Kern River Groundwater Sustainability Agency

Groundwater Workshop

August 20, 2018

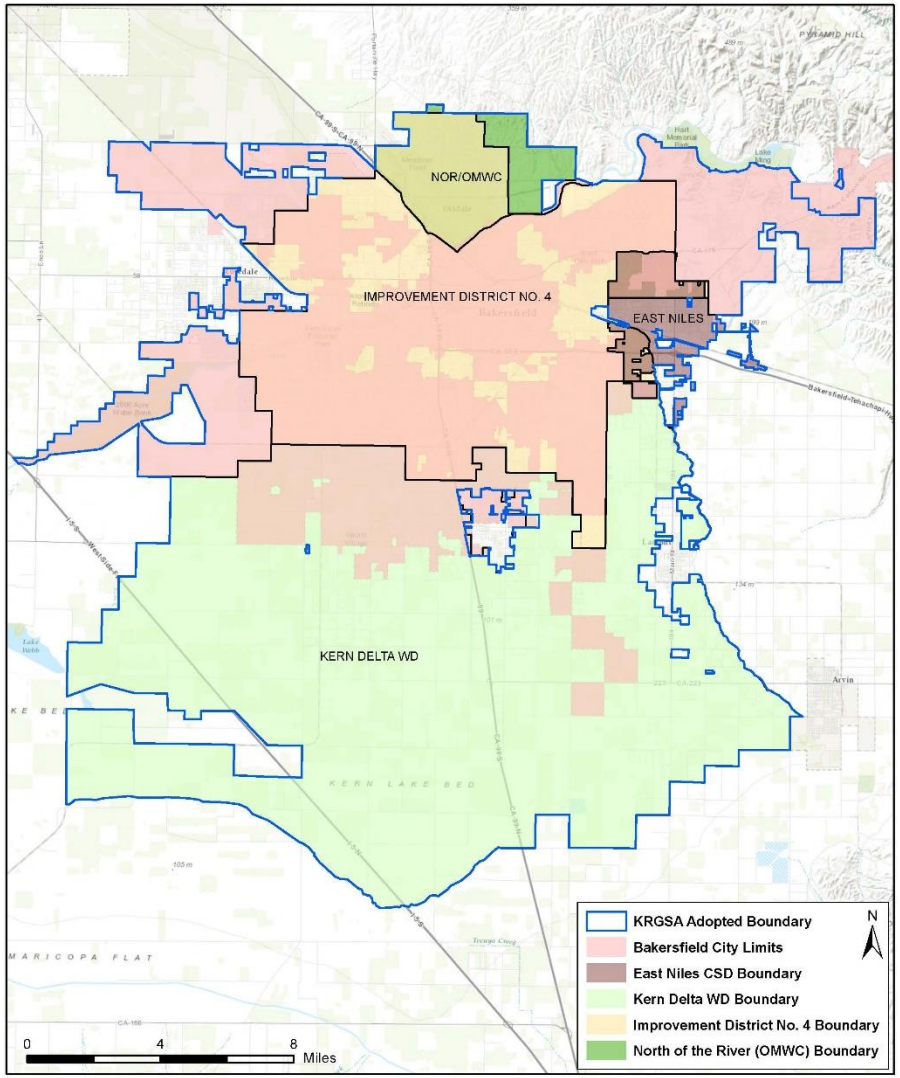
Horizon WATER and ENVIRONMENT

KRGSA

KERN RIVER GROUNDWATER SUSTAINABILITY AGENCY

Self-Help Enterprises

KERN RIVER GROUNDWATER SUSTAINABILITY AGENCY



Members of the Kern River GSA

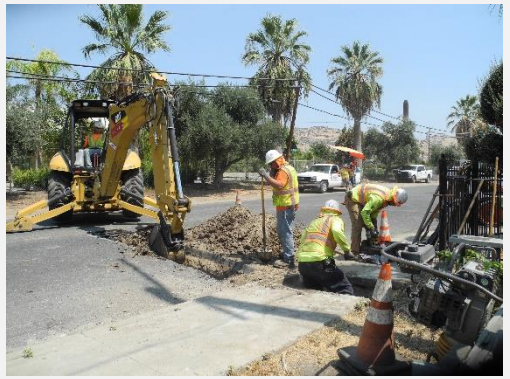
- City of Bakersfield
- Kern County Water Agency
- Kern Delta Water District – ID 4

