

Los Angeles River Temperature Study

Technical Advisory Committee Meeting #3
Scenario Development

December 3, 2024



Today's Agenda

1. Introductions
2. Project Background
3. Project Status
 - a. Work Plan Update
 - b. Monitoring Status
4. Scenario Development
5. Wrap Up and Next Steps



Background

The background features a white space with abstract green geometric shapes. On the right side, there are several overlapping, semi-transparent triangles and polygons in various shades of green, ranging from light lime to dark forest green. These shapes create a layered, dynamic effect. A thin, light gray line also extends from the bottom right towards the center of the page.

Los Angeles County Temperature Studies

- ▶ Revised temperature standard - *At no time shall these WARM-designated waters be raised above 80°F as a result of the waste*
- ▶ Revised standards apply to WRP discharge in all watersheds in Los Angeles County
 - ▶ San Gabriel River and Santa Clara River (LA County Sanitation Districts)
 - ▶ LA River (Cities of Burbank and Los Angeles)
- ▶ Focus for today's meeting is on the LA River and Burbank Western Channel
- ▶ Technical issues are similar, but LA River is unique



Compliance Schedule

- ▶ Study (Present-12/25 & 10/26)
 - ▶ Identify potential impacts of effluent temperature
 - ▶ Identify potential control measures
- ▶ Regulatory Process (1/26-TBD)
 - ▶ Water Board may consider regulatory revisions, if appropriate given study findings
- ▶ Design and Build (2026/27-2031)
 - ▶ City would design and build project(s) to address effluent temperature impacts, if needed

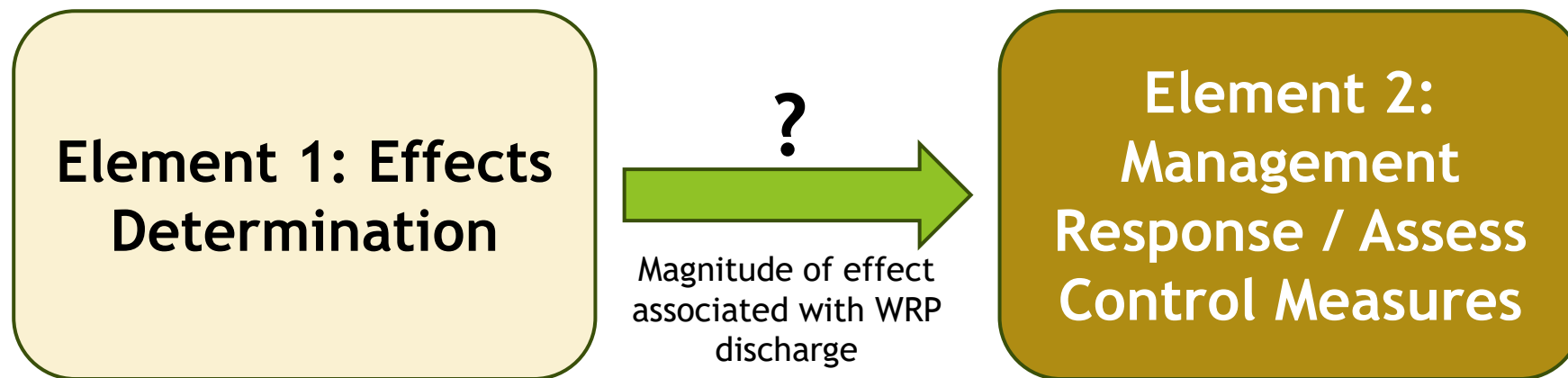
Task	Completion Date		
	LA Permits	Burbank Permit	
1	Submit and Begin Implementation of Pollution Prevention Plan (PPP) for Source Control	4/1/23	2/1/24
2	Select members for the Technical Advisory Committee and Stakeholder Committee and regularly convene the committee members to initiate the development of a Technical Workplan that includes a temperature study that identifies the potential impacts of the WRP's effluent temperature and potential control measures (including nature-based solutions) that can be implemented to protect beneficial uses.	5/1/23	3/1/24
3	Finalize and submit a Technical Workplan for the Los Angeles Water Board Approval, secure the necessary permits for Los Angeles River Channel access and deployment of in-situ monitoring devices, and initiate bidding and procurement for any necessary equipment and/or services.	11/1/23	9/1/24
4	Implement the Technical Workplan, initiate testing and deployment of any necessary equipment, and continue securing the necessary permits for Los Angeles River Channel access and deployment of in-situ monitoring devices.	4/1/24	2/1/25
5	Implement the Technical Workplan and begin drafting a Final Technical Report.	12/1/24	10/1/25
6	Complete and submit the Final Technical Report	12/1/25	10/1/26
7	Notify Los Angeles Water Board of Selected Preferred Project and Identify Regulatory Approval Process (if appropriate given the study findings), Present Results of Technical Workplan at Next Scheduled Los Angeles Water Board Meeting	2/1/26	12/1/26
8	Begin Preliminary Design and Environmental Review	7/1/26	5/1/27
9	Complete Preliminary Design	4/30/27	2/28/28
10	Complete Environmental Review	4/30/28	2/28/29
11	Design Preferred Project	4/30/29	2/28/30
12	Issue Notice to Proceed for Project Work	4/30/30	2/28/31
13	Complete Preferred Project	2/1/31	12/1/31

