Los Angeles River Temperature Study

Technical Advisory Committee Meeting #4

May 21, 2025

Today's Agenda

1. Introductions
2. Project Background
3. Study Data
4. Scenario Development
5. Wrap Up and Next Steps

Background

Los Angeles County Temperature Studies

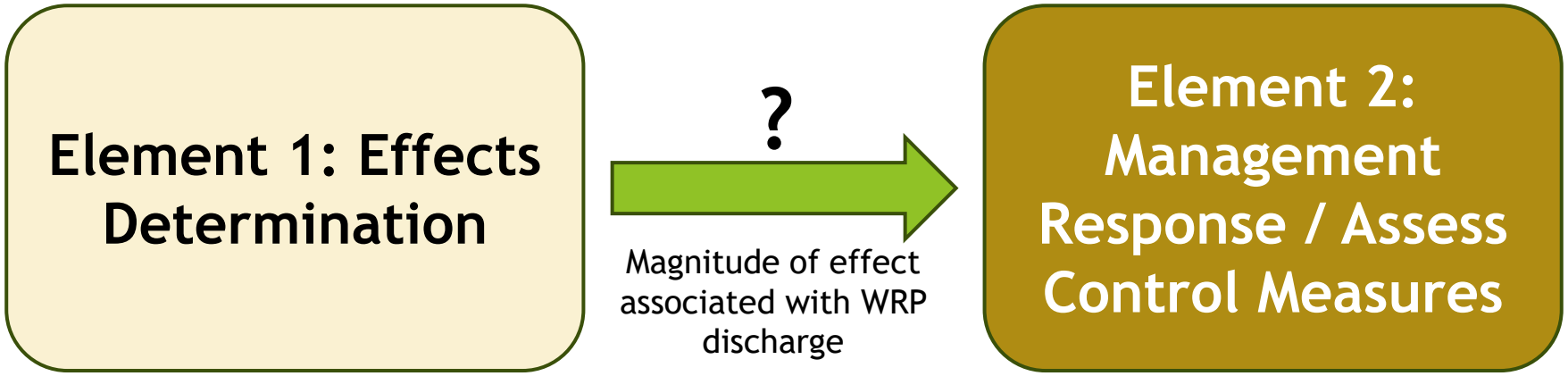
- Revised temperature standard - *At no time shall these WARM-designated waters be raised above 80˚F as a result of the waste*

- 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)

- Technical issues are similar between SGR, SCR, and LAR, but LAR is unique

- Focus for today's meeting is on the LA River and Burbank Western Channel

Two Main Elements of the Analysis



Summary of Study Data

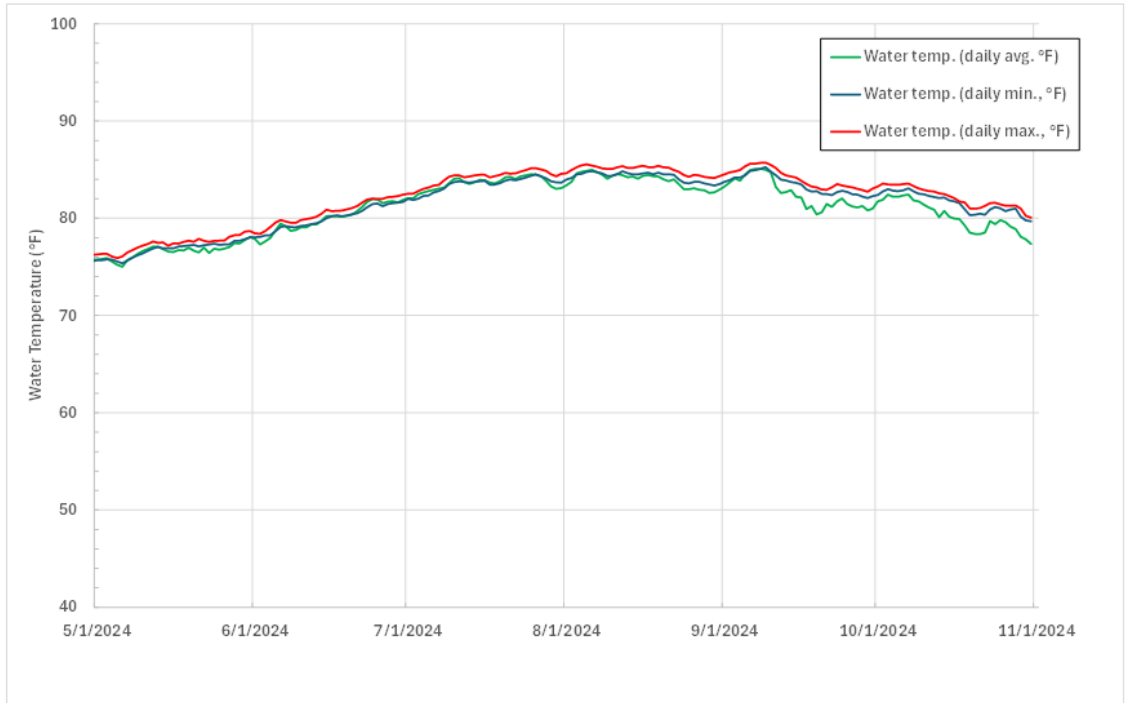
Overview of Temperature Data

- Purpose: Acquire additional stream temperature monitoring data to fill data gaps and supplement existing data
- Predicated on measurements from continuous temperature recording thermistors deployed from May – October 2024
  - Strategically located above and below WRPs to answer specific study questions, i.e.,
    - SO #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.

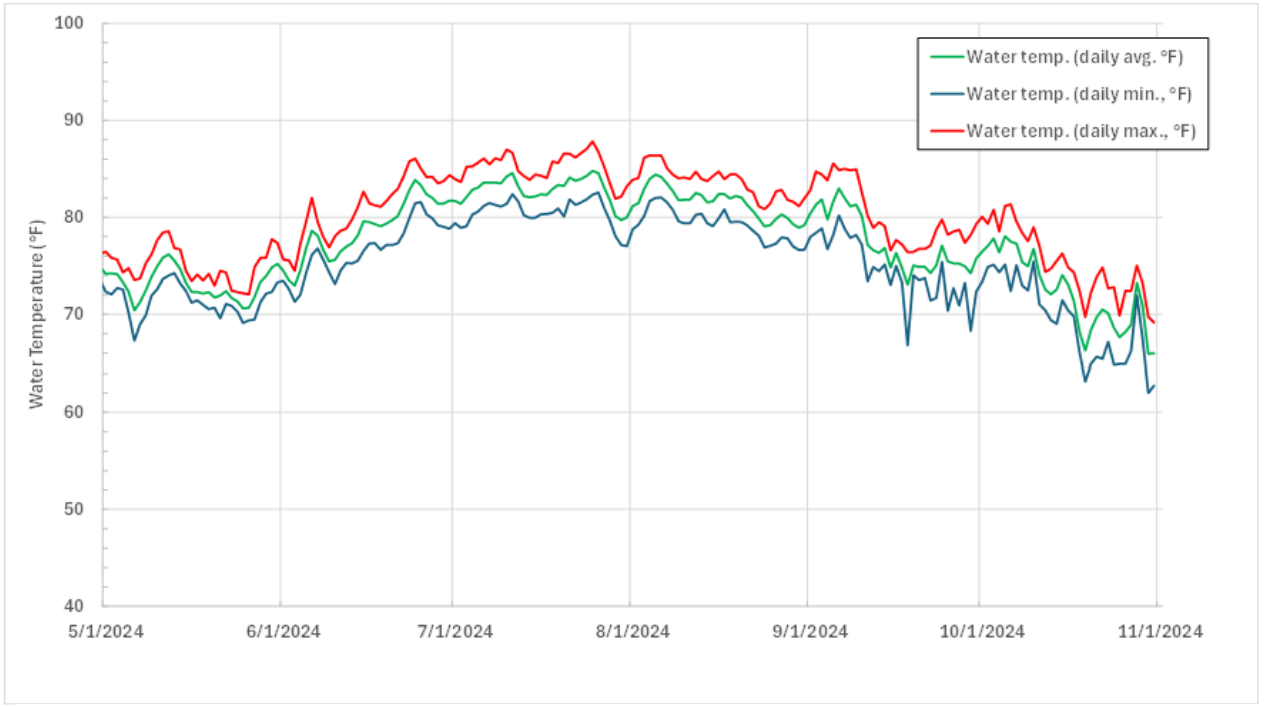
Data Collection Effort: Temperature

- May through October 2024 (27 weeks)
- 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

