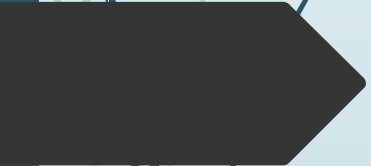


Data Collection and Estimates of Inter-basin Groundwater Flows since 2017 and How the GSAs are Approaching Inter-basin Coordination

Coordination During Groundwater Sustainability Plan Development



Christina Buck, Ph.D. (presenting)
Assistant Director
Butte County Water & Resource
Conservation
CBuck@buttecounty.net

ButteCounty
CALIFORNIA

Lisa Porta, P.E.
Senior Water Resources Engineer
Montgomery & Associates
lporta@elmontgomery.com

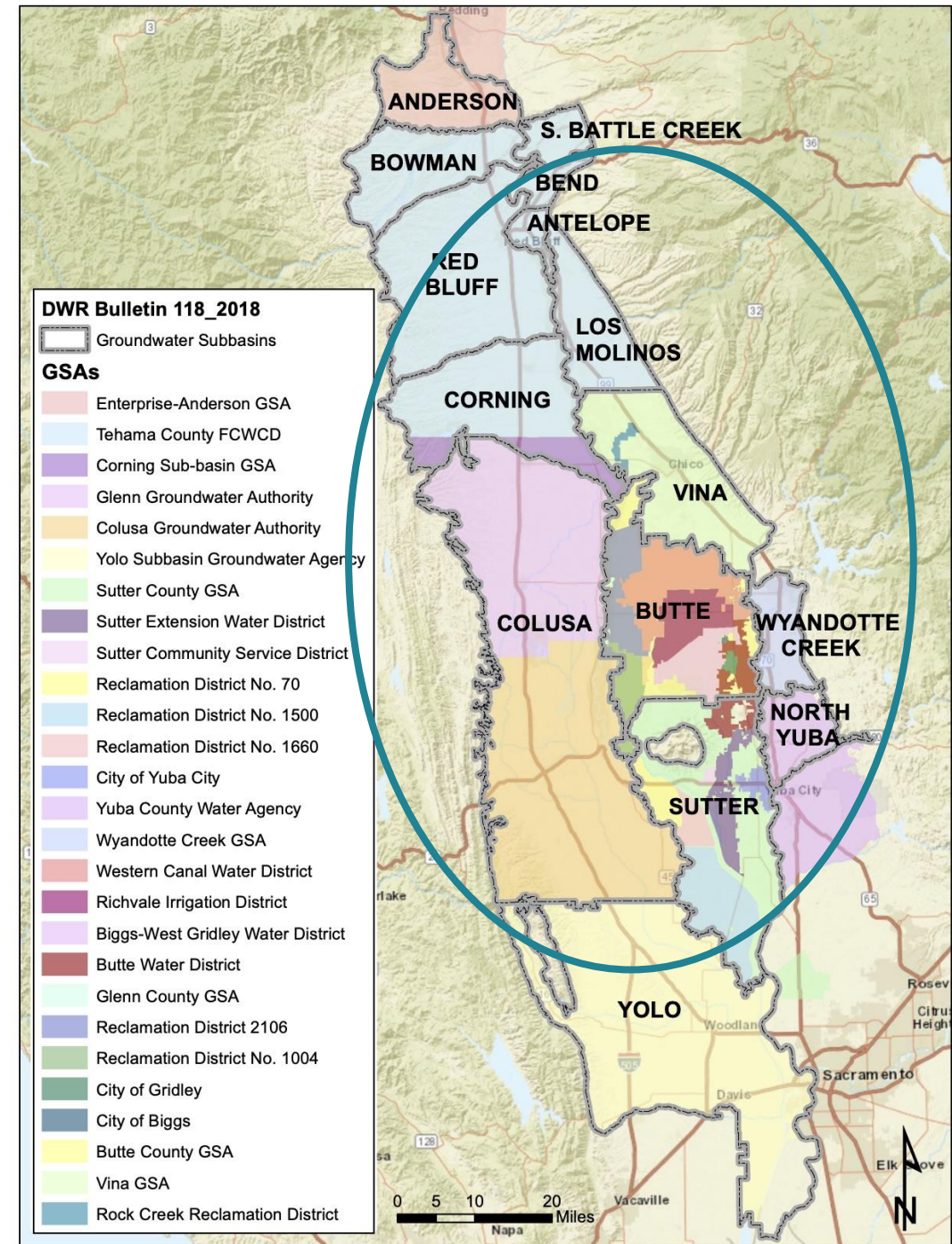
 **MONTGOMERY**
& ASSOCIATES
Water Resource Consultants

Coordination in the Northern Sacramento Valley

11 Subbasins with overlapping jurisdictions, including:

- 6 Counties
- 27 Groundwater Sustainability Agencies (GSAs)

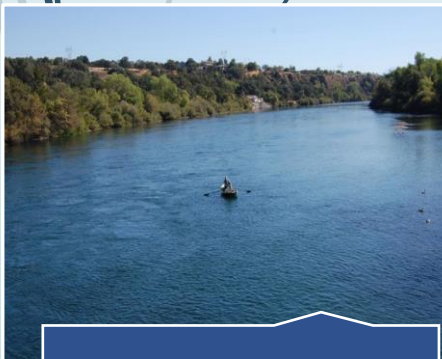
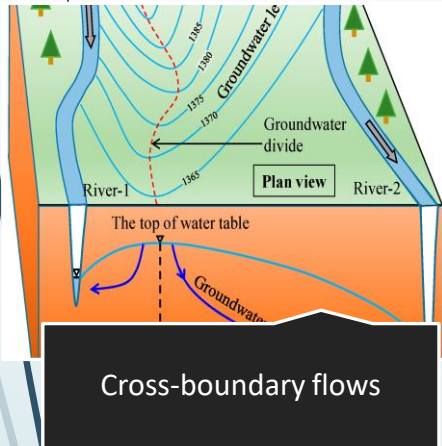
A single Groundwater Sustainability Plan (GSP) was submitted in January 2022 for each Subbasin