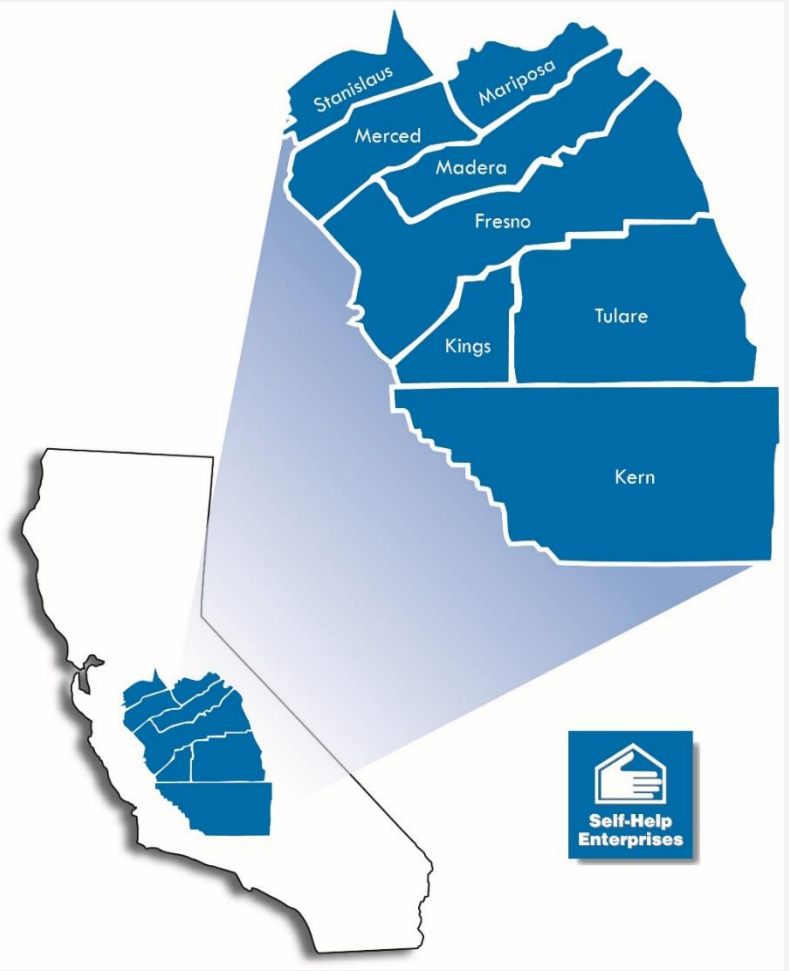
Communities within the GSA

- Edison
- Fuller Acres
- Oildale
- Oil Junction
- Rexland Acres
- Weedpatch
- Lamont (small northern portion only)

SELF-HELP ENTERPRISES (SHE)

- SHE is a nationally-recognized non-profit housing and community development organization whose mission is to work together with low-income families to build and sustain healthy homes and communities.
- Community Development Program provides technical assistance and leadership development in rural communities who face clean water, sanitary sewer and other infrastructure challenges.
- Community Engagement and Planning Team supports community participation in regional water management and groundwater sustainability planning as well as building water management capacity and expertise in rural communities.