DCT EFF 001 and Wildlife Lake - Temp Profiles

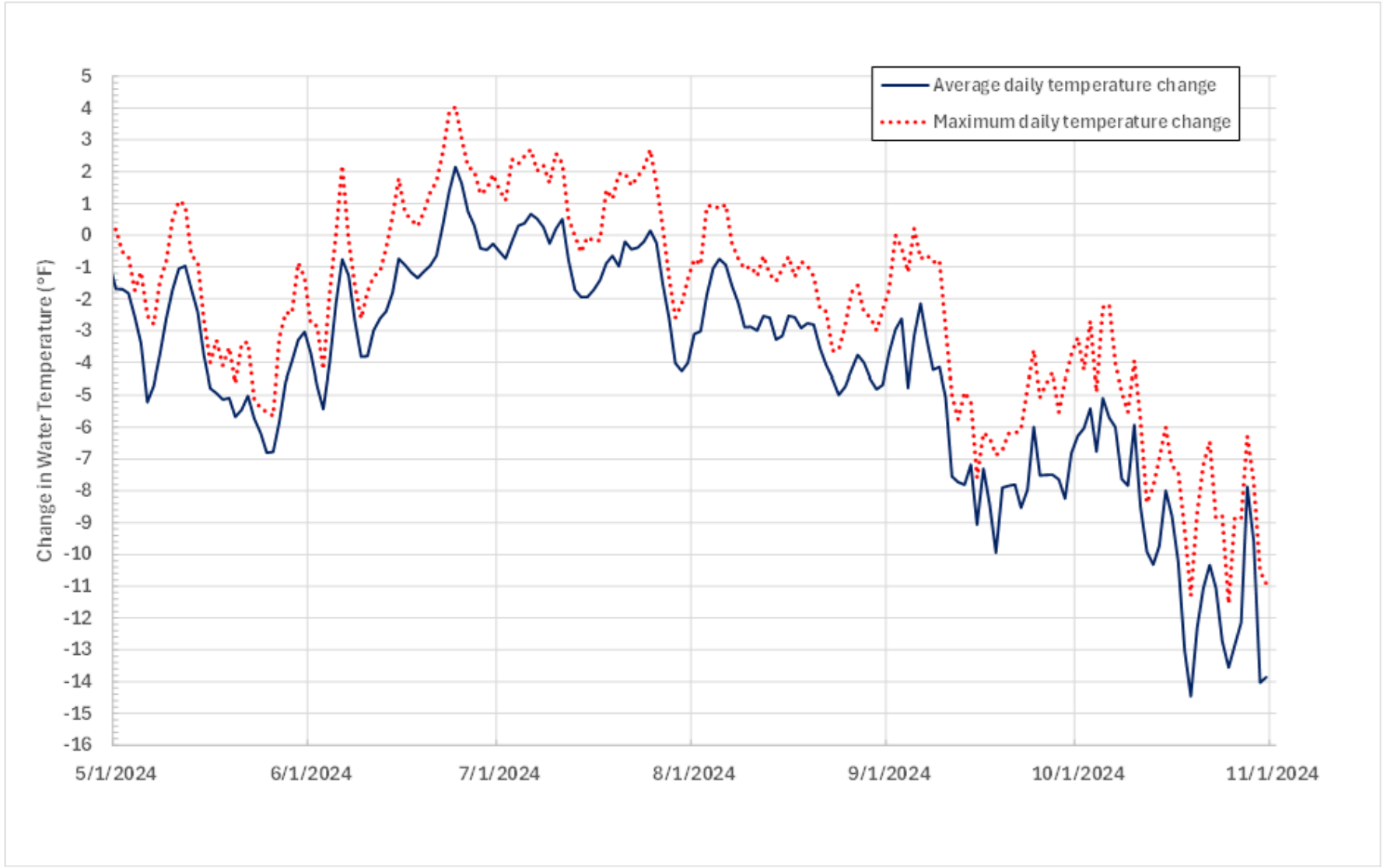


Continuous Temperature at DCT Eff 001



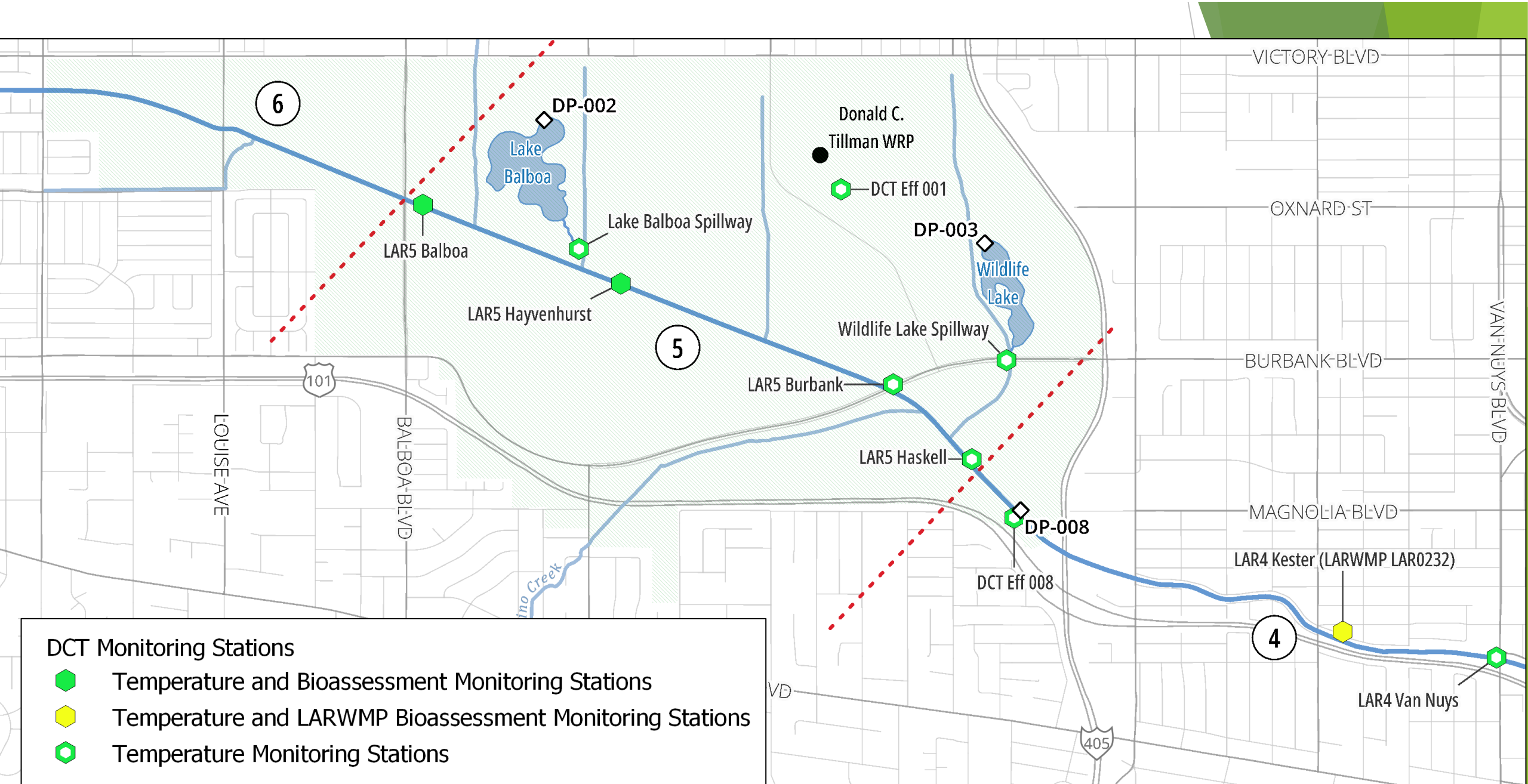
Continuous Temperature Measured in Wildlife Lake Spillway

Wildlife Lake and DCT EFF 001 – Changes in Temp

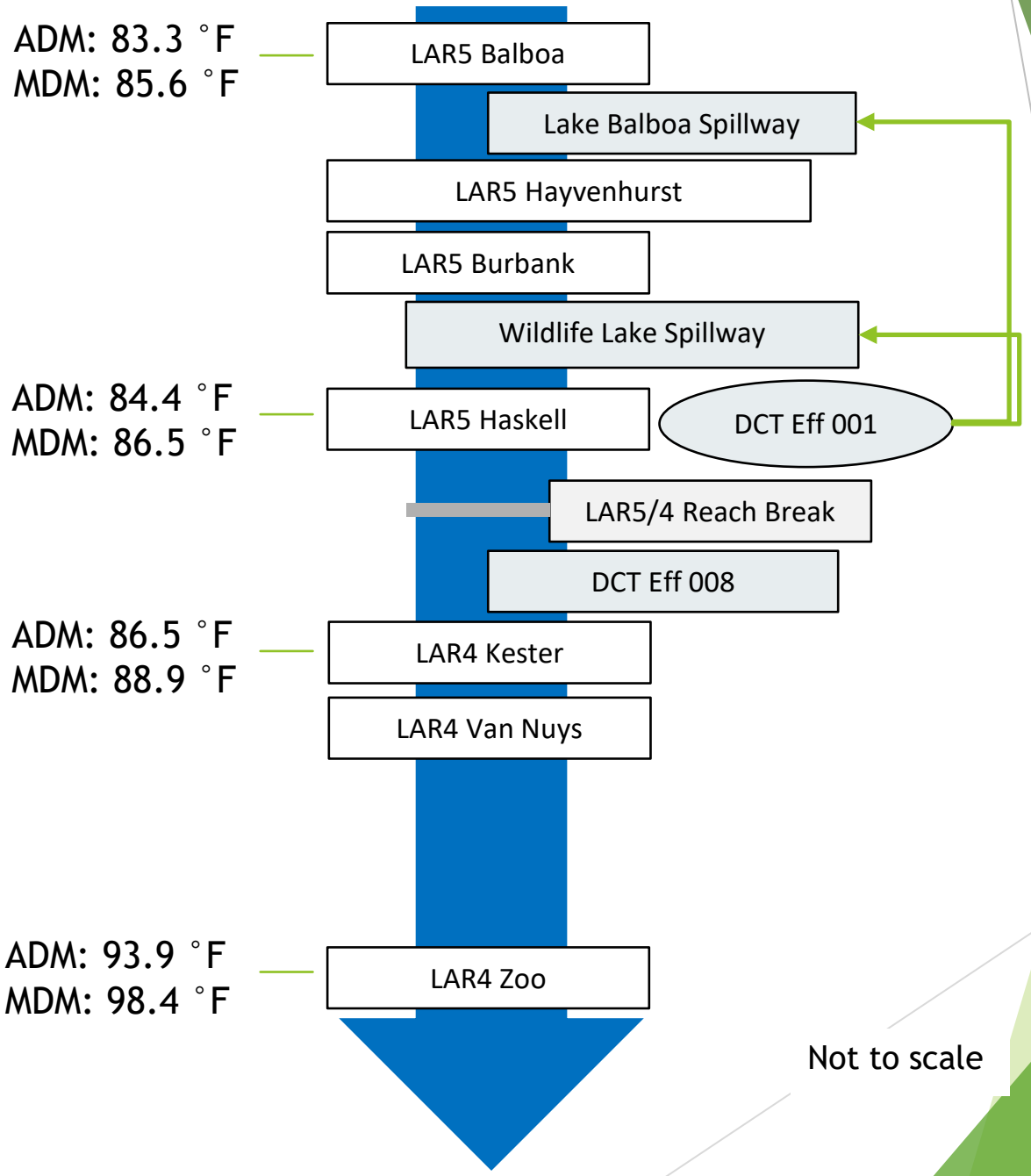


Temperature Difference Between Wildlife Lake Spillway and DCT Eff 001

Data Collection Effort: DCTWRP

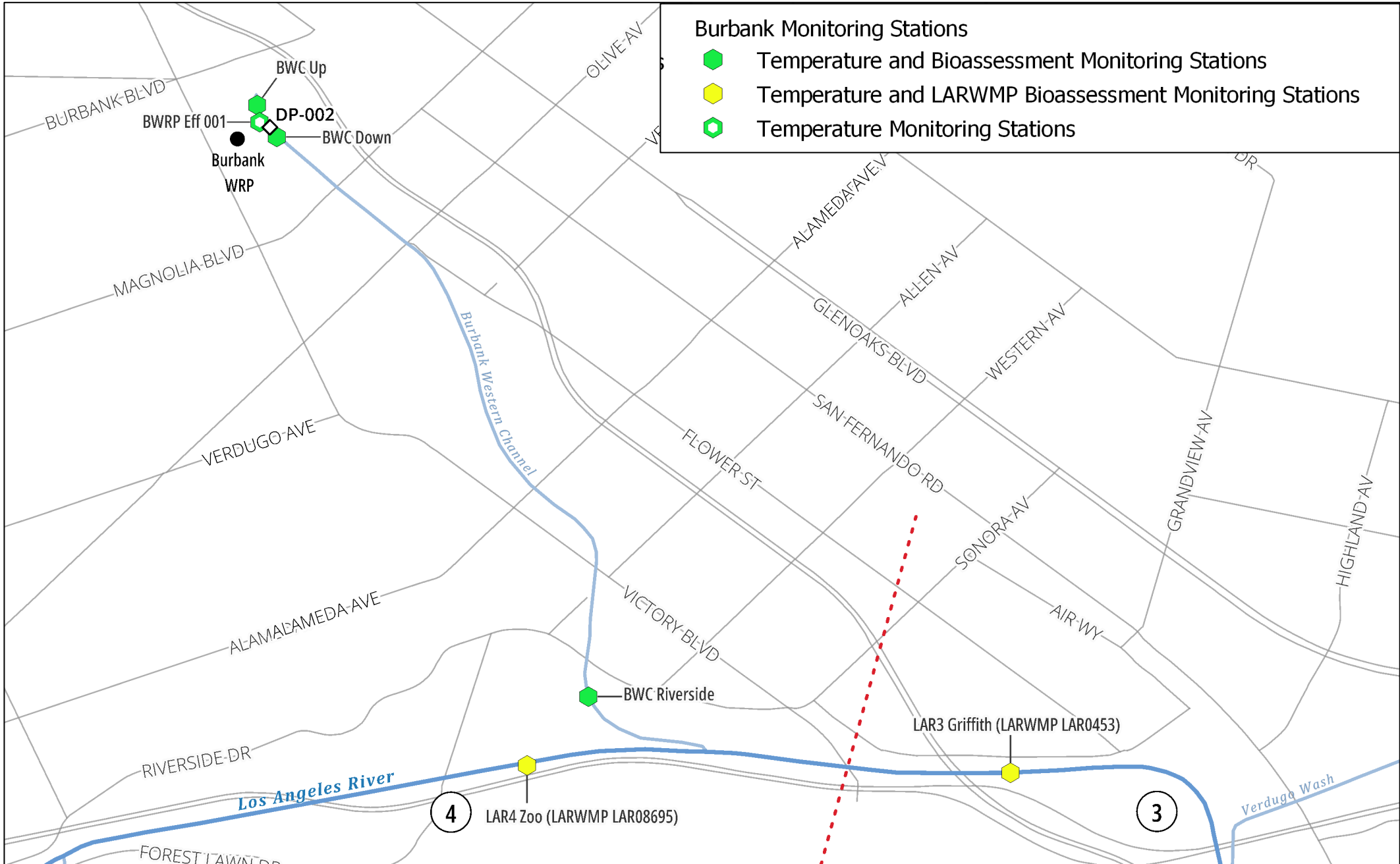


DCT and LA River Reaches 5 and 4 (July 2024)

