BUREAU OF RECLAMATION

Central Valley Project Water Temperature Modeling Platform, Chapter 3

California Water and Environmental Modeling Forum
Annual Meeting: Session 7

September 23, 2024; 3:30 p.m. – 5:15 p.m.

2024 CWEMF Annual Meeting

Session 7: CVP WTMP, Chapter 3

3:30	Introduction with Recap Moderator: Yung-Hsin Sun (Sunzi Consulting LLC)
3:40	Presentation with Q&A: What We have Done A consolidated review of the intent and accomplishments of the initial WTMP implementation.
4:40	Reclamation Panel Discussion with Q&A: The End is the Beginning Reflection with outlook on Reclamation's resolution for WTMP development and implementation.
5:15	Adjourn

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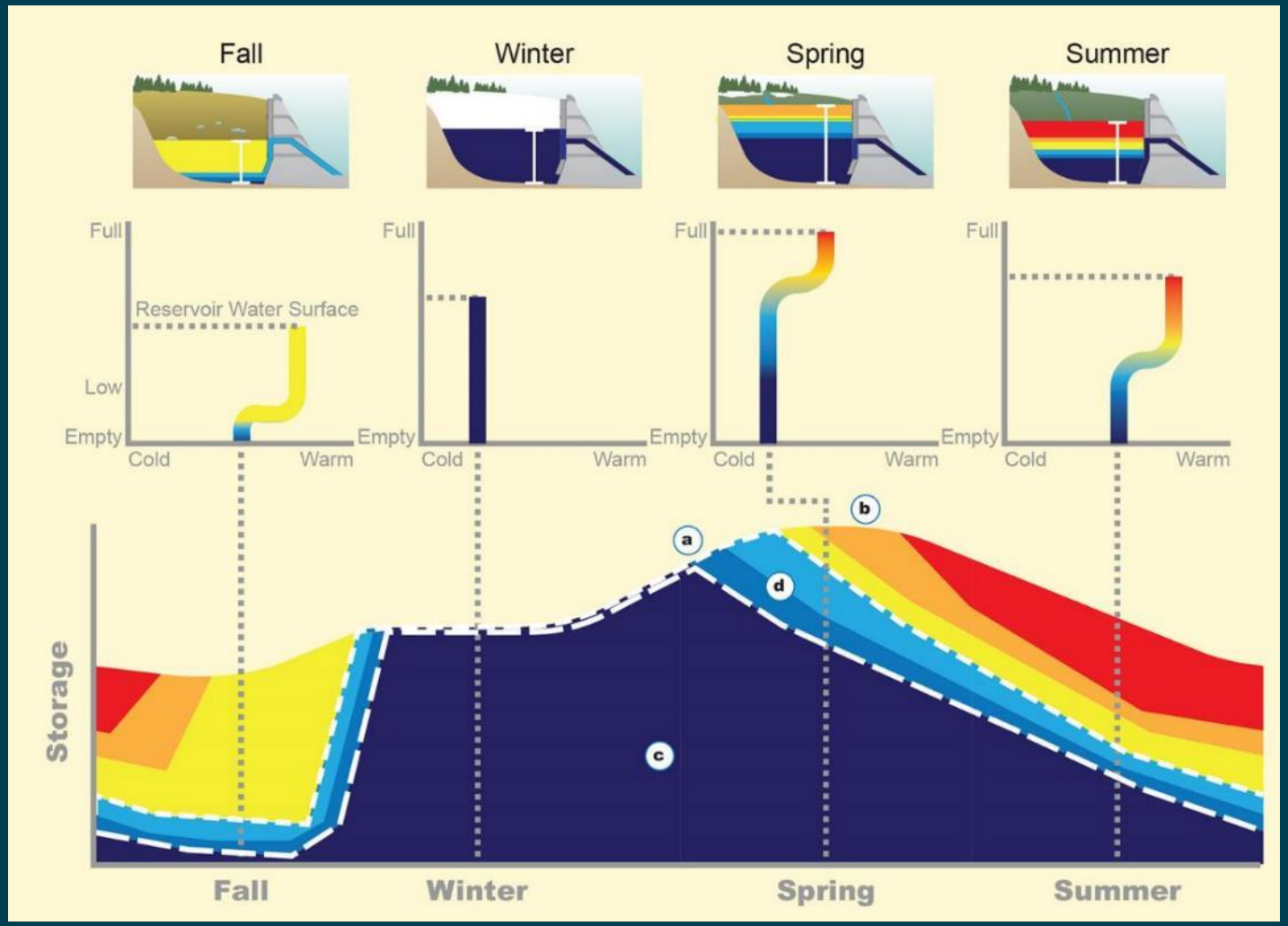
2024 CWEMF Annual Meeting: Session 7: CVP WTMP, Chapter 3