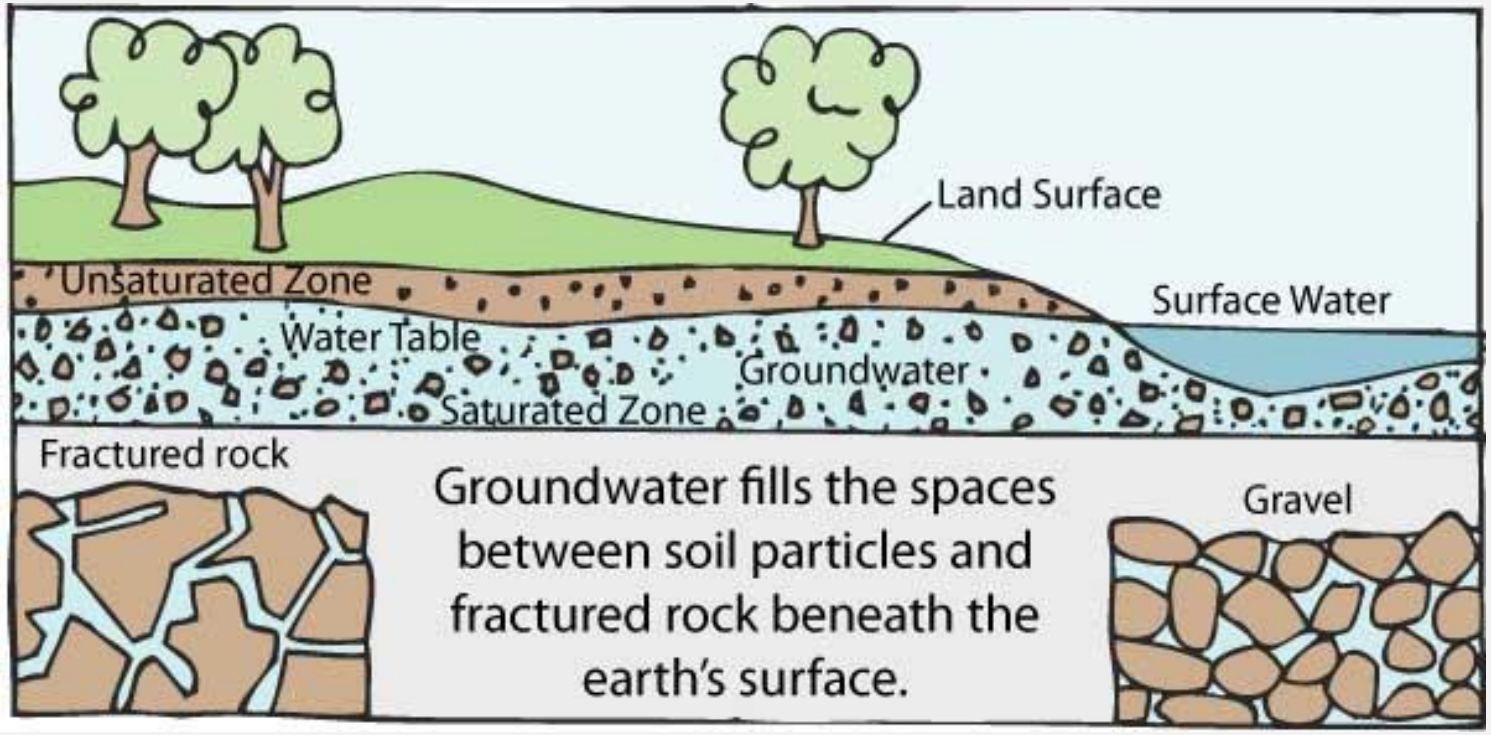


WORKSHOP OVERVIEW

- California's New Groundwater Law – The Sustainable Groundwater Management Act (SGMA)
- Groundwater Sustainability Plans (GSPs)
- KRGSA's GSP Development Efforts
- Share Your Thoughts – Stakeholder Survey
- Wrap Up and Closing Remarks

GROUNDWATER MATTERS

On average Californians get **40%** of their water from groundwater. During droughts, that number can go up to **60%.**



- In the Central Valley, we are even more dependent on groundwater than the state as a whole
- **90%** of Central Valley residents rely on groundwater for at least part of their drinking water supply
- Most unincorporated communities are **100%** reliant on groundwater – includes many of our small school districts

HOW COMMUNITIES AND SCHOOLS USE GROUNDWATER

HISTORICAL GROUNDWATER MANAGEMENT

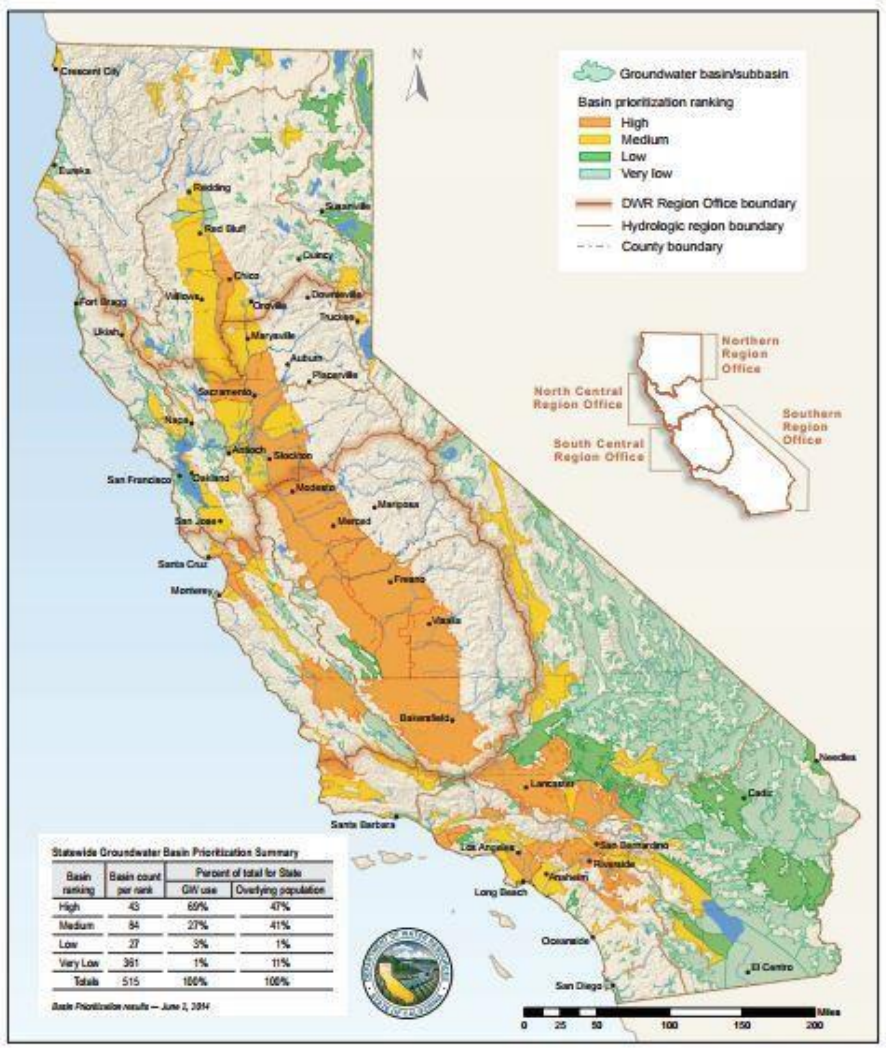
- Previously, groundwater management was voluntary in certain areas of the state
- Groundwater levels have been declining due to over-pumping, less surface water, and not enough recharge
- The drought (2012-2016) had an unprecedented impact on our state
- Dry wells (i.e., Arvin, Lamont area, and many others)
- Subsidence