Initial Aspirations in early 2020

Driven by “Technical Information” outlined in Article 8 of GSP Regulations for Inter-basin Agreements

1. An **estimate of groundwater flow across basin boundaries**, including consistent and coordinated data, methods and assumptions.
2. An **estimate of stream-aquifer interactions at boundaries**.
3. A **common understanding of the geology and hydrology of the basins and the hydraulic connectivity** as it applies to the Agency’s determination of groundwater flow across basin boundaries and **description of the different assumptions** utilized by different Plans and how the Agencies reconciled those differences.
4. **Sustainable management criteria and a monitoring network** that would confirm that no adverse impacts result from the implementation of the Plans of any party to the agreement...



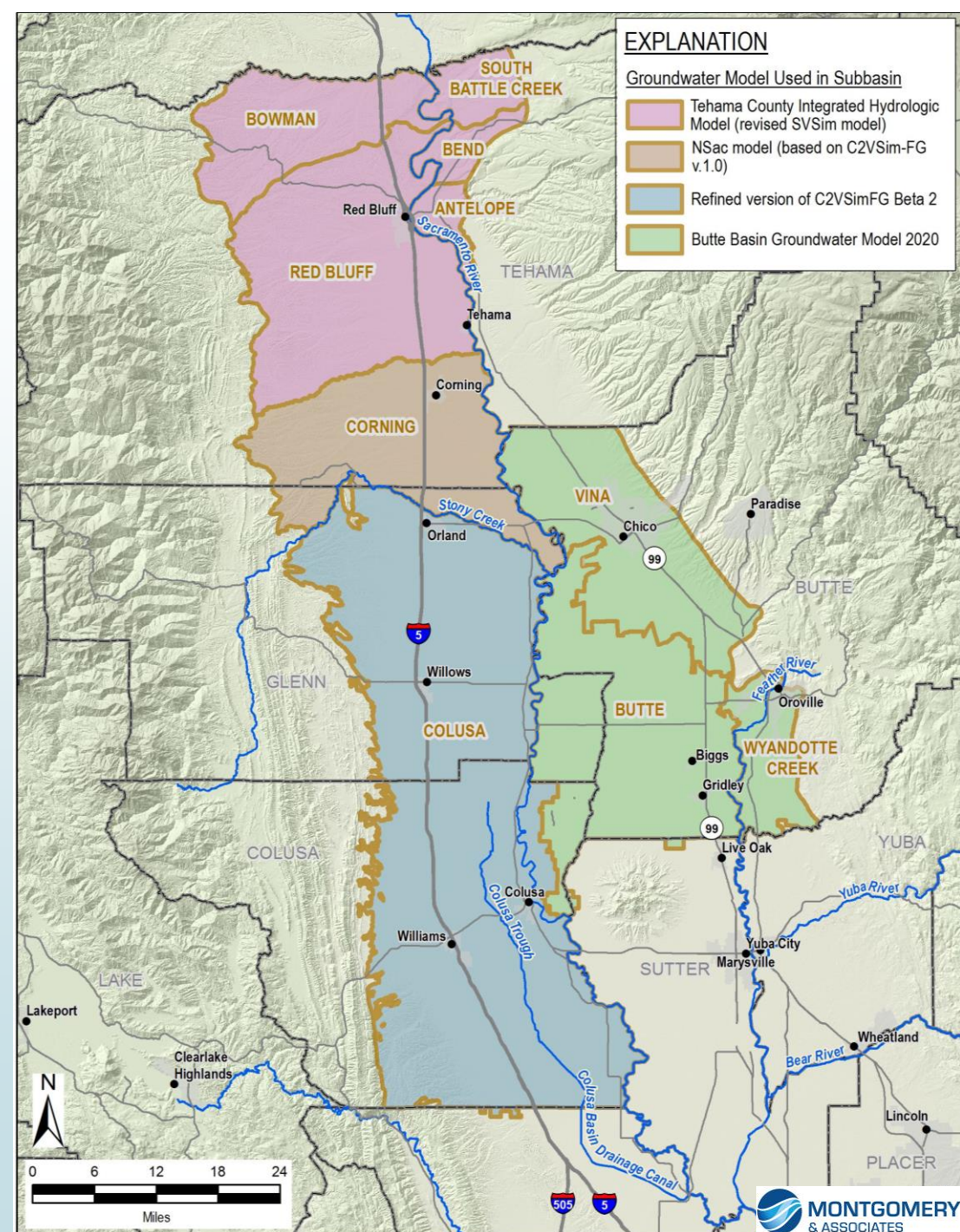
Stream-aquifer interactions at boundaries

Inter-basin Coordination Activities

- ▶ 11 meetings from June 2020 through January 2022
- ▶ GSA staff meetings facilitated by Tania Carlone and Mariana Rivera-Torres (CBI) through DWR Facilitation Support Services
- ▶ 2 technical meetings focused on information sharing template for models, cross-boundary flows, stream interactions with technical consultant teams working on the GSPs
- ▶ Related Effort: Northern California Water Association (NCWA) facilitated SGMA coordination meetings as a venue for all Sacramento Valley technical teams to share information on GSP progress, approaches to SMC development, and discussions to work through local/regional challenges