Introduction and Recap

Yung-Hsin Sun, Sunzi Consulting

Water Temperature Management Story



From Reclamation, 2017. Water Temperature Management in Reservoir-River Systems through Selective Withdrawal, Reference Technical Memorandum for Central Valley Project Operation, California. September.

Elements of Temperature Management

The Why

1. **Environmental Objectives:** Defining management criteria (e.g., target species' seasonal temperature requirements and their distribution in downstream river reaches).

The Resources

2. **Total Reservoir Storage:** Defining cold water volume through reservoir storage.

3. **Reservoir Water Temperature Profile:** Defining cold water volume through thermal profile characterization.

The Means

4. **Selective Withdrawal:** Assessing selective withdrawal facilities and strategies.

5. **Tail Bay Water Temperature Management:** Determining reservoir tail bay temperatures.

The Factors

6. **Meteorological Conditions:** Determining heat gain from the reservoir to downstream river management locations to inform decision-making processes.

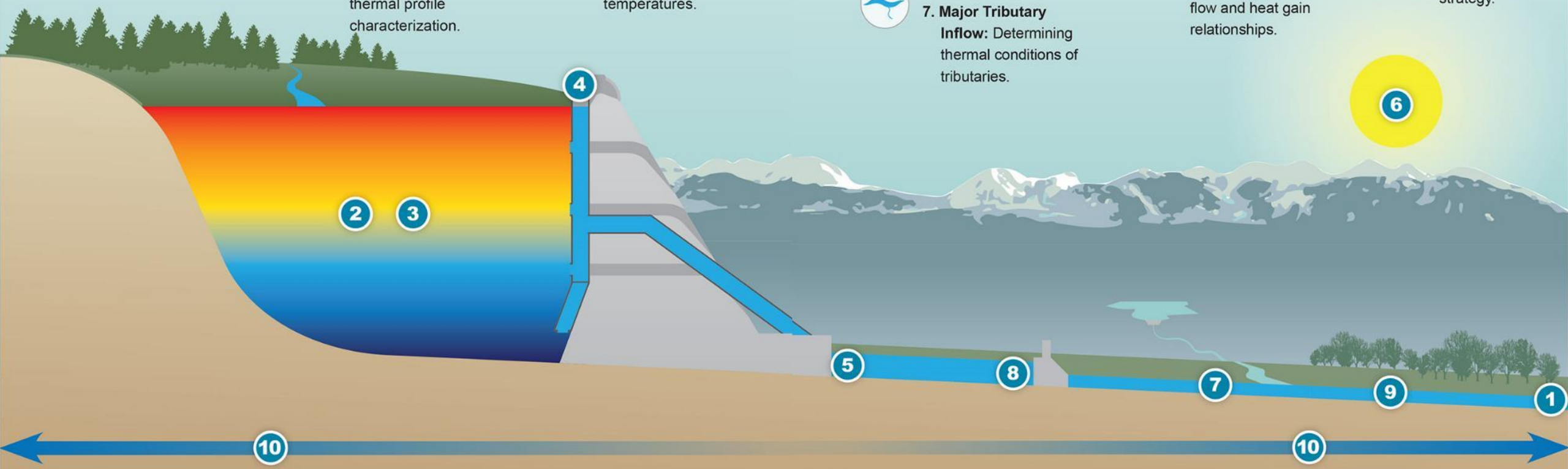
7. **Major Tributary Inflow:** Determining thermal conditions of tributaries.