CALIFORNIA'S SUSTAINABLE GROUNDWATER MANAGEMENT ACT (SGMA)

- Three-bill package: SB 1168 (Pavley), AB 1739 (Dickinson), SB 1319 (Pavley)
- Signed by Governor Brown on September 16, 2014
- Objective: Ensure the long-term reliability of our groundwater resources and connected surface water resources requiring "sustainable" management
- Core Principle: Local control

PREVENT UNDESIRABLE RESULTS

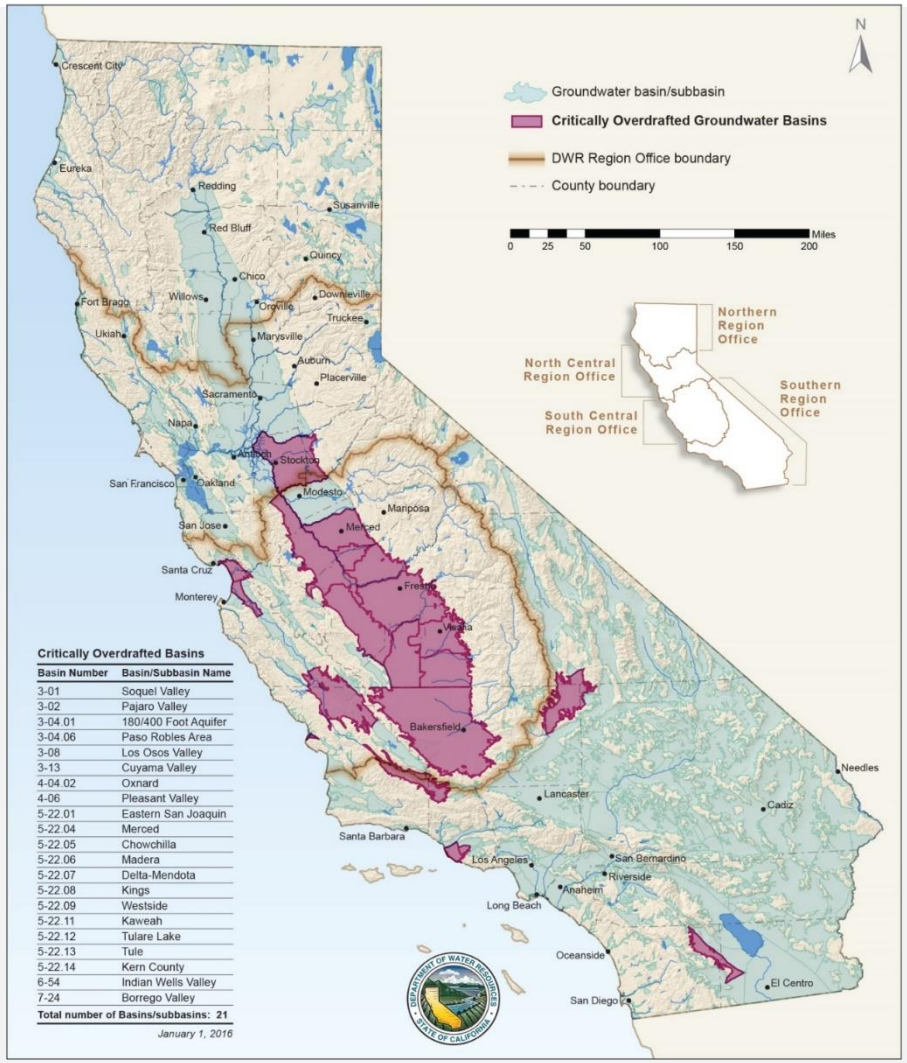
WHO MUST COMPLY WITH SGMA?