Compliance Schedule

- ▶ Study (Present-12/25 & 10/26)
 - ▶ Identify potential impacts of effluent temperature
 - ▶ Identify potential control measures

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Two Main Elements of the Analysis



Study Objectives – Element 1 What Are the Effects

1. Determine the wholly or partially aquatic-dependent taxa that are present, were historically present, or could be present given the current habitat conditions in the Los Angeles River.
2. For each taxon identified in Objective 1, describe the relationship between waterbody temperatures and the probability (or likelihood) that different aquatic life stages are supported.
3. Determine how the relationships between waterbody temperature and the support of aquatic life vary based on the taxon's location in the river and seasonality.

Study Objectives – Element 1 What Are the Effects

4. Determine the critical exposure times, durations, and/or frequencies associated with the temperature relationships described in Objectives 1 through 3.
5. Evaluate how other physical factors (e.g., shading, groundwater discharge, availability of substrate, flow, etc.) and climate change could potentially influence temperature effects on biological communities.
6. Analyze relationships between effluent discharge temperature and in-river temperature, including how river temperature changes as a function of distance from the discharge location and downstream physical characteristics.

Work Plan Update – Following Dec. 2023 TAC Meeting

- ▶ An initial draft of the Los Angeles River Temperature Study Workplan was submitted to the Regional Board by the City of LA in November 2023 to address the requirements of the DCT and LAG WRP Permits
- ▶ The Workplan was revised in February 2024 based on input from the TAC.
- ▶ On January 1, 2024, the Burbank WRP permit became effective.
- ▶ The Cities decided to cooperatively conduct the Los Angeles River Temperature Study.
- ▶ Workplan was updated in March and May 2024 to incorporate the Burbank WRP and submitted to the Regional Board.

