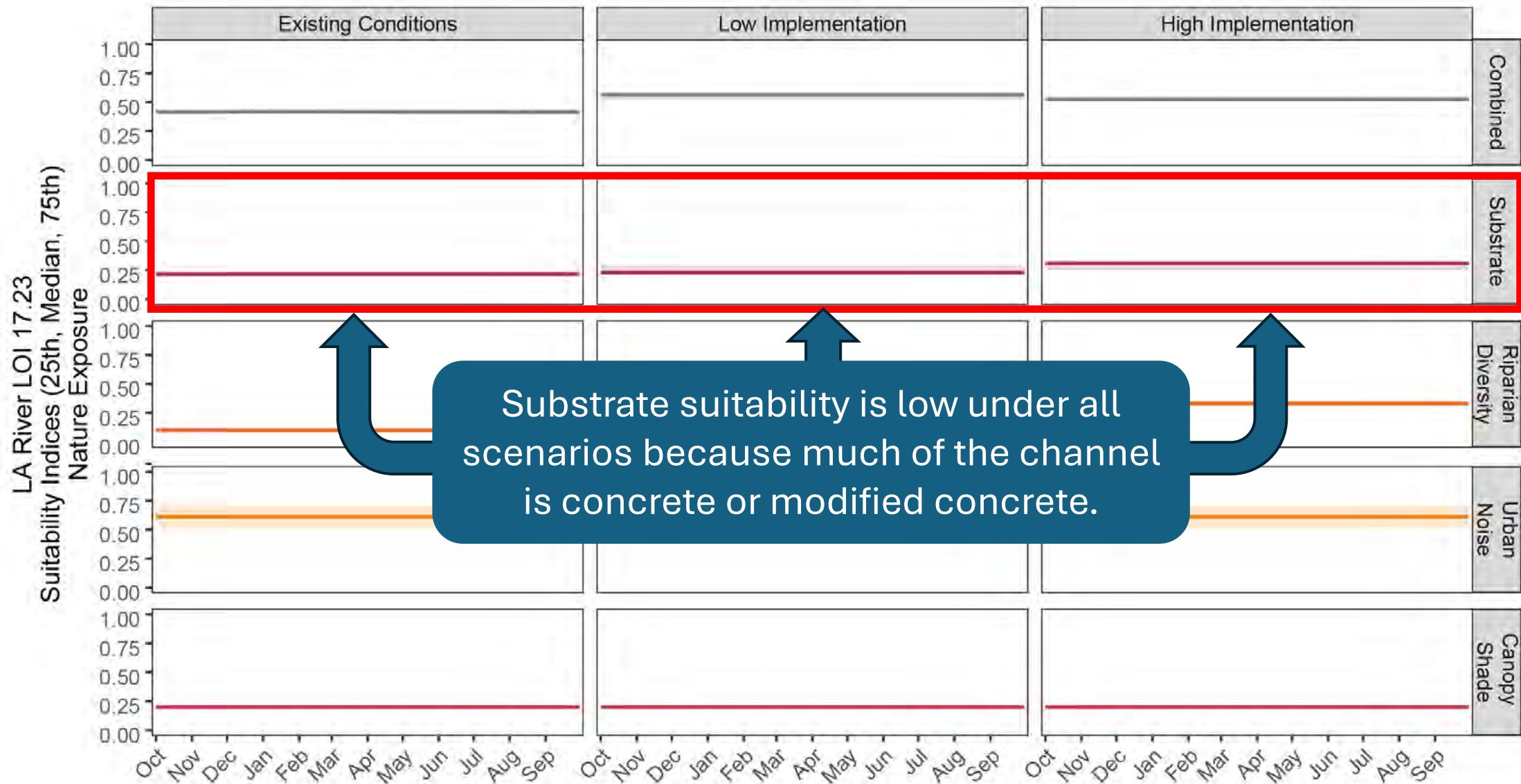
LA River CEFF Section C – Nature Exposure (RE-PM-13) Results



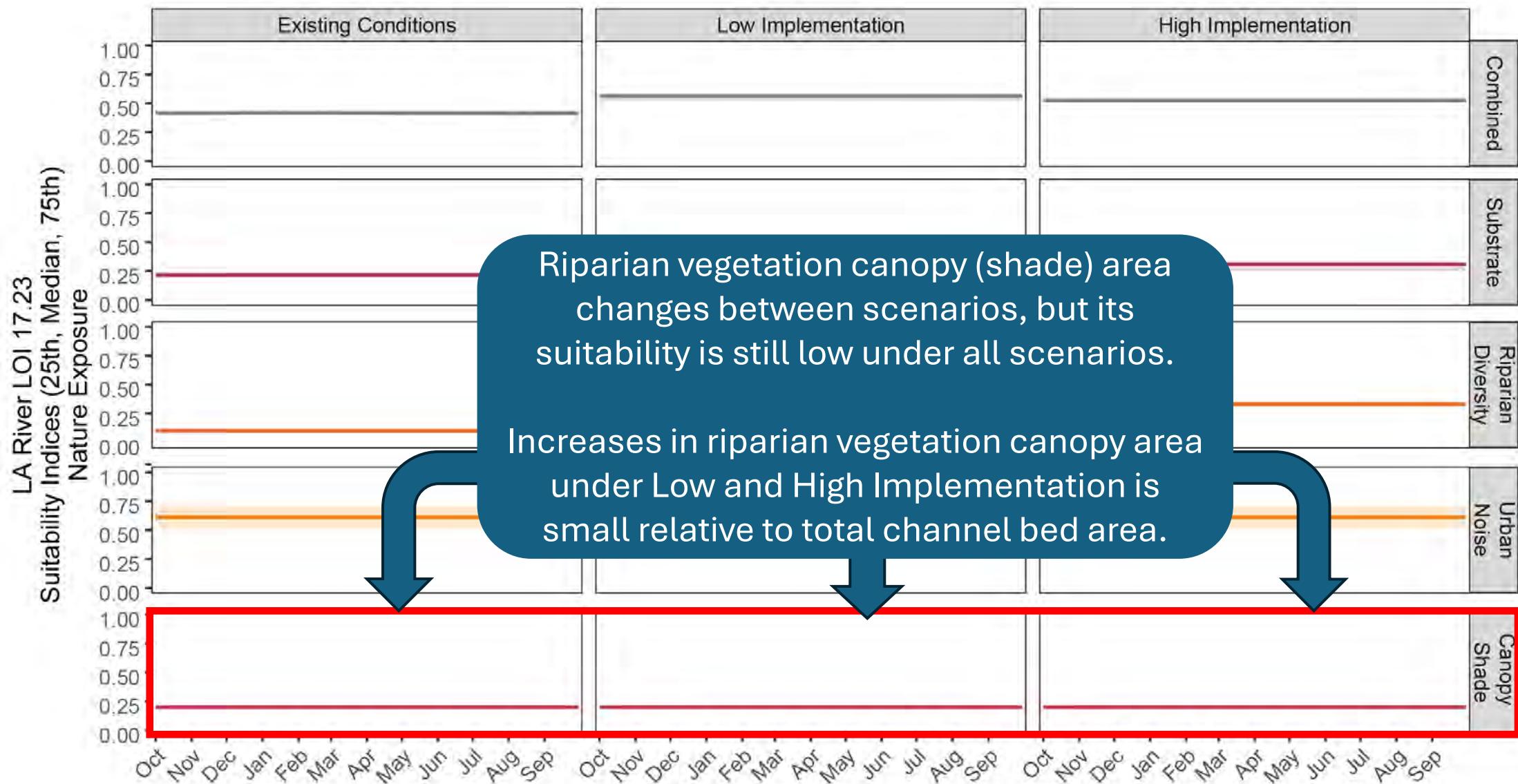
LA River CEFF Section C – Nature Exposure (RE-PM-13) Results



LA River CEFF Section C – Nature Exposure (RE-PM-13) Results



LA River CEFF Section C – Nature Exposure (RE-PM-13) Results



LA River CEFF Section C – Nature Exposure (RE-PM-13) Results

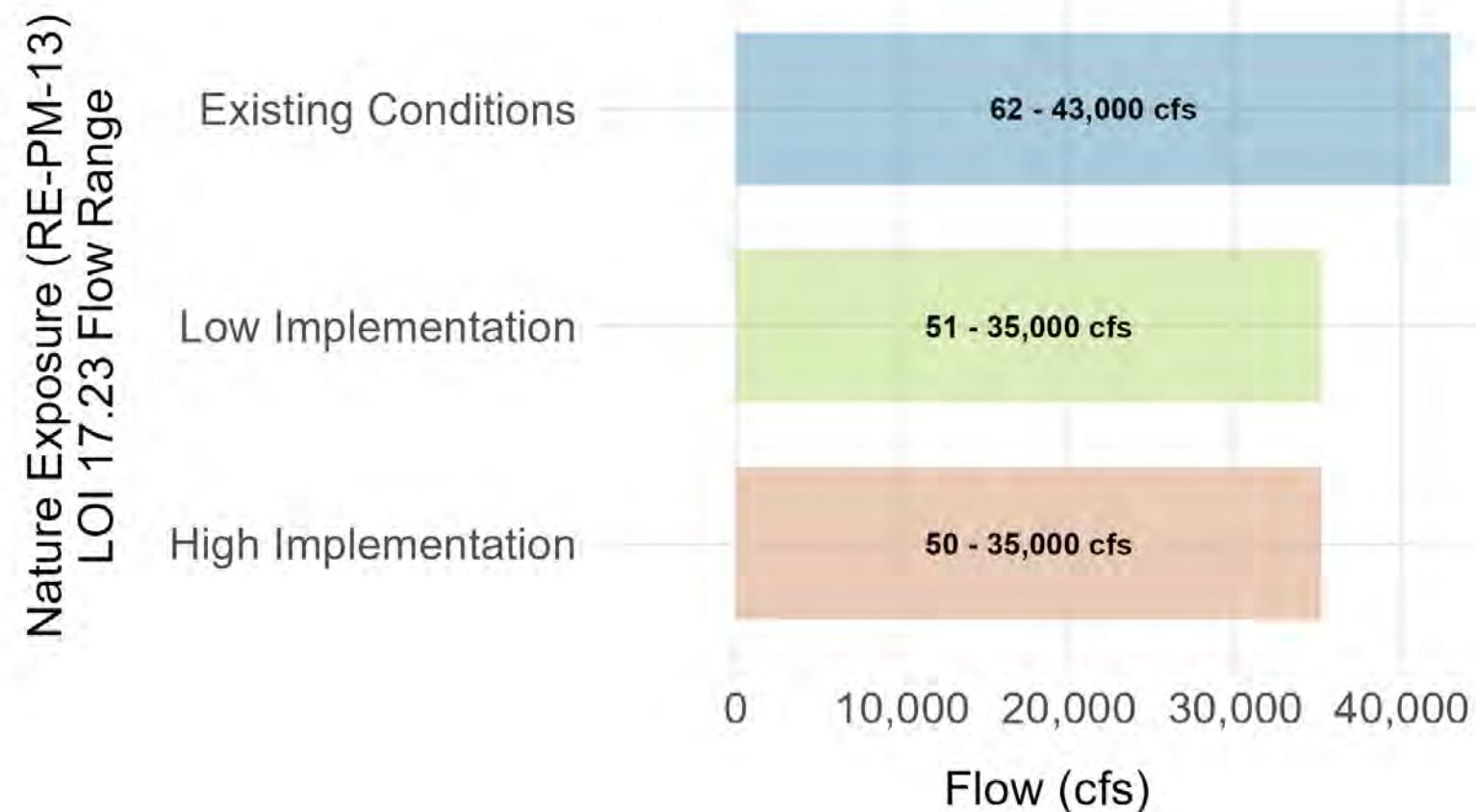
Nature exposure suitability is greater than zero across modeled flow range.

Nature exposure suitability **would** eventually go to zero at lower flows.

Nature exposure supported at relatively low flows, but overall suitability still is relatively low.

Nature exposure overall suitability is primarily controlled by channel form conditions.

- Channel bed substrate
- Riparian vegetation canopy
- Riparian vegetation diversity



Biodiversity TTWG

- Adult tule growth is supported from January 1 to December 31 (BD-PM-49).

Biodiversity TTWG Recommended Parameters Evaluated

- Water depth
- Water velocity (Lodging velocity)
- Substrate type

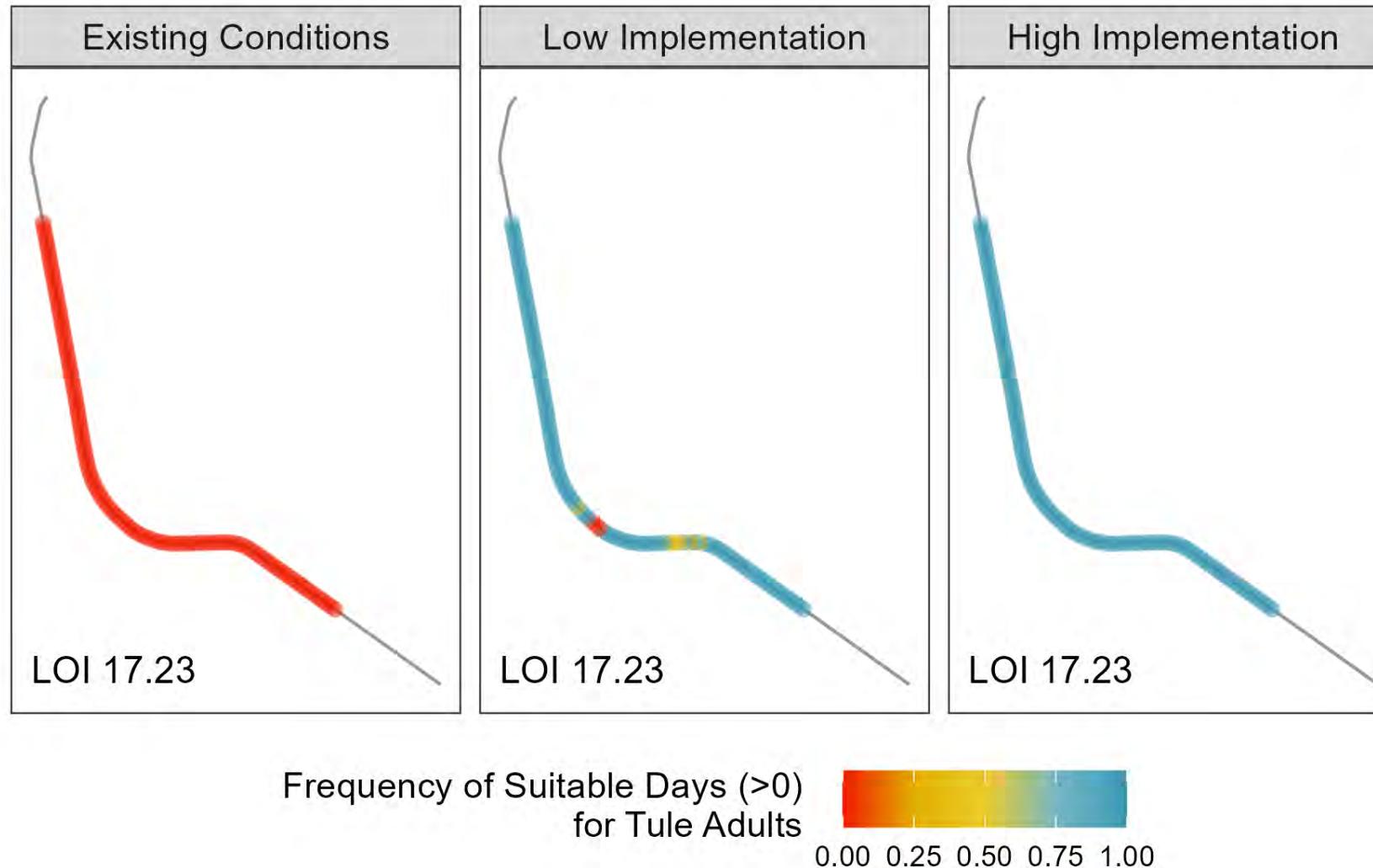
Biodiversity TTWG Recommended Parameters **Not** Evaluated

- Substrate
- Water temperature

Substrate and water temperature were not evaluated at this time due to data and model limitations.

Substrate was replaced by “substrate type” that only assessed whether channel bed was concrete, modified concrete, or natural substrate.

LA River CEFF Section C – Tule adults (BD-PM-49) LOI 17.23 Results

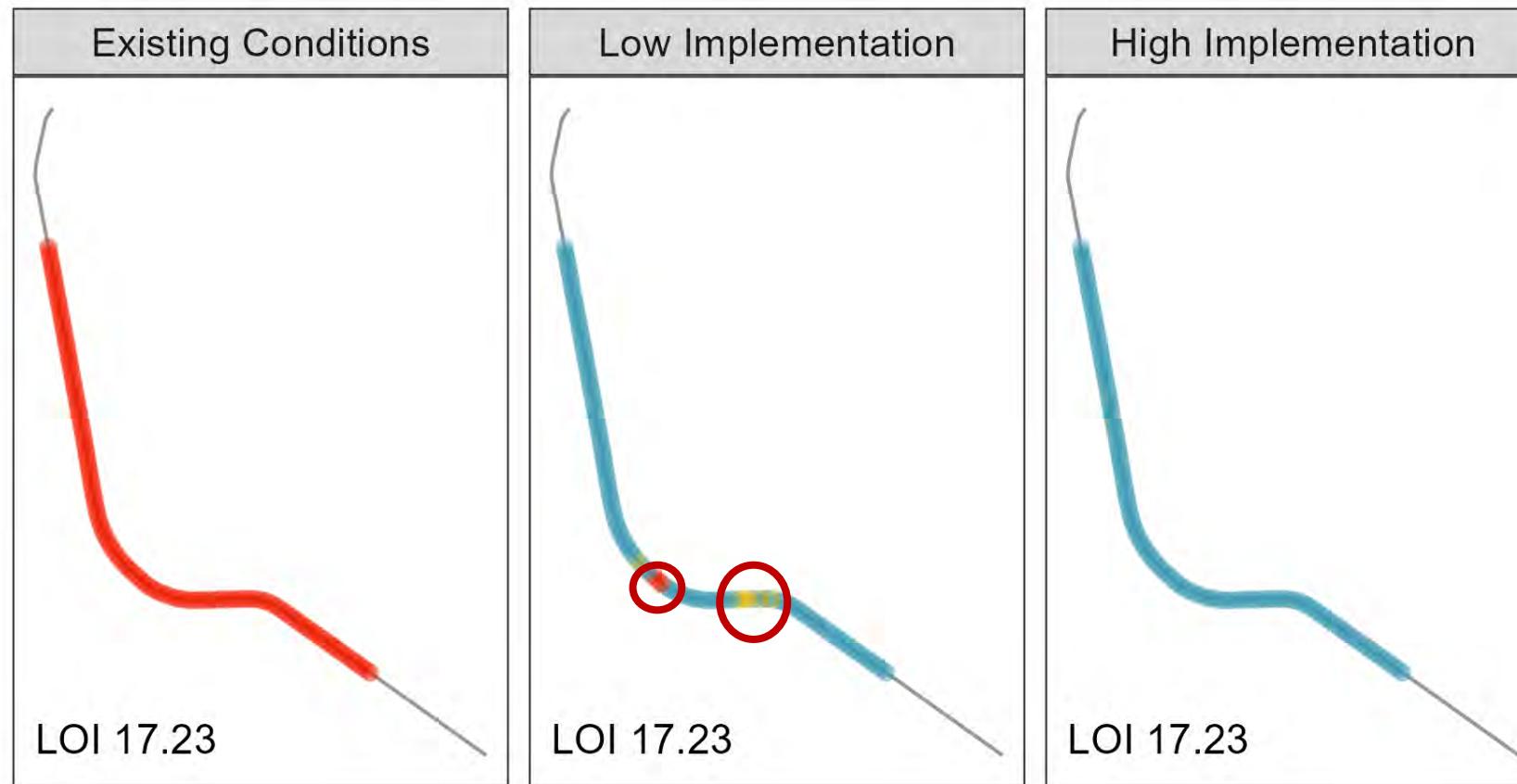


Frequency of suitable days for tule adults is assessed for each 200 ft segment.

Tule adult suitability was zero between WY 2011 – 2017 under existing conditions.

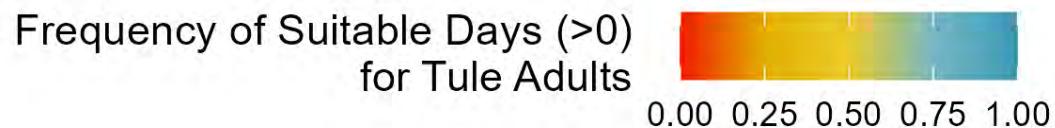
Frequency of suitable days for tule adults was relatively high under “Low” and “High” Implementation, but there were **slightly different patterns**.

LA River CEFF Section C – Tule adults (BD-PM-49) LOI 17.23 Results

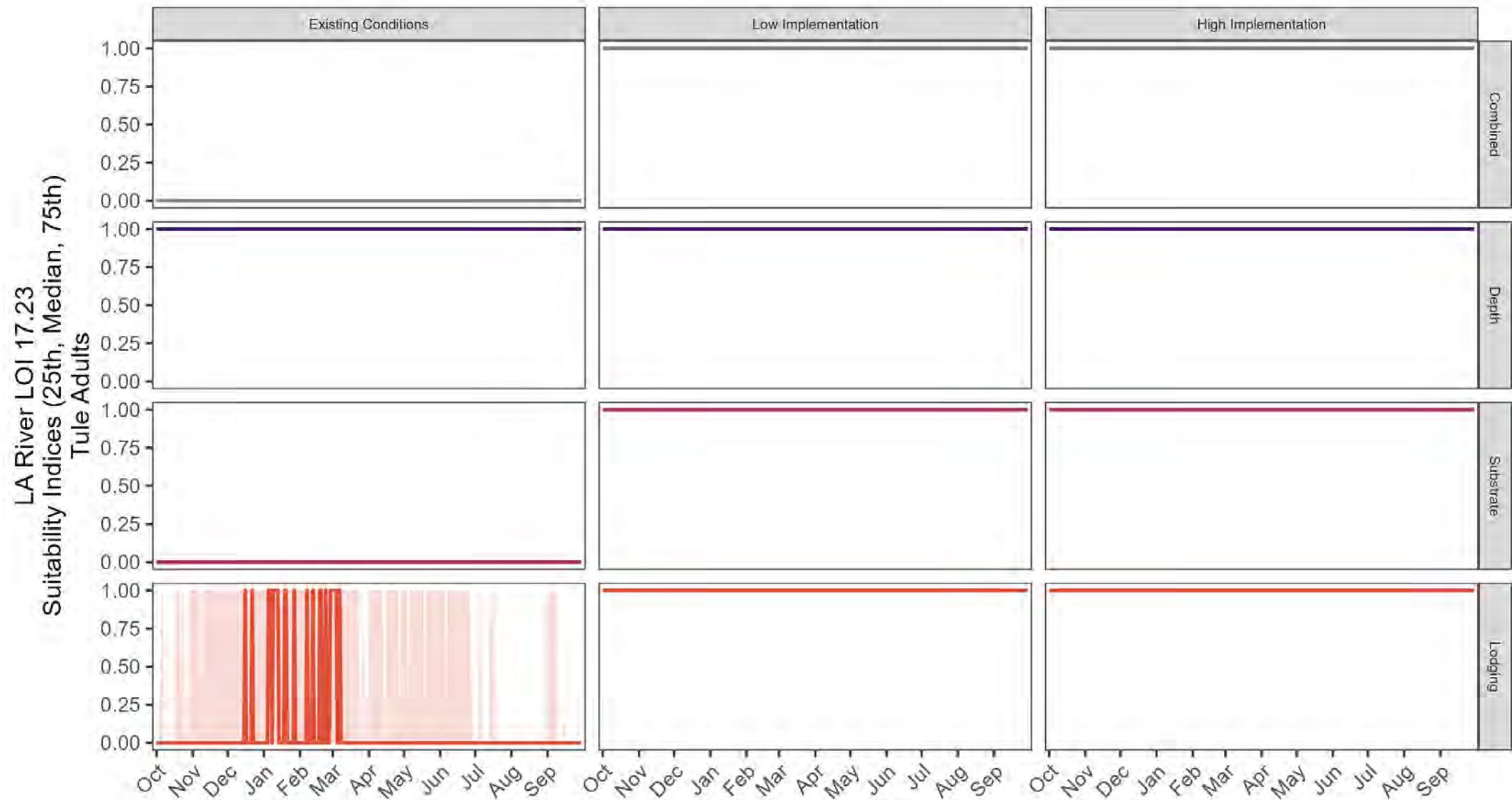


Low Implementation had several segments where tule adult suitability was low.