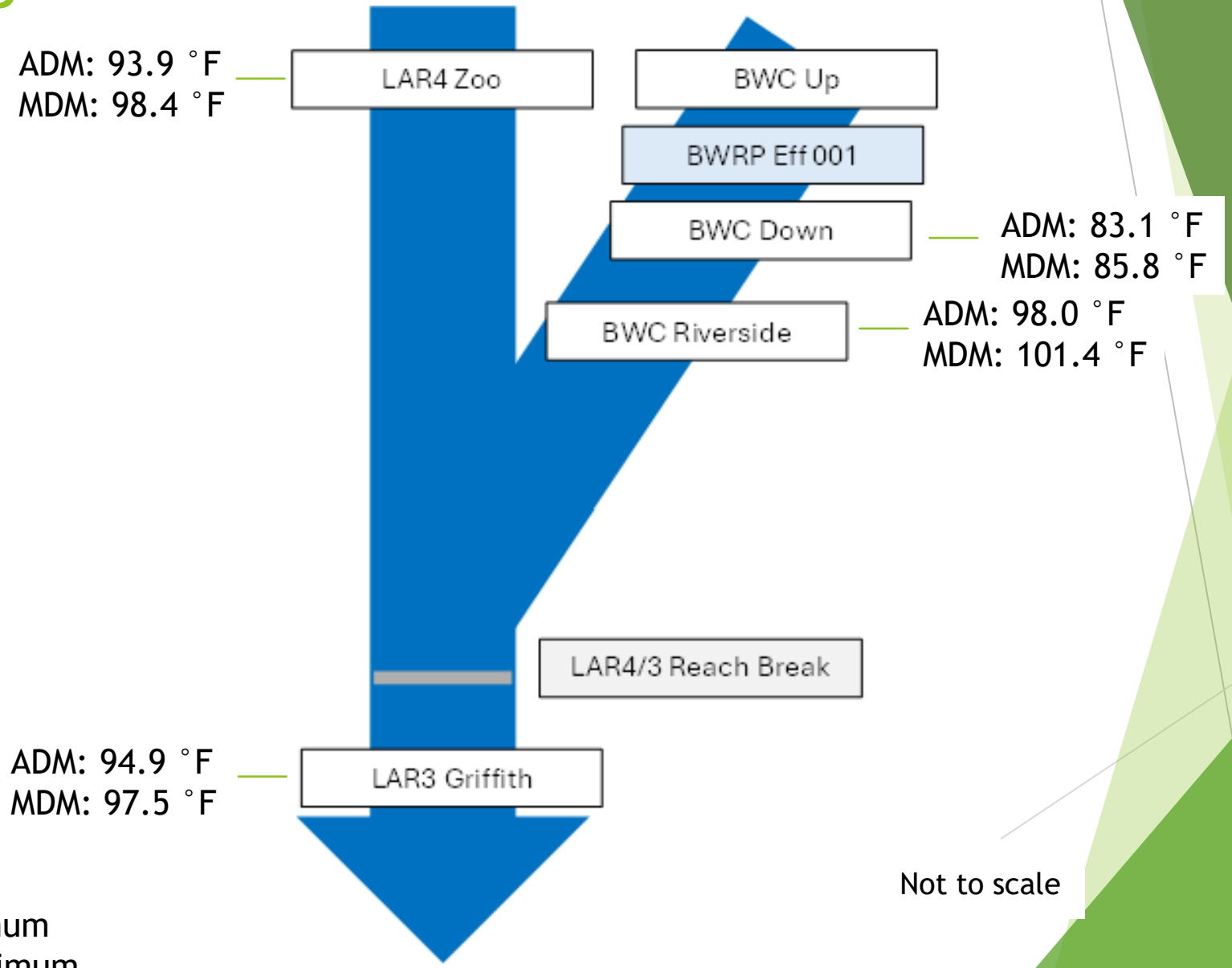


ADM: Average Daily Maximum
MDM: Maximum Daily Maximum

Data Collection Effort: BWRP

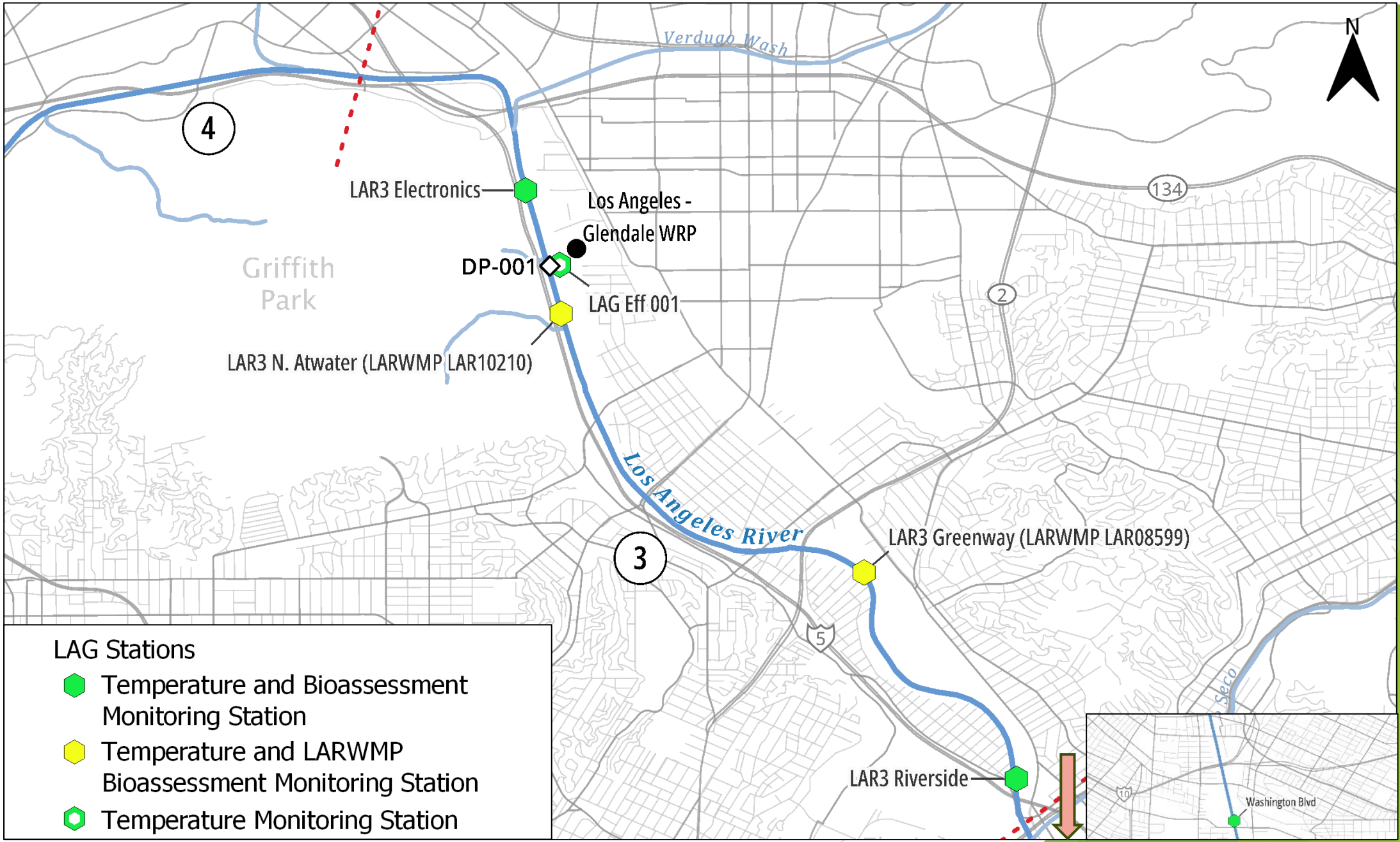


BWRP, BWC, and LA River Reach 3 and 4 (July 2024)

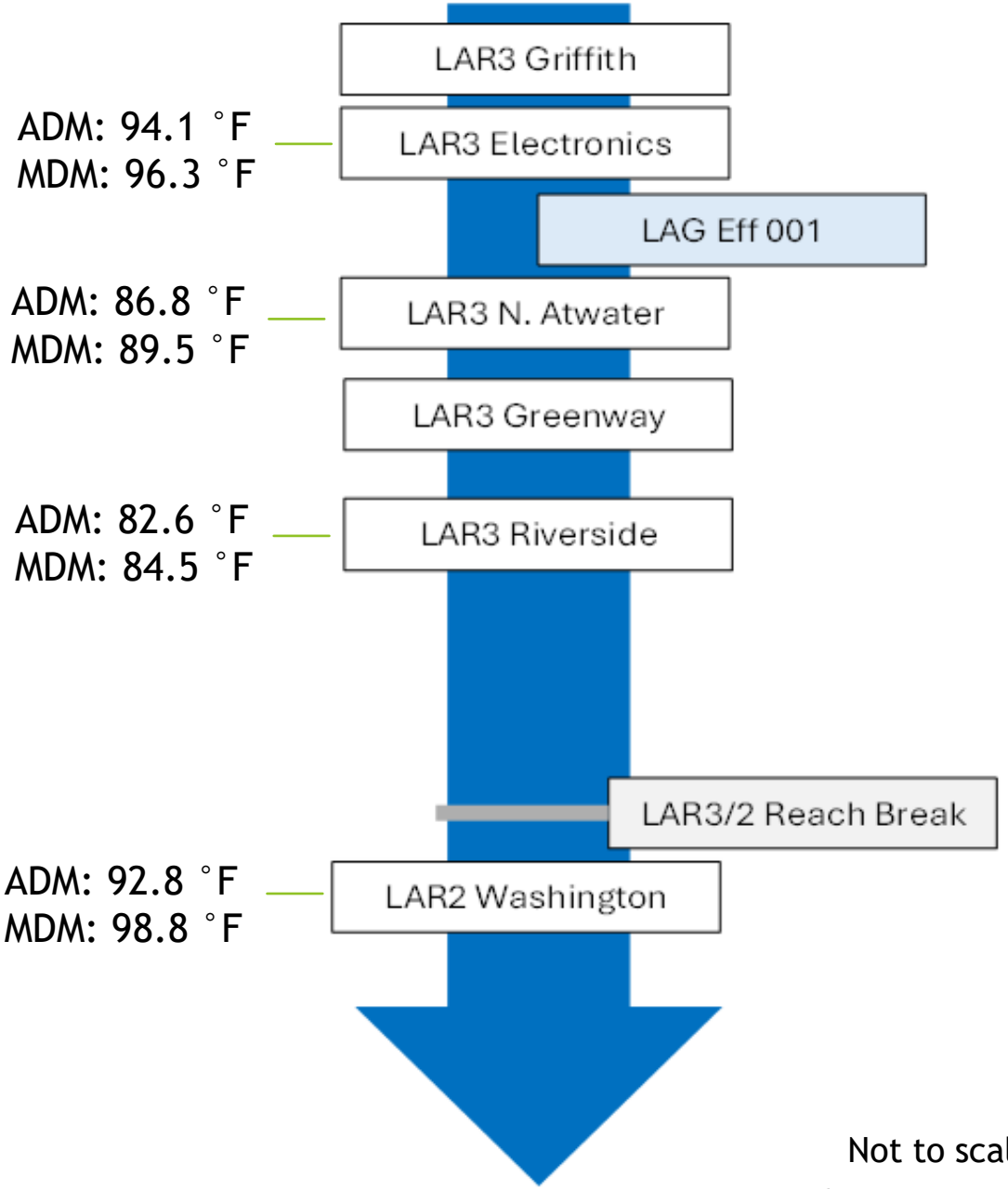


ADM: Average Daily Maximum
MDM: Maximum Daily Maximum

Data Collection Effort: LAGWRP



LAG and LA River Reach 3 (July 2024)