8. **Regulating Reservoirs:** Characterizing re-regulating reservoir conditions and river release temperatures.

9. **River Flow Heat Gain Relationship:** Employing river flow and heat gain relationships.

The Methods

10. **Monitoring:** Using system-wide monitoring network information to assess conditions and adapt the selective withdrawal strategy.



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Vision of WTMP

Deliver quality products to support Reclamation's mission – predict water temperature to support CVP operations

- Modernize CVP systemwide water temperature modeling and analytics
- Develop to current professional standards
- Consistency: Real-time, seasonal, and long-term planning

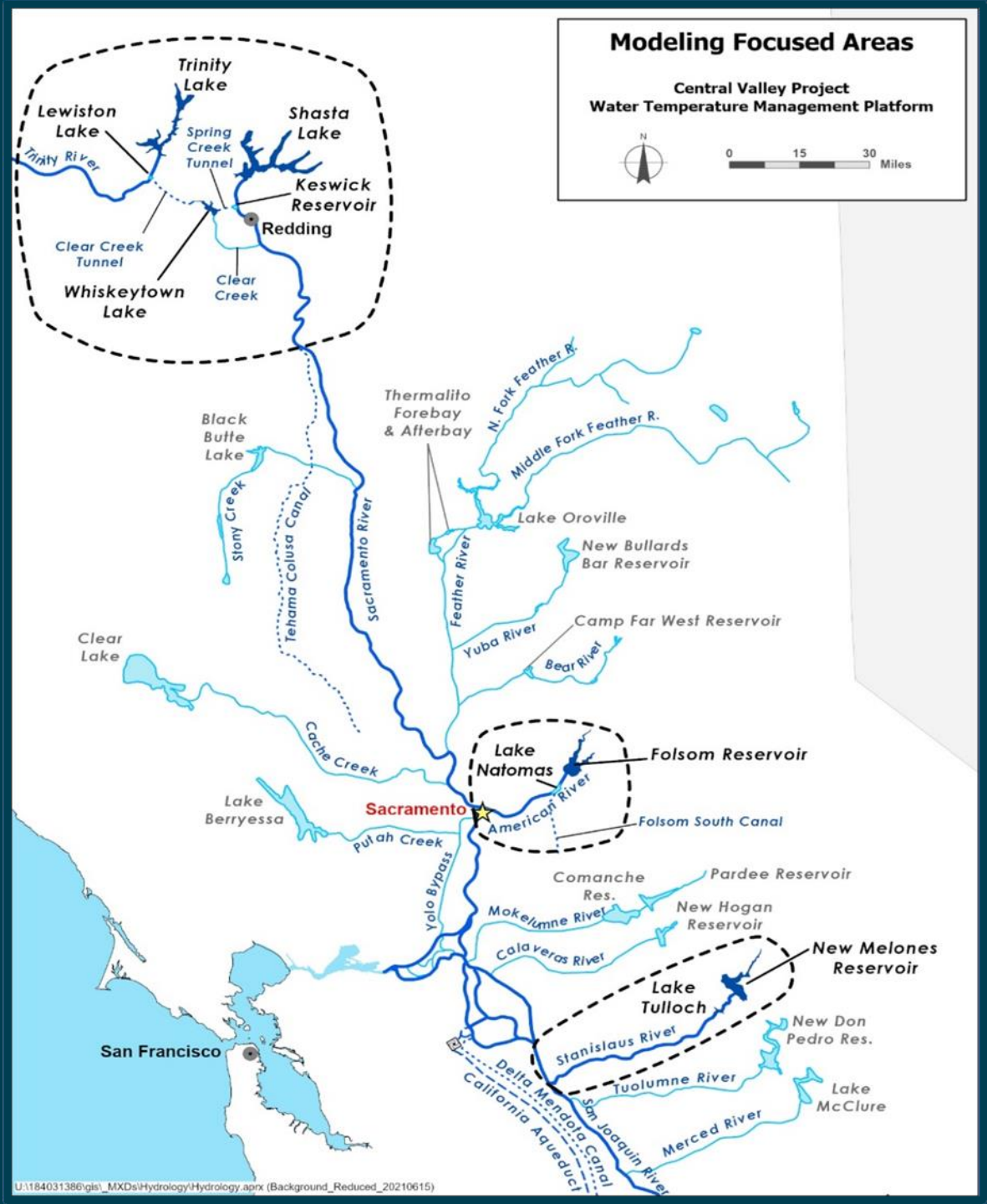
Outcome of Initial Implementation

A living modeling platform to support long-term CVP operations by addressing water temperature modeling needs and challenges.