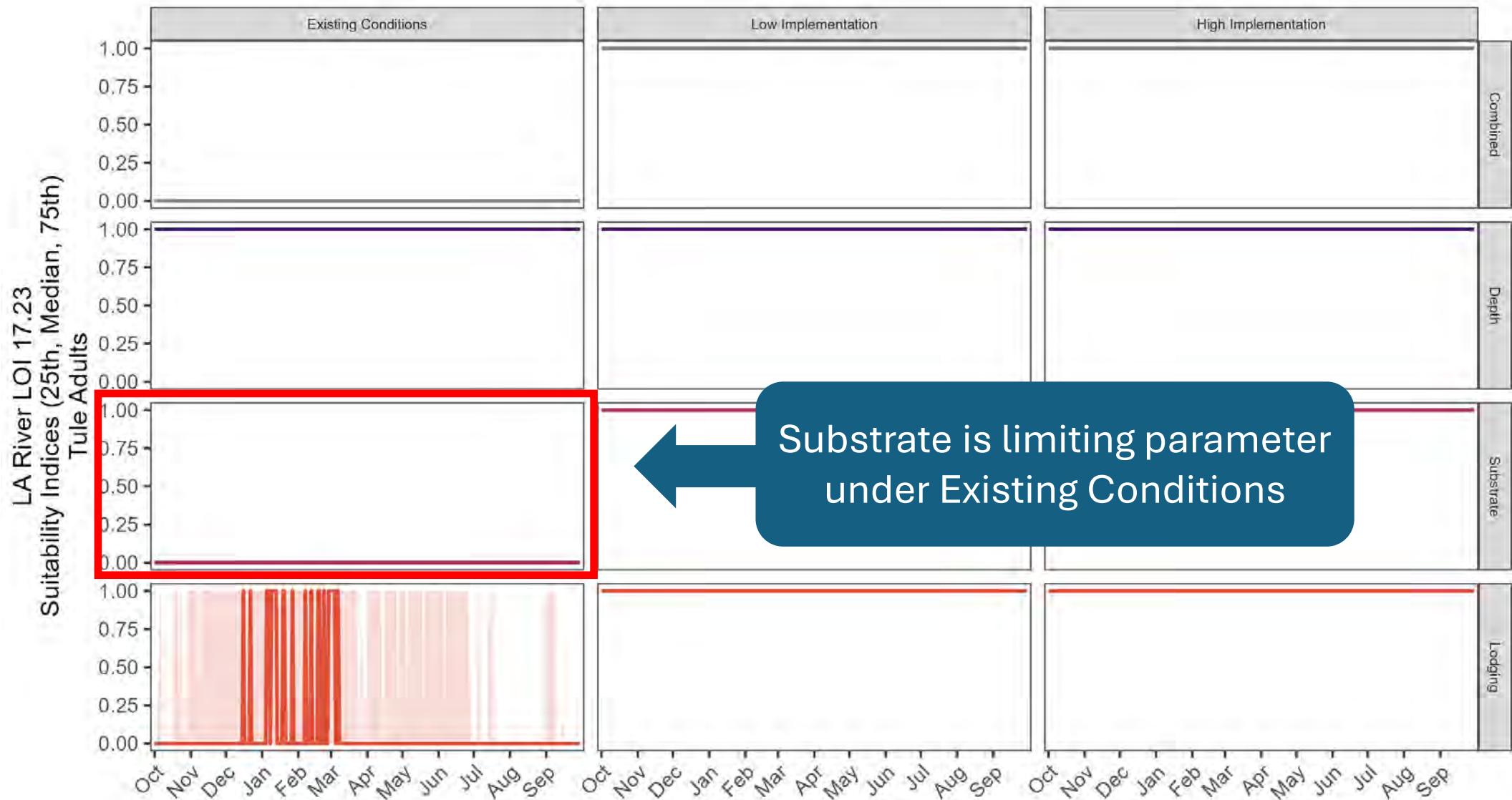
High Implementation was more consistently suitable for tule adults throughout reach.



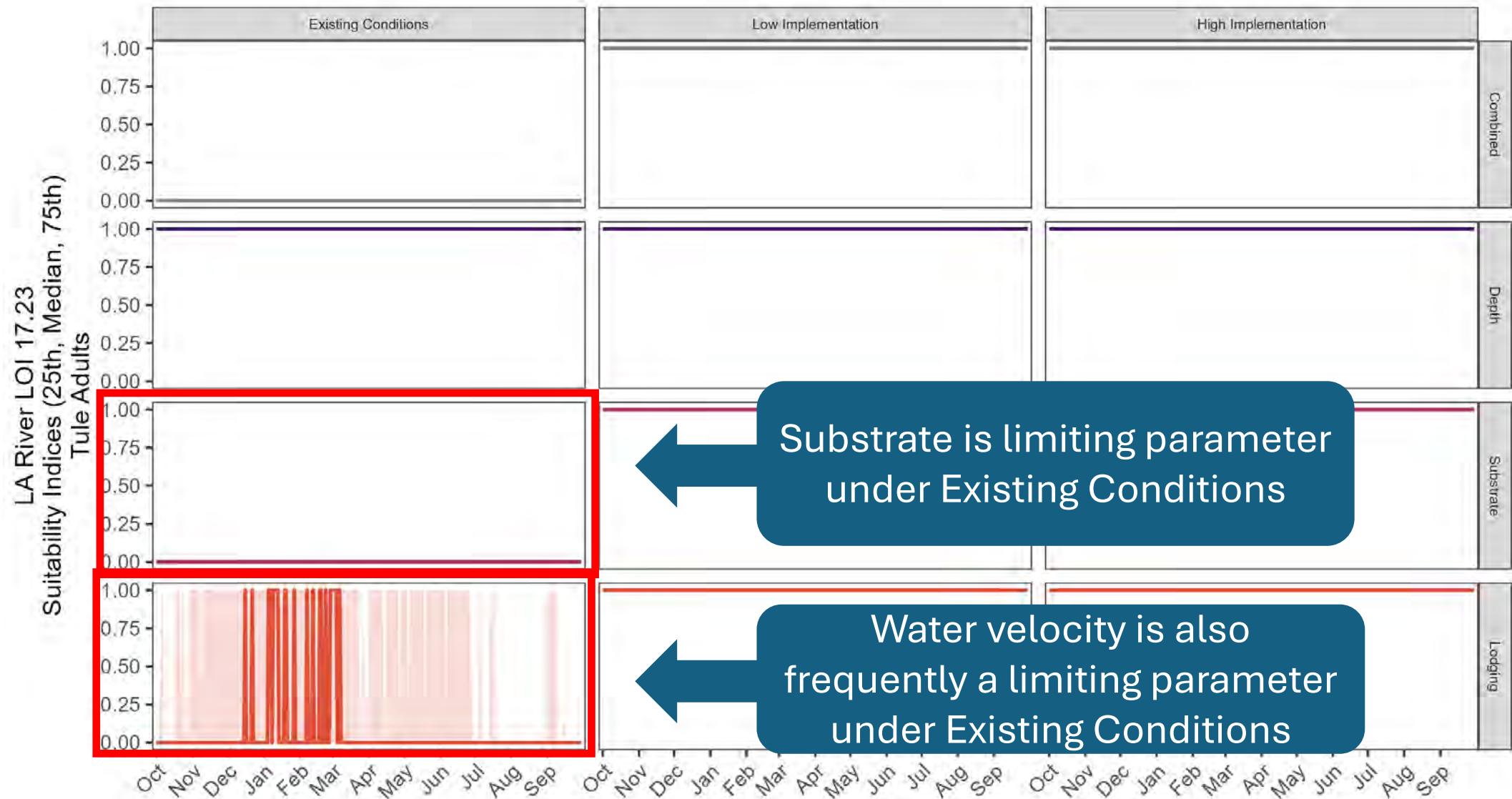
LA River CEFF Section C – Tule adults (BD-PM-49) LOI 17.23 Results



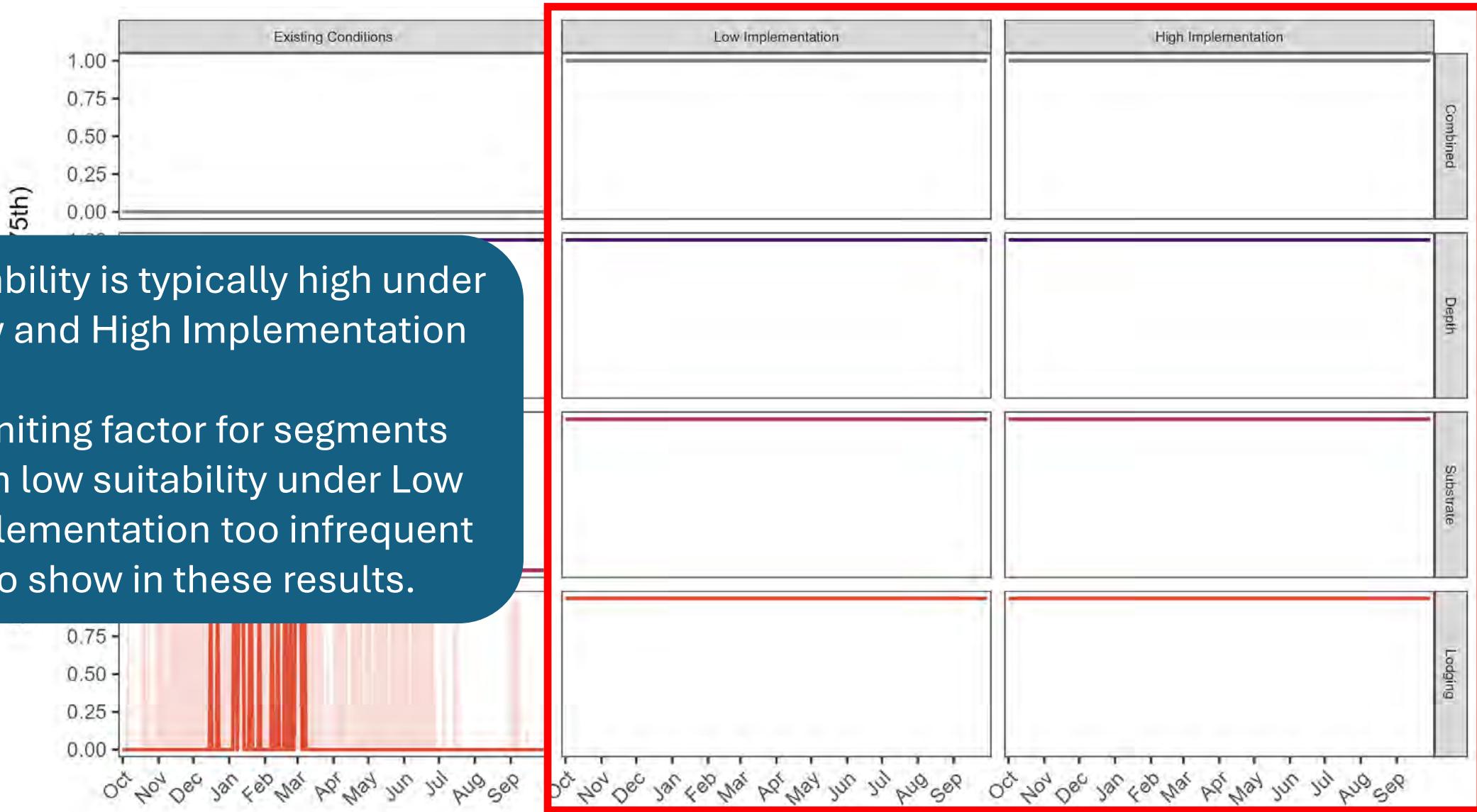
LA River CEFF Section C – Tule adults (BD-PM-49) LOI 17.23 Results



LA River CEFF Section C – Tule adults (BD-PM-49) LOI 17.23 Results



LA River CEFF Section C – Tule adults (BD-PM-49) LOI 17.23 Results



Suitability is typically high under Low and High Implementation

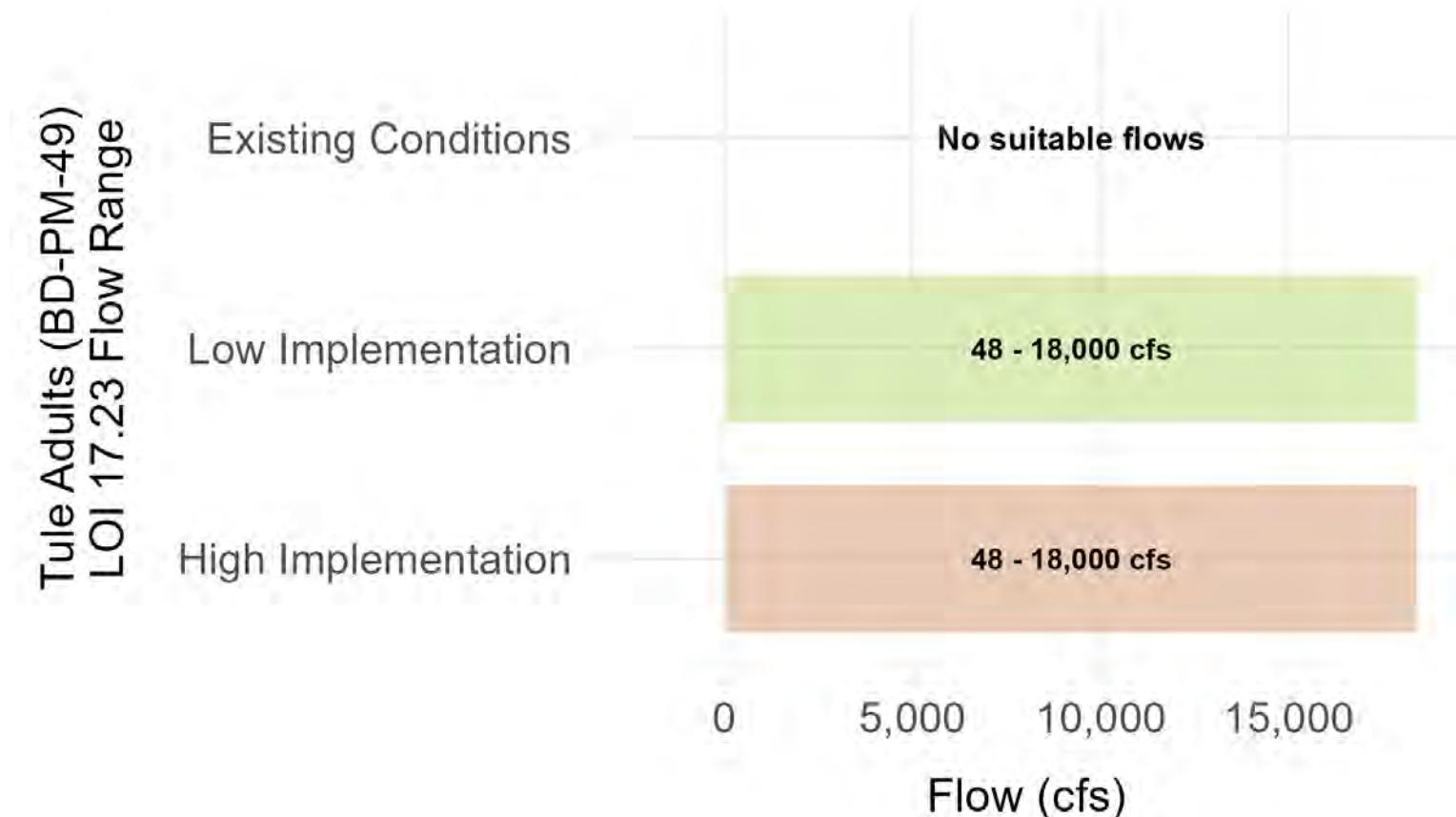
Limiting factor for segments with low suitability under Low Implementation too infrequent to show in these results.

Tule adult suitability is never supported under Existing Conditions

- No substrate to support growth (i.e., it's all concrete)

Tule adult suitability is supported at a wide range of flows under Low and High Implementation

- Channel form changes provide suitable substrate and reduce velocities.



Recreation TTWG

- Wading is supported from May 1 to Sept 30 (RE-PM-4).

Recreation TTWG Recommended Parameters Evaluated

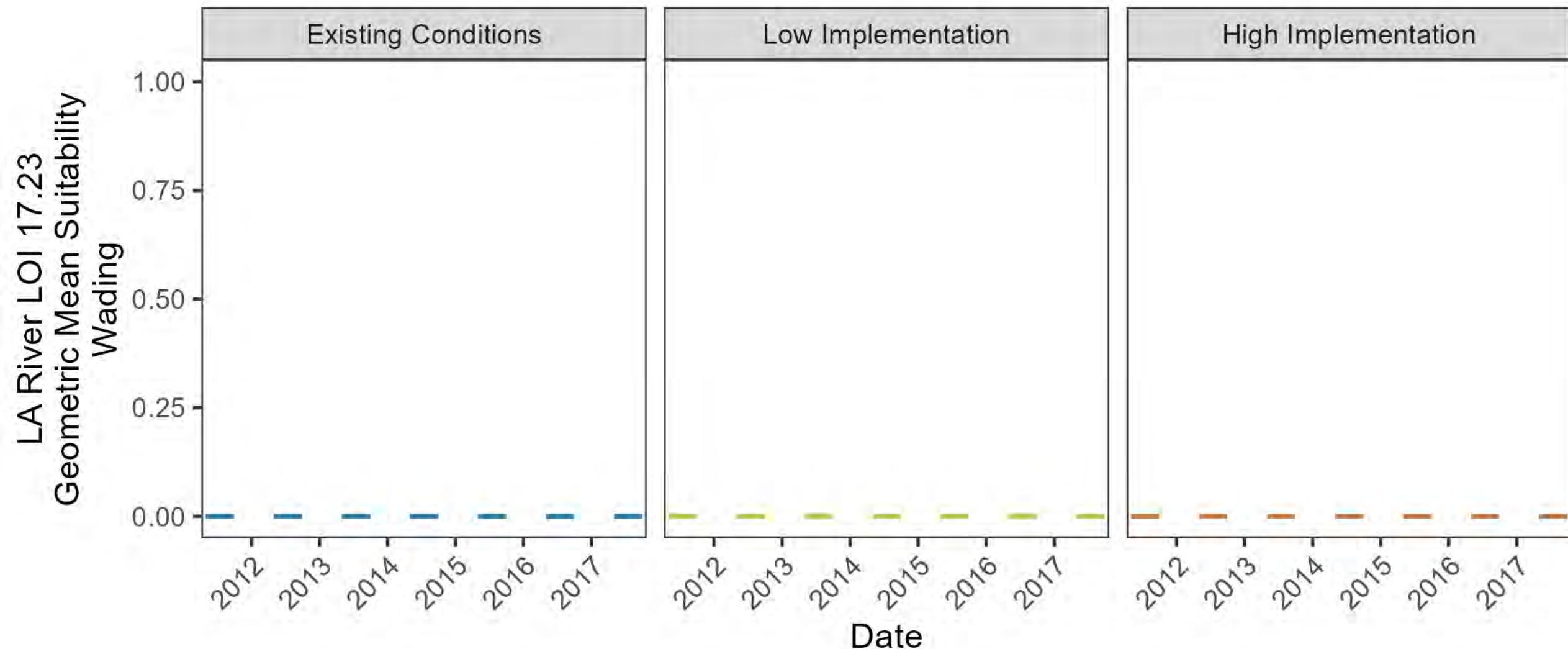
- Water depth
- Water velocity
- Wetted channel width
- Unwetted channel margin width
- Access

Recreation TTWG Recommended Parameters **Not** Evaluated

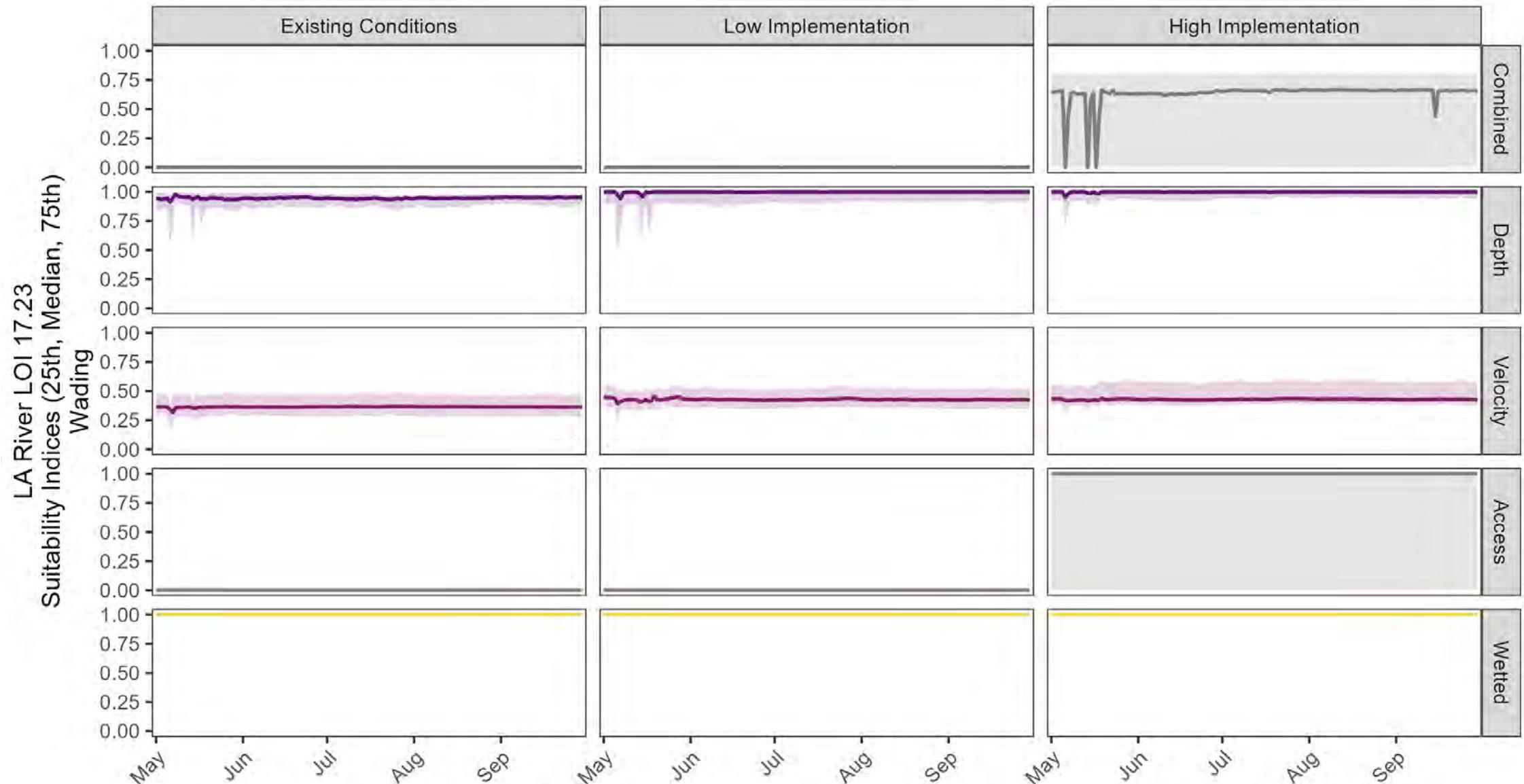
- Channel margin slope
- Substrate
- Basin Plan water quality objectives
- Riparian vegetation stand density
- Multiple social parameters
 - Signage
 - Etc.