Sampling Status



Data Collection Effort

Temperature

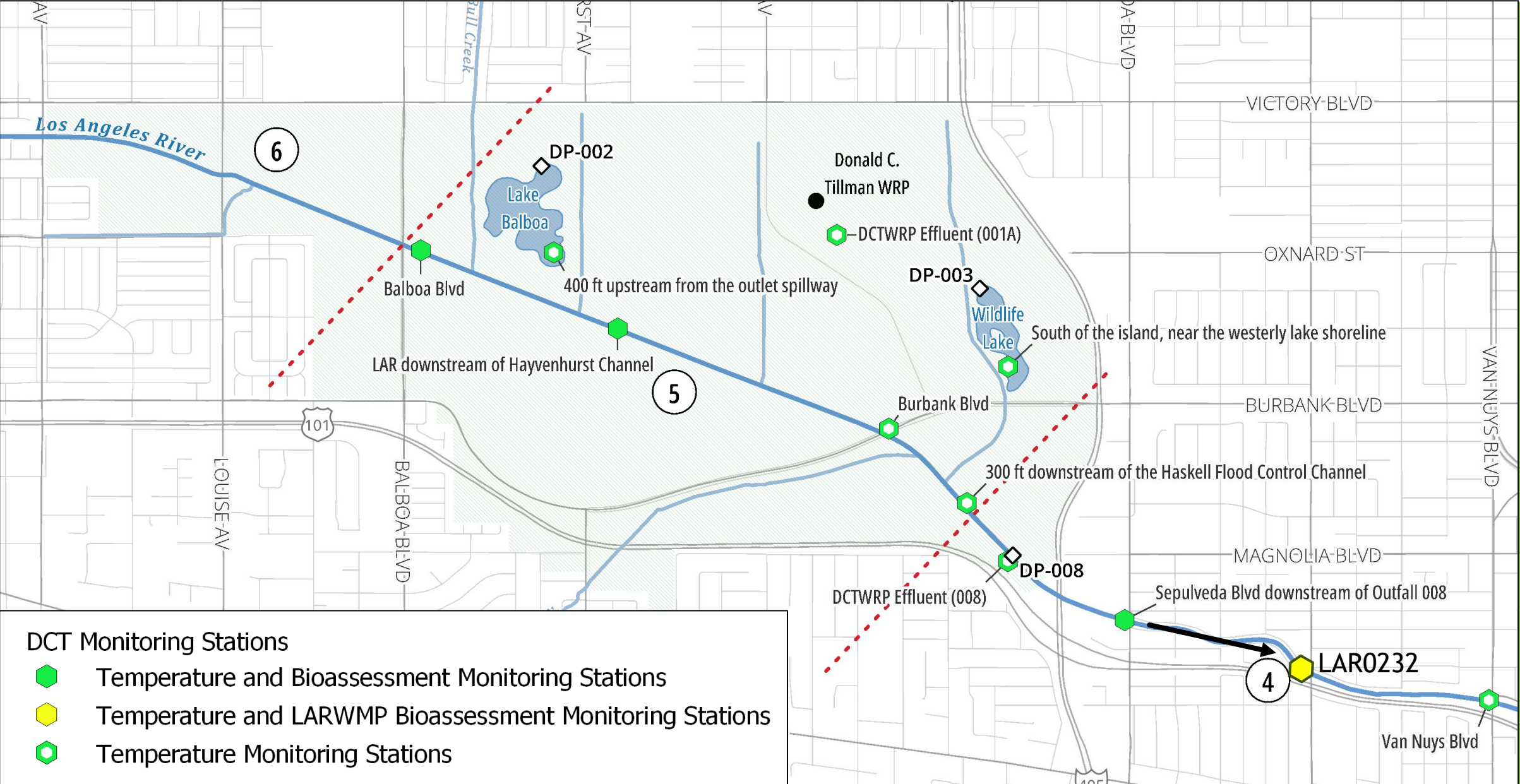
- ▶ May through October 2024
- ▶ Continuous temperature probes (thermistors) with temperature measured on a half-hour basis
- ▶ DCTWRP (10 stations): Effluent (2), LA River (6), and lakes (2)
- ▶ LAGWRP (6 stations): Effluent (1) and LA River (5)
- ▶ BWRP (6 stations): Effluent (1), BWC (3), and LA River (2) up and downstream of the confluence with the BWC

Data Collection Effort

Bioassessment

- ▶ Late Spring 2024
- ▶ BMI, algae, and diatoms
- ▶ DCTWRP (3 stations): LA River
- ▶ LAGWRP (5 stations): LA River
- ▶ BWRP (5 stations): BWC (3) and LA River (2) up and downstream of the confluence with the BWC
- ▶ Coordinated with LARWMP (with CWH)