Technical Coordination

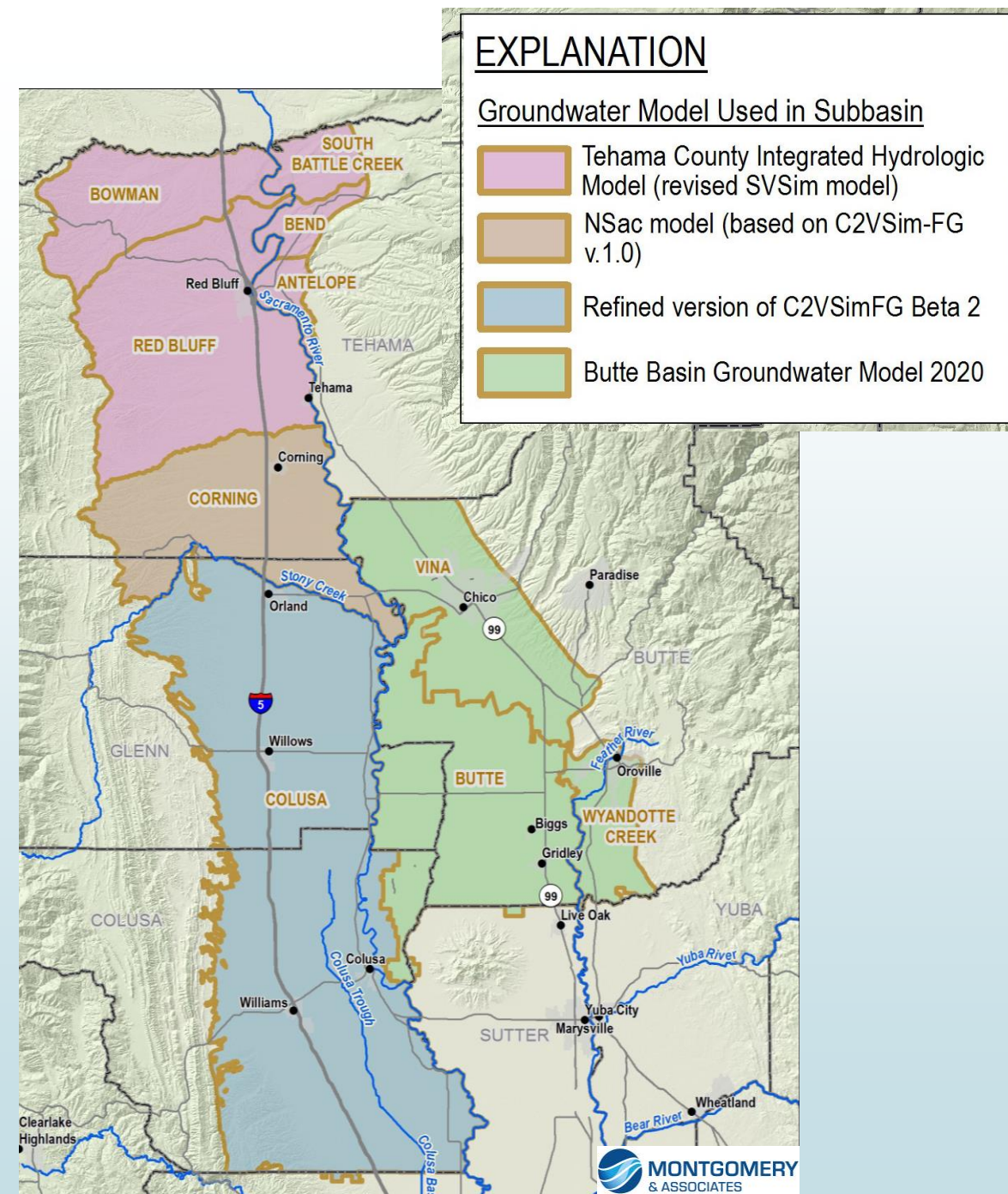
- Modeling coordination and information sharing
- Initial comparison of groundwater budget components
- Information sharing regarding Sustainable Management Criteria, monitoring networks, and data gaps



Modeling Coordination

Four different groundwater flow models

- ▶ All based on same numerical code: DWR's IWFM
- ▶ Using various versions of the code
- ▶ Using different types of inputs
- ▶ Overlapping boundaries
- ▶ Using different modeling timeframes for historical periods
- ▶ Different approaches to projected land use
- ▶ Overall similar approaches for projected timeframes with climate change data