Multiple recommended parameters were not evaluated at this time due to a) data and model limitations, or b) no linkage between flow variations and parameter suitability.

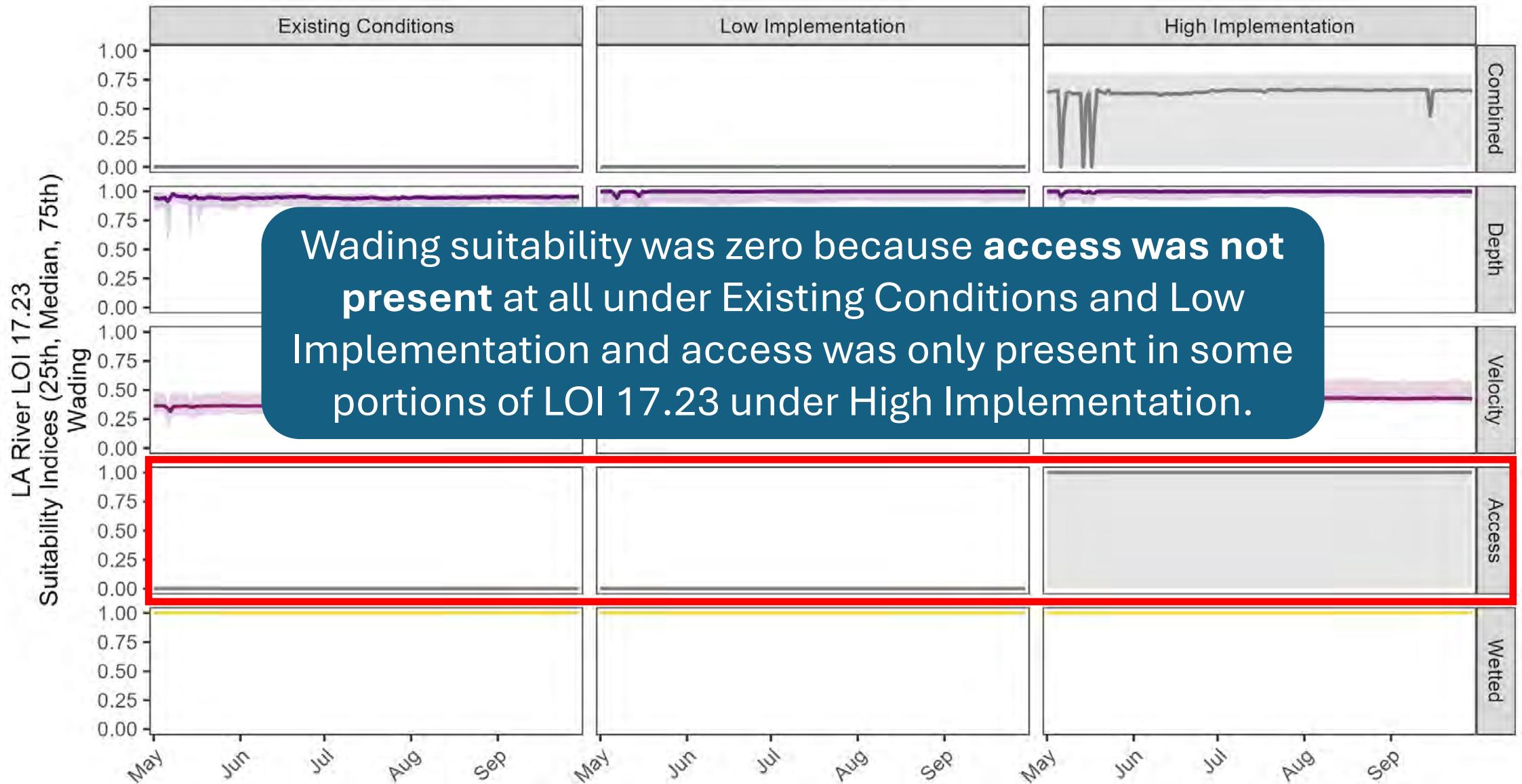
LA River CEFF Section C – Wading (RE-PM-4) LOI 17.23 Results



LA River CEFF Section C – Wading (RE-PM-4) LOI 17.23 Results



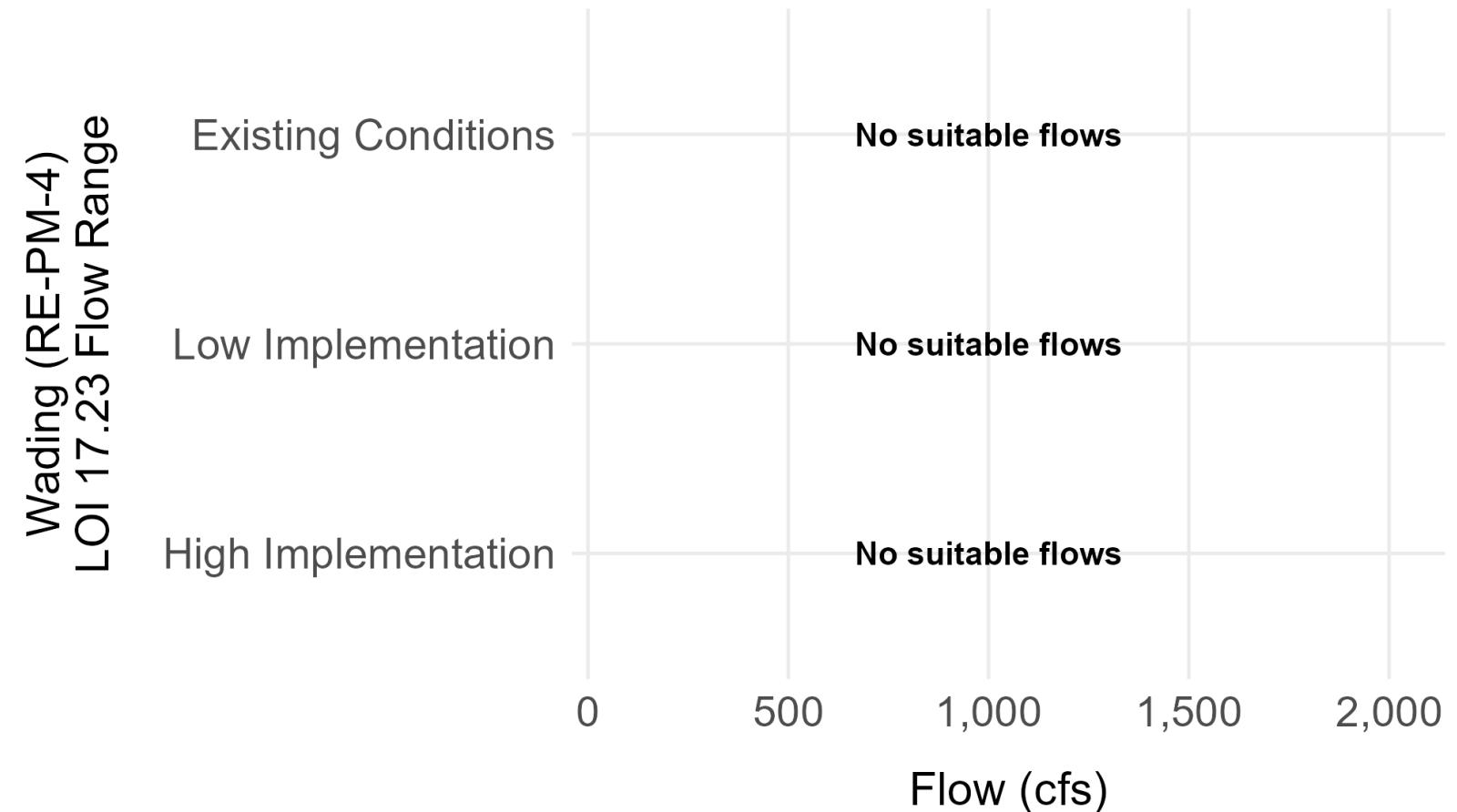
LA River CEFF Section C – Wading (RE-PM-4) LOI 17.23 Results



LA River CEFF Section C – Wading (RE-PM-4) LOI 17.23 Results

Access suitability limits overall suitability across entire flow range.

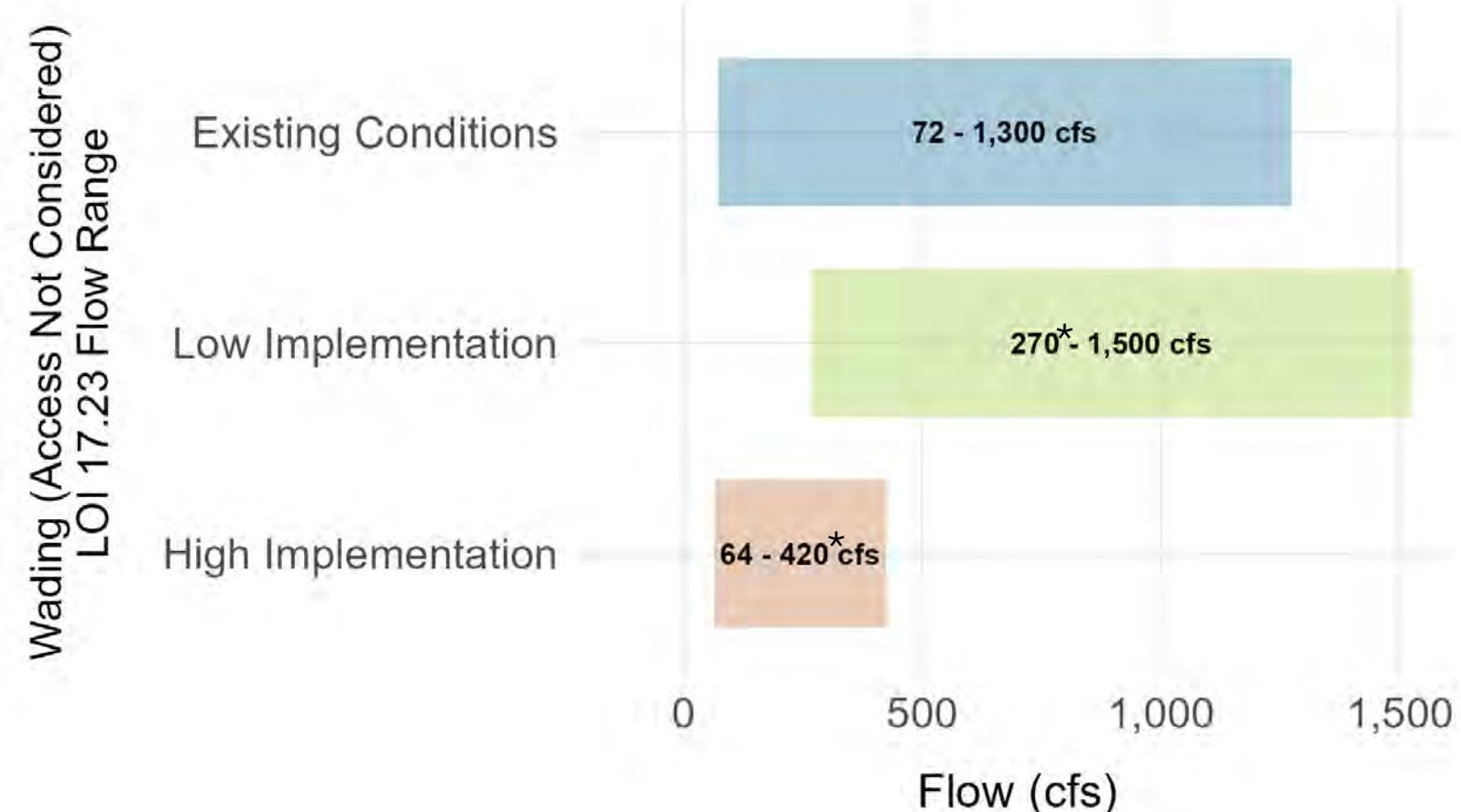
No flow range would support wading unless access improved.



LA River CEFF Section C – Wading (RE-PM-4) LOI 17.23 Results

It is possible to calculate suitable flow range for wading assuming access was available.

Flow range that supports suitable conditions for wading throughout the reach is calculated.



*Flow range limit set by one 200 ft segment that behaved differently from adjacent 200 ft segments; flow range limit will likely change after further model refinement.

Biodiversity TTWG

- Adult Pacific lamprey migration is supported from December 1 to June 30 (BD-PM-34).

Biodiversity TTWG Recommended Parameters Evaluated

- Water depth
- Water velocity
- Substrate type
- Potential riparian cover

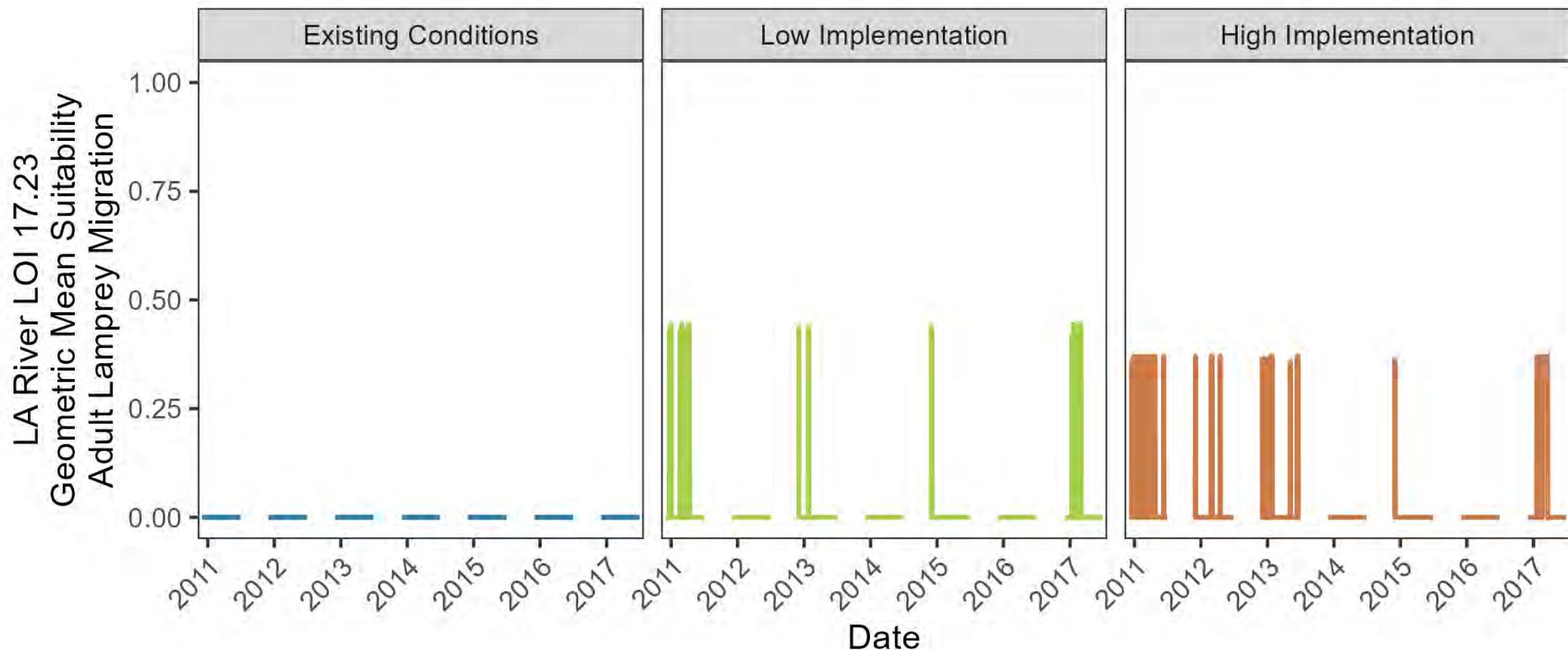
Biodiversity TTWG Recommended Parameters **Not** Evaluated

- Substrate
- Water temperature

Substrate and water temperature were not evaluated at this time due to data and model limitations.

Substrate was replaced by “substrate type” that only assessed whether channel bed was concrete, modified concrete, or natural substrate.

LA River CEFF Section C – Adult Lamprey Migration (BD-PM-34) LOI 17.23 Results

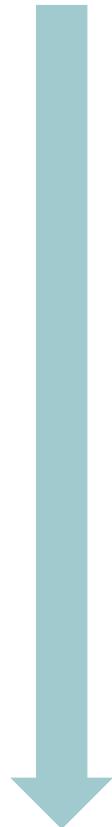


Overall suitability is greater than zero at times for Low and High Implementation, with limited continuous passage through the reach during 4 of 7 years modeled.