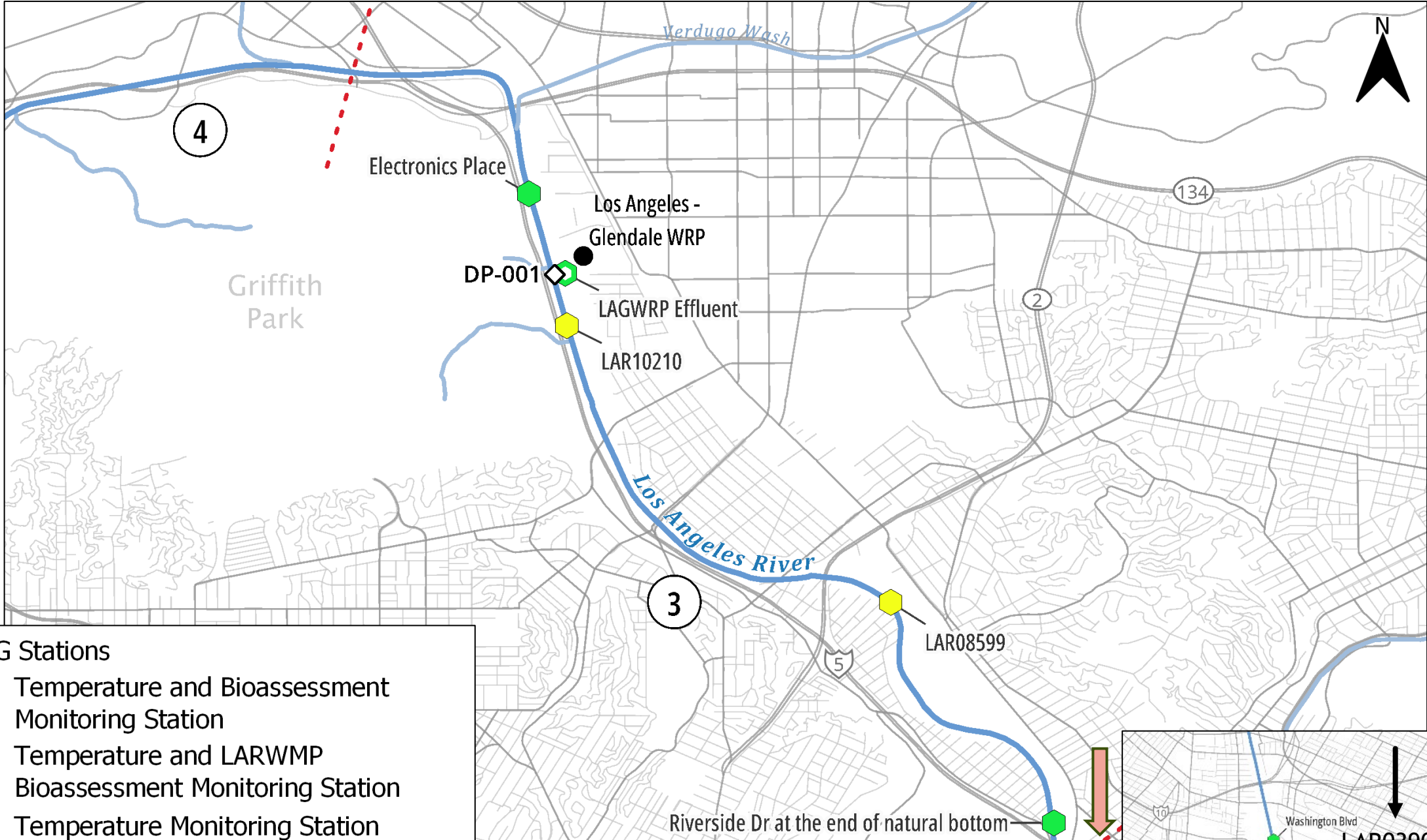
Data Collection Effort: DCTWRP



DCT Monitoring Stations

- Temperature and Bioassessment Monitoring Stations
- Temperature and LARWMP Bioassessment Monitoring Stations
- Temperature Monitoring Stations