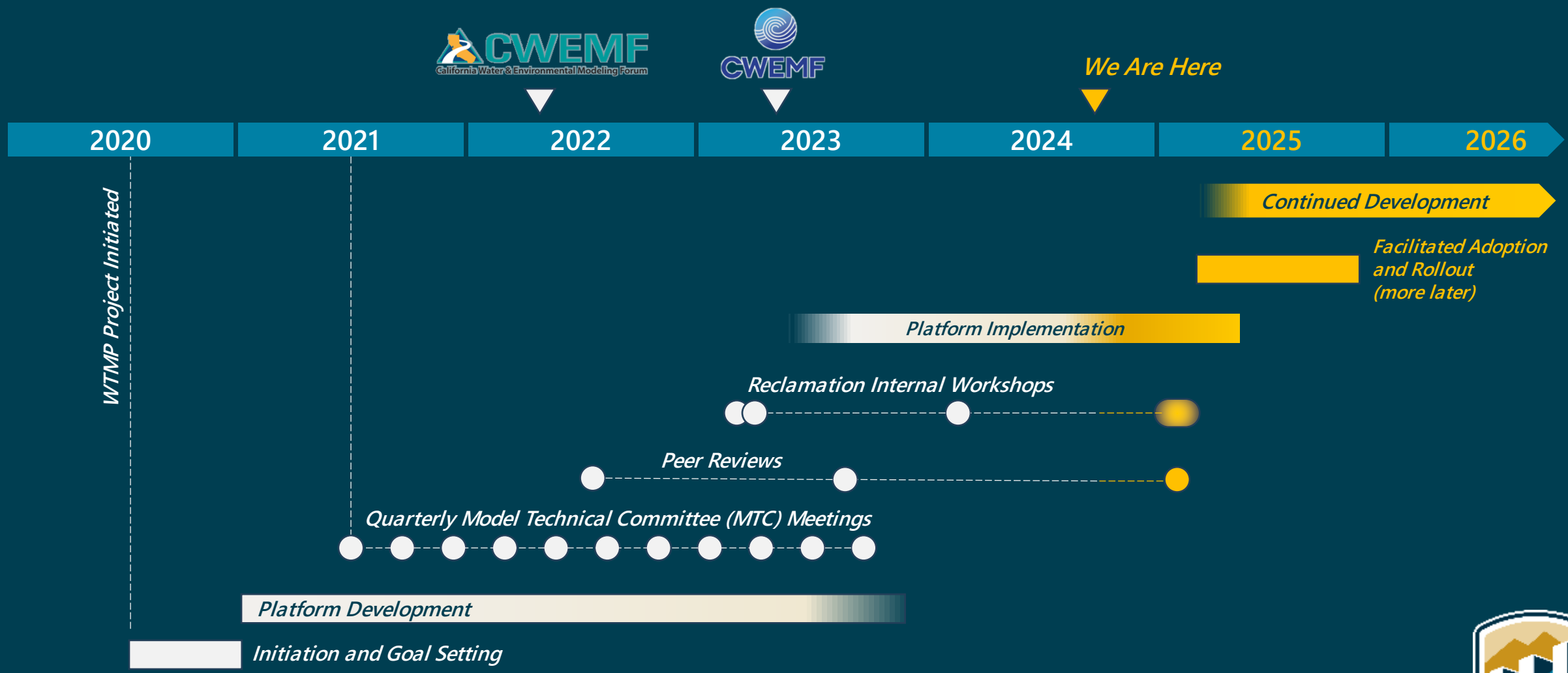
- Water Temperature Modeling Platform
  - Implemented models/model framework
  - Data Management System
  - Documentation package
- Community modeling development
- Independent scientific peer review