LA River CEFF Section C – Adult Lamprey Migration (BD-PM-34) LOI 17.23 Results

Beginning of

LOI 17.23 110,000



River station

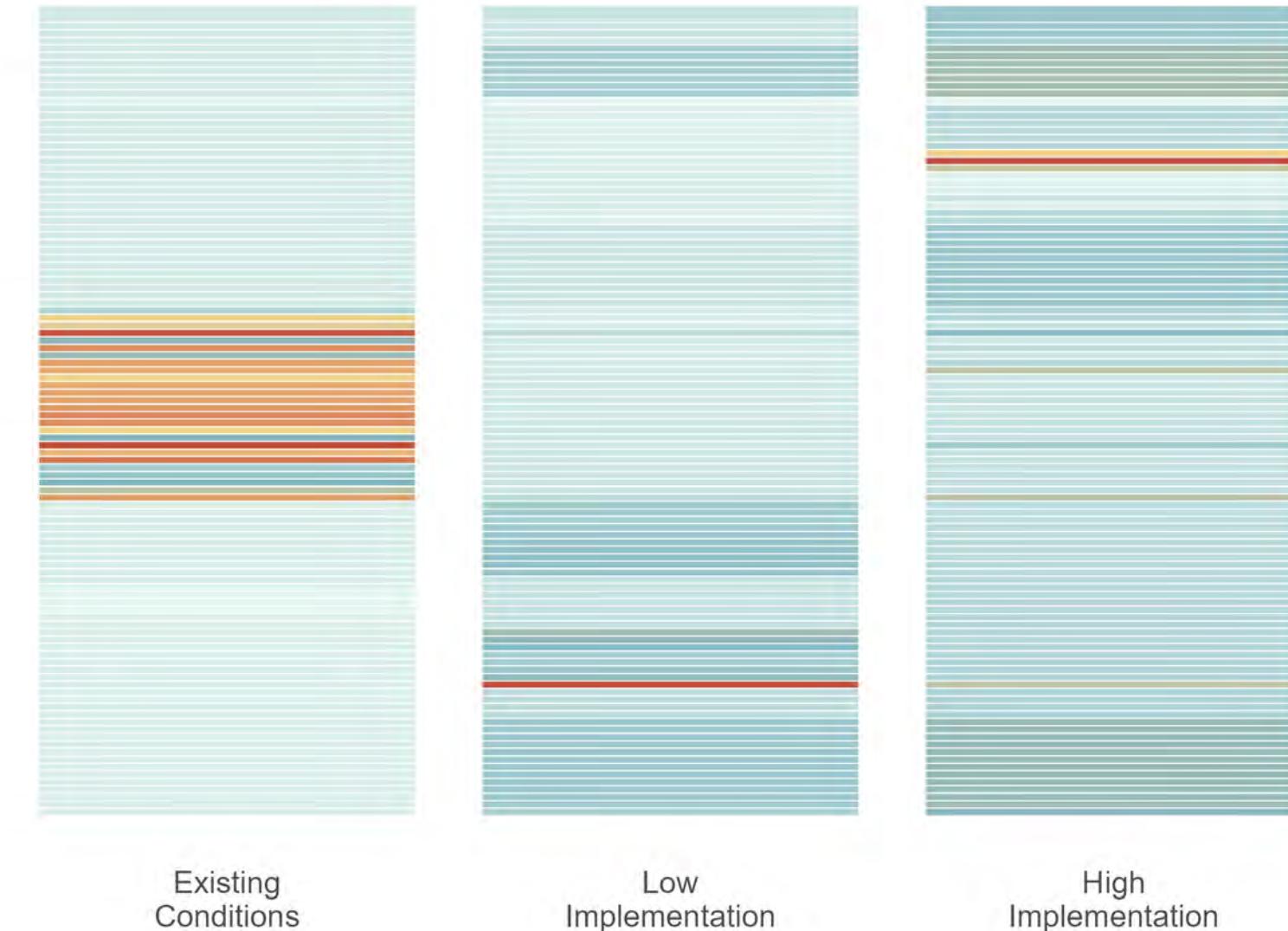
105,000

100,000

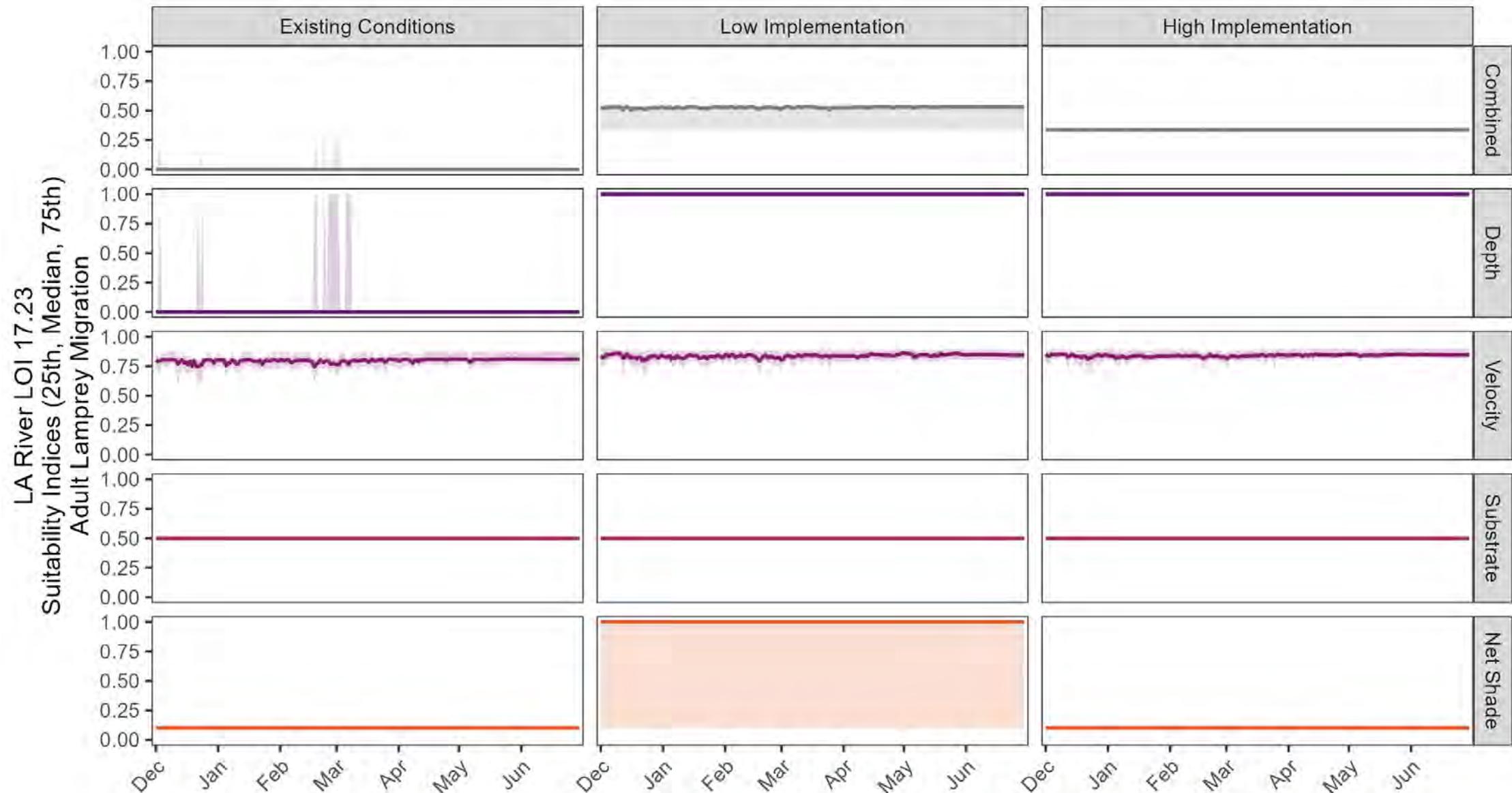
95,000

90,000

End of
LOI 17.23



LA River CEFF Section C – Adult Lamprey Migration (BD-PM-34) LOI 17.23 Results

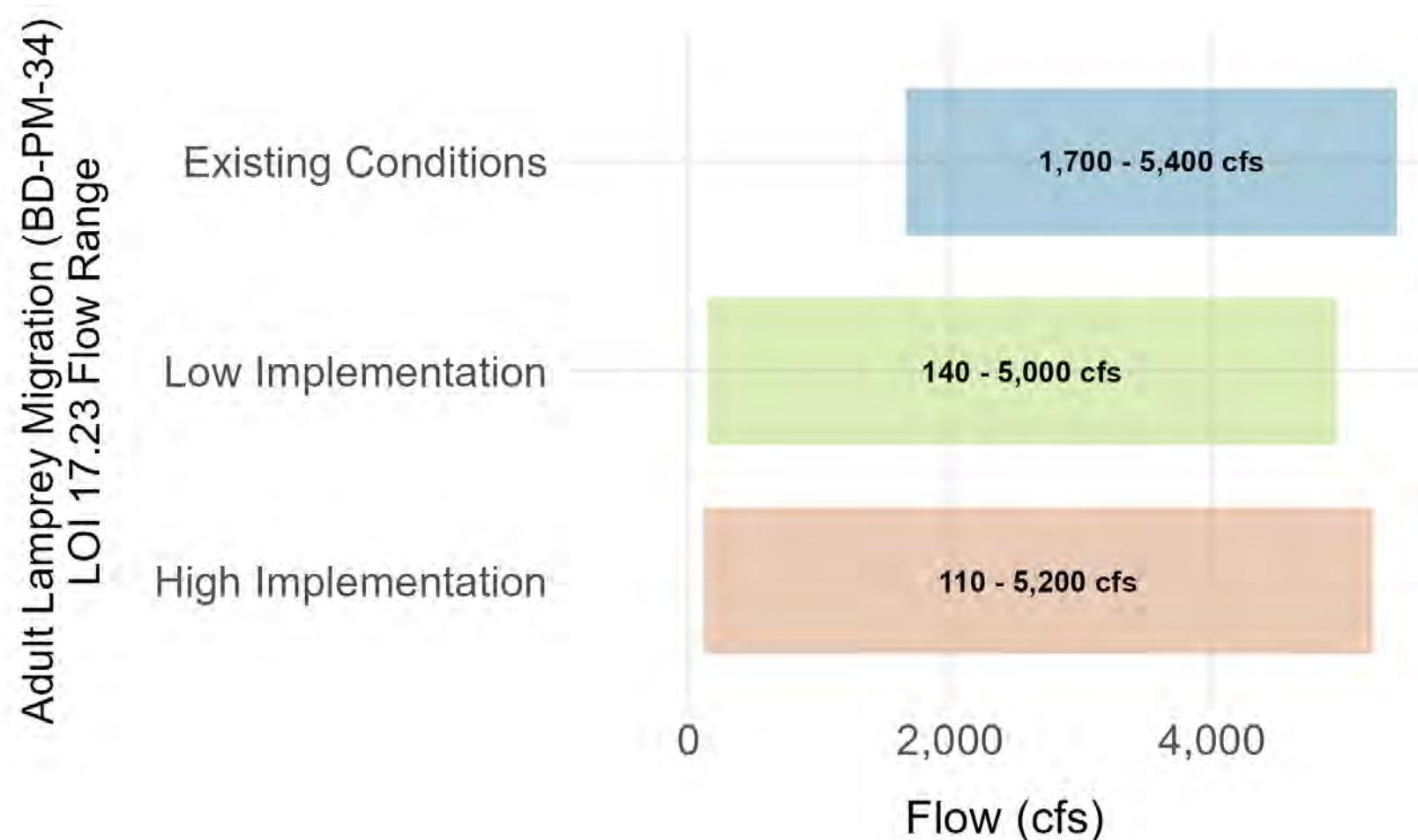


LA River CEFF Section C – Adult Lamprey Migration (BD-PM-34) LOI 17.23 Results

Adult lamprey migration flow range is similar to adult steelhead migration flow range.

Lower end of flow range due to some locations requiring higher flow for passage.

Locations needing higher flow could likely be refined to provide passage at lower flows.



LA River CEFF analysis initial results indicate:

- Overall suitability is often low under Existing Conditions
- Overall suitability often increases under Low and High Implementation

Suitable flow range to support performance measures often decreases under Low and High Implementation scenarios relative to Existing Conditions scenario.

Suitable flow range is still higher than actual flow range for some part of the reach.

Overall suitability limited by some channel form parameter conditions:

- Substrate
- Potential riparian cover
- Riparian vegetation canopy (shade)
- Access

Linking Flow Assessment Results to Functional Flows

Photo credit: Ian Shive

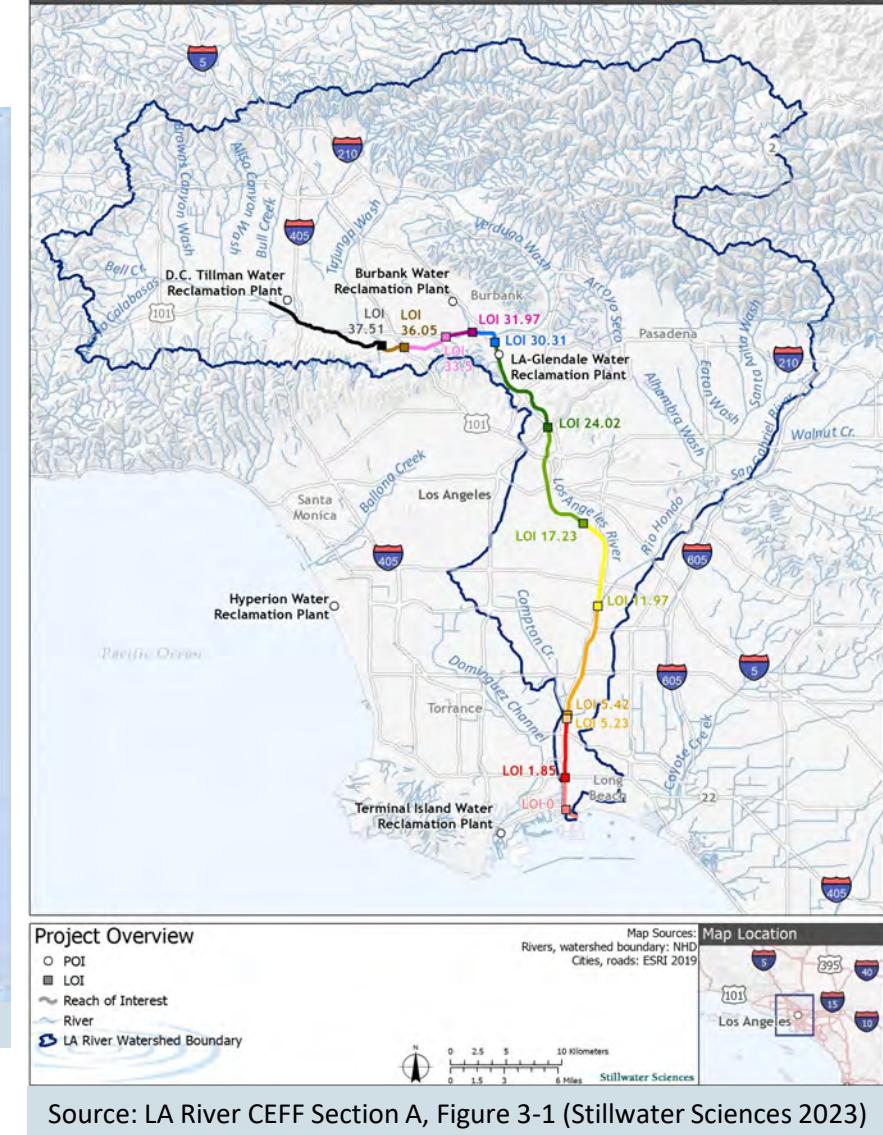
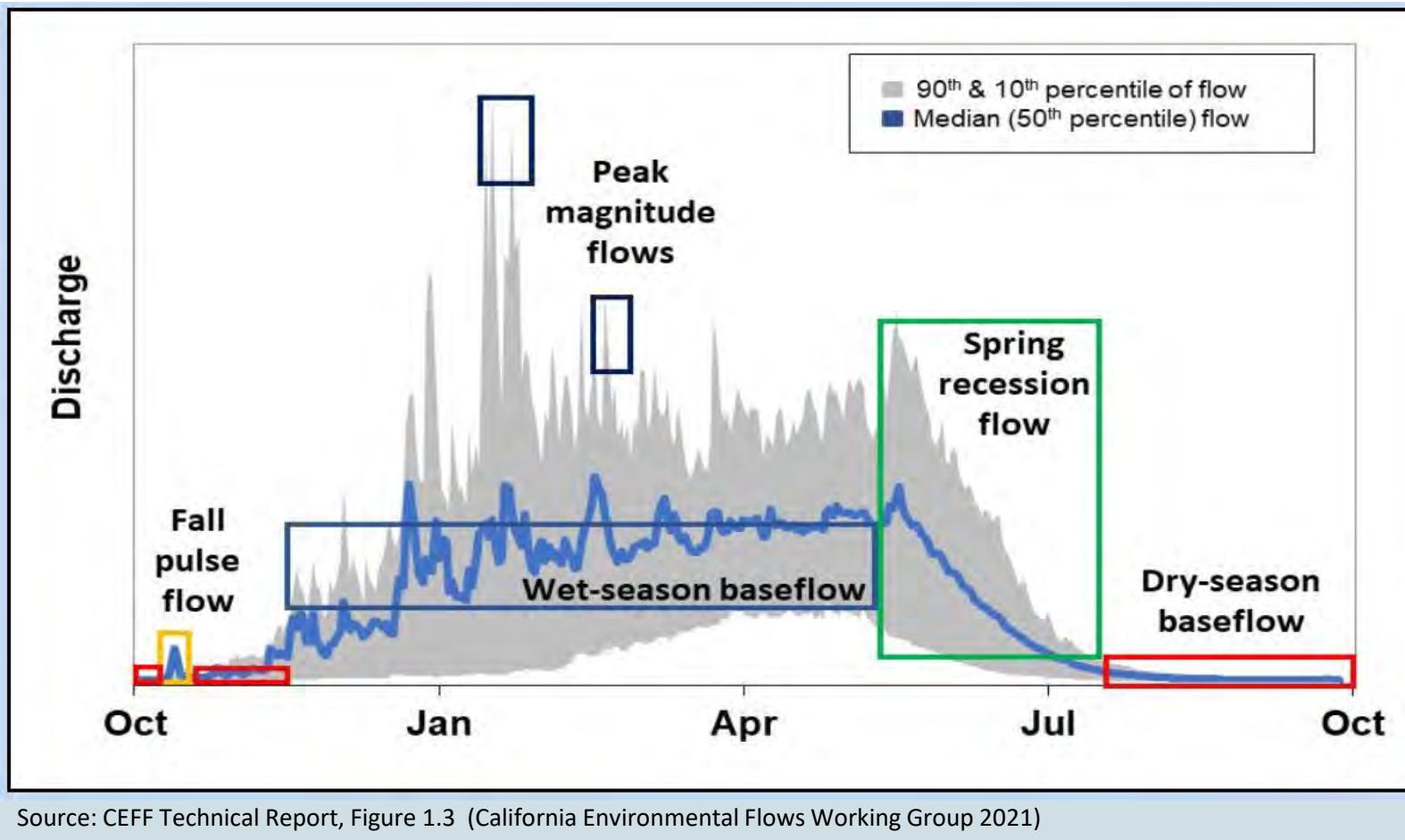
Flow assessment results provide:

- Magnitude and frequency performance measures are supported under different scenarios
- Limiting parameters for performance measures
- Spatial data on where performance measures are supported
- Flow range that supports each performance measure and where limiting segment is within a reach.

Flow assessment results can be used to support development of alternative scenarios and the overall LA River CEFF recommendation.

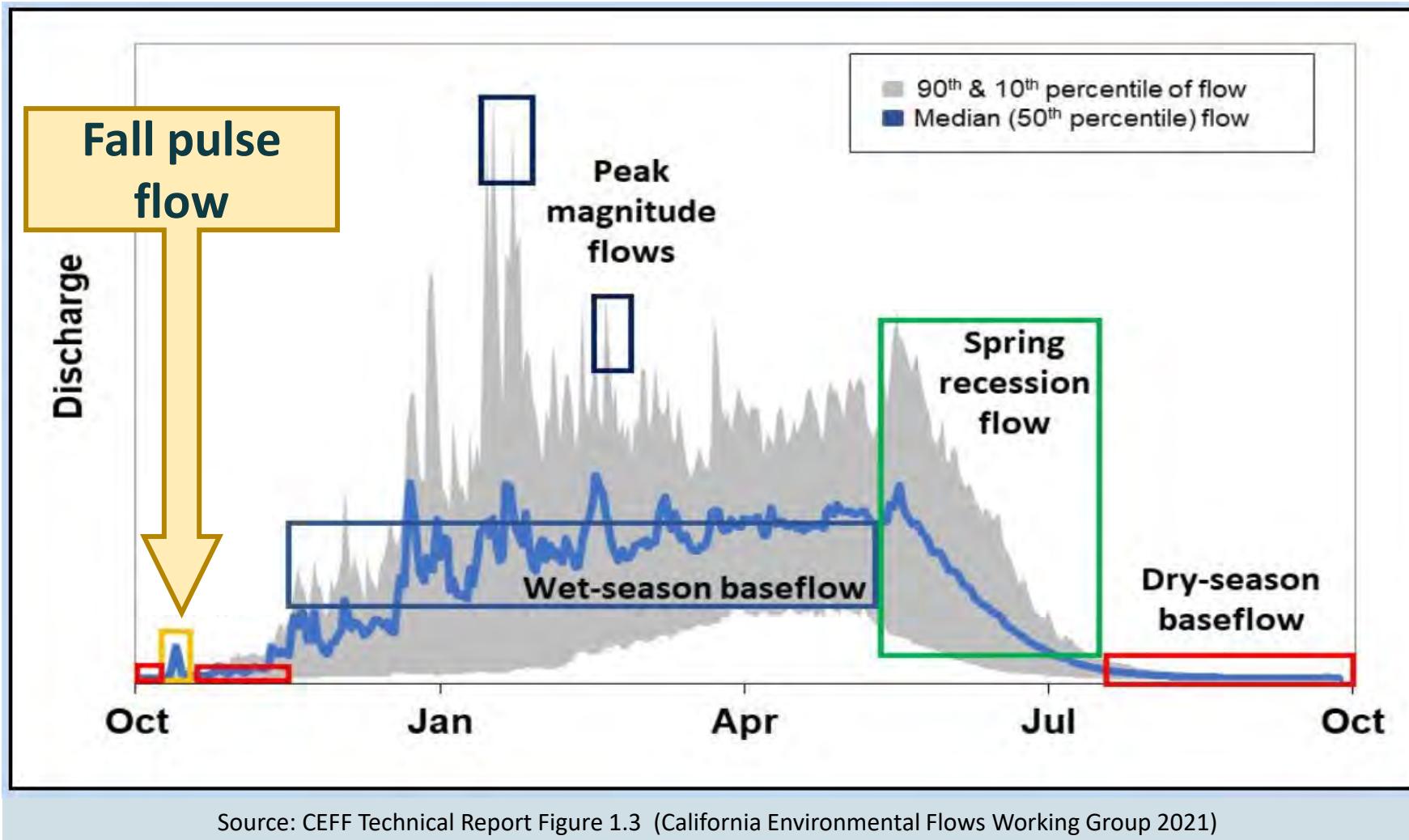
- What flow range supports all performance measures in a reach?
- What flow or channel form refinements are needed to improve achievement of performance measures?

Functional Flow Metrics Refresher – Reading a Hydrograph



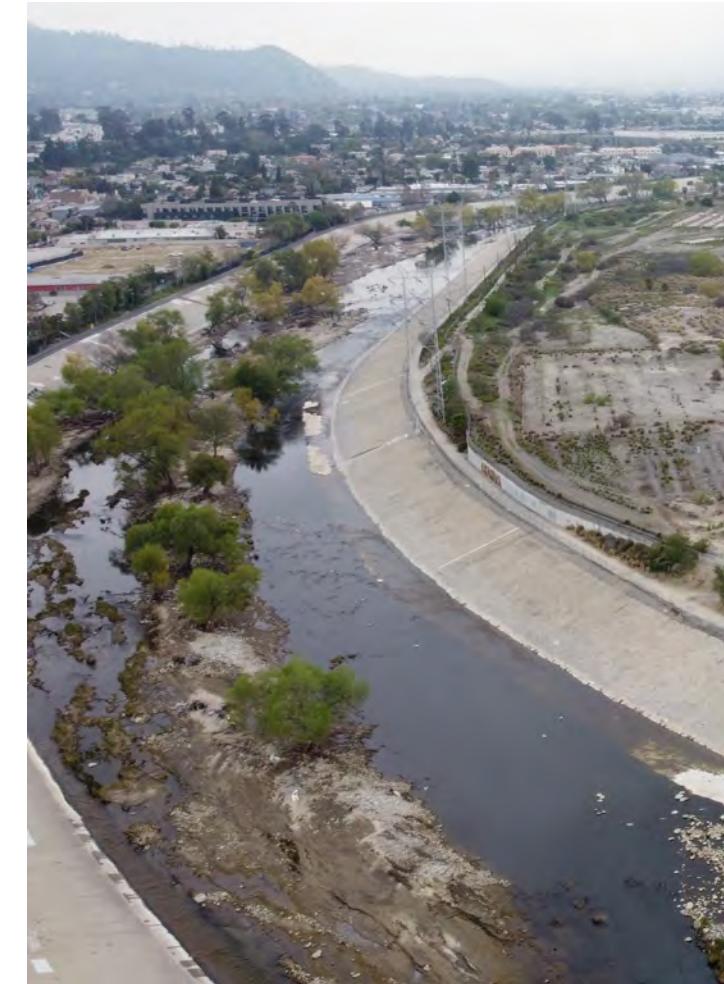
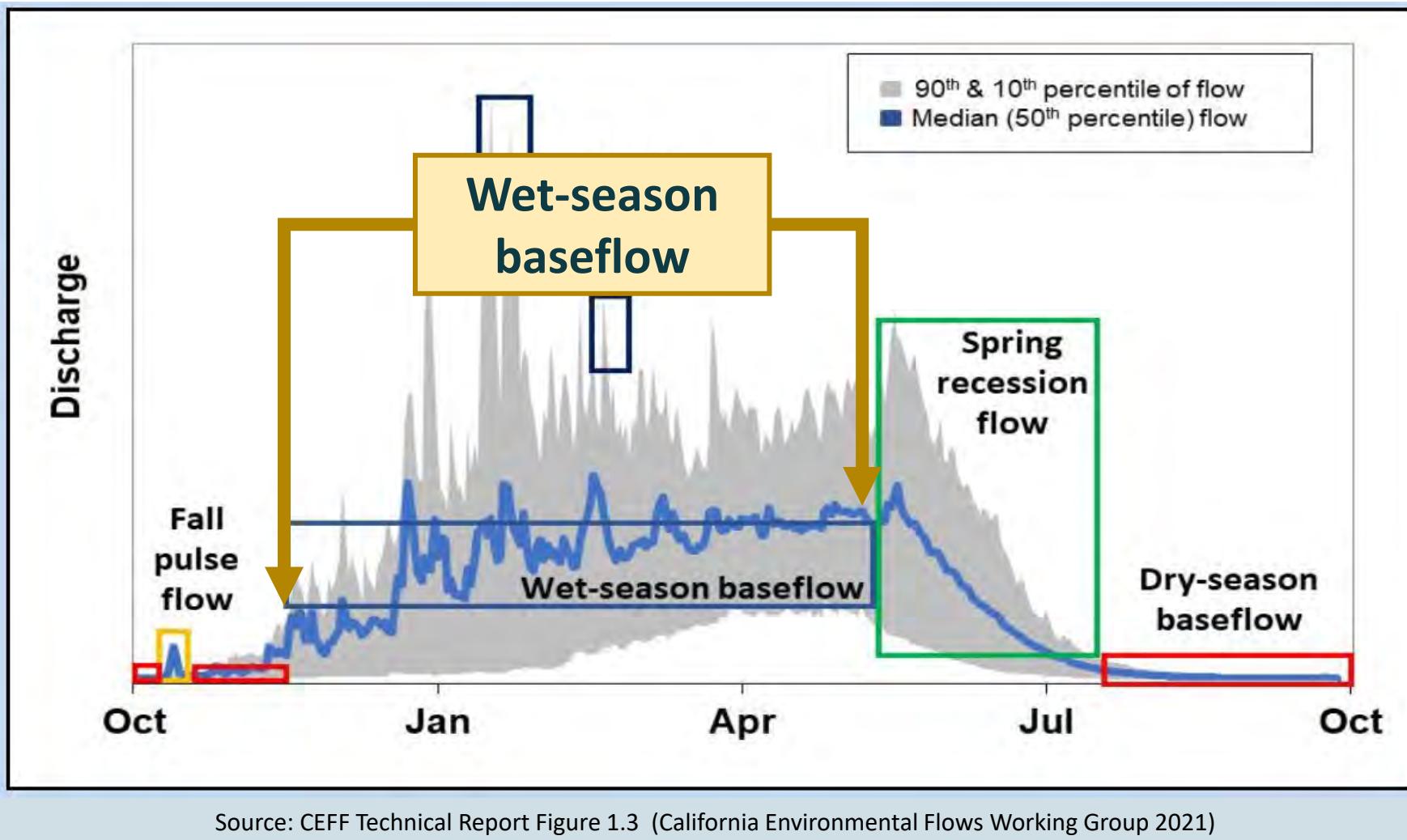
Functional Flow Metrics Refresher – Reading a Hydrograph

Fall pulse flow: First major storm event after the dry season.