Statewide Groundwater Basin Prioritization Summary

Basin ranking	Basin count per rank	Percent of total for State	
		GW use	Overlying population
High	43	69%	47%
Medium	84	27%	41%
Low	27	3%	1%
Very Low	361	1%	11%
Totals	515	100%	100%

Basin Prioritization results — June 2, 2014



Critically Overdrafted Basins

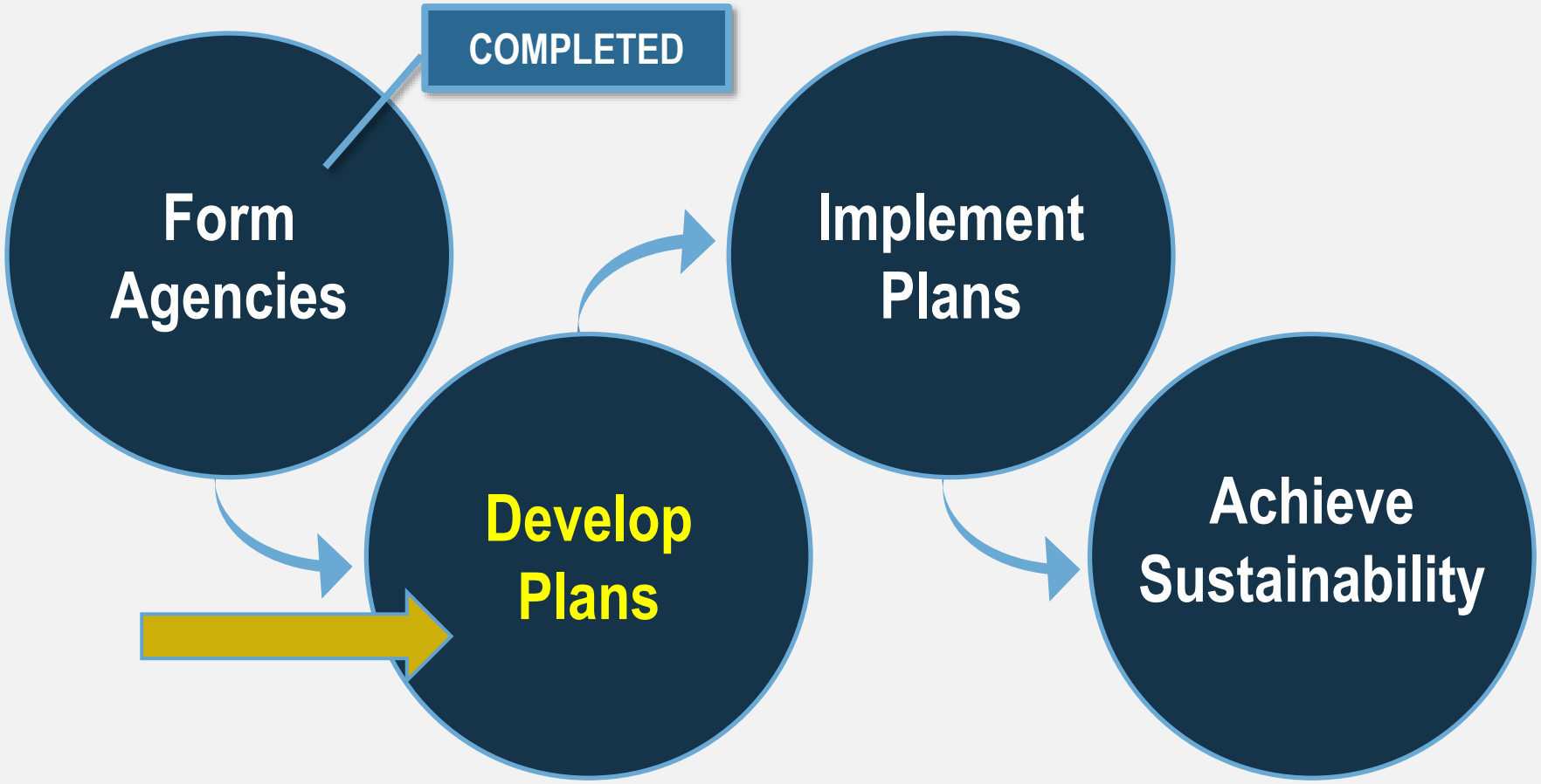
Basin Number	Basin/Subbasin Name
3-01	Soquel Valley
3-02	Pajaro Valley
3-04.01	180/400 Foot Aquifer
3-04.06	Paso Robles Area
3-08	Los Osos Valley
3-13	Cuyama Valley
4-04.02	Oxnard
4-06	Pleasant Valley
5-22.01	Eastern San Joaquin
5-22.04	Merced
5-22.05	Chowchilla
5-22.06	Madera
5-22.07	Delta-Mendota
5-22.08	Kings
5-22.09	Westside
5-22.11	Kaweah
5-22.12	Tulare Lake
5-22.13	Tule
5-22.14	Kern County
6-54	Indian Wells Valley
7-24	Borrego Valley
Total number of Basins/subbasins: 21	

January 1, 2016

WHOSE INTERESTS ARE AT STAKE?