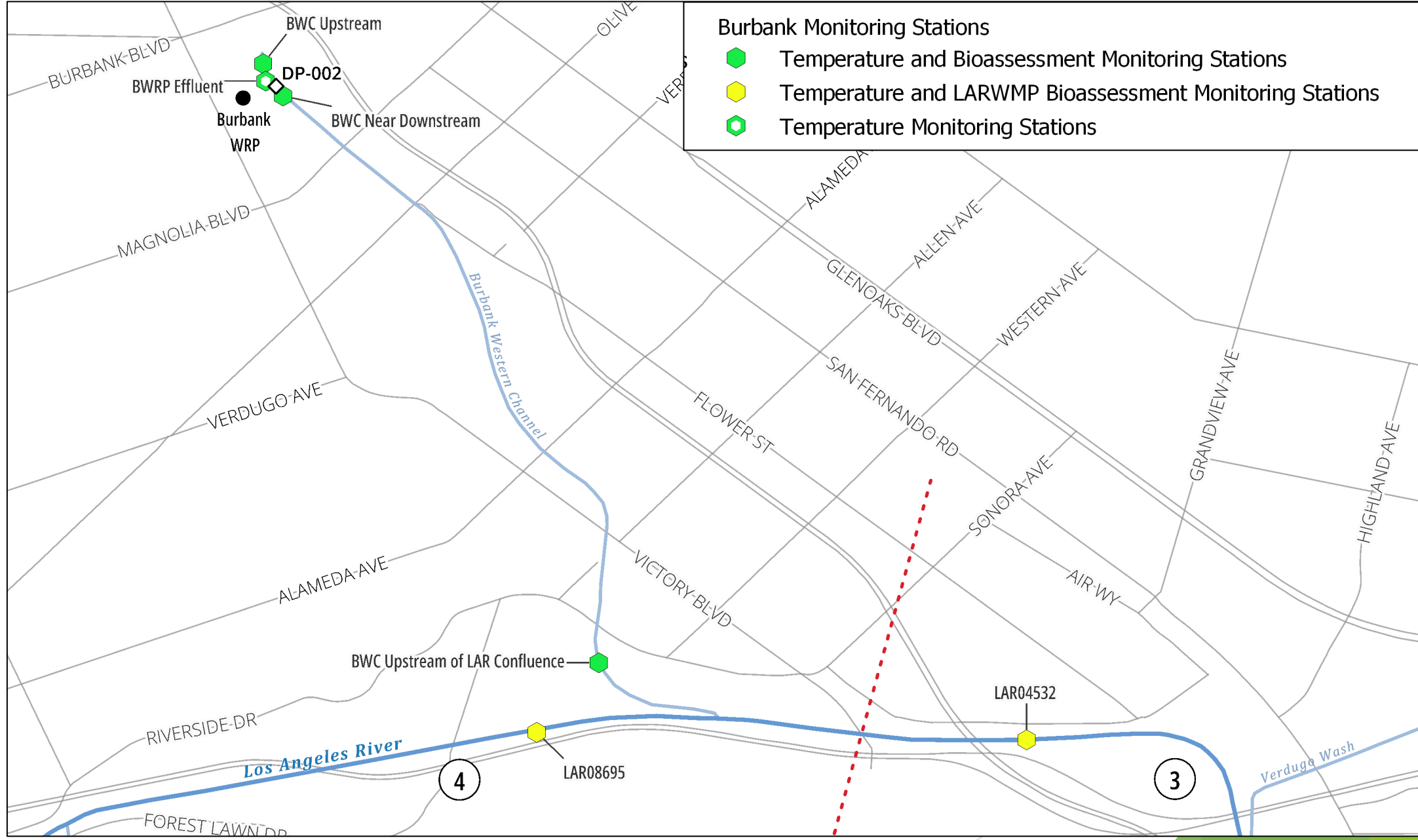
Data Collection Effort: LAGWRP



- LAG Stations**
- Temperature and Bioassessment Monitoring Station
 - Temperature and LARWMP Bioassessment Monitoring Station
 - Temperature Monitoring Station



Data Collection Effort: BWRP



Sampling Status

- ▶ All permits and equipment were obtained
- ▶ Temperature monitoring
 - ▶ Probes deployed at the WRPs on April 25, 2024
 - ▶ Probes deployed in the LA River and Burbank Western Channel on April 29 and 30, 2024
 - ▶ Probes retrieved on October 31, 2024
- ▶ Bioassessment:
 - ▶ Sampling occurred in June and July 2024

Monitoring Overview: Temperature

- ▶ Probes were set to record every 30 minutes and note in- and out-of-water events to ensure all readings used in the analysis represent water temperature rather than air temperature
- ▶ Data was collected for 27 weeks (May 1 – October 31, 2024)
- ▶ Data were downloaded from probes approximately every two weeks
- ▶ Data was reviewed after every download, and this information was used to optimize probe location

Monitoring Overview: Temperature

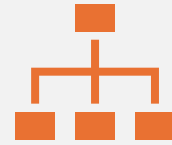
- ▶ Thermistors deployment
 - ▶ Attached to cinder blocks to avoid movement due to water flow
 - ▶ Anchor blocks were broken (to reduce usefulness) and full "decoy" blocks were placed nearby
 - ▶ Some anchor blocks were camouflaged to look aged
- ▶ Constraints to data collection
 - ▶ Variable water levels, tampering
 - ▶ Two probes needed to be replaced during the study
 - ▶ Two additional probes added as backups at sites due to tampering
- ▶ Outcome
 - ▶ 189,678 in-water temperature data points were recorded
 - ▶ 97% of intended data was collected



Scenario Development

Element 2

If there are temperature effects...What do we want to do about it?