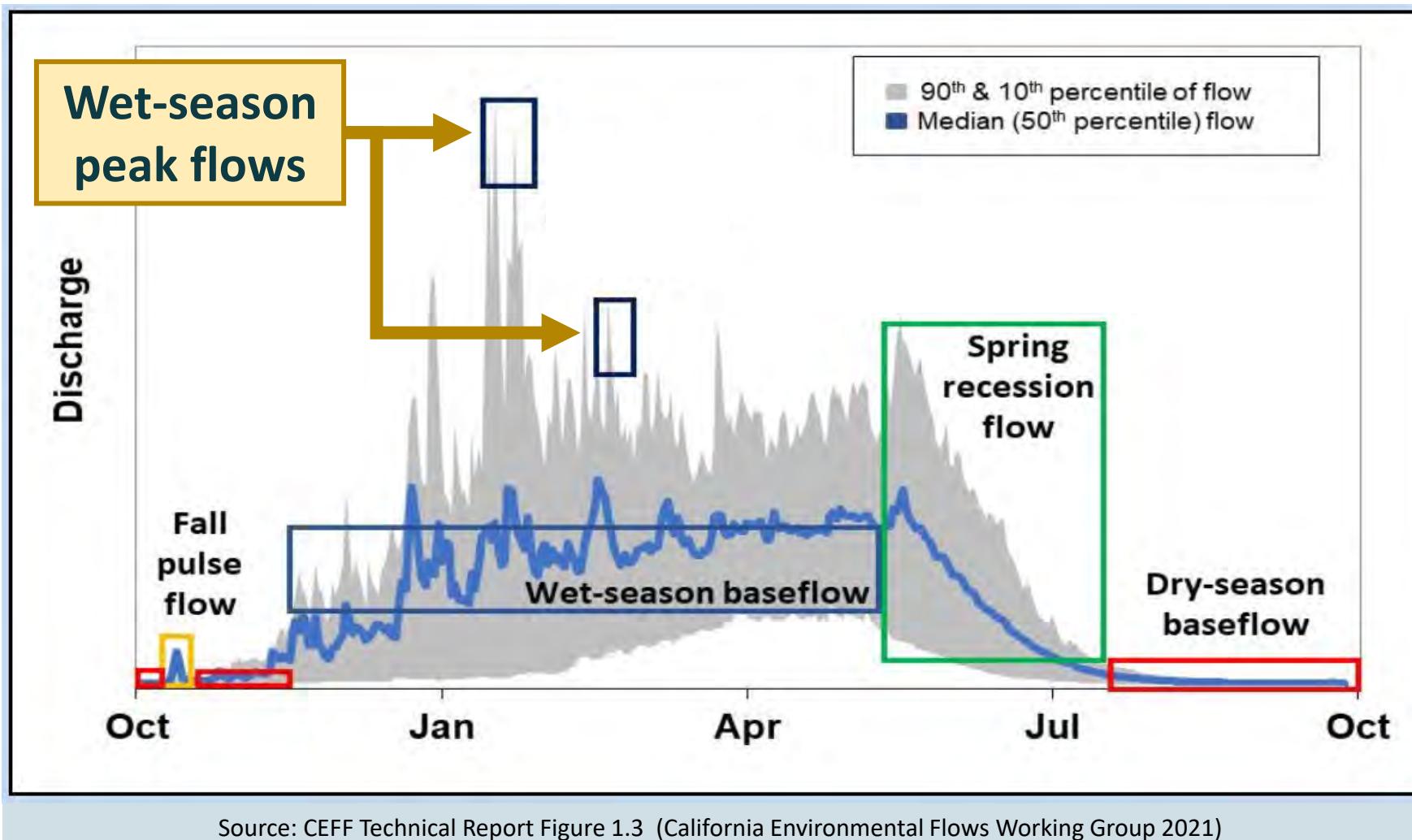
Functional Flow Metrics Refresher – Reading a Hydrograph

Wet-season baseflow: Flows during the wet season between storm events.



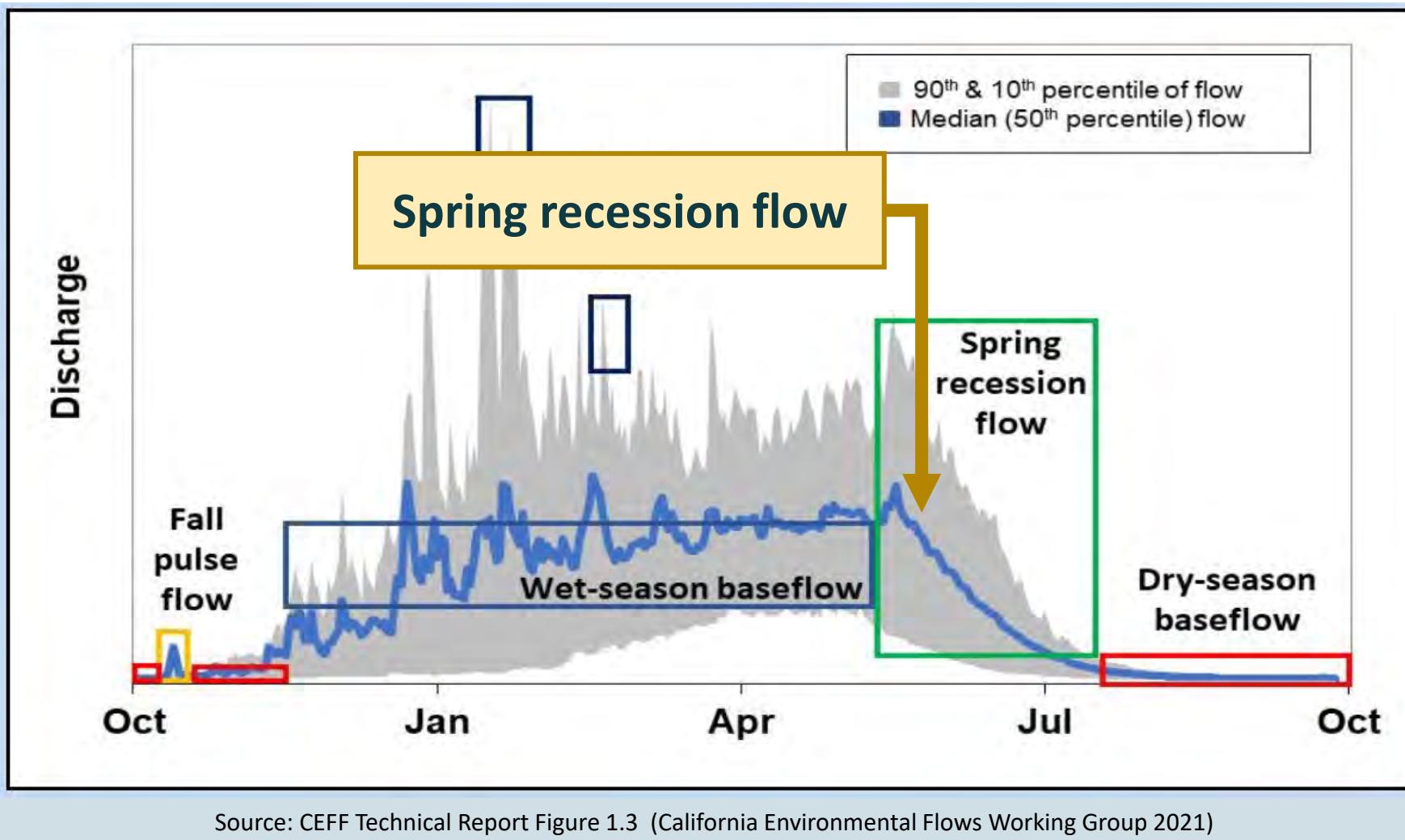
Functional Flow Metrics Refresher – Reading a Hydrograph

Wet-season peak flows: Largest storm events of the season.



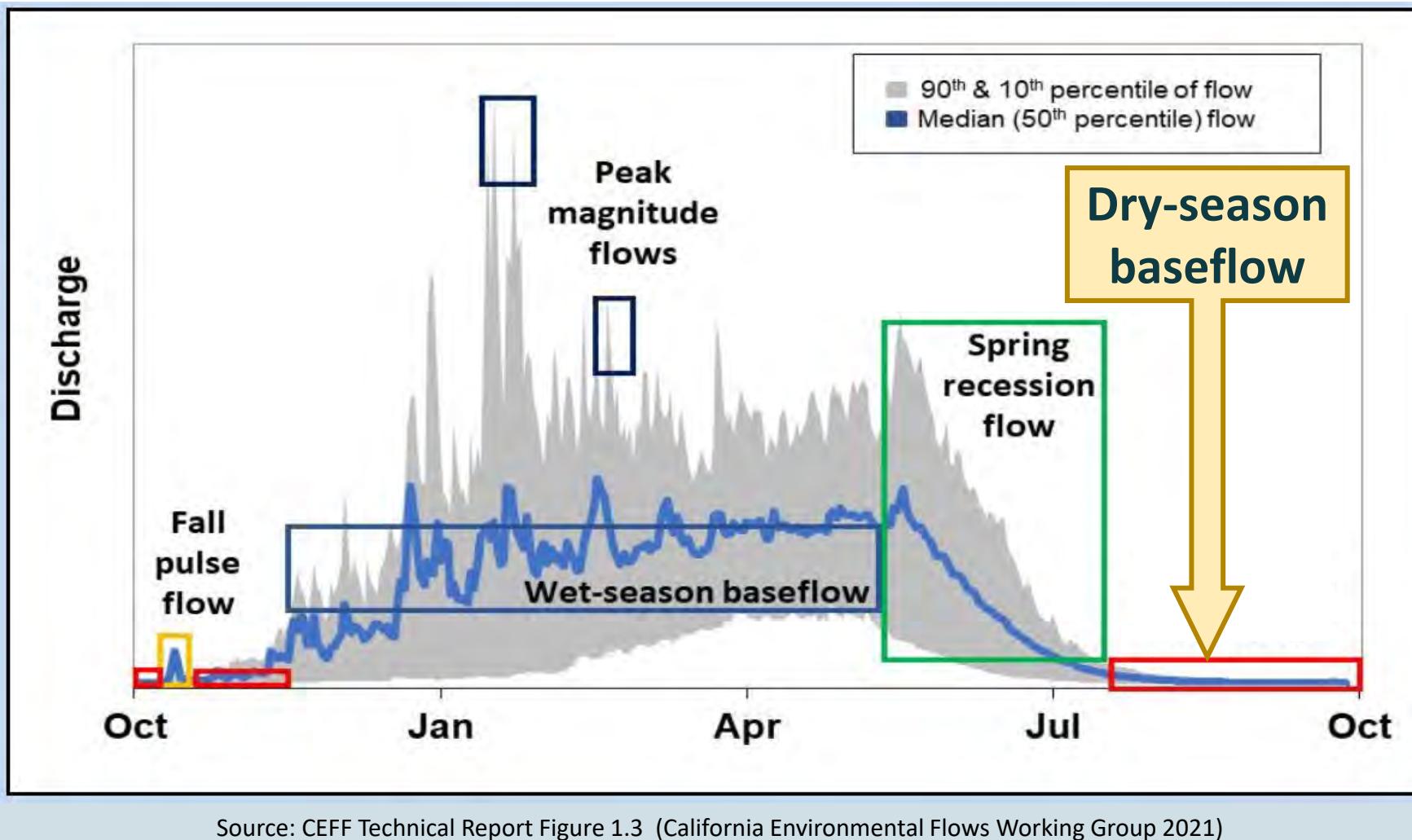
Functional Flow Metrics Refresher – Reading a Hydrograph

Spring recession flows: Declining flows between the wet and dry season.



Functional Flow Metrics Refresher – Reading a Hydrograph

Dry-season baseflow: Flows during the dry season.



Source: CEFF Technical Report Figure 1.3 (California Environmental Flows Working Group 2021)



CEFF Flow Recommendation – Designing a Hydrograph

LA River CEFF project will provide a flow recommendation for each of the five functional flows for each reach.

Flow recommendations will be range of flows to support performance measures during each functional flow time period.

Range of flows depends on what performance measures need supported.

LA River CEFF Recommendations Format

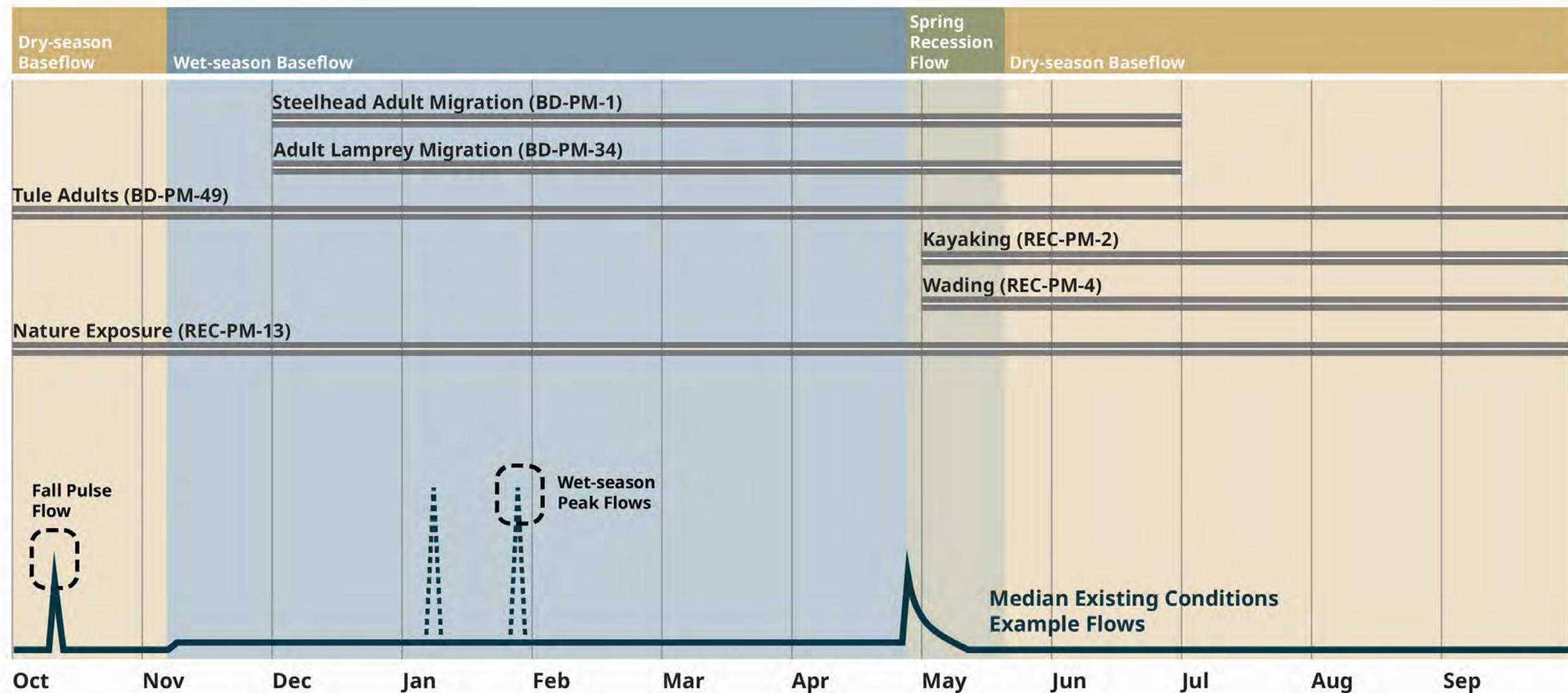
Recommended flows per reach in terms of the five functional flow metrics

Potential watershed management actions to achieve recommended flow

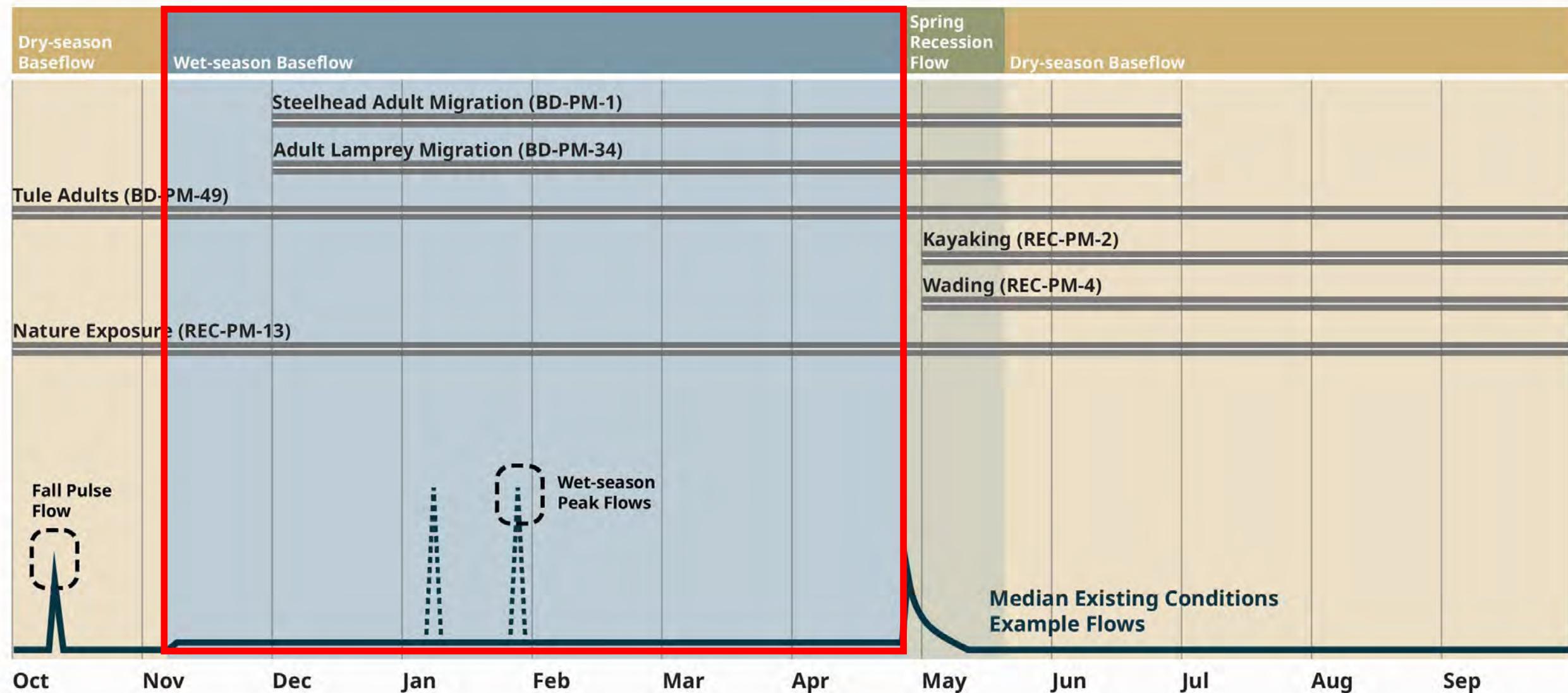
Potential channel form changes to support goals at recommended flow

Recommended implementation plan outline

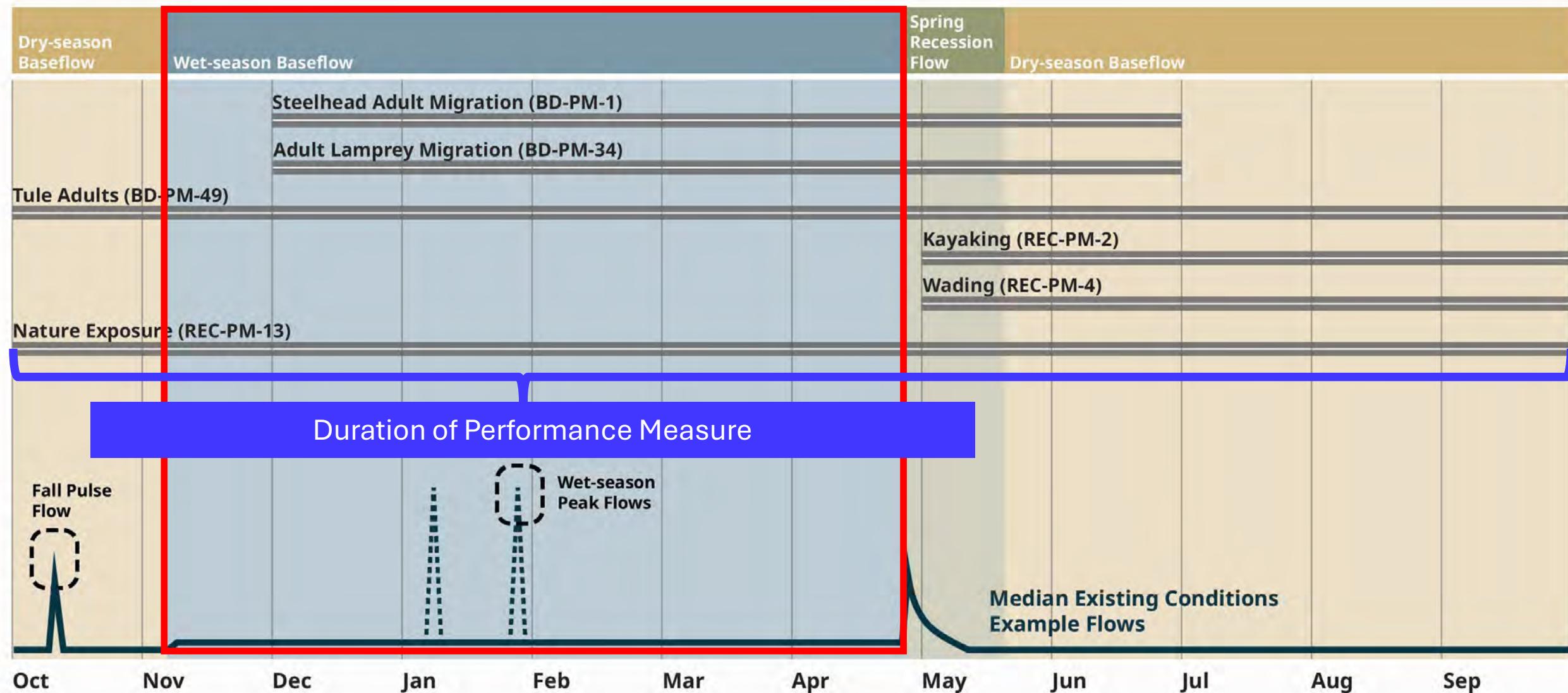
LA River CEFF Section C – Functional Flow & Performance Measure Timing



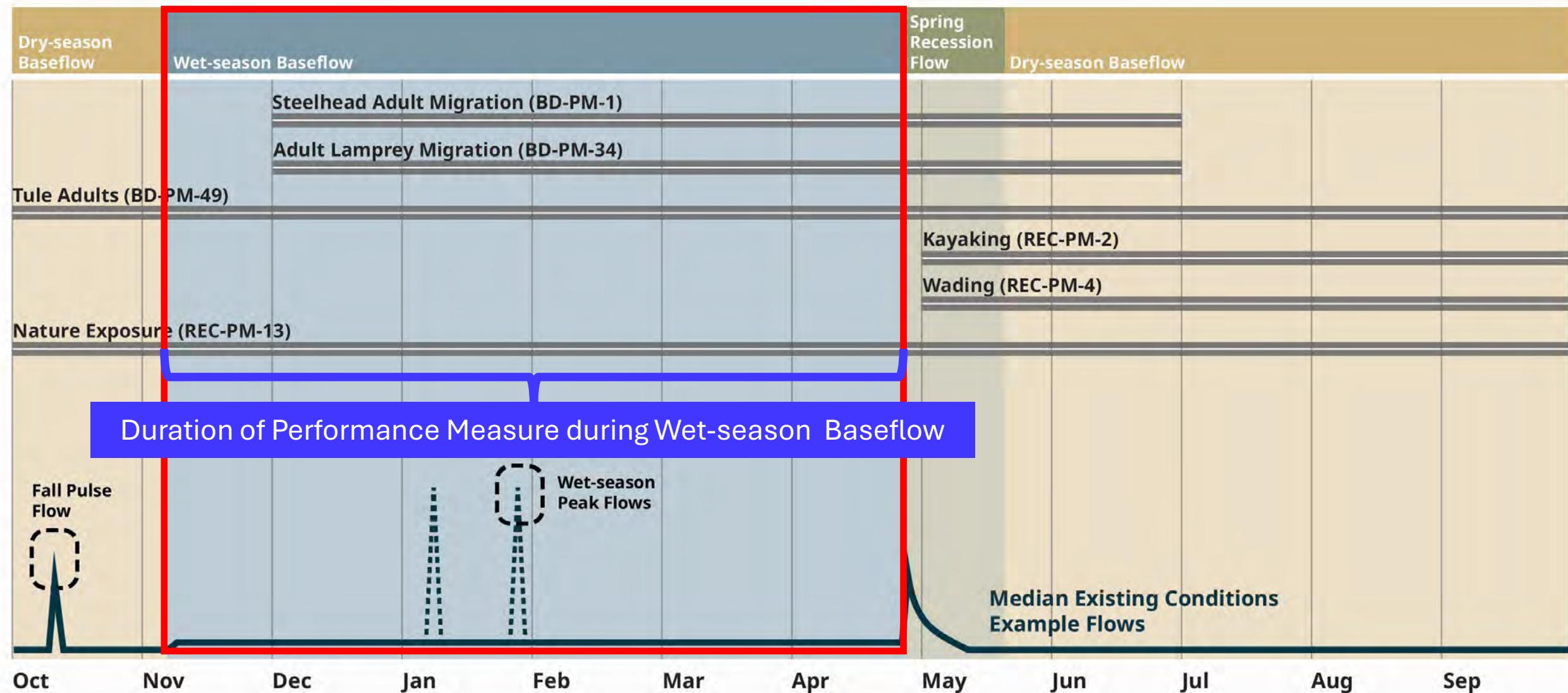
LA River CEFF Section C – Functional Flow & Performance Measure Timing