WTMP Model Domain

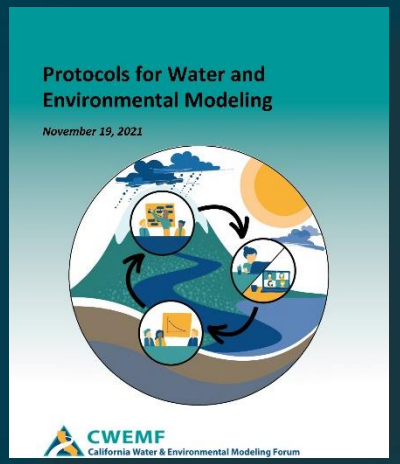
- Shasta-Trinity-Sacramento River System
- Folsom-American River System
- New Melones-Stanislaus River System



WTMP Timeline



Adoption of CWEMF Modeling Framework and Guidance



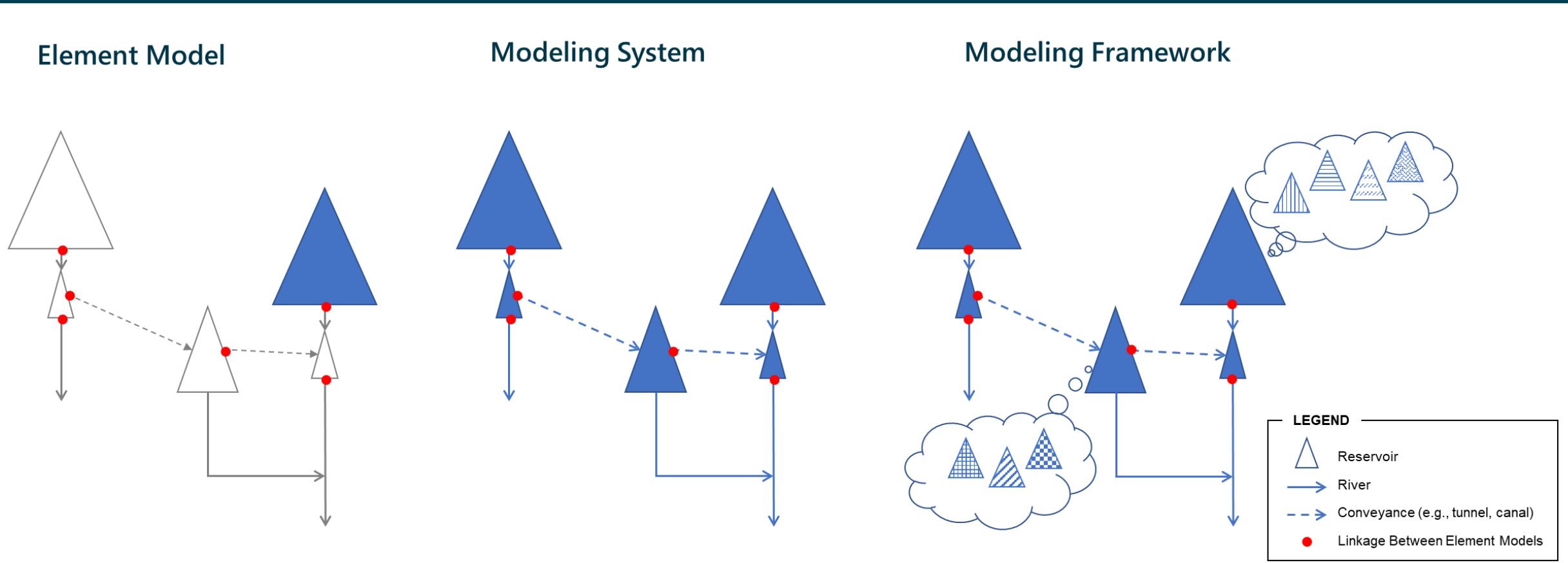
Guidance

- Preliminary Analysis
- Framing the Modeling Study
- Application of the Model
- Communicating and Documenting Results
- Encouraging Collaboration in the Modeling Community

CVP WTMP

- Modeling Framework Selection
- Model Configuration, Testing, and Uncertainty
- Model Applications
- Technical Memoranda, User Manual, etc.
- Modeling Technical Committee and Peer Review