Not to scale

ADM: Average Daily Maximum
MDM: Maximum Daily Maximum

Initial Observations: Study Temperature Data

- ADM exceeded 80 °F throughout LA River, regardless of WRP flow
- Strong evidence of solar heating, particularly in concrete channels
- Flow, substrate, shading all factors affecting water temperature

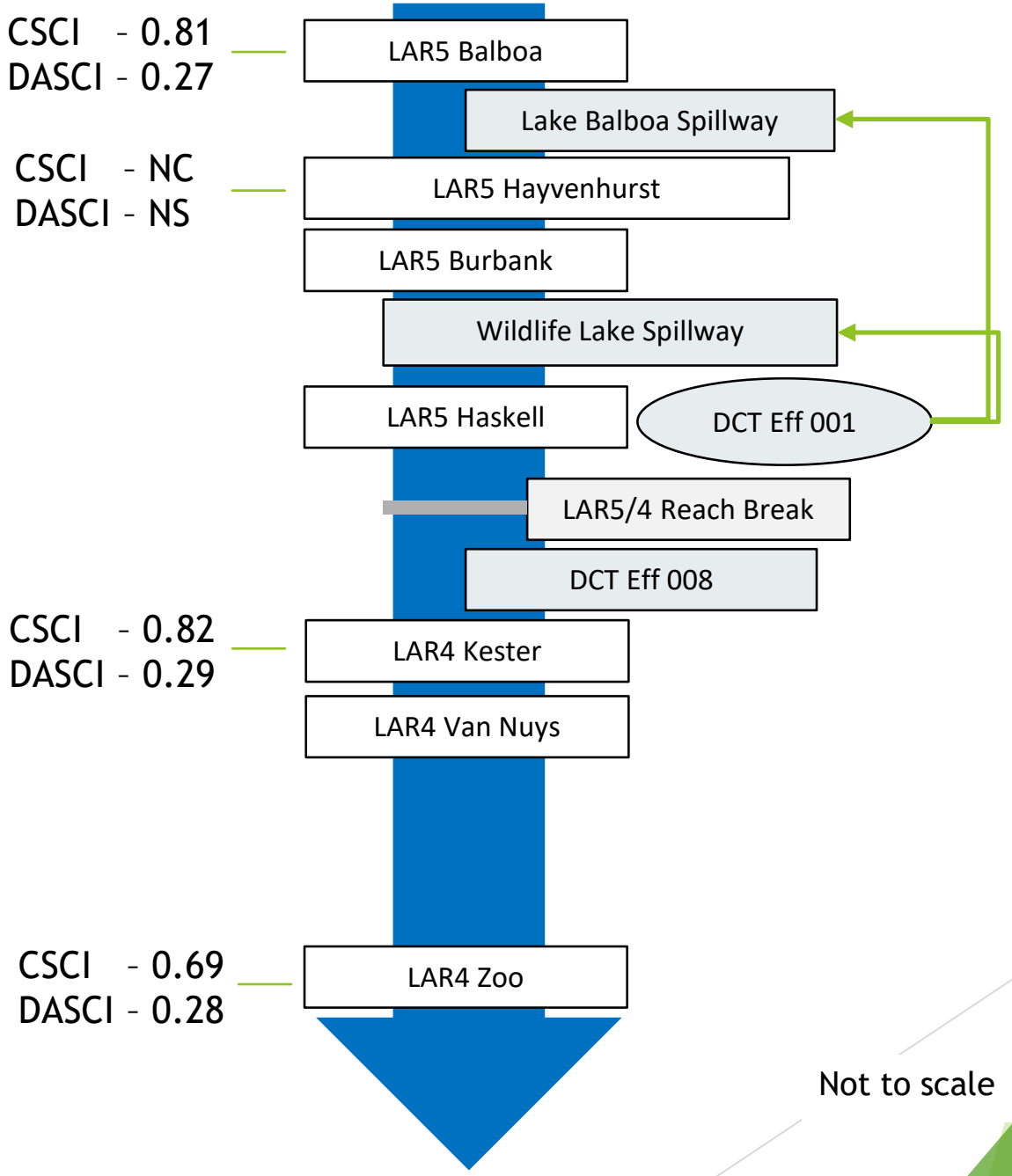
Overview of Biological Data

- Purpose: Same - Acquire additional stream biology data to fill data gaps and supplement existing data
- Predicated on historical (not included this presentation) and new data from this study – where BMI and diatoms were sampled in June 2024.
  - Strategically located above and below WRPs to answer specific study questions, i.e.,
    - SO #1-5. Taxa present….relationship between temp and likelihood life stages supported….how relationships vary by location and season….critical exposure times, durations, and or frequencies….how other physical factors influence temp effects on biological communities.

Data Collection Effort: Bioassessment

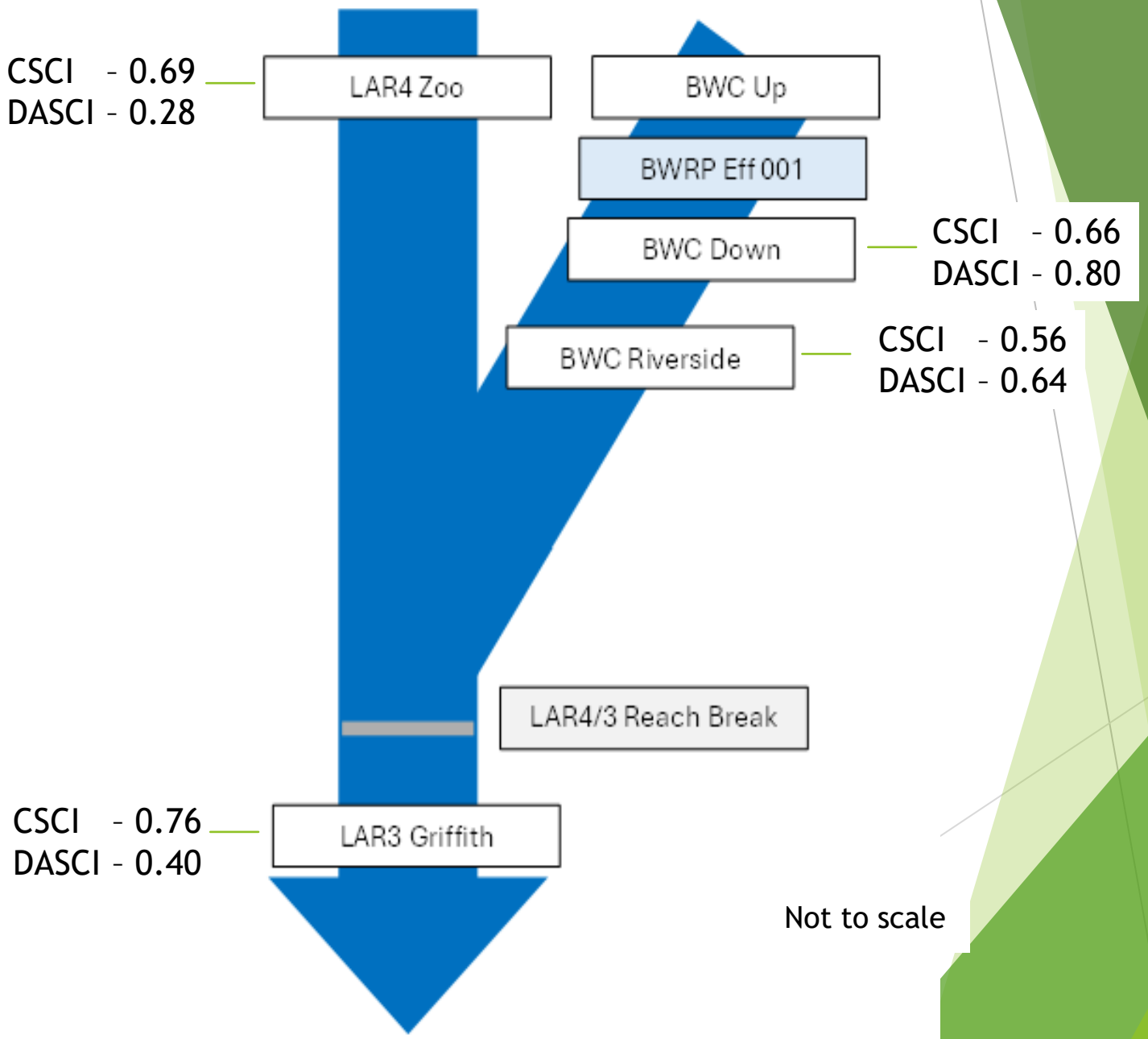
- June 2024
- BMI, algae, and diatoms
- DCTWRP (3 stations): LA River
- LAGWRP (5 stations): LA River
- BWRP (5 stations): BWC (3) and LA River (2) up and downstream of the confluence with the BWC
- Coordinated with LARWMP (with CWH)

DCT and LA River Reaches 5 and 4 (June 2024)



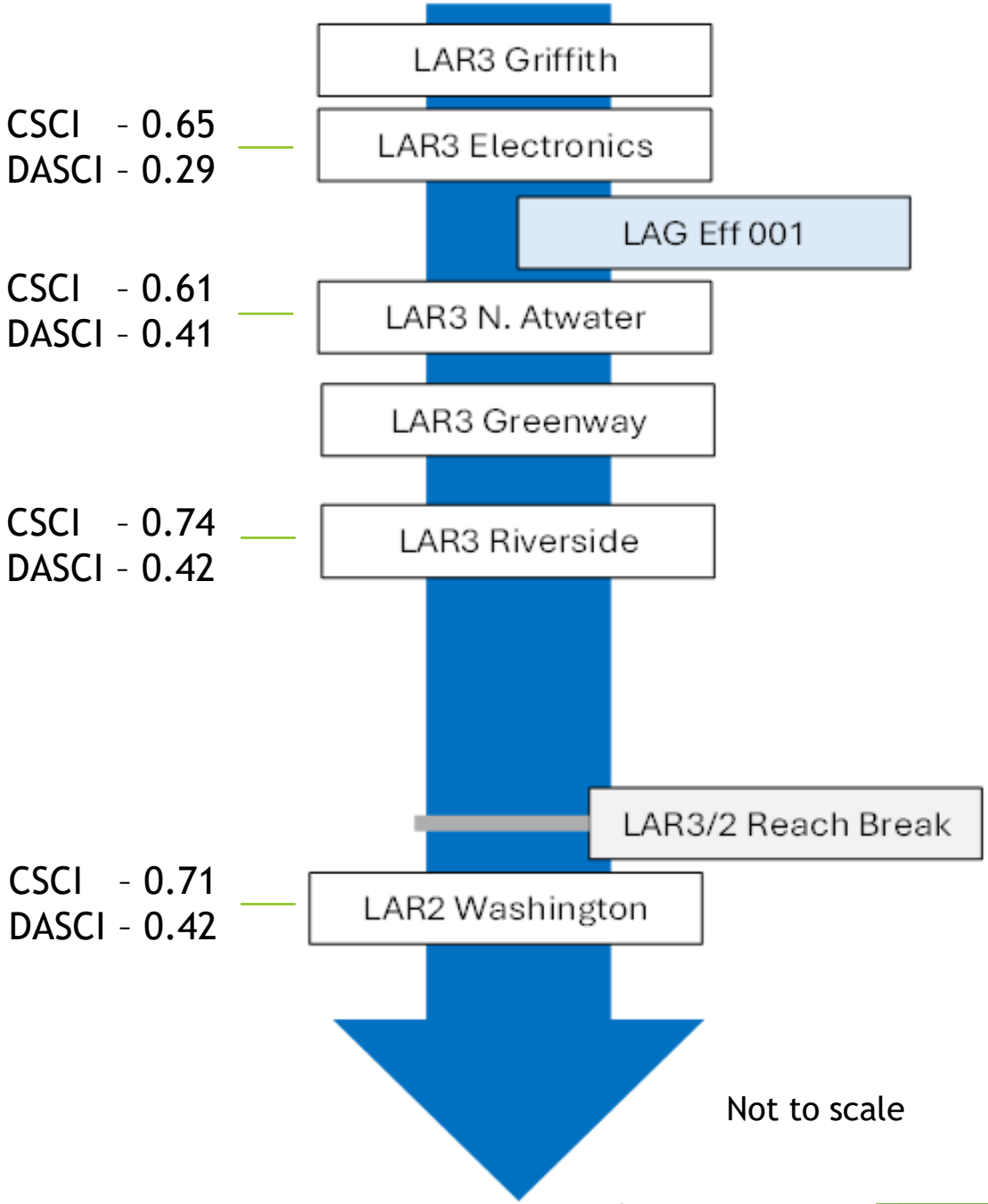
NC: Not Calculable
NS: Not Sampled
CSCI: California Stream Condition Index
DASCI: Diatom Algal Stream Condition Index