- Holders of overlying groundwater rights (agricultural and domestic)
- Public water systems
- Local land use planning agencies
- Environmental users of groundwater
- Surface water users
- California Native American tribes
- Disadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems

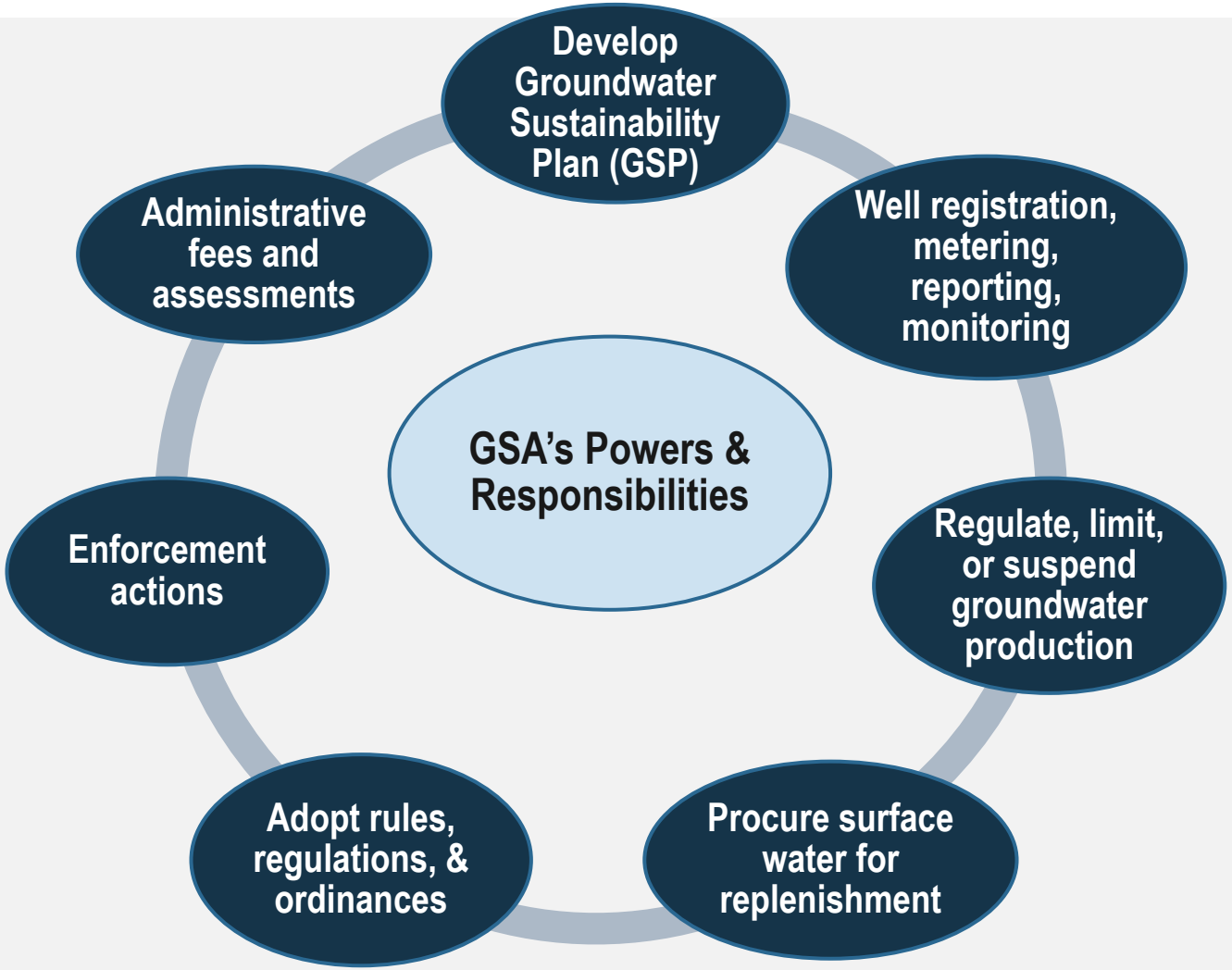
SGMA DESIGN


COMPLETED
Form Agencies
Develop Plans
Implement Plans
Achieve Sustainability

MULTIPLE GSAs IN A SUBBASIN

- More than one GSA can be formed in a sub-basin
- If there are multiple GSAs in a sub-basin, the GSAs can collaborate to write one single plan, or each GSA can write its own plan so long as the GSAs establish a coordination agreement for implementing multiple plans.
- However, GSAs must cover the entire area of the sub-basin, leaving no areas unmanaged
- All GSAs were approved in July 2017