LA River CEFF Section C – Functional Flow & Performance Measure Timing



LA River CEFF Section C – Functional Flow & Performance Measure Timing



LA River CEFF Section C – Designing a Hydrograph

Duration of PM
in Wet-season

Wet-season baseflow

70%

Steelhead Adult Migration (BD-PM-1)

Existing Conditions

1,700 – 2,900 cfs

70%

Adult Lamprey Migration (BD-PM-34)

1,700 – 5,400 cfs

47%

Tule Adults (BD-PM-49)

No suitable flows
(Substrate Limited)

47%

Nature Exposure (RE-PM-13)

60 – 43,000 cfs

Low Implementation

140 – 3,400 cfs

140 – 5,000 cfs

50 – 18,000 cfs

50 – 35,000 cfs

High Implementation

110 – 3,000 cfs

110 – 5,200 cfs

50 – 18,000 cfs

50 – 35,000 cfs



LA River CEFF Section C – Designing a Hydrograph

Duration of PM
in Wet-season

Wet-season baseflow

70%

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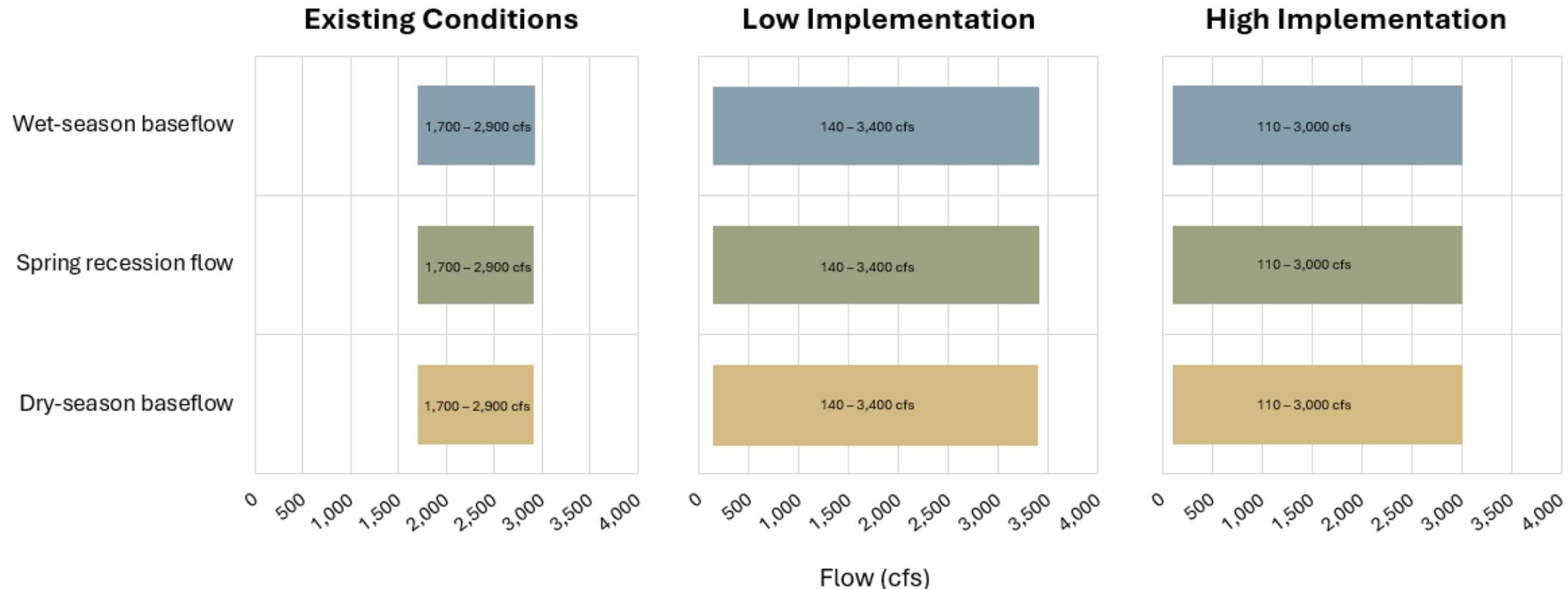
110 – 5,200 cfs

50 – 35,000 cfs

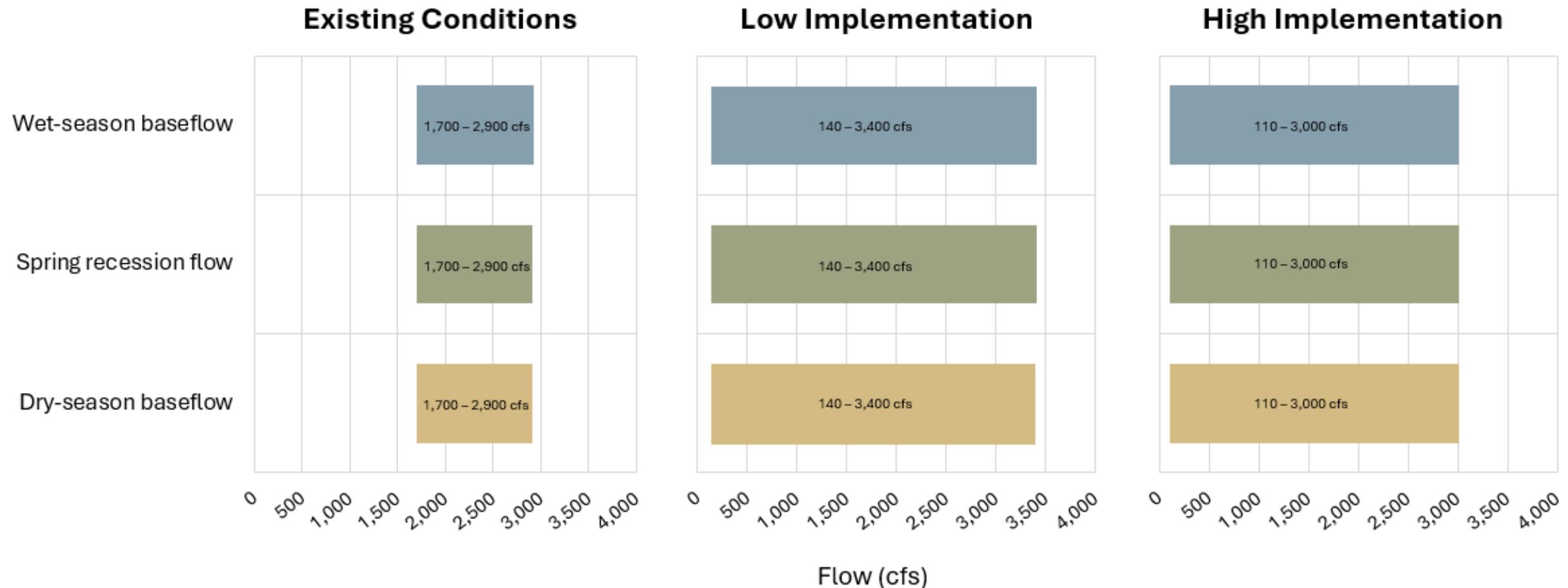
50 – 35,000 cfs



LA River CEFF Section C – Designing a Hydrograph

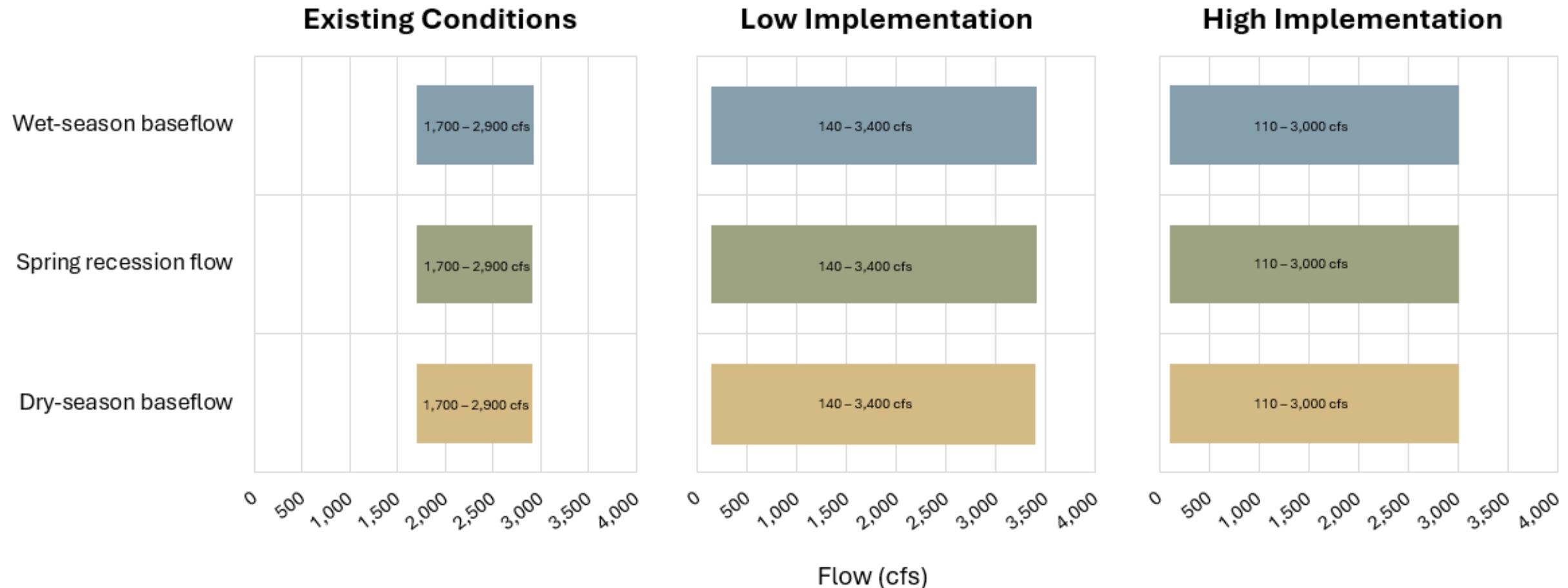


LA River CEFF Section C – Designing a Hydrograph



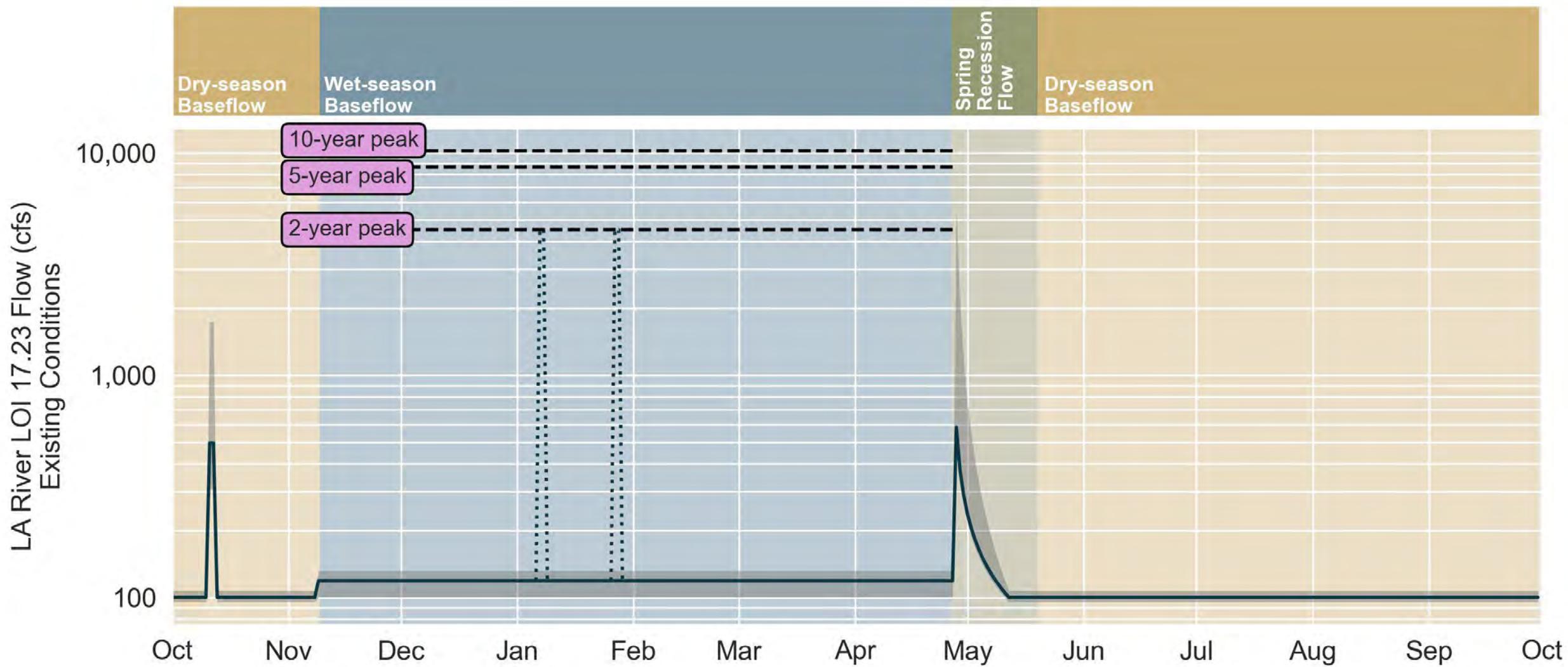
One performance measure with a narrow flow range that exists for all three functional flow periods defines suitable flow range for these three functional flows:
Steelhead Adult Migration (BD-PM-1)

LA River CEFF Section C – Designing a Hydrograph

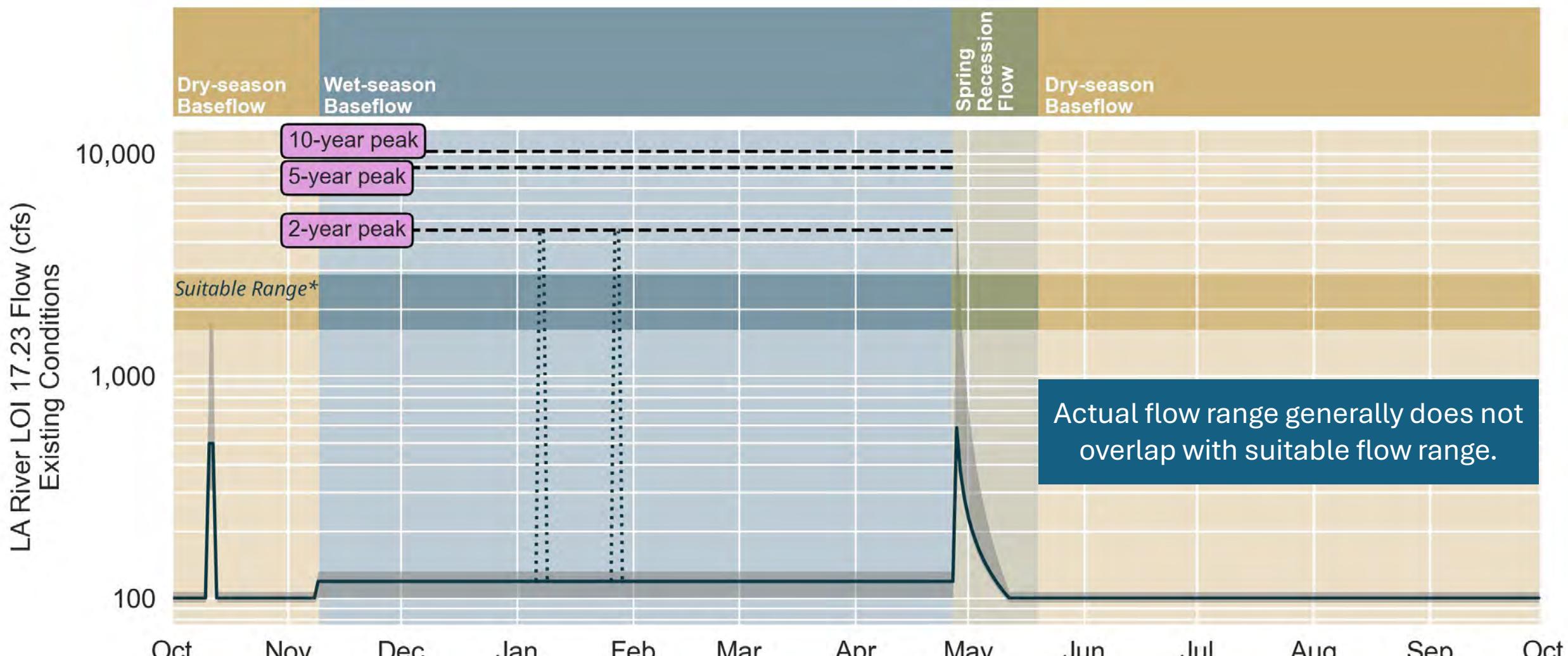


Suitable flow range for these three functional flows will change as more performance measures are added.

LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range

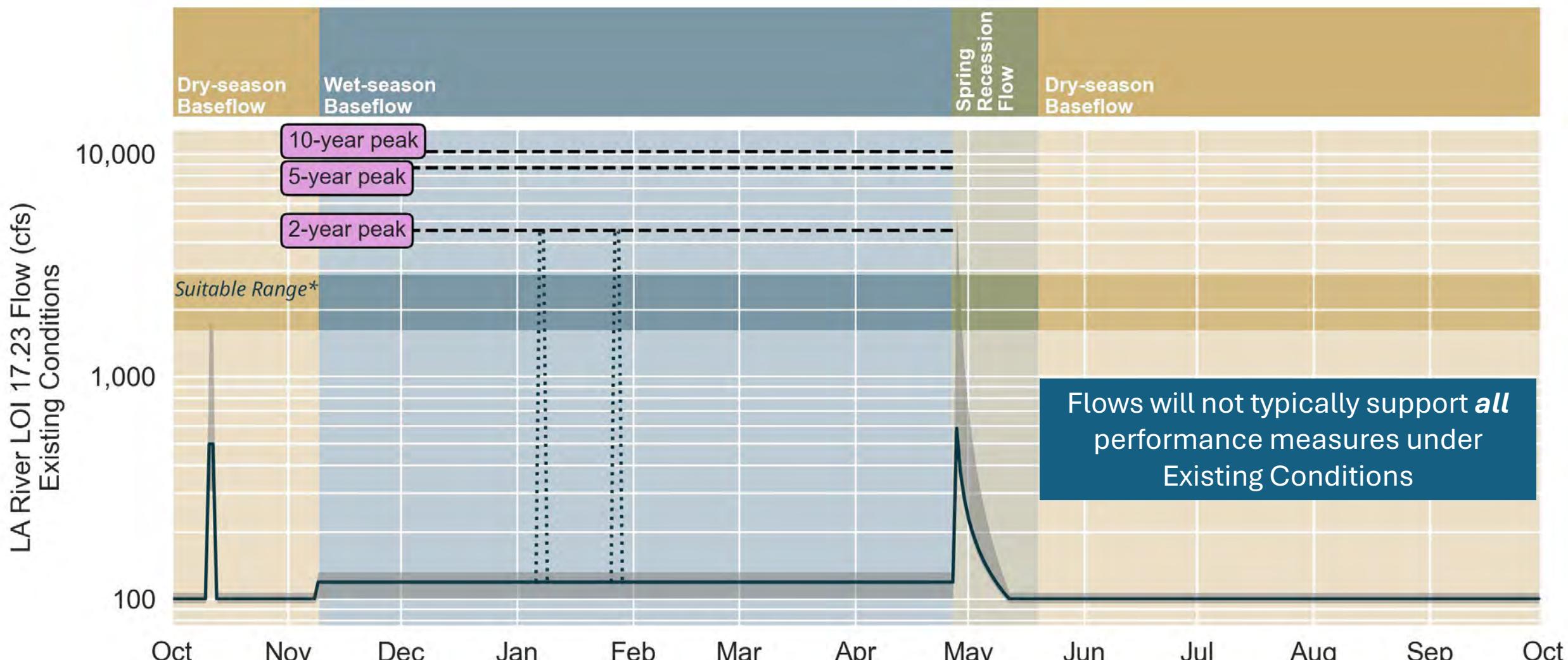


LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range



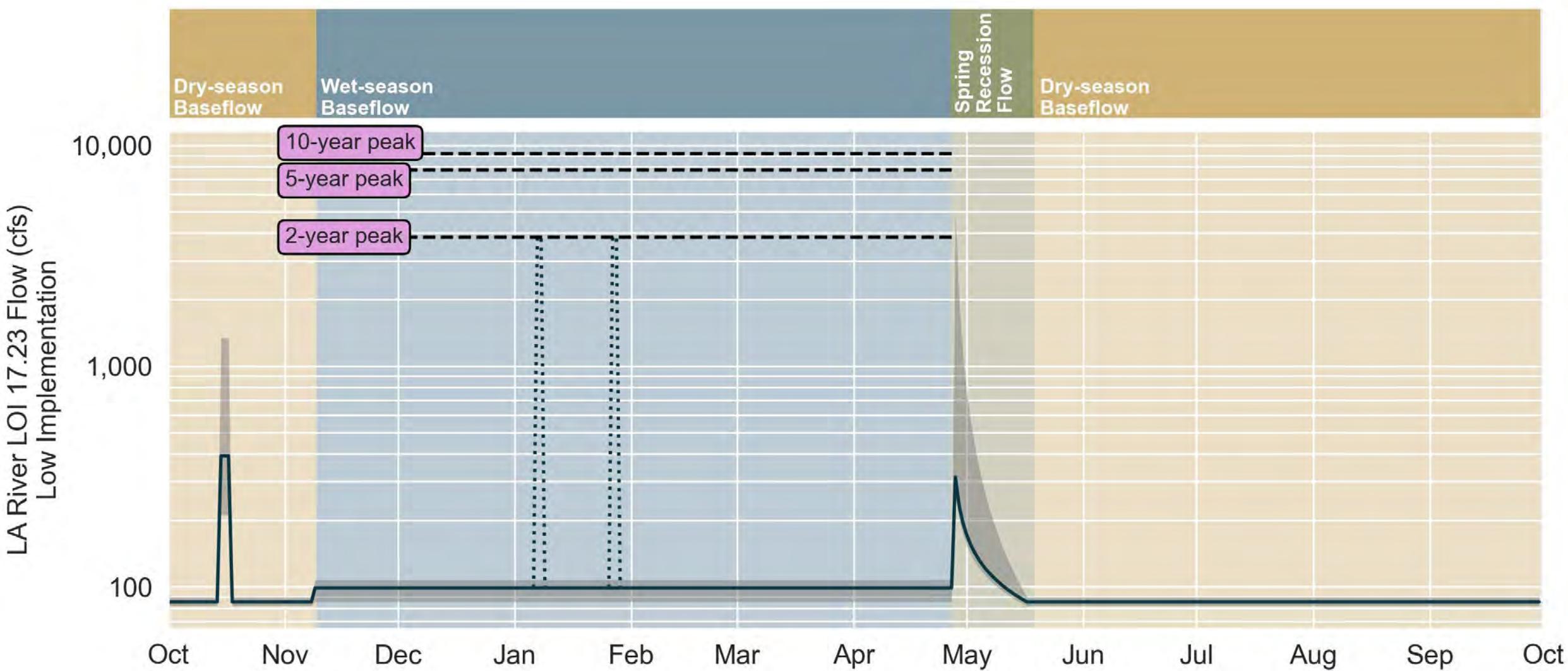
*Suitable flow range to support performance measures during a given functional flow period

LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range

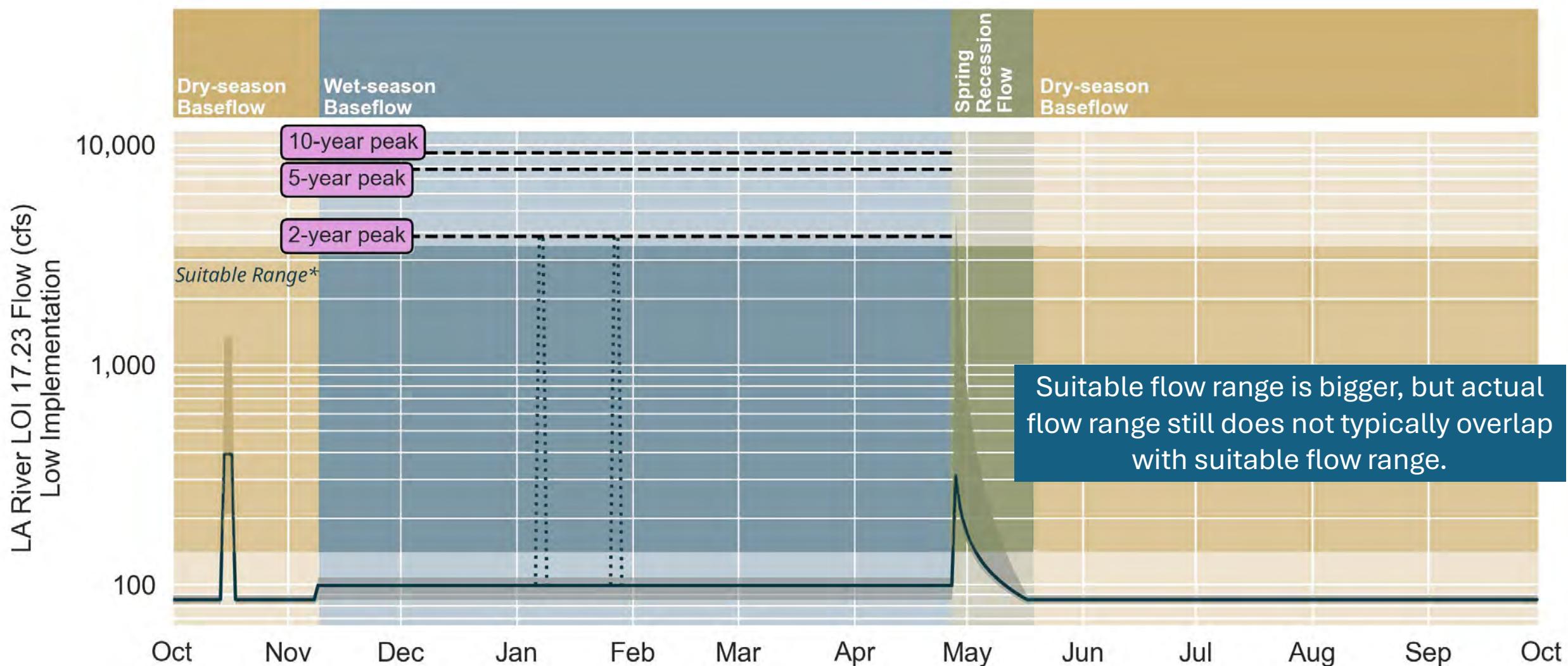


*Suitable flow range to support performance measures during a given functional flow period

LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range

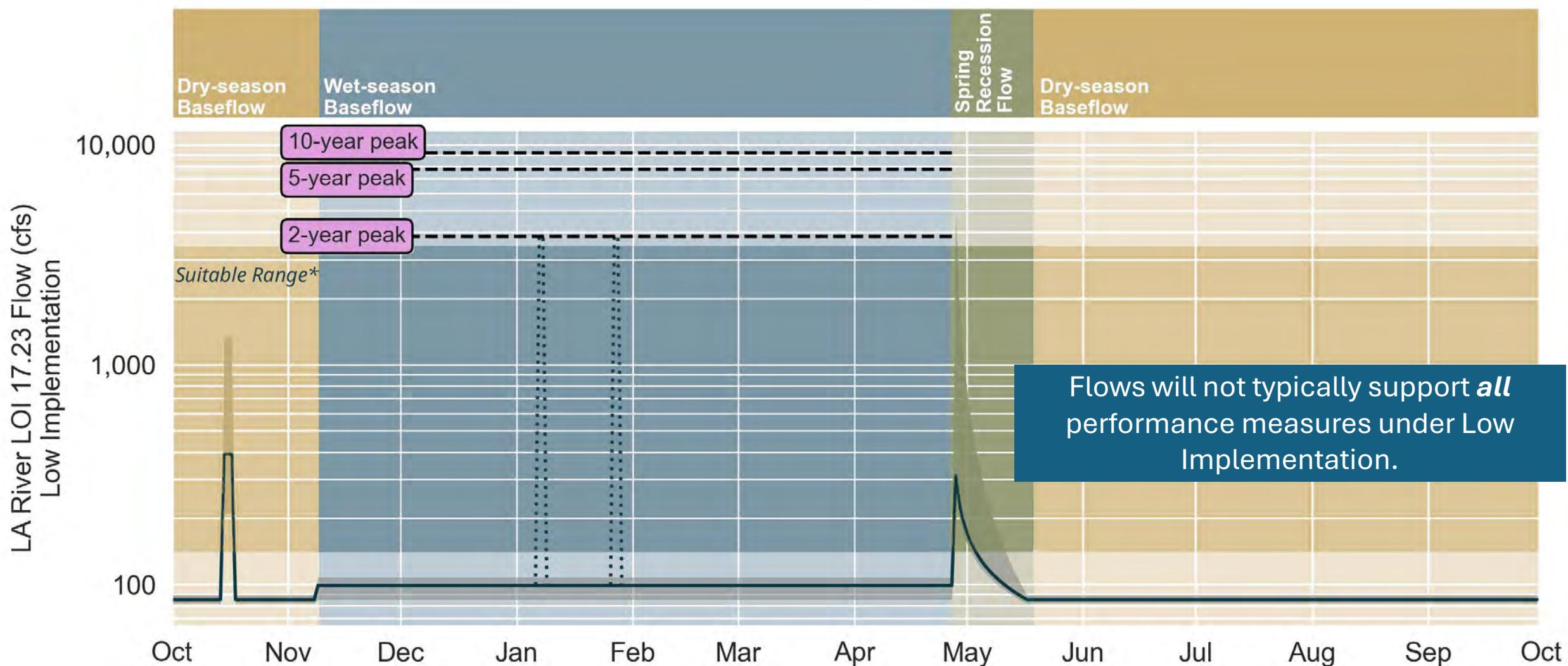


LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range



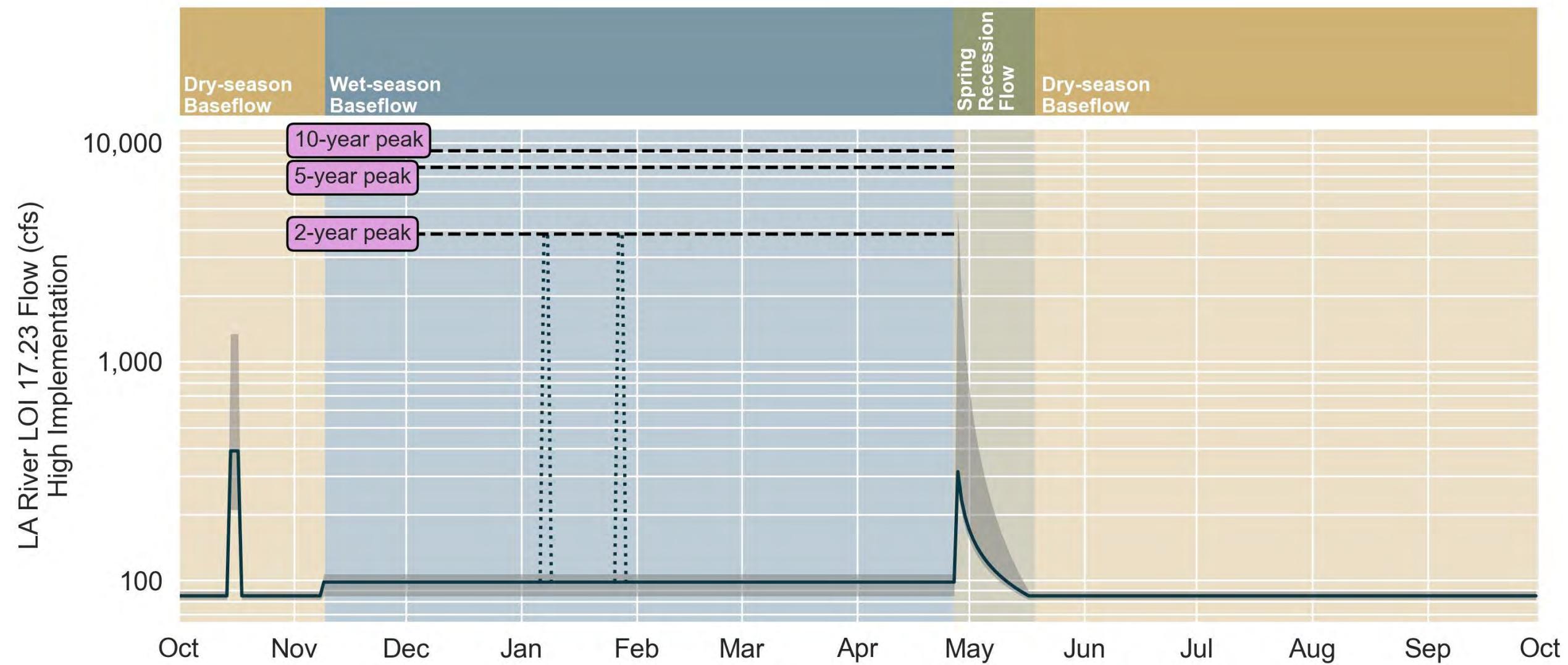
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LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range

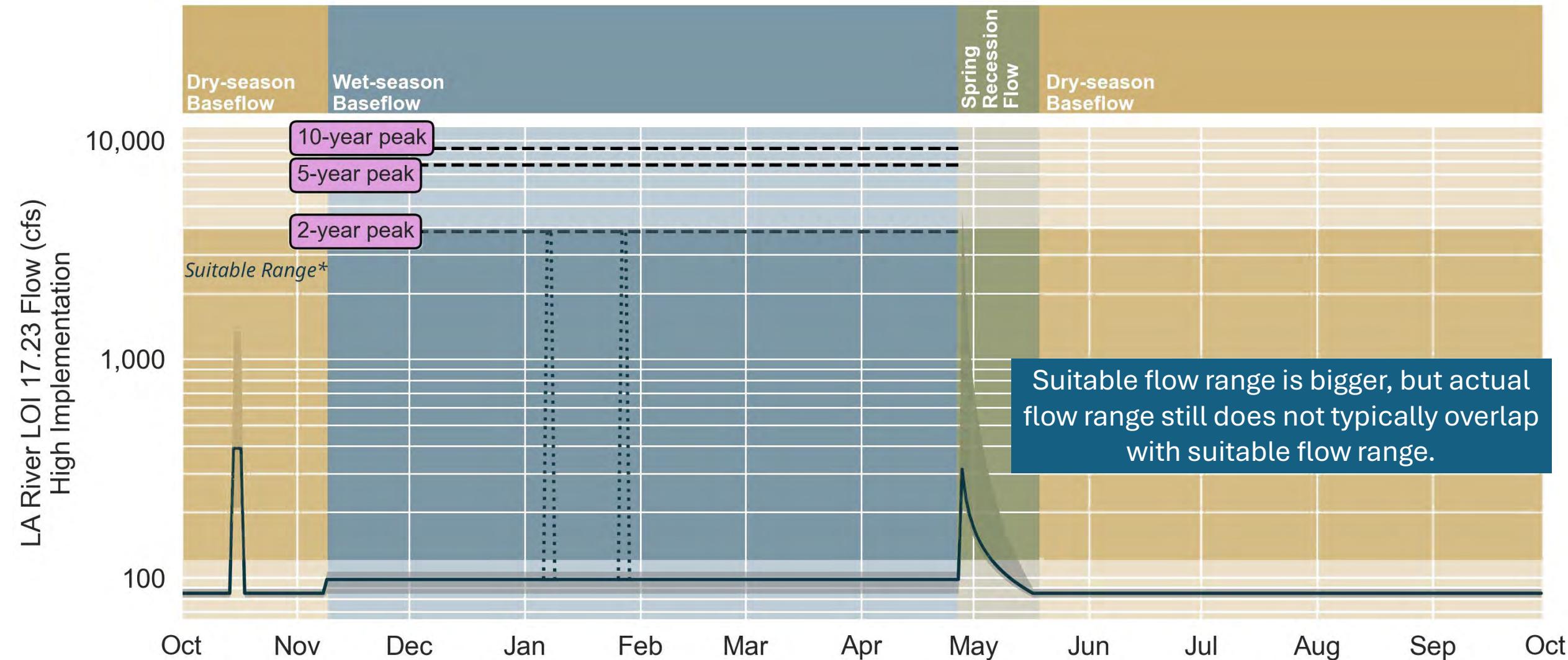


*Suitable flow range to support performance measures during a given functional flow period

LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range

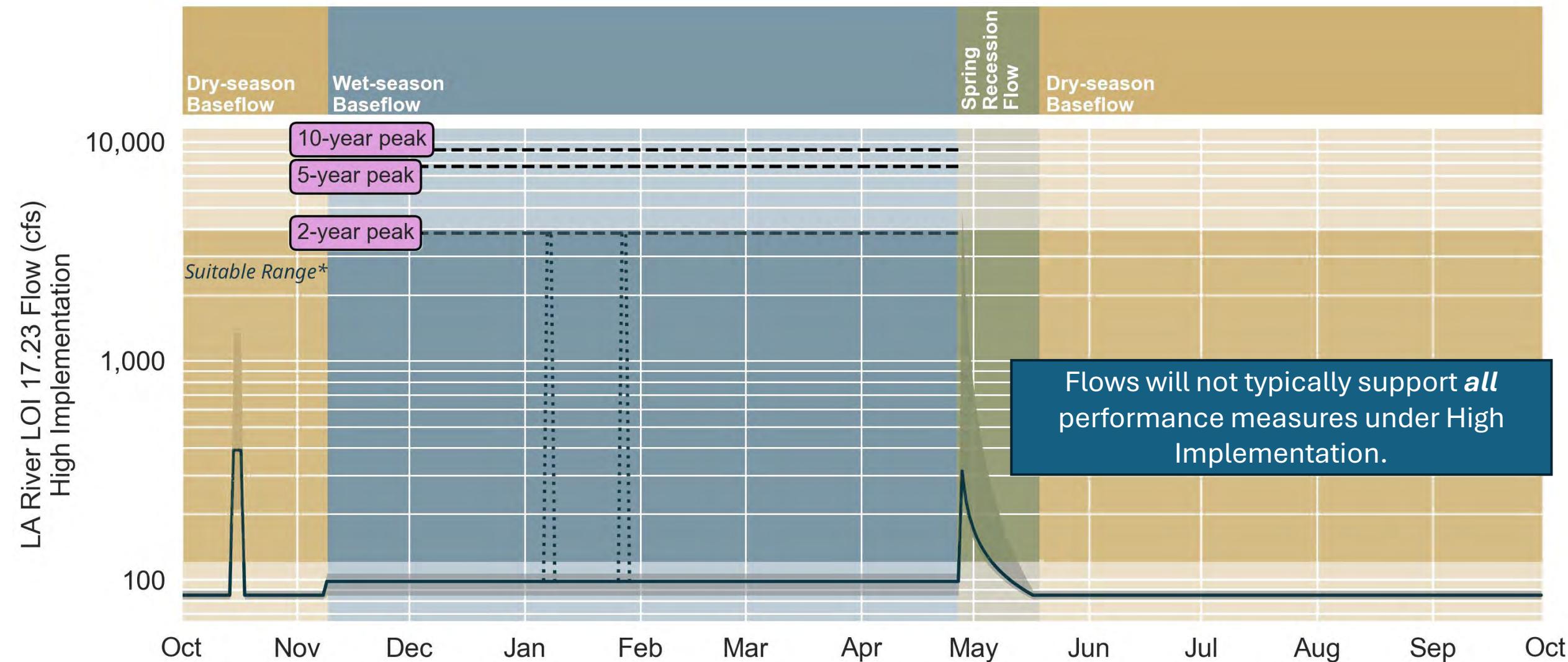


LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range



*Suitable flow range to support performance measures during a given functional flow period

LA River CEFF Section C – Comparing Scenario Flows to Suitable Flow Range



LA River CEFF Section C – Developing Flow Recommendations

Flow assessment results highlight flow range that **supports performance measures** during different functional flow time periods for each scenario.

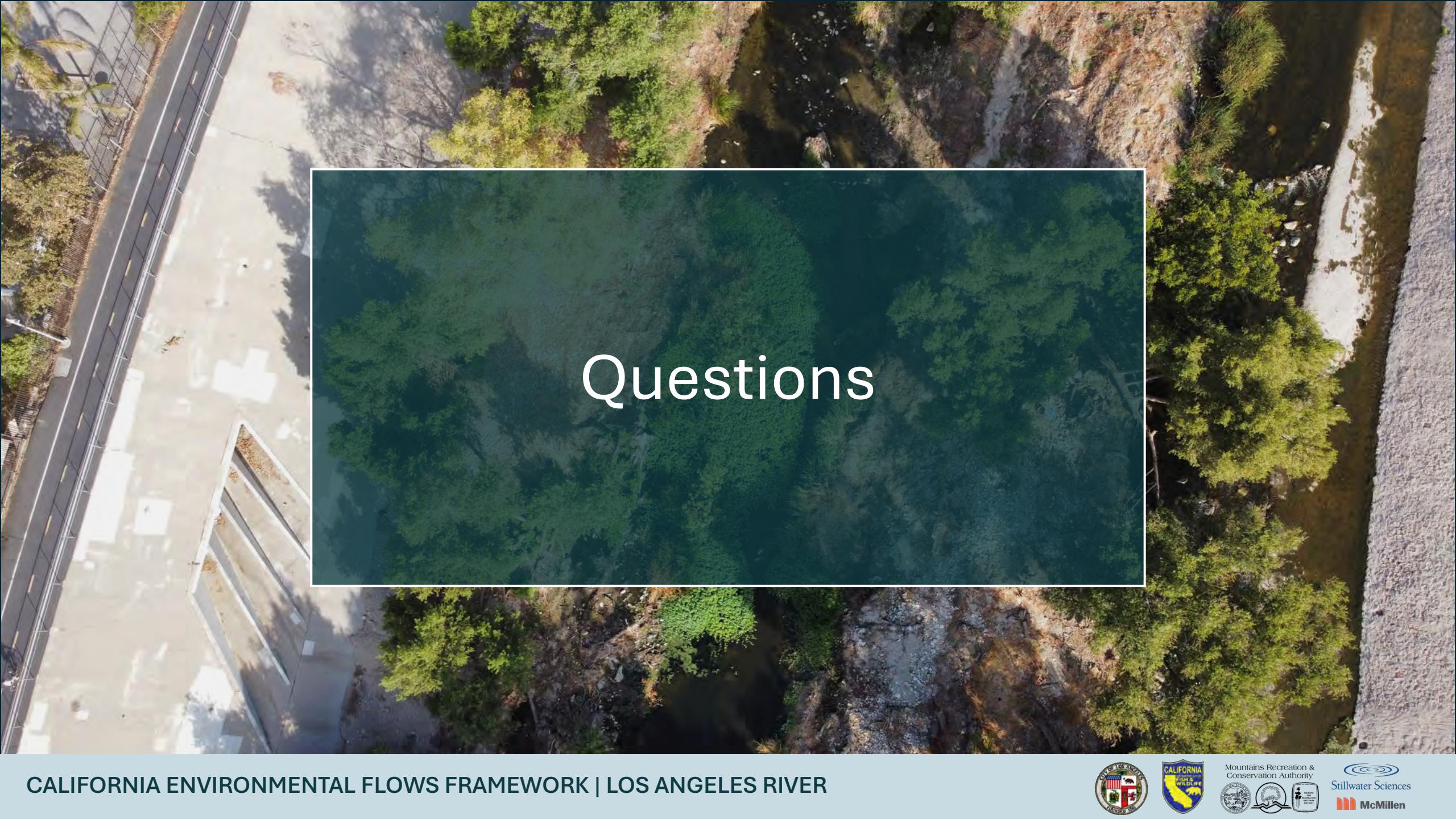
Low and High Implementation improve suitability, but refinement is needed.

Performance measures that **require flows higher** than the modeled flow range indicates refinements are needed.

- **Channel form refinements** may reduce flow needed to achieve performance measure (e.g., suitable water depths at lower flows).
- **Flow to channel refinements** can raise flows into suitable flow range.
- **Performance measure refinements** to accommodate dynamic suitability variations.