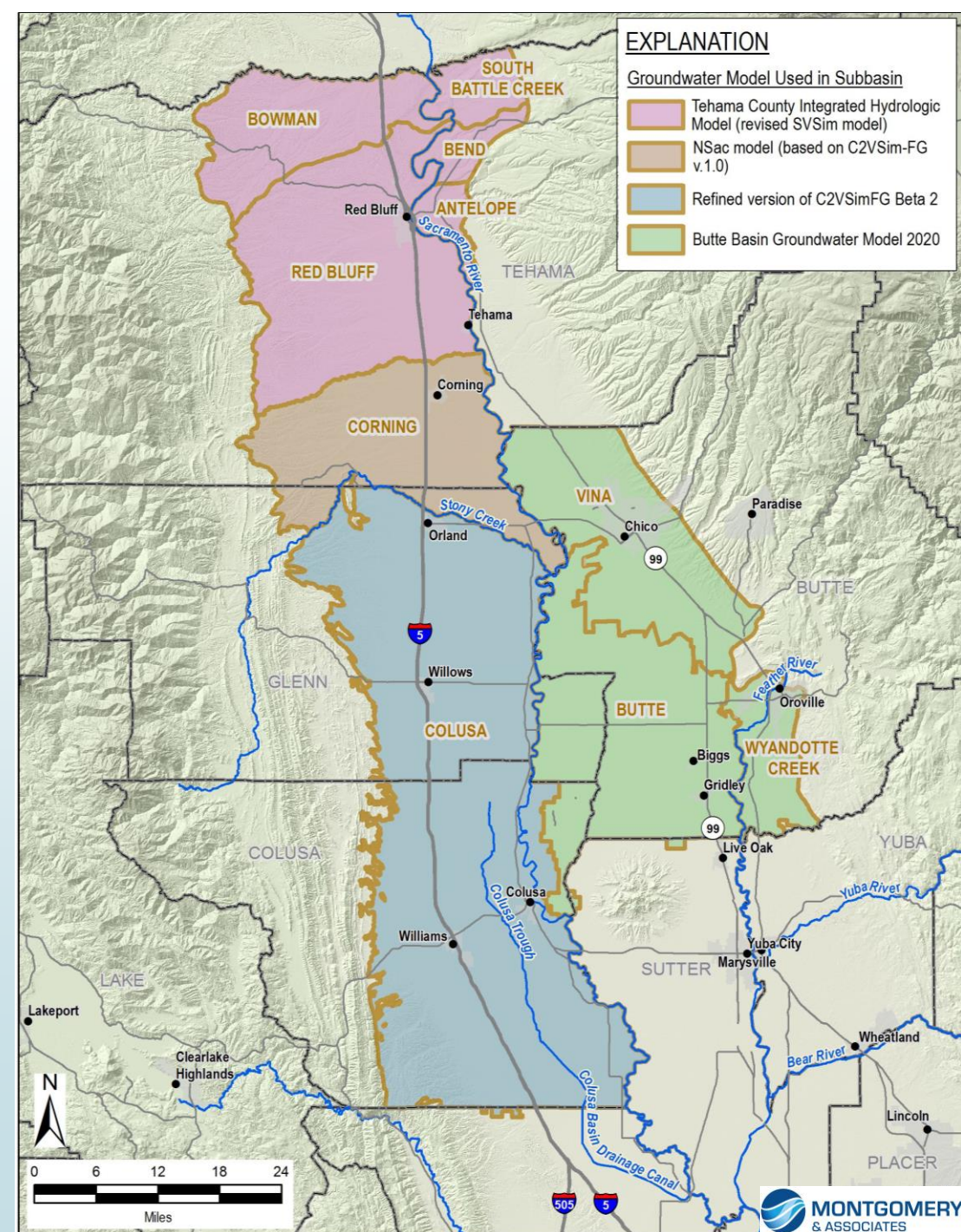


Modeling Coordination

Model Comparison Spreadsheet

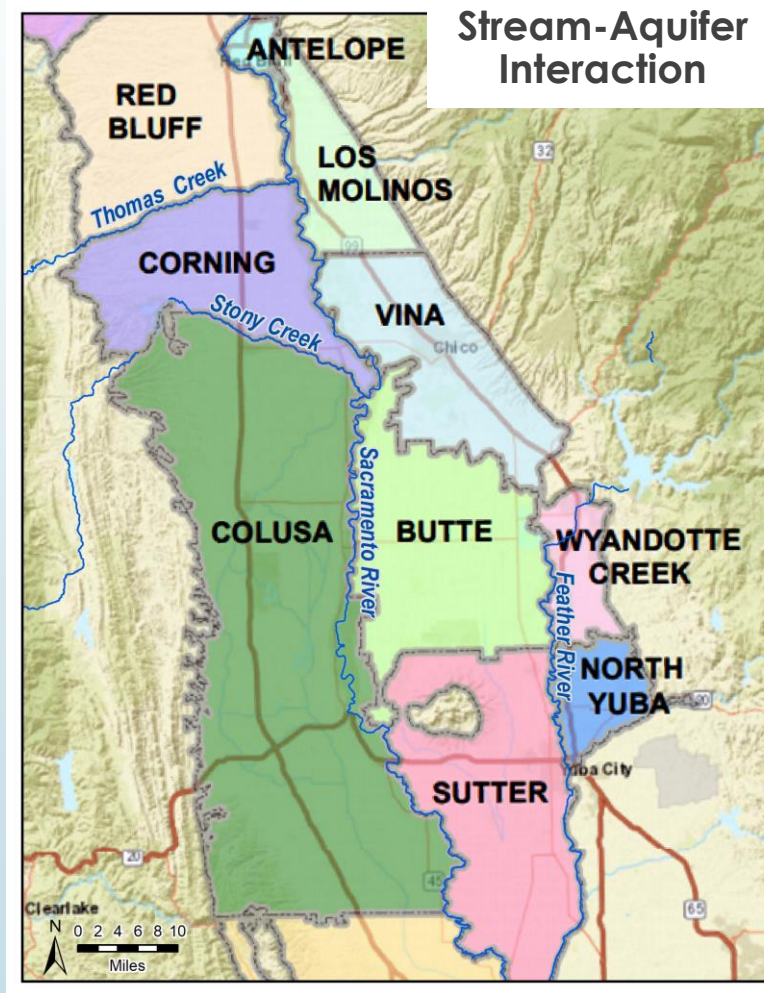
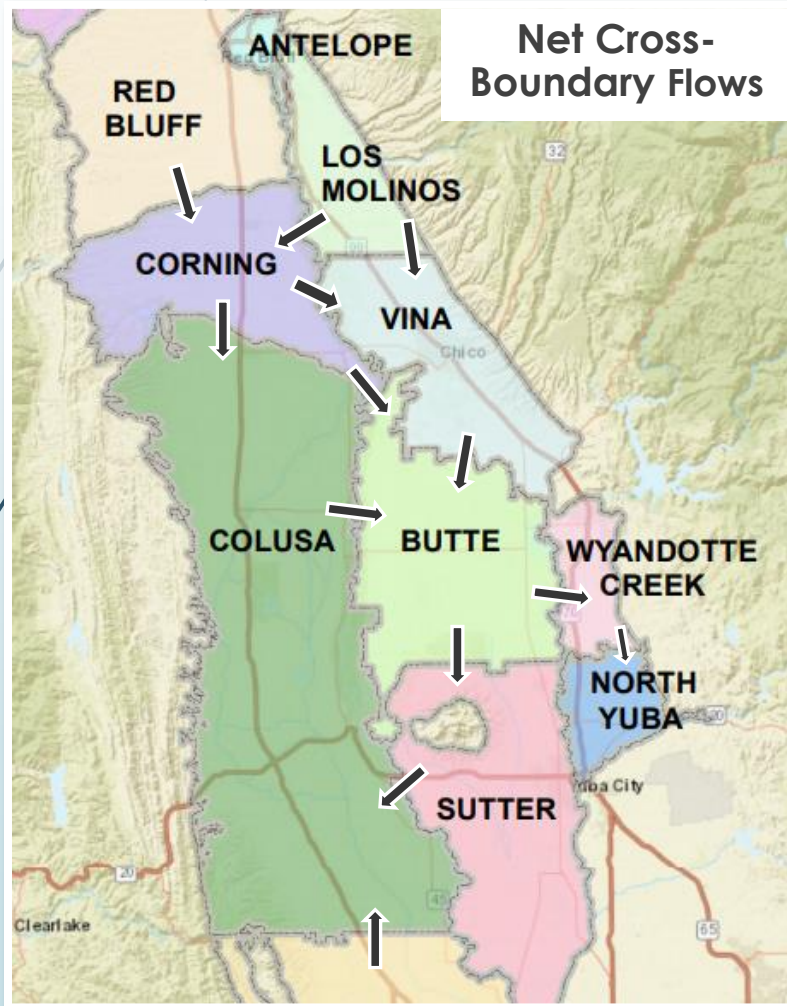
- Model
- Model Ownership (& Contact)
- Geographic Extent
- Time Step
- Simulation Period
- Number of layers
- Basis for Model Layering
- Ag Demand Estimation Model
- Stream-Aquifer Interaction Method
- Boundary Conditions