WTMP: Flexibility in Use of Element, System, and Framework



CE-QUAL-W2

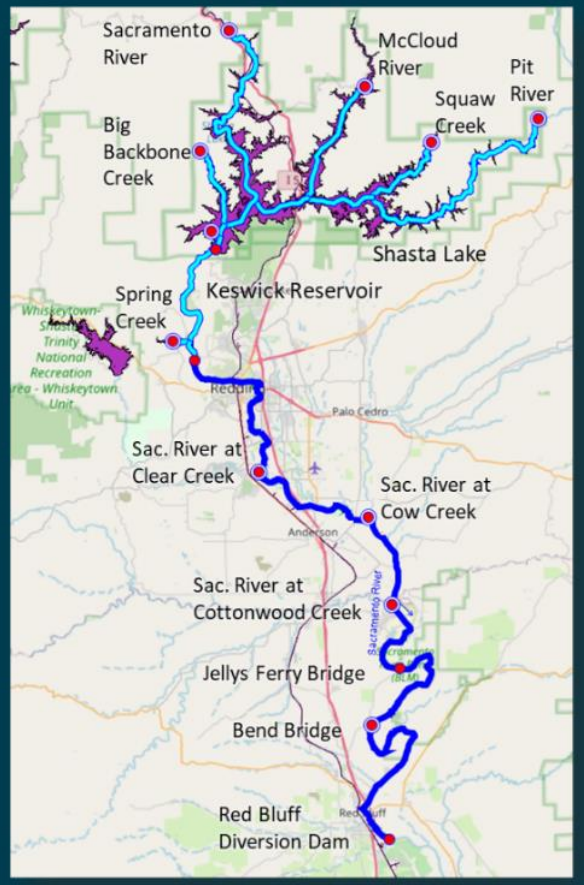
HEC-ResSim

HEC-WAT

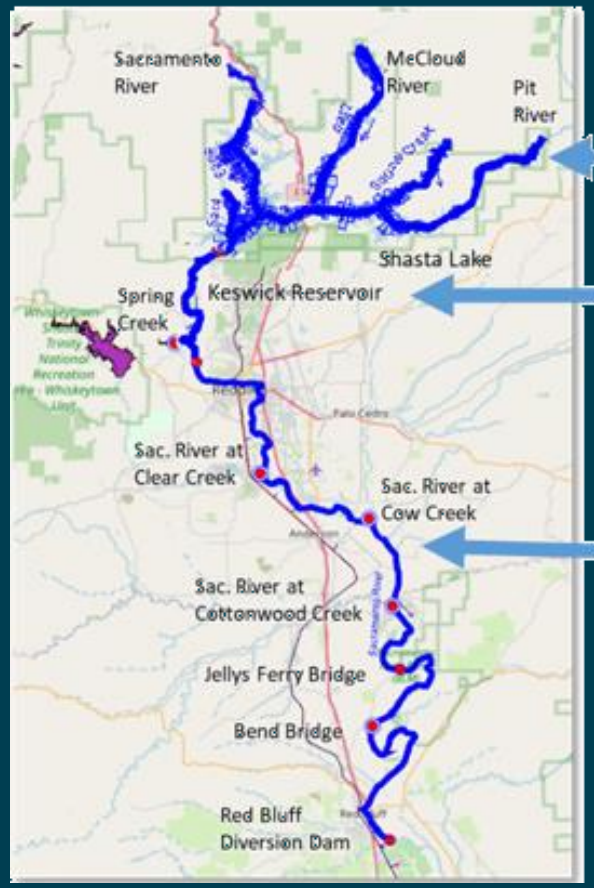
WTMP: Flexibility in Use of Element, System, and Framework