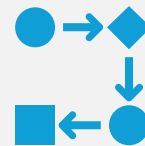
Evaluate potential control measures

management strategies inc. nature-based solutions



Evaluate future conditions based on management strategies

Using predictive tools to understand long-term impacts



Need a process for identifying, developing and evaluating scenarios

We need your help!

Workflow



Choose
management
strategy



Identify bookends



Develop response
curves



Apply response
curves to strategies
and combinations
of strategies

What Are We Asking From the TAC?

1. Identify management strategies for evaluation
 2. Identify bounds of ranges of potential management scenarios
 3. Develop response curves
 4. Simulate potential temperature changes associated with ranges of management scenarios
 5. Apply response curves to management strategies and combinations of management strategies
-
- Directly with TAC
- Reviewed by TAC
- ```
graph LR; TAC1[Directly with TAC] -.-> S1[1. Identify management strategies for evaluation]; TAC1 -.-> S2[2. Identify bounds of ranges of potential management scenarios]; TAC2[Reviewed by TAC] -.-> S3[3. Develop response curves]; TAC2 -.-> S4[4. Simulate potential temperature changes associated with ranges of management scenarios]; TAC2 -.-> S5[5. Apply response curves to management strategies and combinations of management strategies];
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# Today, We Would Like Your Feedback on Steps #1 and #2



Overall strategy development process



Preliminary management strategies



Specific bounds (bookends) for each scenario

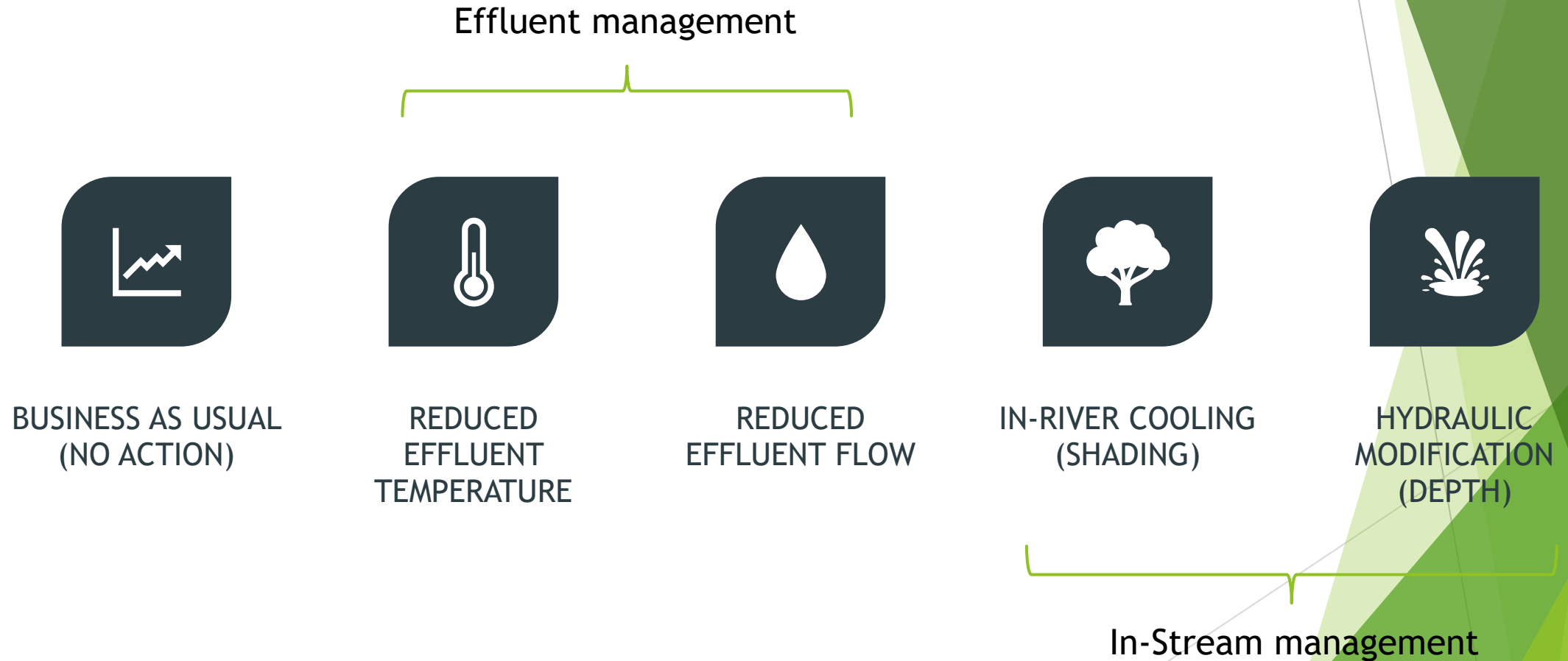


Most useful endpoints



Data collation for predictive models

# Potential Management Strategies





# Potential Bookends



## Reduction in effluent temperature

Simulate reduction in effluent temperature to meet WQOs of 80°F and  $\Delta 5^\circ\text{F}$  (e.g., 0-25%)

Summer (80°F) Vs winter ( $\Delta 5^\circ\text{F}$ )



## Reduction in WRP discharge associated with increased recycling

Simulate reduction in effluent discharge volume (e.g., 0-50%)

Summer Vs winter



## Increased canopy cover

Simulate canopy cover (e.g., 0-50%)

Proximate to outfall Vs continuing downstream



## Increase density and depth of in-channel pools

Simulate number of pools with increased depths (depth)