<https://www.buttecounty.net/1234/Inter-Basin-Coordination>



Modeling Coordination

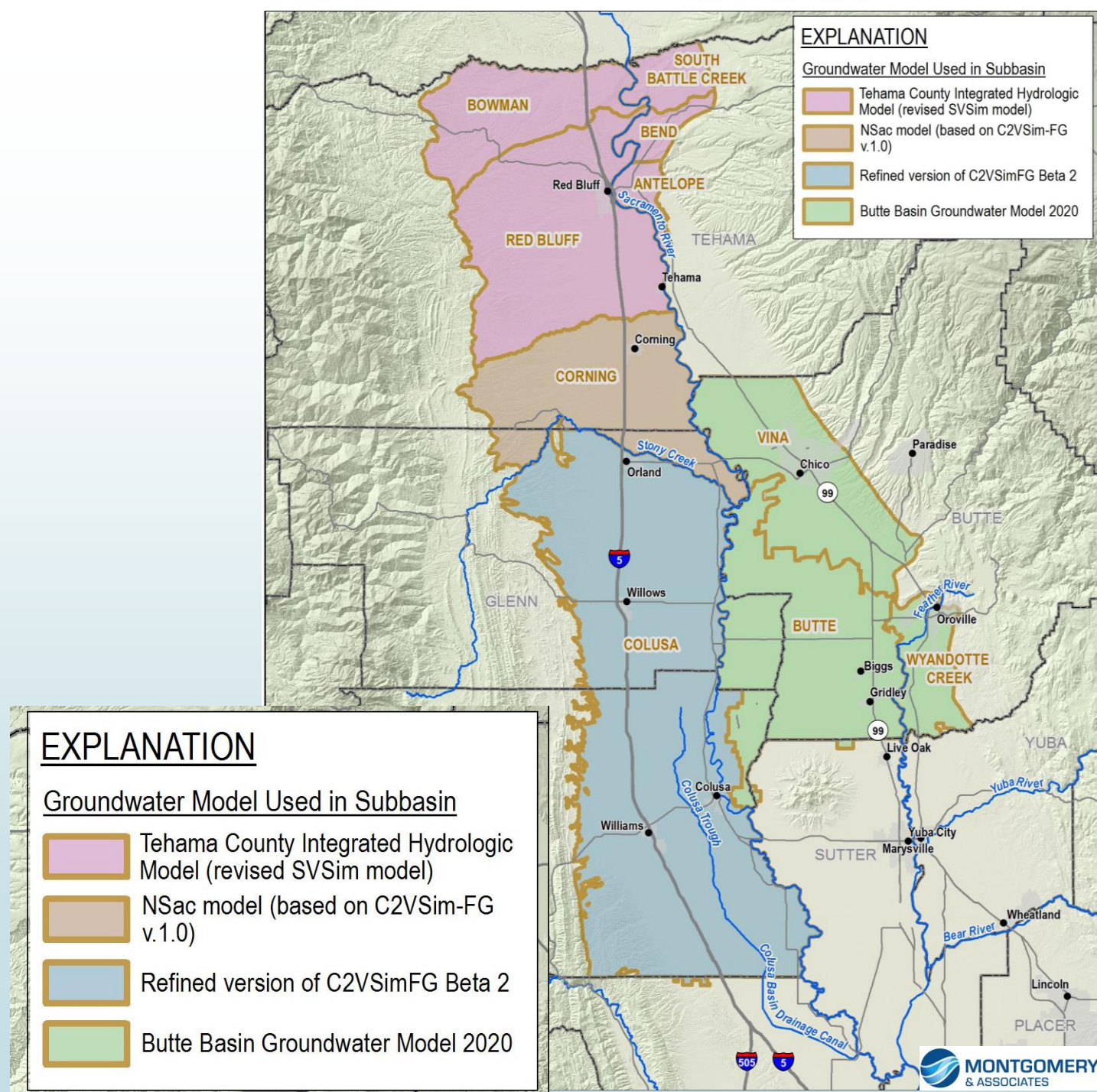
Initial review of modeling results at basin boundaries