Performance measures **not supported at any flow range** indicate channel form conditions need to be refined, including:

- Substrate
- Access



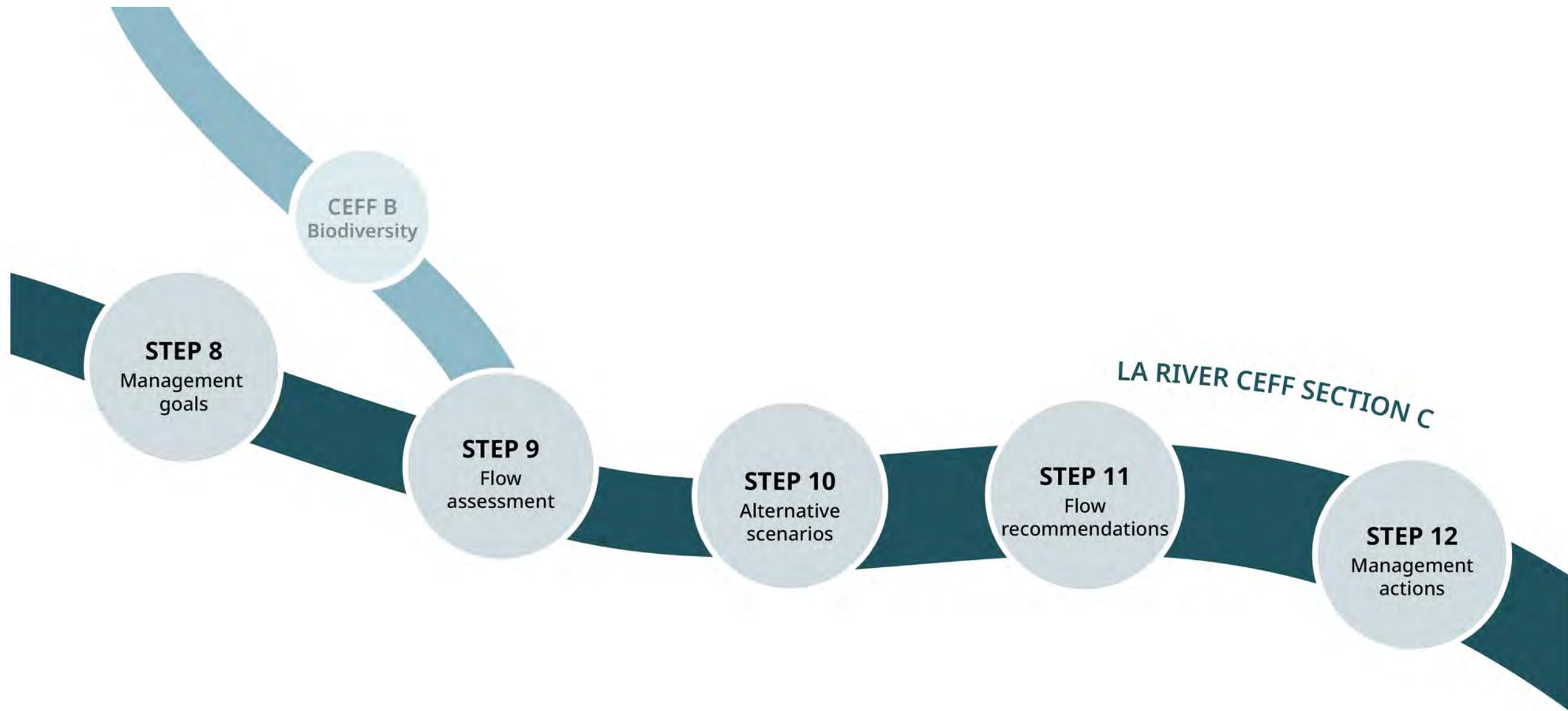
Questions

Activity: Identifying Management Actions (Levers)



Photo credit: Stillwater Sciences

LA River CEFF Section C Progress



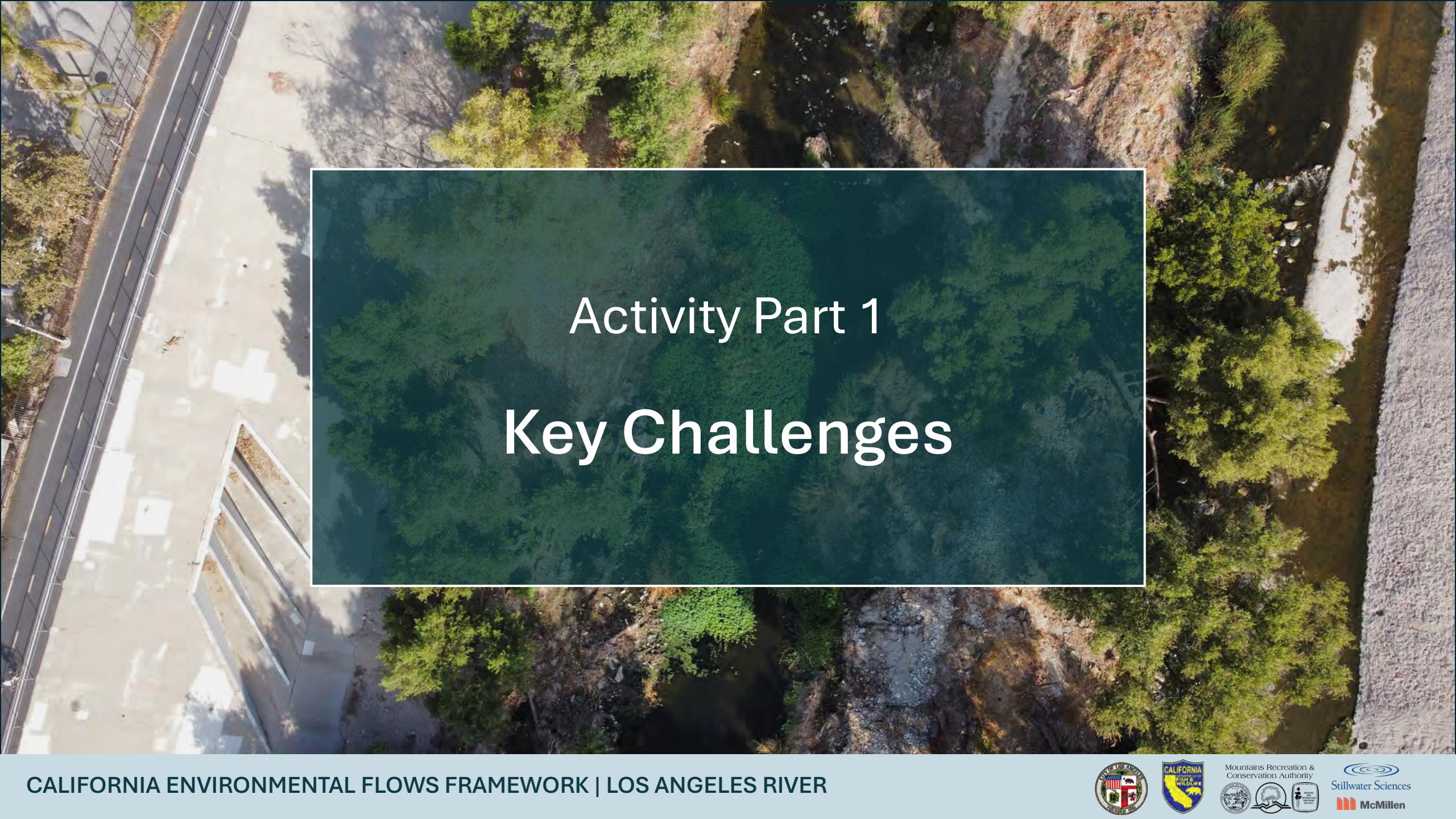
Purpose

- Identify potential management actions to accompany flow recommendations.
- Support flow optimization and CEFF implementation plan (next steps)

Overview of exercise

- 5 key environmental flows challenges (supported by CEFF results)
- Identification of levers (full group)
- Lunch (another chance for more levers)
- Opps & Cons (small groups)
- Prioritization for further evaluation (individuals)

Questions?



Activity Part 1

Key Challenges

Meet dry season base flow needs through water supply management actions

Potential constraints from future planned conditions (*preliminary*):

- *WRP discharge reductions to river to meet local water supply resilience and Eastern Sierra restoration goals*

Example Lever: Timed release of discharges to channel to support kayaking during the day

Meet dry season base flow needs through MS4 compliance actions

Potential constraints from future planned conditions (*preliminary*):

- *Some dry season base flows are diverted for treatment and water supply before they enter the river to meet MS4 requirements*

Example Lever: BMPs that treat and then release clean/cool flows back to the river

Provide kayak passage and tribal goals in the channel with reduced dry season base flows

Potential constraints from future planned conditions (*preliminary*):

- *Soft bottom reaches may not meet depth threshold for kayaks (tule boats may require greater depths)*
- *Limited kayak passage to the ocean in "Low" Scenario, greater sensitivity to depth if conversion to soft bottom*

Example Lever: Maintain boating passageway depth (move some rocks in shallow spots)

Manage peak flows to accommodate additional roughening in the channel while achieving flood risk reduction goals

Potential constraints from future planned conditions (*preliminary*):

- *Channel restoration projects propose to increase roughness/vegetation*
- *Goal to increase flood resilience (further reducing potential for roughening)*
- *Some reaches currently below design capacity (but some have capacity >500-year event)*

Example Lever: Terraced walls to increase channel capacity

Provide favorable flows for fish passage during the wet season and spring recession

Potential constraints from future planned conditions (*preliminary*):

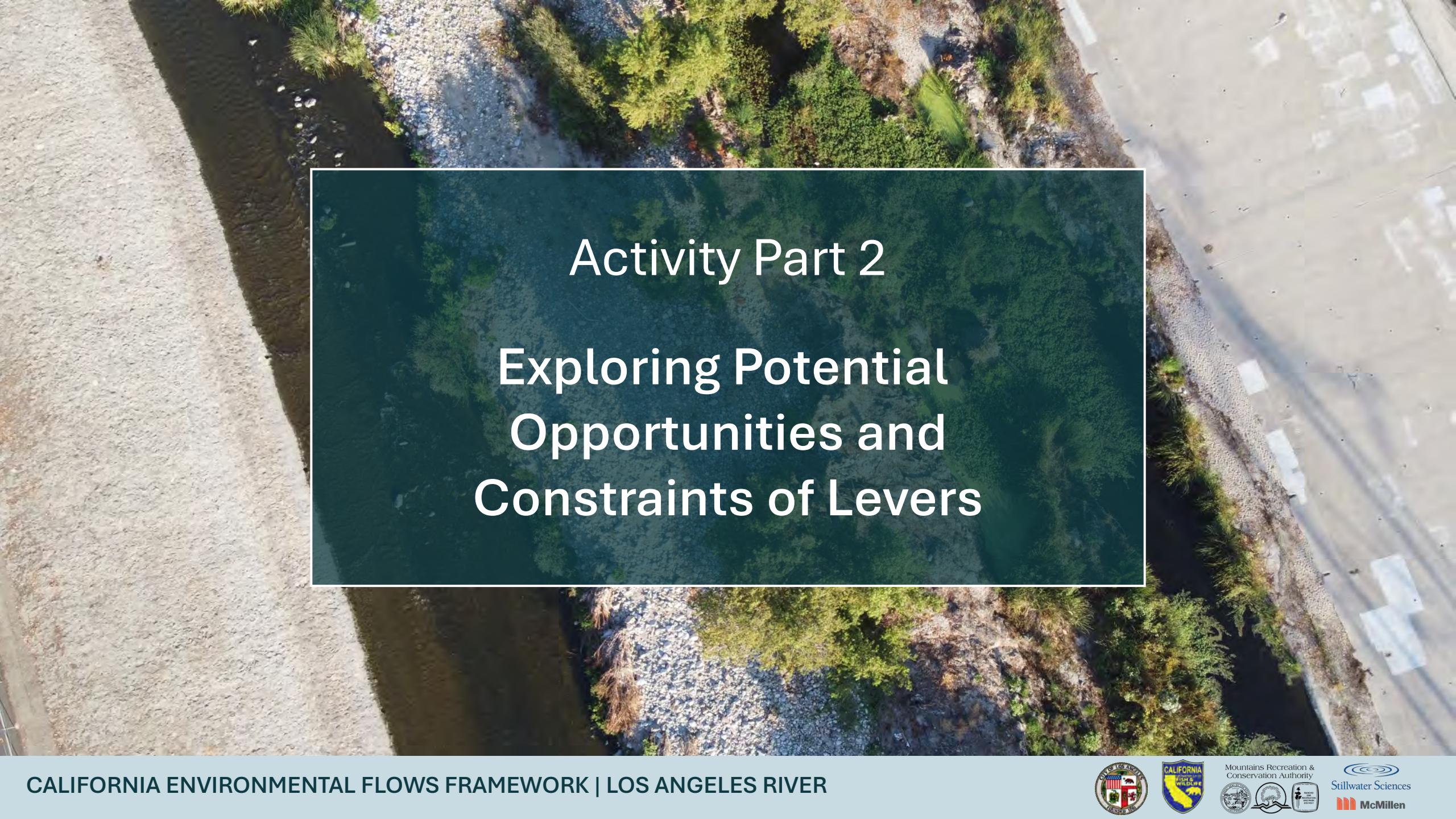
- *Potential reduction in frequency of smaller storm flow events and duration of storm drawdown period as a result of MS4 compliance projects and increased capture of stormwater for water supply*

Example Lever: Treat and release stormwater BMPs to optimize draw down period

A close-up photograph of a turtle's head and front legs. The turtle is resting on a light-colored rock. Its head is turned slightly to the right, showing its eye and the front of its neck. Its front legs are extended forward, with visible claws. The turtle's shell is visible in the background, showing its patterned scutes. The water in the background is a mottled brown.

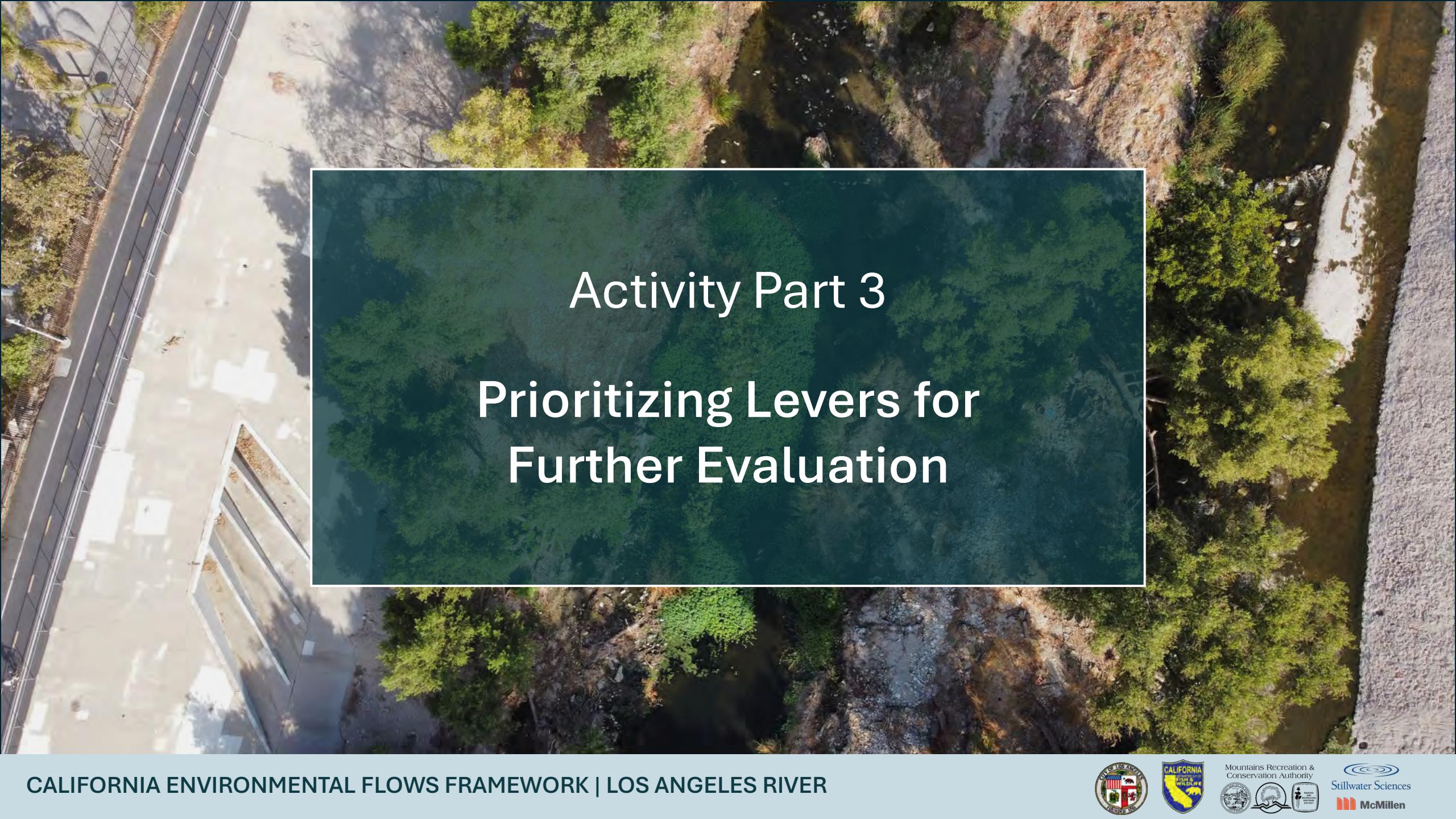
Lunch

Photo credit: Nurit Katz



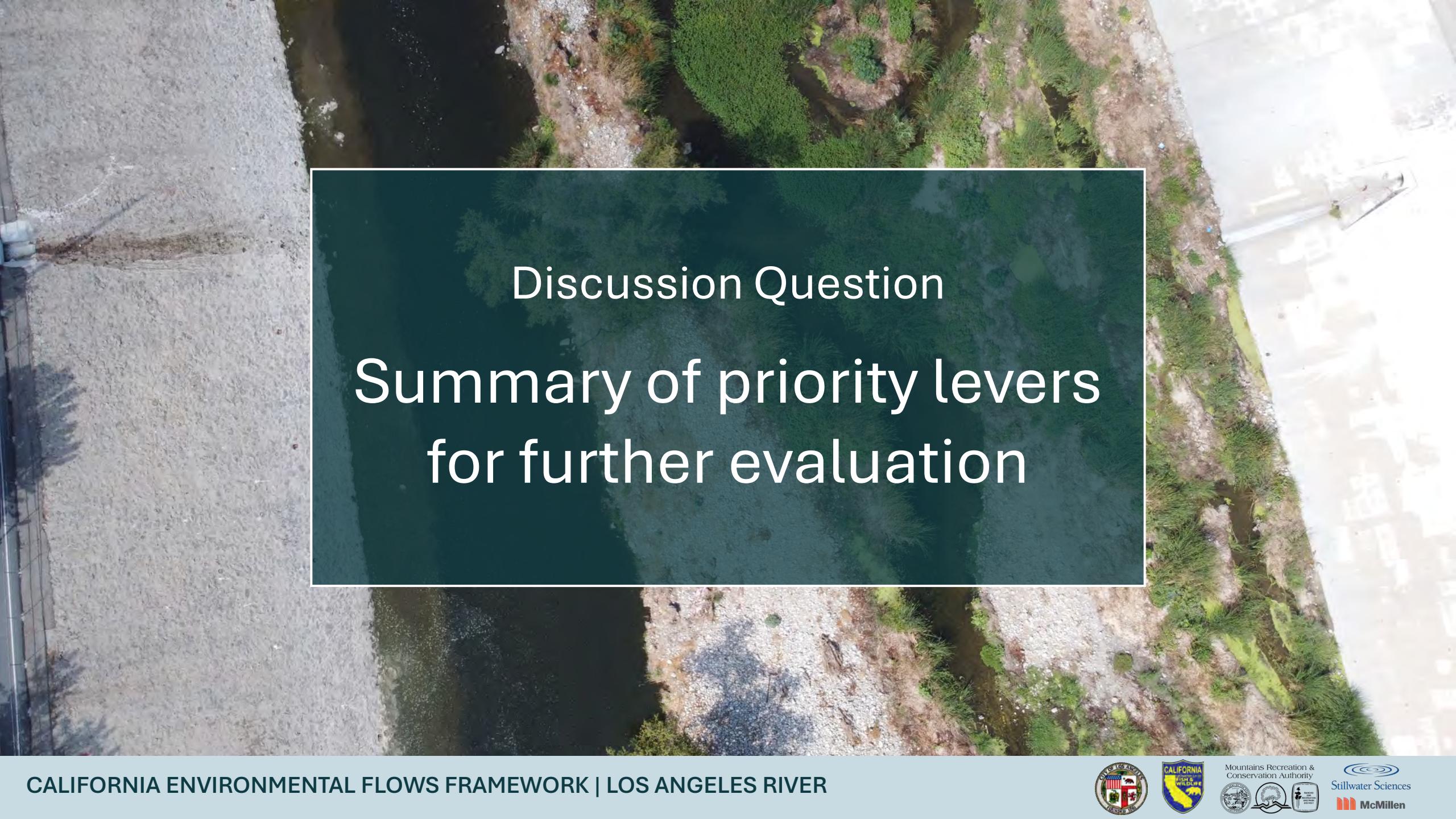
Activity Part 2

Exploring Potential Opportunities and Constraints of Levers



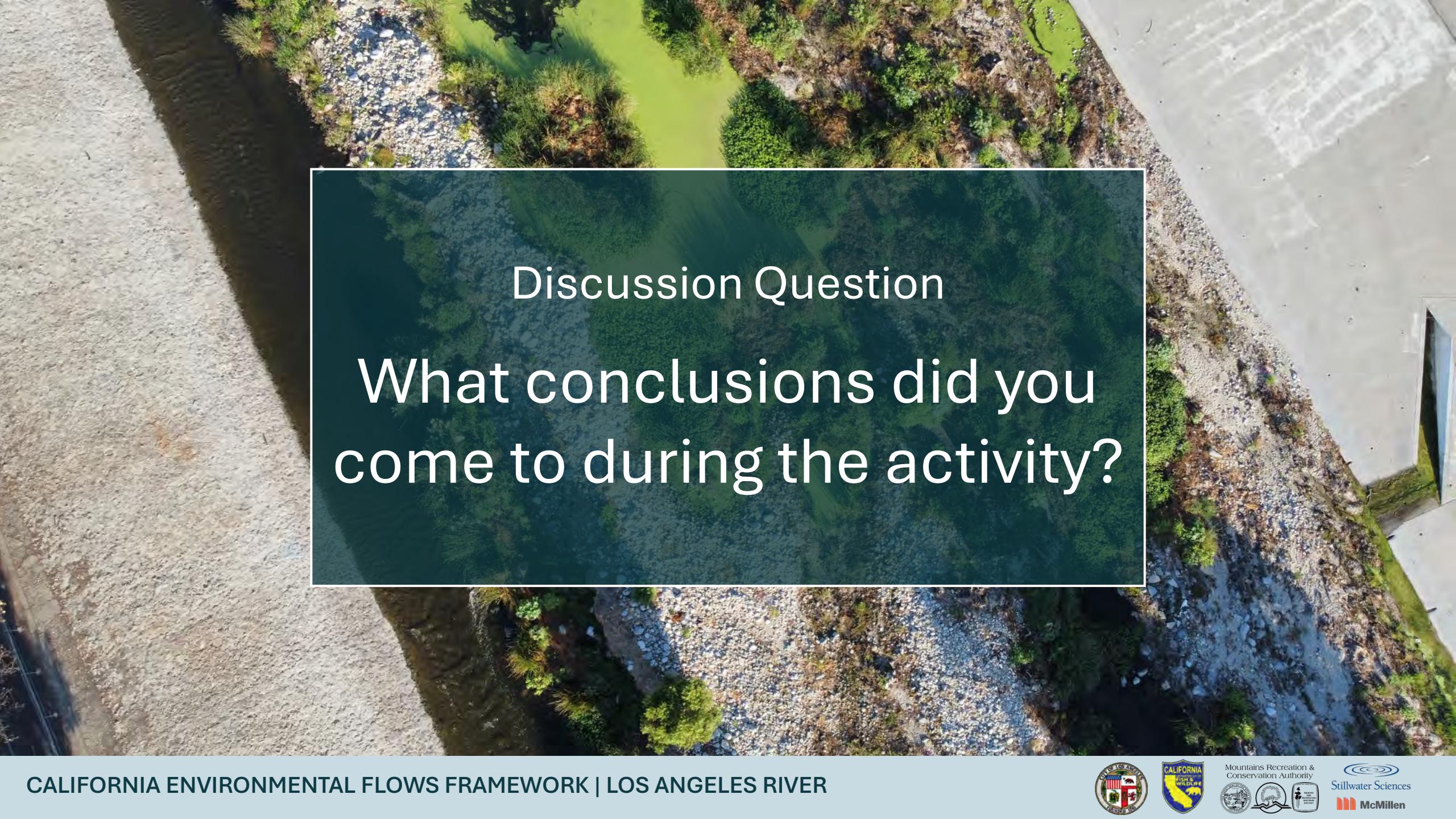
Activity Part 3

Prioritizing Levers for Further Evaluation



Discussion Question

Summary of priority levers for further evaluation

An aerial photograph of a river flowing through a landscape. The river is dark and appears to be flowing from a concrete structure on the left. The banks of the river are covered in green vegetation and some gravel. A large, light-colored concrete wall runs along the right bank. The water in the river has a greenish tint, likely from algae. The surrounding land is a mix of green grass and brown, rocky areas.

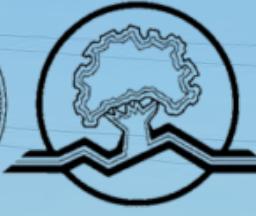
Discussion Question

What conclusions did you come to during the activity?



Discussion Question

What do you want us to
know as we move forward?



LA River CEFF



LA River from Fletcher Street Bridge, Los Angeles, CA
Cropped photo by "[Downtowngal](#)" used under CC BY-SA 4.0