Summer Vs winter

Temperature model

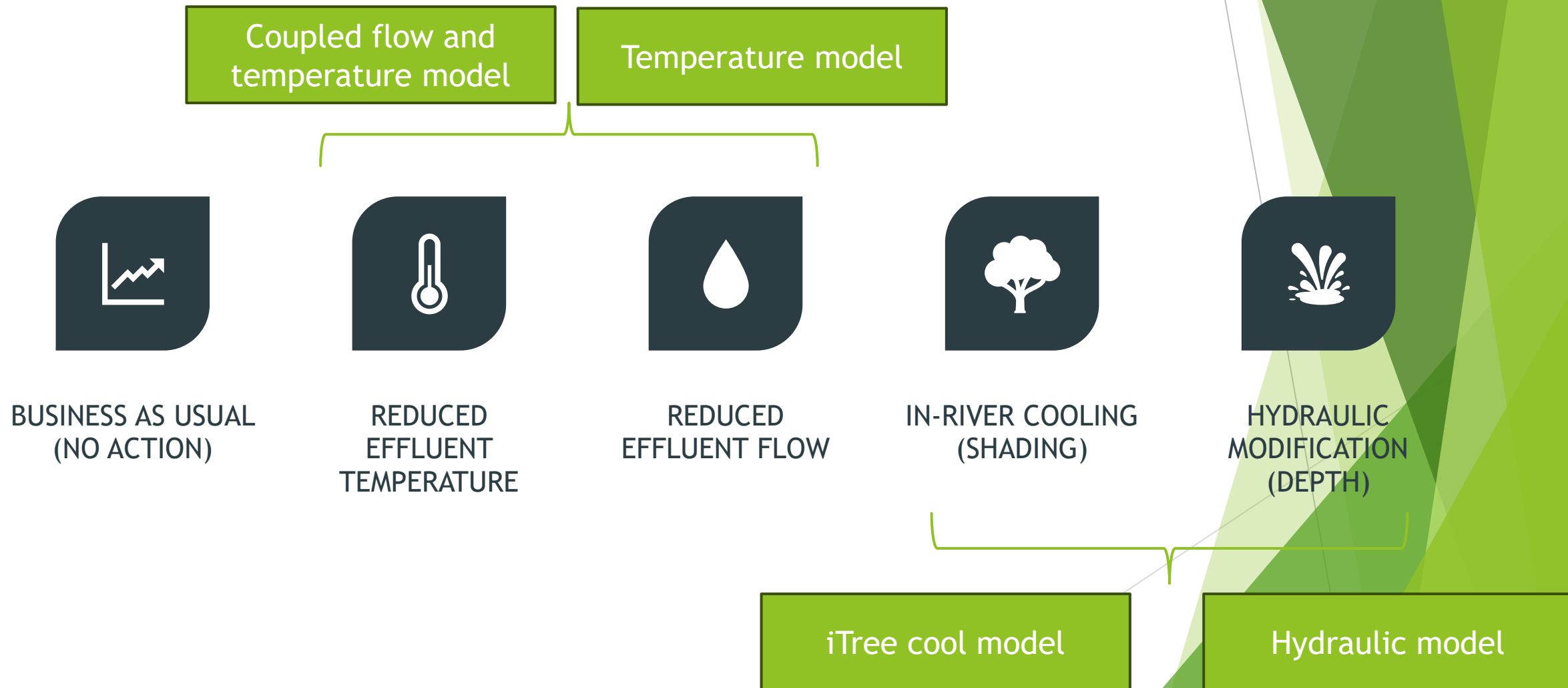
Coupled flow and temperature model

iTree cool model

Hydraulic model

*Specific ranges to be discussed at next TAC meeting*

# Potential Management Strategies



# Data Needs

| Models           | Purpose                                                | Data needs                                          |
|------------------|--------------------------------------------------------|-----------------------------------------------------|
| Temperature      | Relate reduction in effluent temp to stream temp       | Observed temp of effluent & stream (continuous)     |
| Temperature~Flow | Relate reduction in flow to stream temp                | Observed effluent flow & in-stream flow (plus temp) |
| HEC-RAS          | Relate depth and canopy cover (shading) to stream temp | Geomorphology, flow, temp, riparian cover           |
| iTREE cool       | Relate depth and shading to stream temp                | Geomorphology, flow, temp, riparian cover           |

# Today, We Would Like Your Feedback on Steps #1 and #2



Overall strategy development process



Preliminary management strategies



Specific bounds (bookends) for each scenario



Most useful endpoints



Data collation for predictive models

# Next Steps

1. Refine strategies based on today's feedback
  - a. Including bookends & endpoints
2. Collate data for predictive models
3. Present approach for combining scenarios
4. Evaluate effect of scenarios on in-stream temperature
5. *If there are temperature increases associated with WRP discharge → evaluate potential effects on WARM beneficial uses*



# Schedule for Implementation

| Task                         | FY 2024/25<br>(7/1/24-6/30/25) |          |          | FY 2025/26<br>(7/1/25-6/30/26) |          |
|------------------------------|--------------------------------|----------|----------|--------------------------------|----------|
|                              | 10/1-12/31                     | 1/1-3/30 | 4/1-6/30 | 7/1-12/31                      | 1/1-3/31 |
| Workplan Development         | Completed                      |          |          |                                |          |