Modeling Coordination

COMPLEXITIES ABOUND

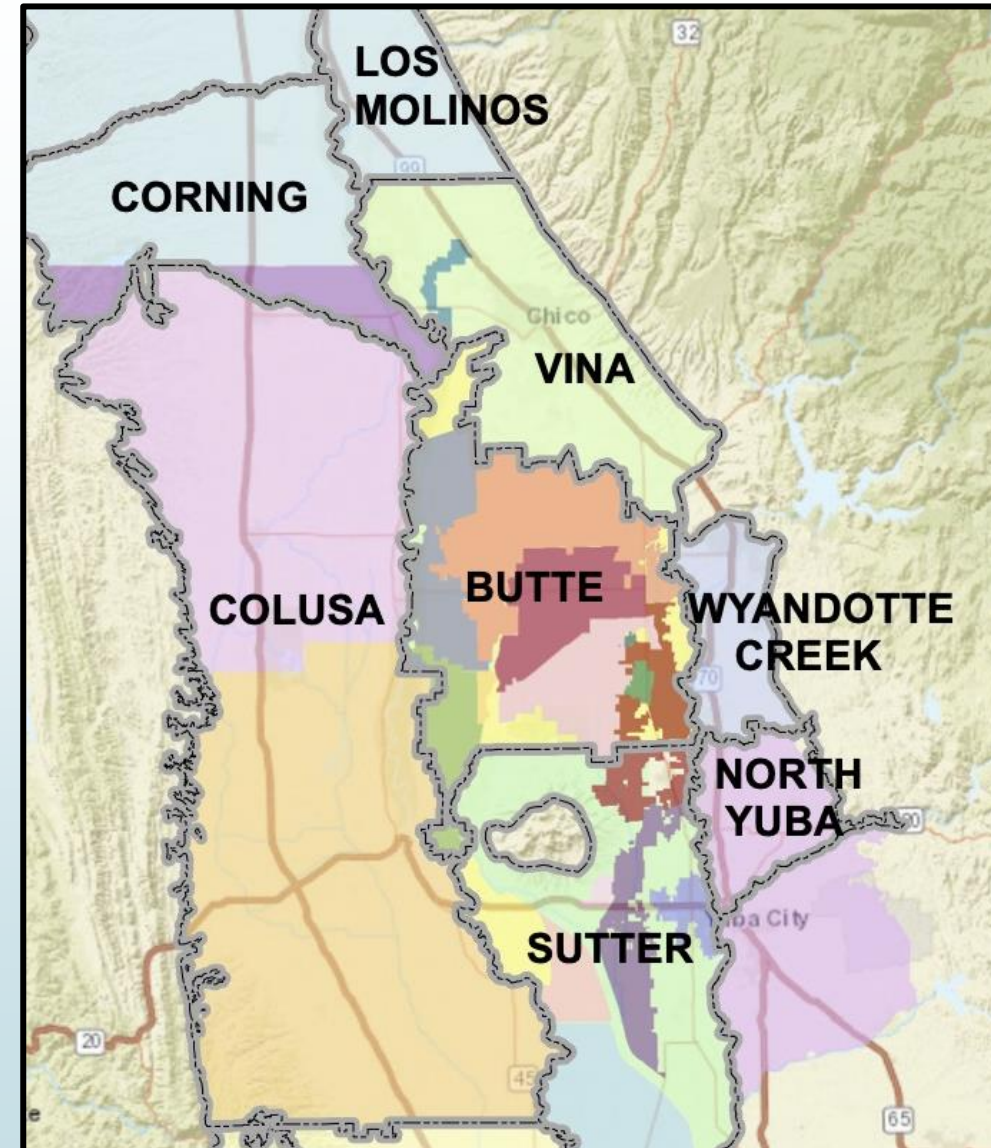
- Tricky to consistently compare inter-basin flows
- Key subbasin boundaries align with the Sacramento River (and also a model boundary)



Challenges

- Significant differences in timelines of GSP development (Basin Setting in particular)
- Numerous GSAs with differing public processes
- Many different technical consulting teams with different contracts/timelines