POWERS AND RESPONSIBILITIES OF A GSA



DEVELOPMENT OF GROUNDWATER SUSTAINABILITY PLANS

- GSPs must contain important information:
  - Description of plan area & basin setting
  - Sustainability criteria
  - Monitoring program and projects
- GSPs will serve as the roadmap to achieve sustainability
- GSAs will need to develop GSPs with stakeholder input

GSP SUBMITTAL AND APPROVAL BY DWR

- GSPs must be written by **January 31, 2020 (or January 31, 2022 if the basin is not critically overdrafted)**
- DWR determinations
  - Adequate
  - Inadequate
  - Incomplete
- If the Department of Water Resources decides that a GSP **will not sustainably manage groundwater by 2040 (or 2042 if not in critically overdrafted basins)**…

  → **<u>The State may step in and manage the sub-basin itself!</u>**

  Much more expensive
  Less local control

GSP IMPLEMENTATION AND ACHIEVING SUSTAINABILITY

- After submitting its GSP, a GSA has 20 years to reach sustainability
  - **Sustainability must be reached by 2040 (2042 for areas not in critical overdraft)**
- DWR will review all plans every five years to assess progress and recommend corrective actions as needed
- Annual Reporting

QUESTIONS & ANSWERS

GROUNDWATER SUSTAINABILITY PLANS

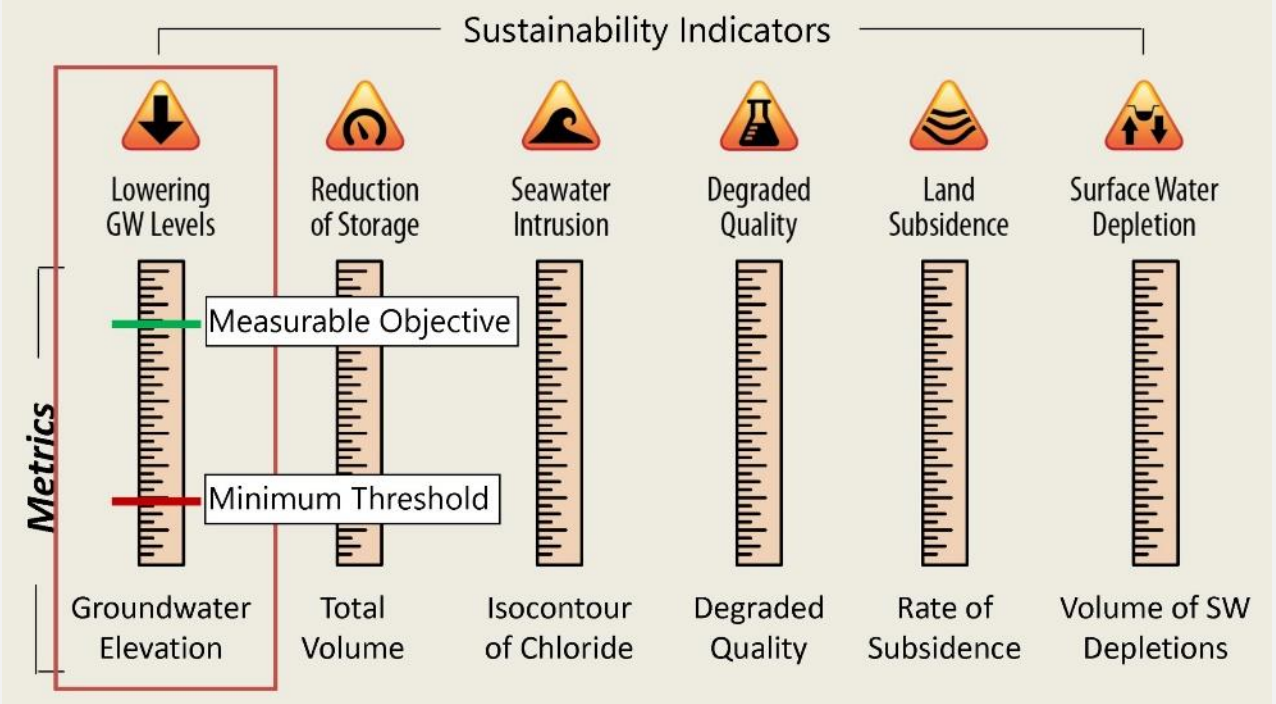
1. **Description of the plan area and basin setting:** Groundwater conditions, water budget, hydrogeological conceptual model, management areas
2. **Sustainability criteria:** set sustainability goal, set minimum thresholds for undesirable results, set measurable objectives
3. **Projects and management actions:** projects, management actions, mitigation measures, monitoring plan

WATER BUDGETS

SUSTAINABILITY CRITERIA
MEASUREABLE OBJECTIVES AND MINIMUM THRESHOLDS

Prevent “Undesirable results that are significant and unreasonable”

At this time, the only undesirable result that we can be certain doesn’t apply to the Kern River GSA area is Seawater intrusion



SUSTAINABILITY IS DEFINED LOCALLY

- SGMA requires GSAs to define sustainability using two concepts:
  - **Measurable objectives** are aspirational goals. Technically, you should achieve them by 2040 (or 2042 if not critically overdrafted).
  - **Minimum thresholds** are to be avoided. If they are crossed, you may be out of compliance with your plan and violating the obligation to reach sustainability.