BWRP, BWC, and LA River Reach 3 and 4 (June 2024)



CSCI: California Stream Condition Index
DASCI: Diatom Algal Stream Condition Index

LAG and LA River Reach 3 (June 2024)



CSCI: California Stream Condition Index
DASCI: Diatom Algal Stream Condition Index

Initial Observations: Study Bioassessment Data

- Differences in CSCI and ASCI scores do not appear to indicate adverse effects of WRP temperature in the LA River (based on Study data)

- Additional data analysis is needed to further evaluate this initial observation using the combination of Study and historical data

Data Analysis Next Steps

- Integrate historical and Study data
- Analyze integrated biological and temperature datasets
- Draw preliminary conclusions related to study questions

Scenario Analysis

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

Evaluate potential control measures

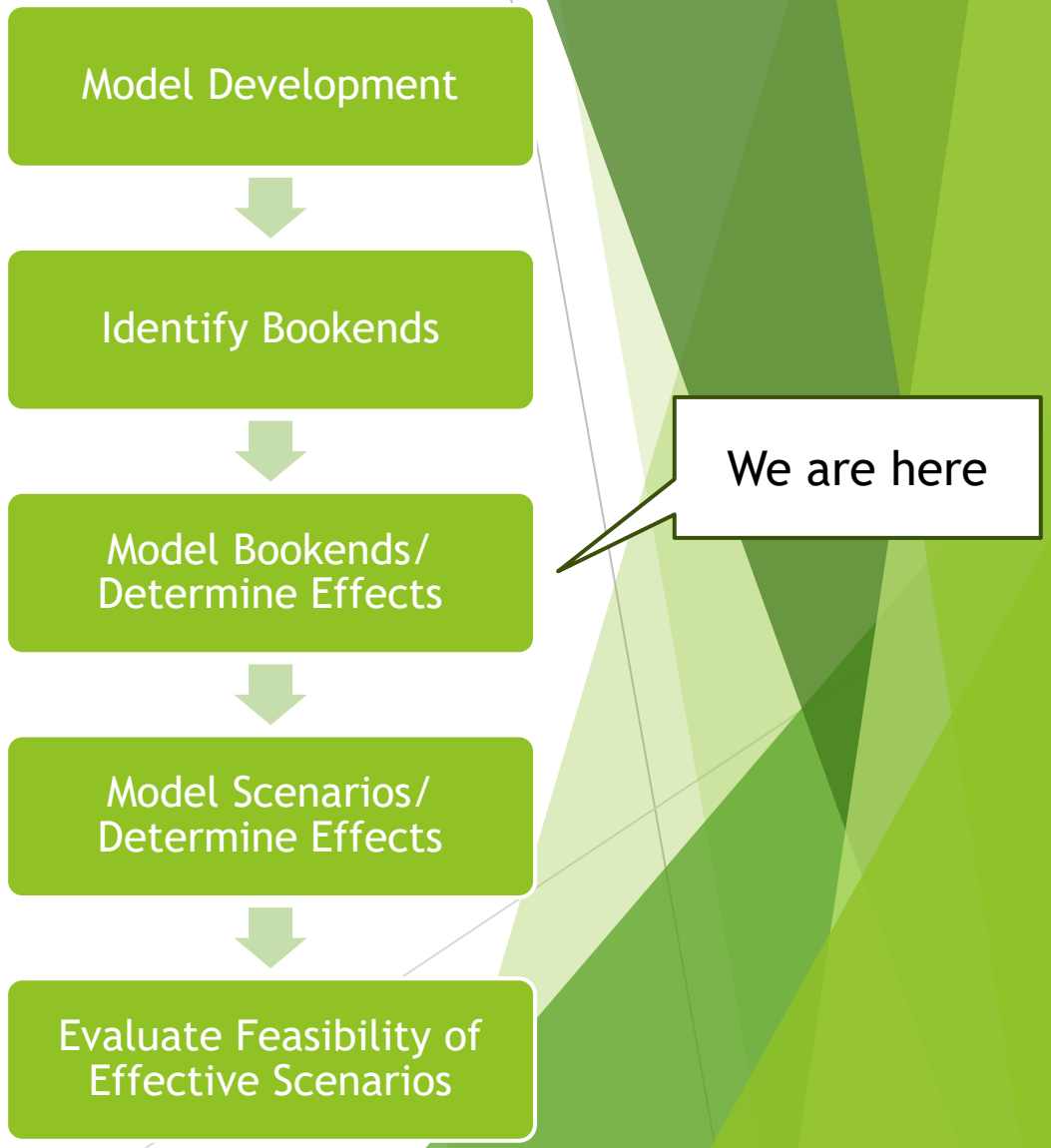
management strategies inc. nature-based solutions

Evaluate future conditions based on management strategies

Using predictive tools to understand long-term impacts

Scenario Analysis Update

- Integrated Study temperature data into the HEC-RAS model
- Calibrated and validated model
- Bookend Measures
  - Completed preliminary analysis of the effluent cooling measure
  - Initiated process for analyzing other measures



Bookends for Scenarios

Reduction in effluent temperature **Preliminary Analysis Completed**

- Simulate reduction in effluent temperature to meet WQOs of 80˚F and Δ5˚F (e.g., 0-25%)
- Summer (80˚F) Vs winter (Δ5˚F)

Reduction in WRP discharge associated with increased recycling **In Process**

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

Increased canopy cover **In Process**

- Simulate canopy cover (e.g., 0–50%)
- Proximate to outfall Vs continuing downstream

Increase density and depth of in-channel pools **Re-evaluating**

- Simulate number of pools with increased depths (depth)
- Summer Vs winter

Temperature model

Coupled flow and temperature model

HEC-RAS model

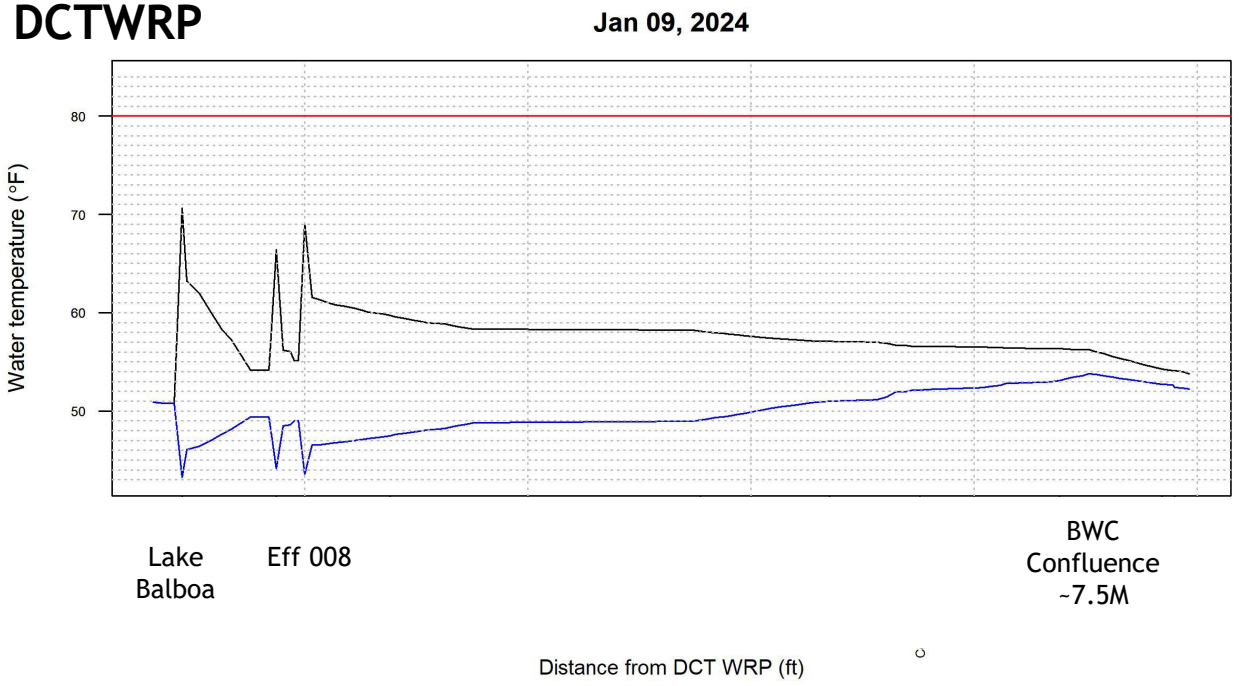
HEC-RAS model

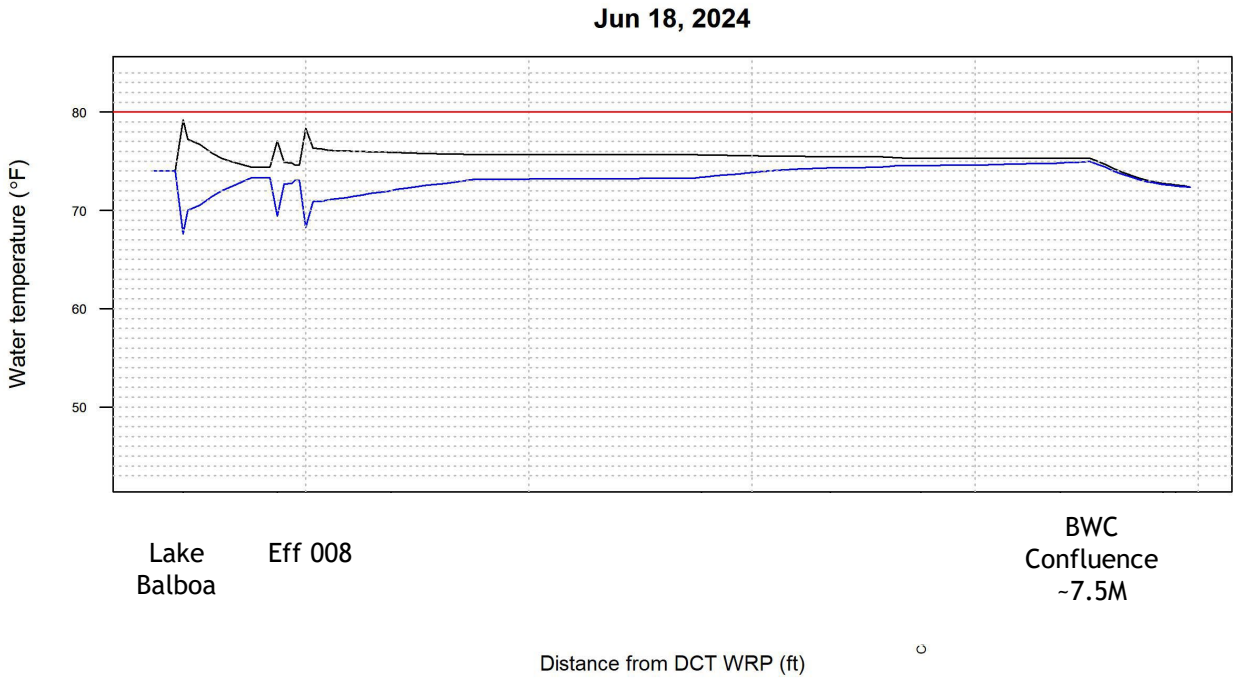
Scenario: Effluent Temperature Reduction