**Impending January 2022
GSP Deadline!**



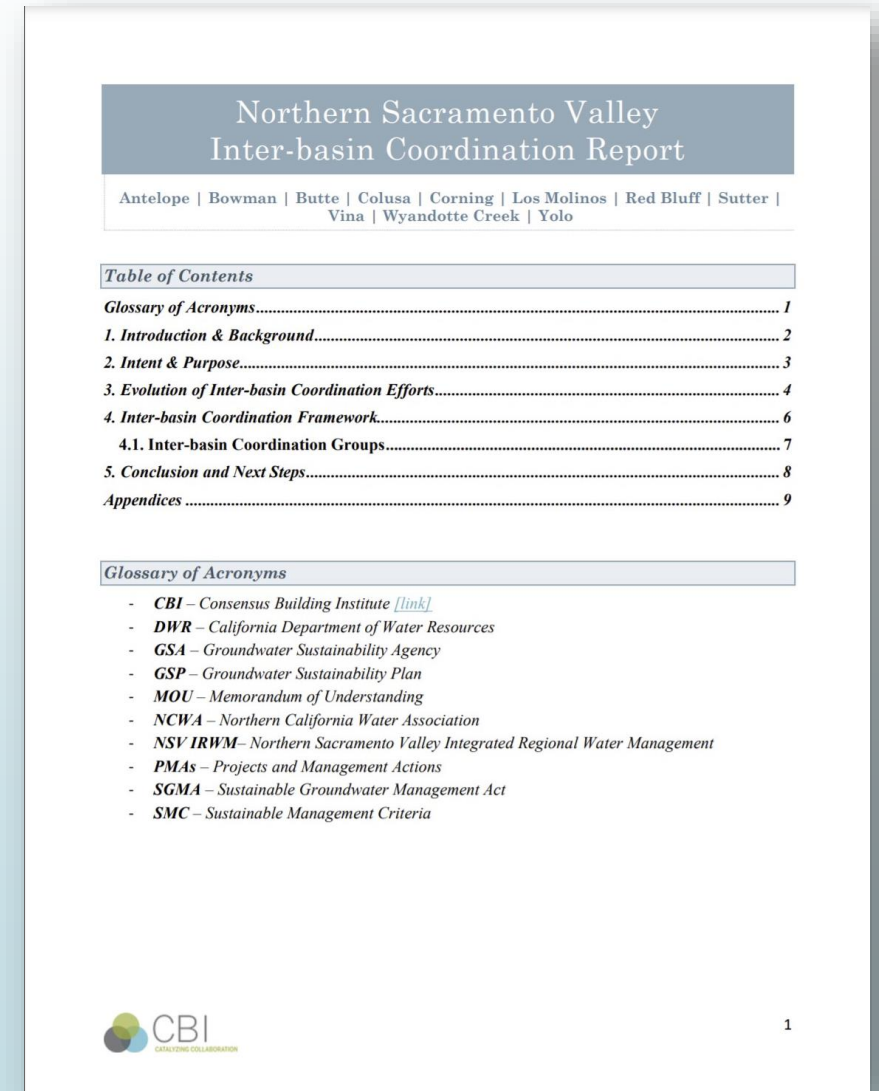
Adjusting Priorities

- Staff and consultants continued to share technical information during GSP development.
- Efforts shifted towards establishing a framework for continued inter-basin coordination and dialogue throughout GSP implementation (post-January 2022).

NSV Inter-basin Coordination Report

- Summarizes coordination efforts during GSP development
- Identifies 5 Pillars as menu of options for future coordination
- Was included as an appendix to GSPs to acknowledge and document subbasin efforts and intent to coordinate

<https://www.buttecounty.net/DocumentCenter/View/5476/Northern-Sacramento-Valley-Inter-Basin-Coordination-Report---Final-PDF>



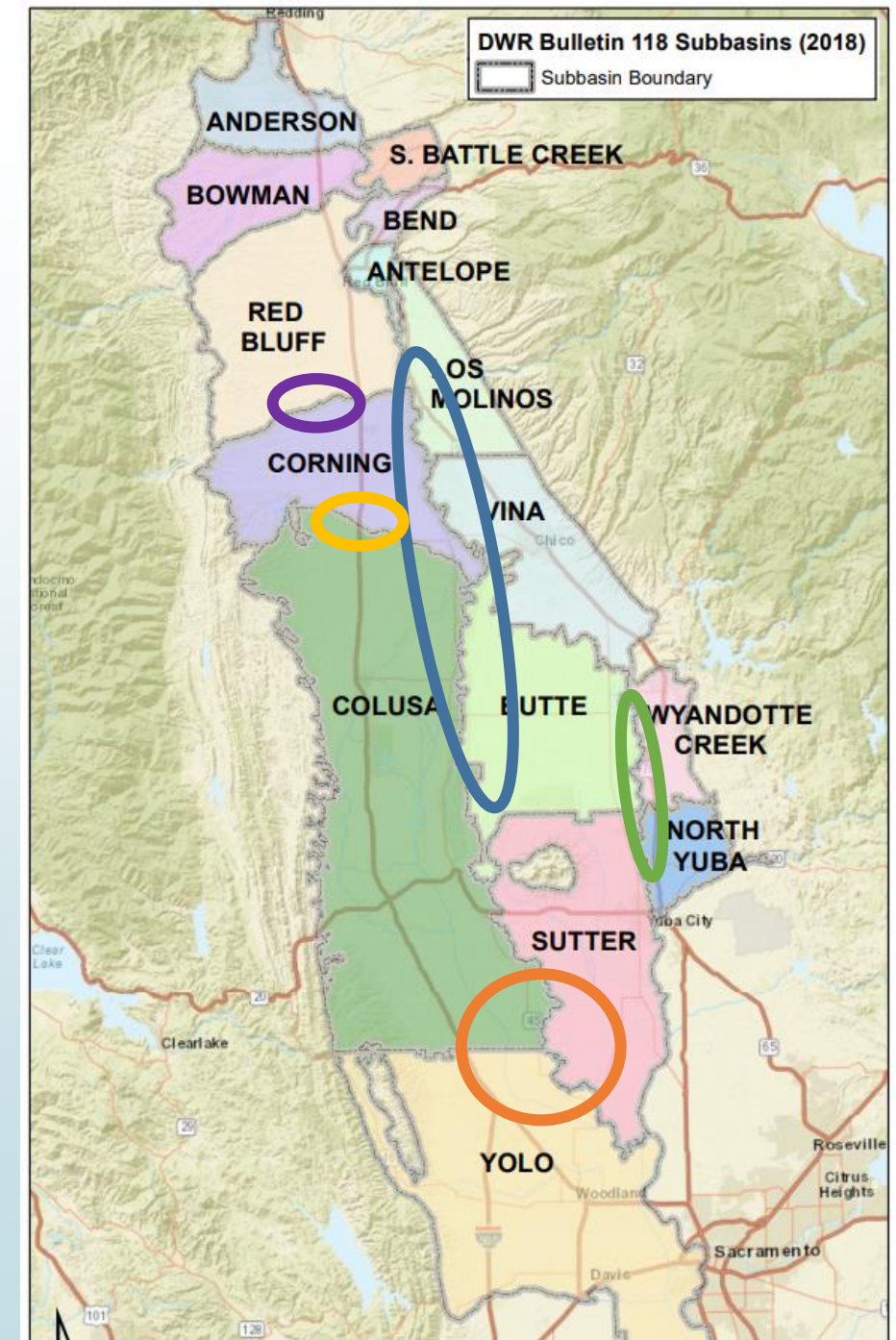
At What Scale Should Coordination Occur?