Example: Shasta-Keswick-Upper Sacramento River

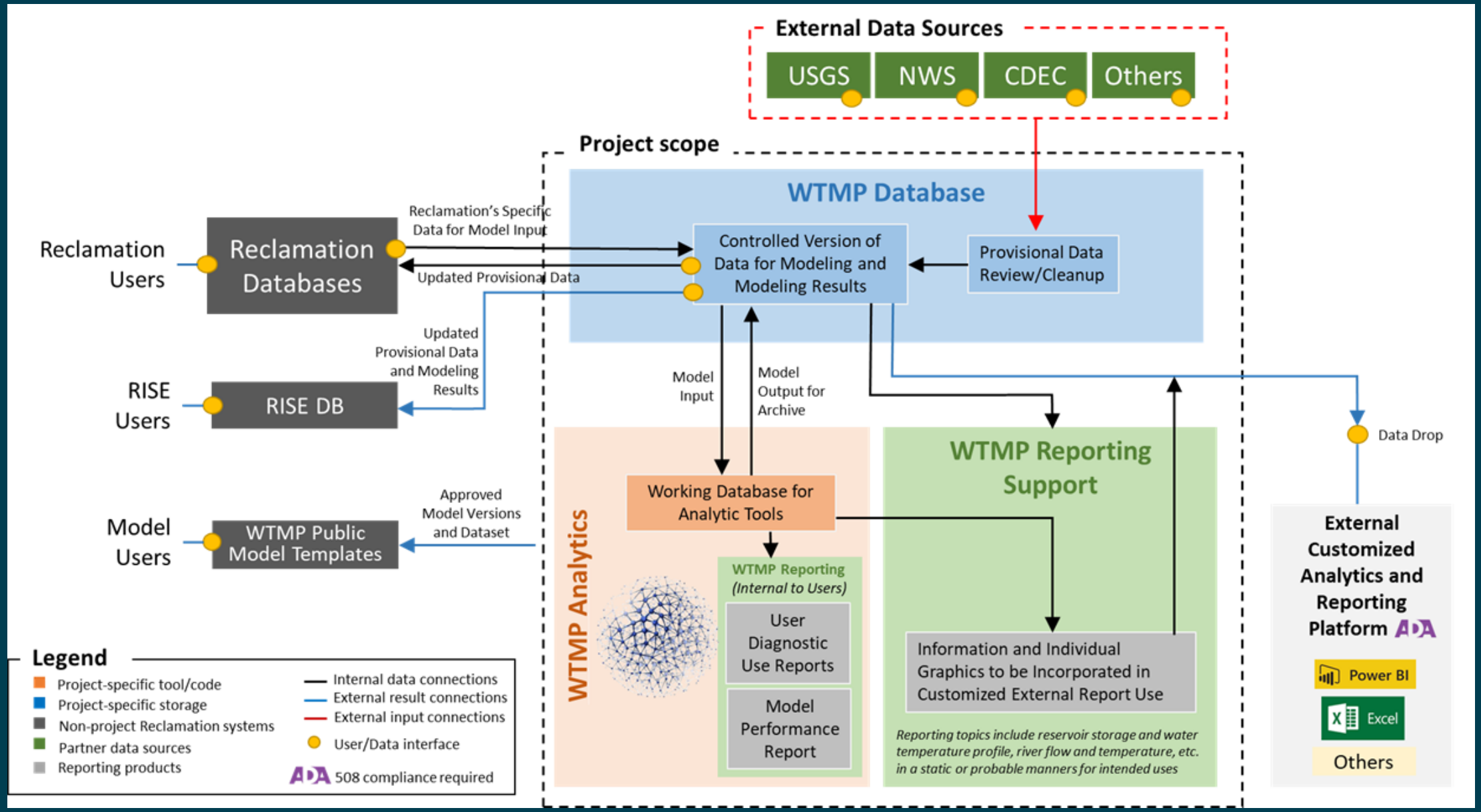
ResSim Only



Combined W2 and ResSim



WTMP: The Engine to Make It Happen



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Contacts

- David Mooney: dmmooney@usbr.gov
- Levi Johnson: lejohnson@usbr.gov
- Randi Field: rfield@usbr.gov
- Ryan Lucas: rlucas@usbr.gov
- Thomas Patton: tpatton@usbr.gov
- Mike Deas: mike.deas@watercourseinc.com
- John DeGeorge: john@rmanet.com
- Yung-Hsin Sun: sun.yunghsin@sunziconsulting.com