| Secure Permits and Equipment | Completed                      |          |          |                                |          |
| Monitoring                   | Completed                      |          |          |                                |          |
| Data Compilation + QA/QC     |                                |          |          |                                |          |
| Modeling (Validation)        |                                |          |          |                                |          |
| Scenario Development         |                                |          |          |                                |          |
| Control Measure Evaluation   |                                |          |          |                                |          |
| Modeling (Scenario Analysis) |                                |          |          |                                |          |
| Reporting (Draft Report)     |                                |          |          |                                |          |
| Reporting (Final Report)     |                                |          |          |                                |          |

# TAC Meetings

| TAC meeting date        | Description of tasks                                                                                                                                                    |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Q2<br>Dec 2024          | Meeting 1 - Discuss overall process with TAC and brainstorm preliminary management strategies, and specific bounds (bookends), and endpoints. Data collation for models |
| Q3<br>Jan - Mar 2025    | Meeting 2 - Present refined approach based on TAC input<br><br>Meeting 3 - Review of scenario to determine initial analysis. Review of model development.               |
| Q4<br>April - June 2025 | Meeting 4 - Preliminary scenario run feedback, seek input and revise approach, if necessary.                                                                            |
| Q1<br>July - Sept 2025  | Meeting 5 - Review of results                                                                                                                                           |

# Questions and Discussion