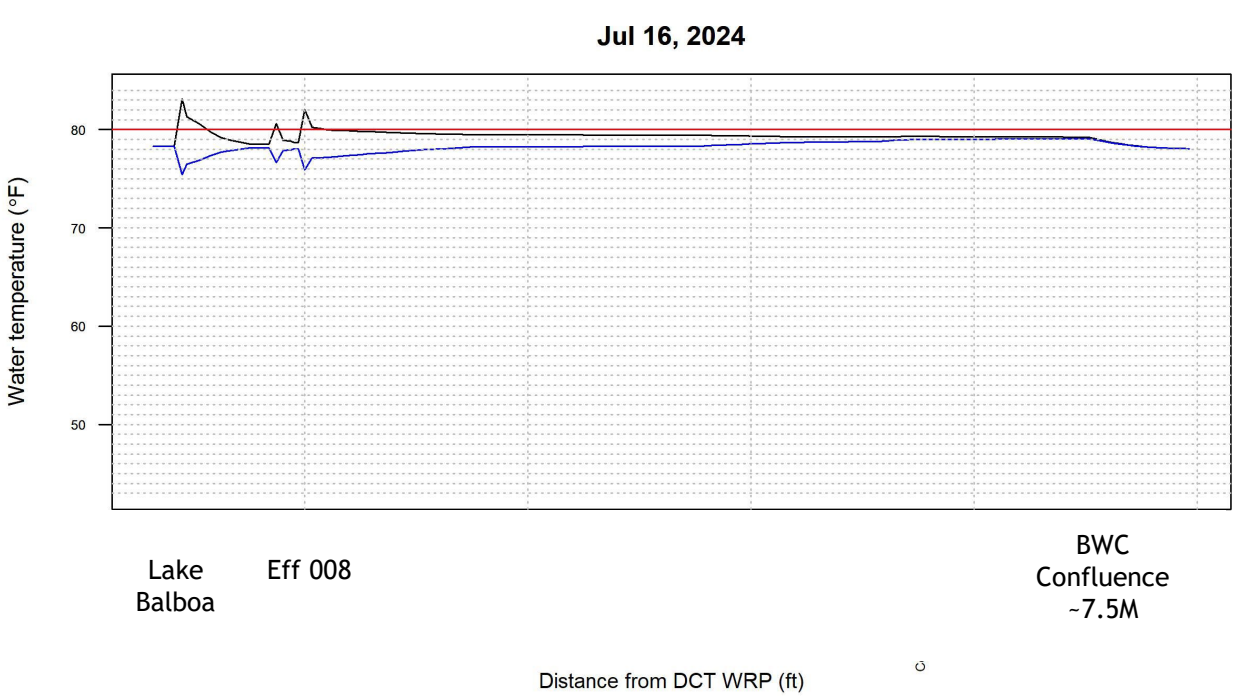
- Effluent temperature reductions were identified to consistently attain limits (80°F max and Δ5°F)
  - 80°F drives reductions
  - Δ5°F drives reductions
- Effluent temperatures adjusted in the model to meet limits

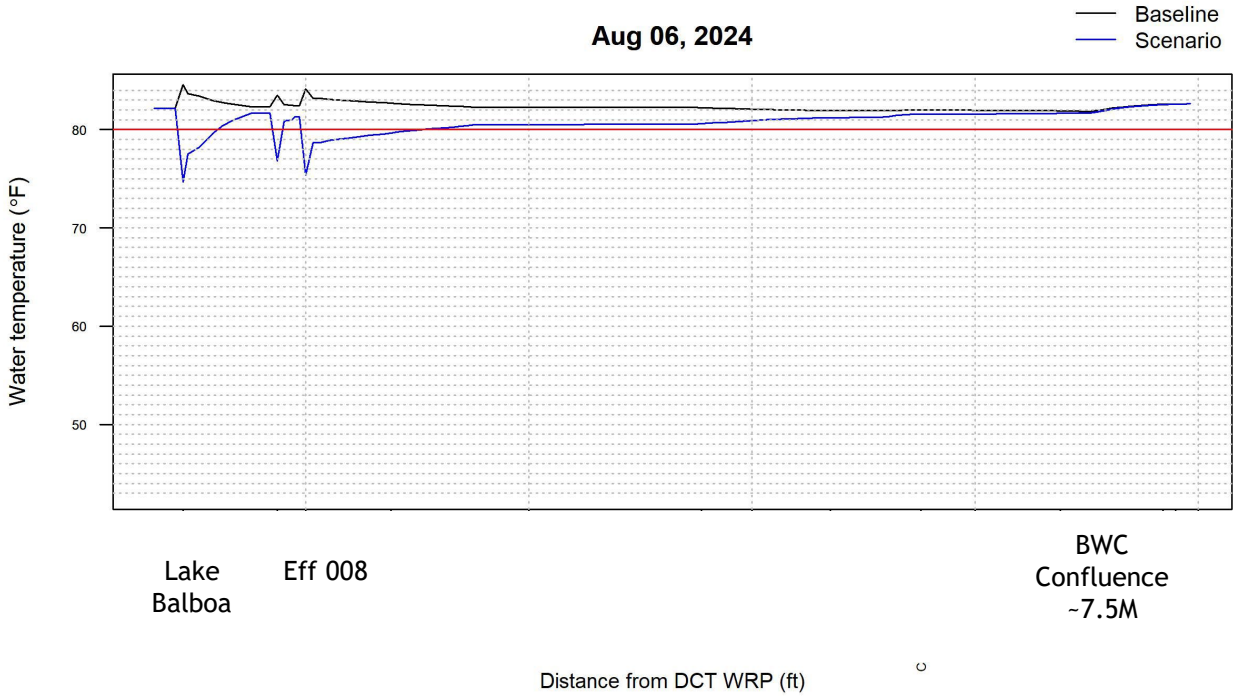
Month	Temperature Reductions Needed to Attain WQOs (˚F)		
	DCT	LAG	BUR
January	29	29	33
February	29	30	**37**
March	23	22	29
April	26	24	29
May	14	19	22
June	13	6	24
July	9	7	20
August	11	8	18
September	14	7	24
October	24	**35**	25
November	30	34	35
December	**32**	34	33

DCTWRP

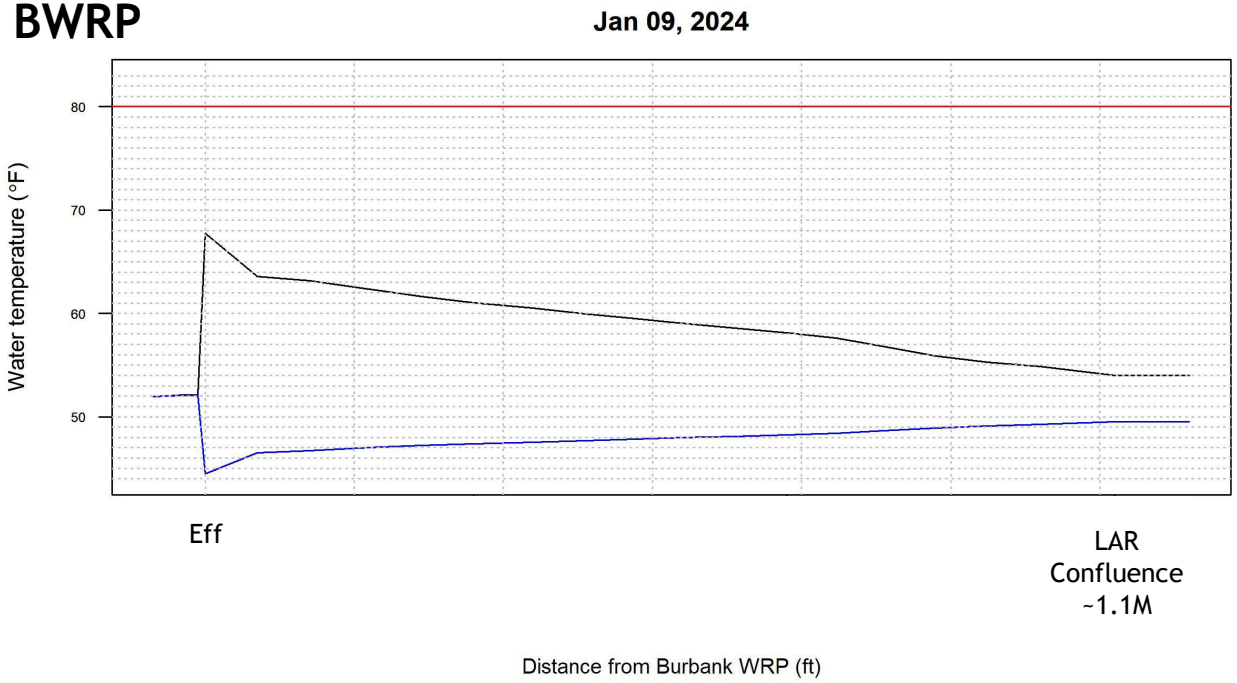

Jan 09, 2024
Water temperature (°F)
80
70
60
50
Lake Balboa
Eff 008
BWC Confluence ~7.5M
Distance from DCT WRP (ft)

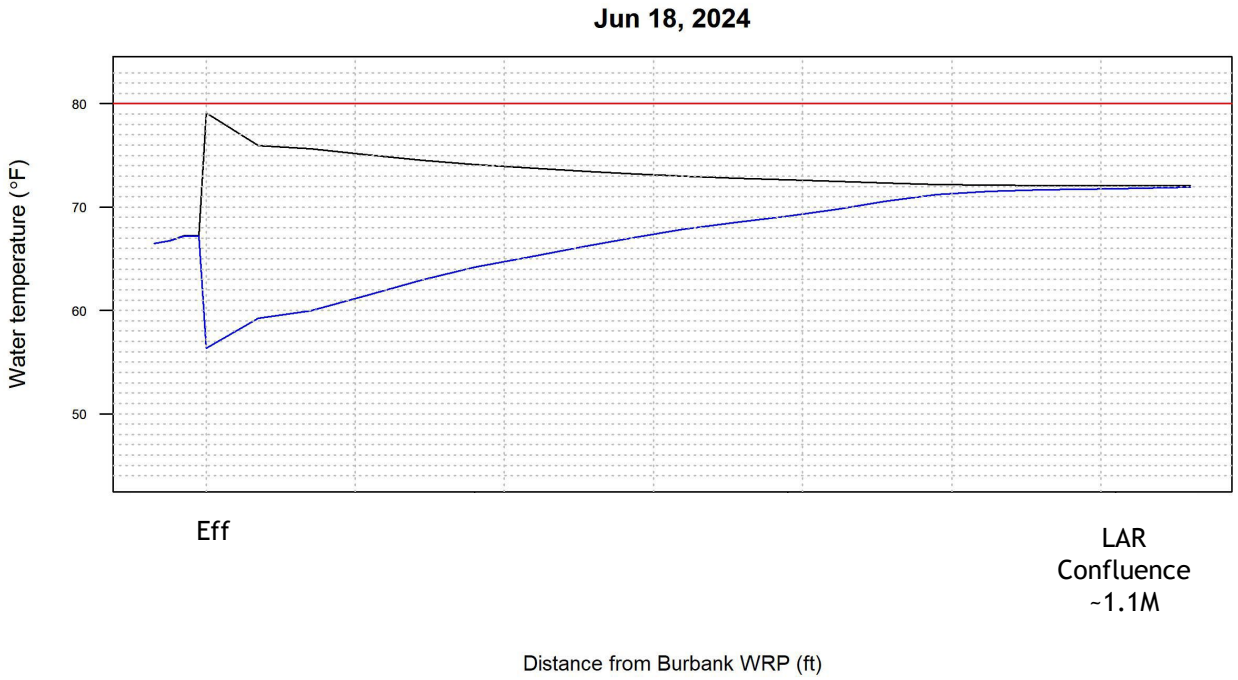

Jun 18, 2024
Water temperature (°F)
80
70
60
50
Lake Balboa
Eff 008
BWC Confluence ~7.5M
Distance from DCT WRP (ft)