Coordination Groups

- **Feather River Corridor**- Butte, Wyandotte Creek, North Yuba, Sutter
- **North Sac River Corridor**- Los Molinos, Red Bluff, Corning, Vina, Butte, Colusa
- **South Sac Corridor**- Colusa, Sutter, Yolo

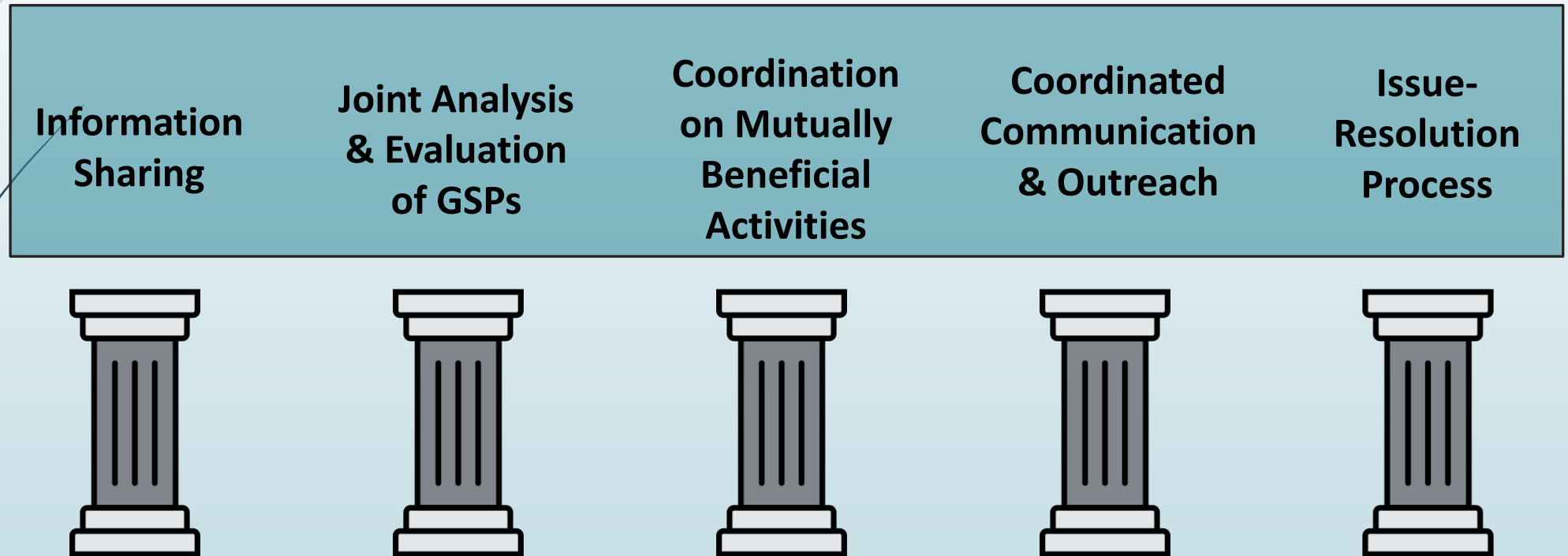
Neighbor to Neighbor

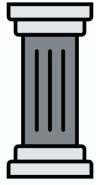
- **Stony Creek**- Corning, Colusa
- **Thomes Creek**- Red Bluff, Corning



Coordination & GSP Implementation

Framework with 5 Pillars





Pillar 2. Joint Analysis & Evaluation of GSPs

- a) Evaluate and compare contents of GSPs with a focus on **establishing a common understanding of basin conditions at boundaries**
- b) **Identify significant differences, uncertainties, and potential issues** of concern related to groundwater interaction at the boundaries
- c) Engage in **analysis and evaluation of Sustainable Management Criteria between GSPs** to assess impacts and identify significant differences and possible impacts between subbasins that could potentially lead to undesirable results

Funding has been pursued through the SGM Grant Program to conduct this work.

Next Steps

- GSAs transitioning to GSP Implementation- NEED FUNDING!
- Regional and neighbor to neighbor coordination
 - Monitoring Networks
 - Modeling refinements and updates
 - Interconnected Surface Water
- Continued coordination through information sharing and outreach
- Hopefully grant funded “Joint Analysis & Evaluation of GSPs” (TBD later in 2023)

GSAs are motivated to be proactive in coordinating locally and not waiting for DWR to identify issues

Acknowledgements

Tania Carlone and Mariana Rivera-Torres with **Consensus Building Institute** facilitated the inter-basin coordination effort and developed the outreach materials and final report.

GSA staff and technical consultant teams that worked on the 11+ GSPs and coordinated throughout the process to ensure knowledge sharing between subbasins in the Northern Sacramento Valley region.

DWR Facilitation Support Services

Questions?

Christina Buck, Ph.D. (presenting)
CBuck@buttecounty.net

Lisa Porta, P.E.
lporta@elmontgomery.com