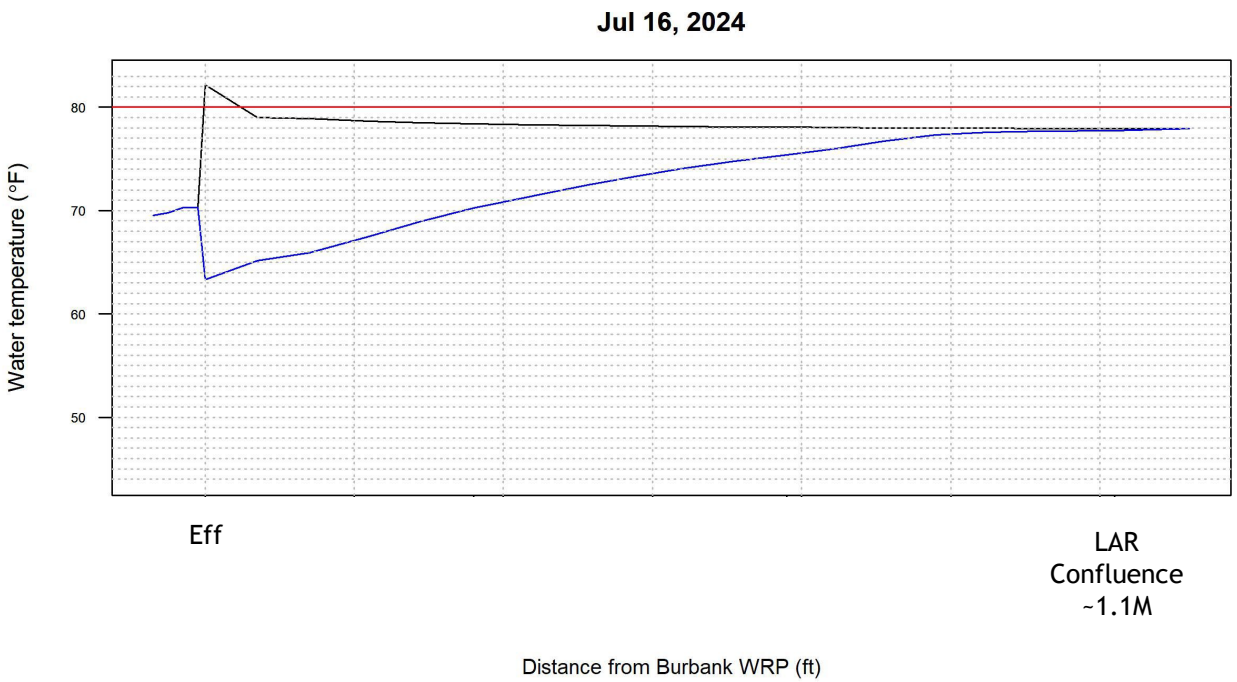

Jul 16, 2024
Water temperature (°F)
80
70
60
50
Lake Balboa
Eff 008
BWC Confluence ~7.5M
Distance from DCT WRP (ft)

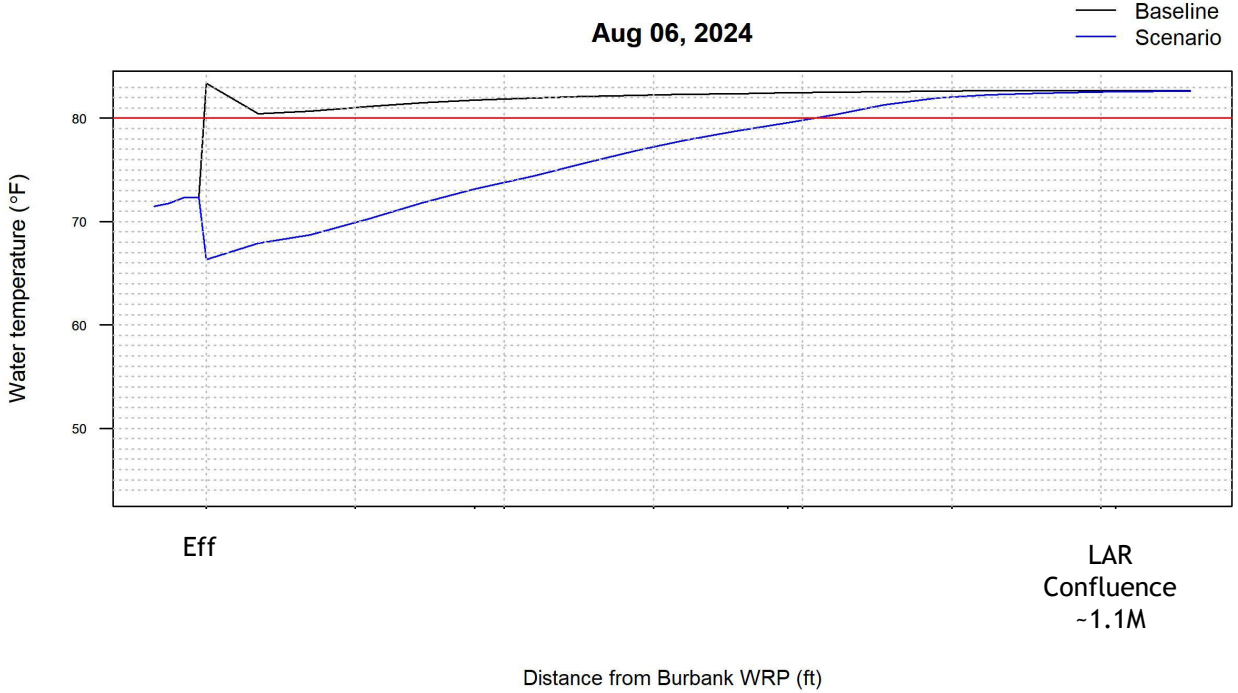

Aug 06, 2024
Baseline
Scenario
Water temperature (°F)
80
70
60
50
Lake Balboa
Eff 008
BWC Confluence ~7.5M
Distance from DCT WRP (ft)

BWRP

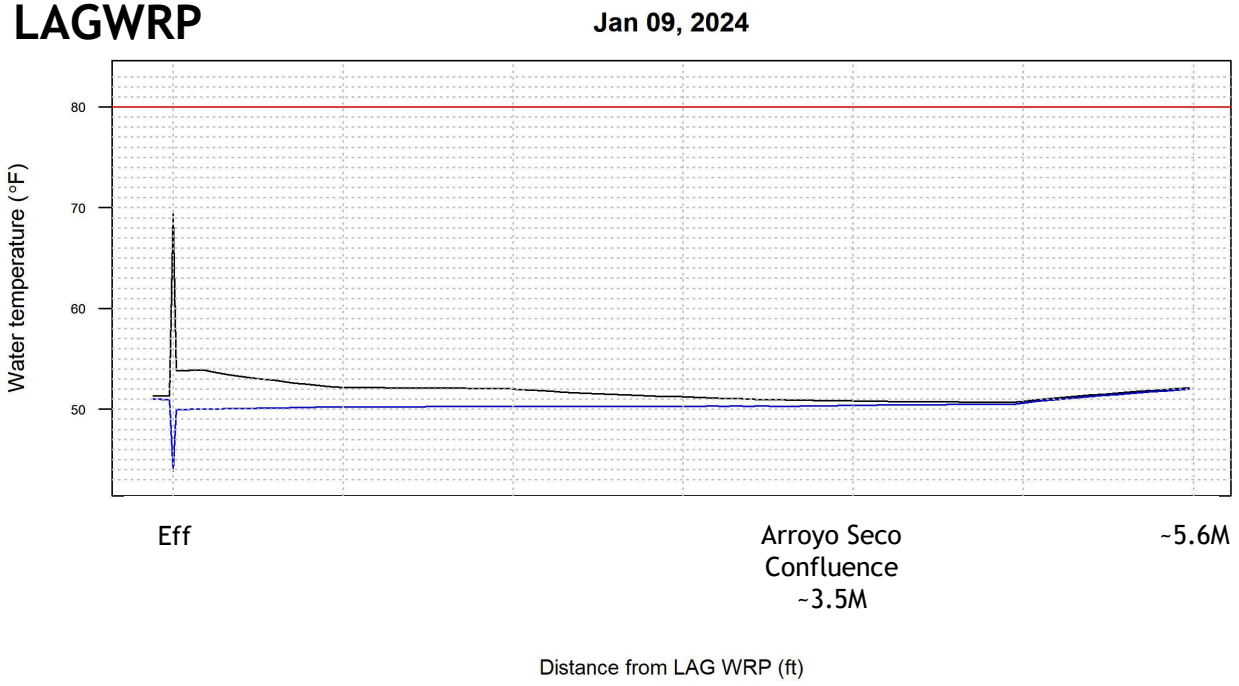

Jan 09, 2024
Water temperature (°F)
80
70
60
50
Eff
LAR
Confluence
~1.1M
Distance from Burbank WRP (ft)

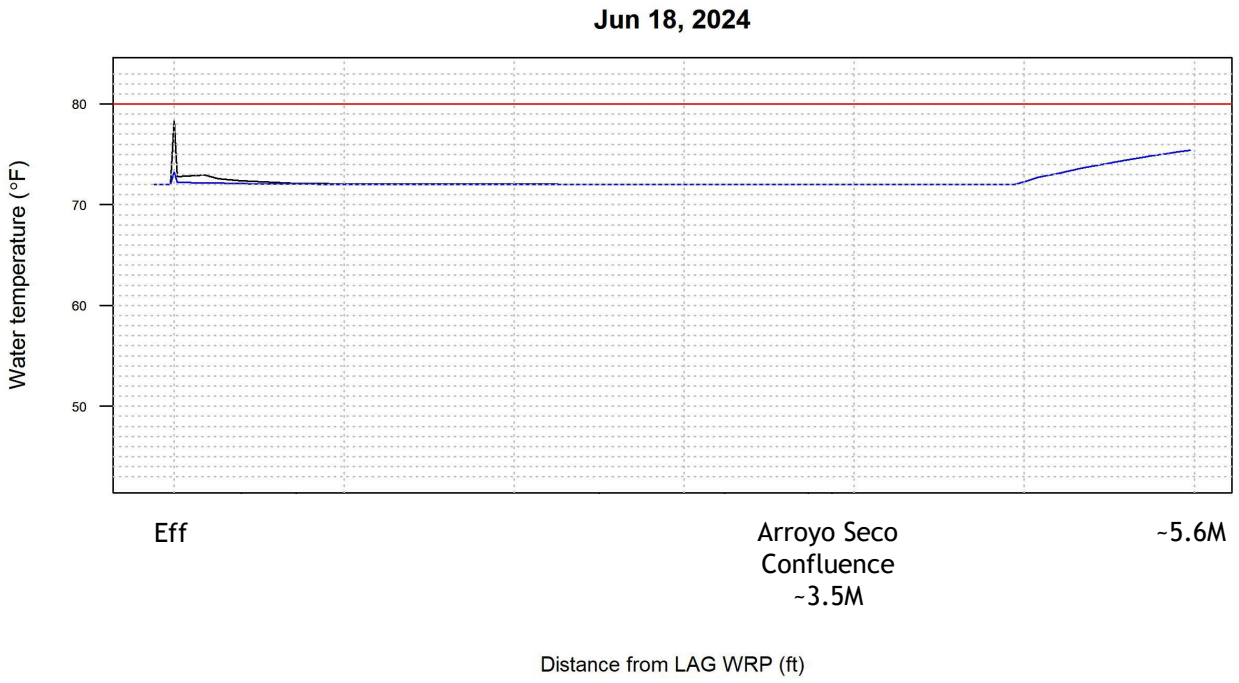

Jun 18, 2024
Water temperature (°F)
80
70
60
50
Eff
LAR
Confluence
~1.1M
Distance from Burbank WRP (ft)

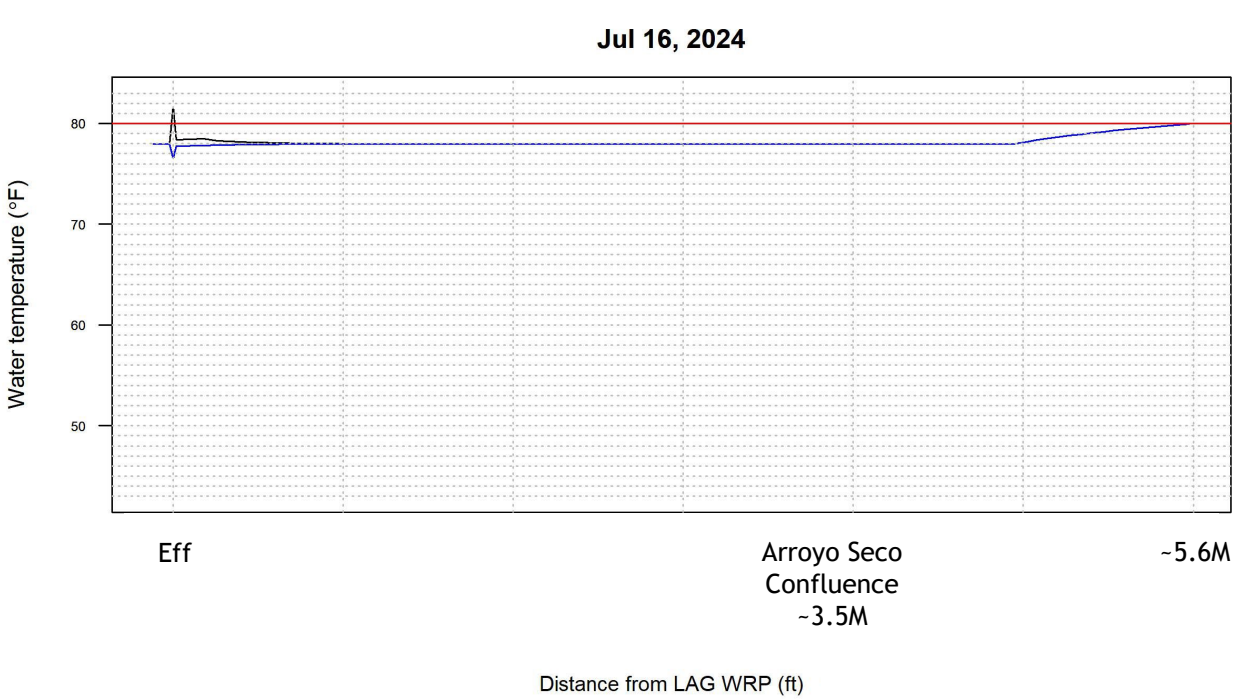

Jul 16, 2024
Water temperature (°F)
80
70
60
50
Eff
LAR
Confluence
~1.1M
Distance from Burbank WRP (ft)

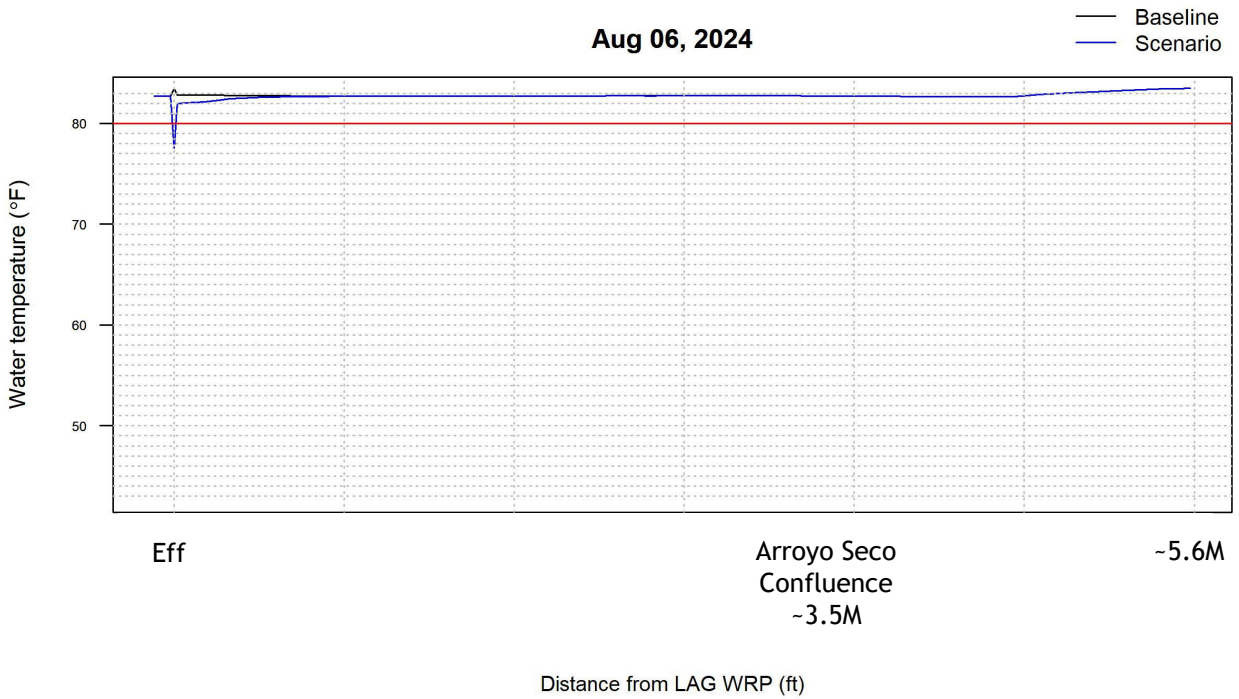

Aug 06, 2024
Baseline
Scenario
Water temperature (°F)
80
70
60
50
Eff
LAR
Confluence
~1.1M
Distance from Burbank WRP (ft)

LAGWRP


Jan 09, 2024
Water temperature (°F)
80
70
60
50
Eff
Arroyo Seco Confluence ~3.5M
~5.6M
Distance from LAG WRP (ft)

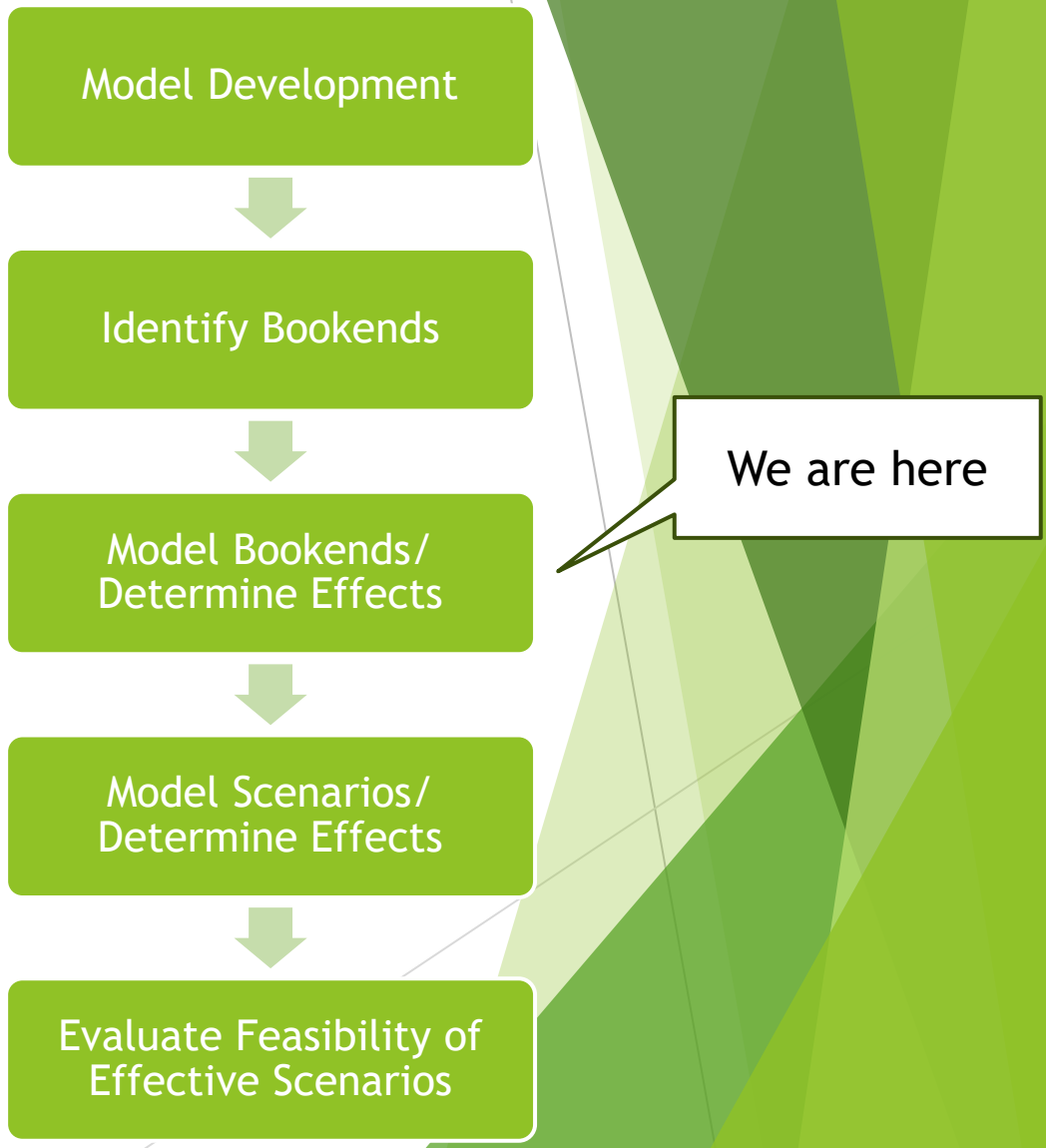

Jun 18, 2024
Water temperature (°F)
80
70
60
50
Eff
Arroyo Seco Confluence ~3.5M
~5.6M
Distance from LAG WRP (ft)


Jul 16, 2024
Water temperature (°F)
80
70
60
50
Eff
Arroyo Seco Confluence ~3.5M
~5.6M
Distance from LAG WRP (ft)


Aug 06, 2024
Baseline
Scenario
Water temperature (°F)
80
70
60
50
Eff
Arroyo Seco Confluence ~3.5M
~5.6M
Distance from LAG WRP (ft)

Next Steps for Scenarios

- Complete bookend analysis
  - Flow reduction
  - Shading
  - Pools (Re-evaluating)
- Identify potential combinations of actions for scenario analysis
  - Effluent cooling + shading
  - Effluent cooling + flow reduction + shading
  - Etc
- Reconvene to discuss bookend results and scenario analysis



Schedule for Implementation

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

TAC Meetings: Scenarios and Reporting

TAC meeting date	Description of tasks
Q2 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 Jan - Mar 2025	Data compilation, QA/QC, model calibration, and preliminary analysis of effluent temperature bookend.
Q4 April - June 2025	Meeting 2 – Present refined approach based on TAC input and discuss initial results and next steps.
Q1 July - Sept 2025	Meeting 3 - Review of bookend results and discuss scenarios analysis. Review of model development (if interested/time allows). Potentially discuss control measures. Meeting 4 - Preliminary scenario run feedback, seek input and revise approach, if necessary. Potentially discuss control measures.
Q2 Oct - Dec 2025	Meeting 5 - Review of results.

Questions and Discussion