GENERAL PRINCIPLES – MEASURABLE OBJECTIVES AND MINIMUM THRESHOLDS

- Cannot harm sustainability in a neighboring basin
- Cannot continue to be in long-term overdraft
- Cannot deplete surface water

MANAGEMENT ACTIONS AND PROJECTS

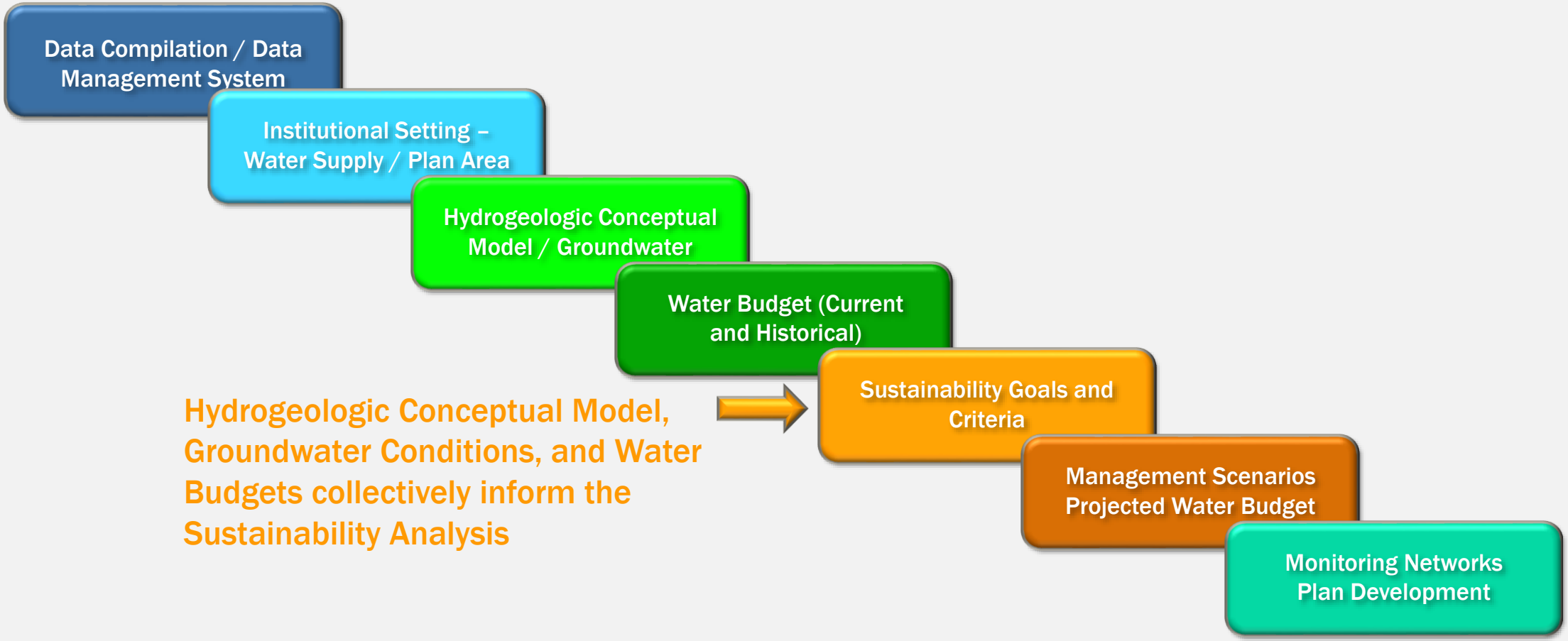
KRGSA's GSP DEVELOPMENT EFFORTS

GSAs AND GSPs IN KERN SUBBASIN
(AS OF APRIL 2018)

- **GSAs Preparing Their Own GSPs:**
  - Kern River GSA
  - Kern Groundwater Authority
  - Buena Vista Water Service District GSA
  - Henry Miller Water District GSA
  - Olcese Water District GSA

- **GSAs That Have Not Formalized GSP Preparation Plans:**
  - City of McFarland GSA
  - Greenfield County Water District GSA

GSP OVERVIEW



Hydrogeologic Conceptual Model, Groundwater Conditions, and Water Budgets collectively inform the Sustainability Analysis

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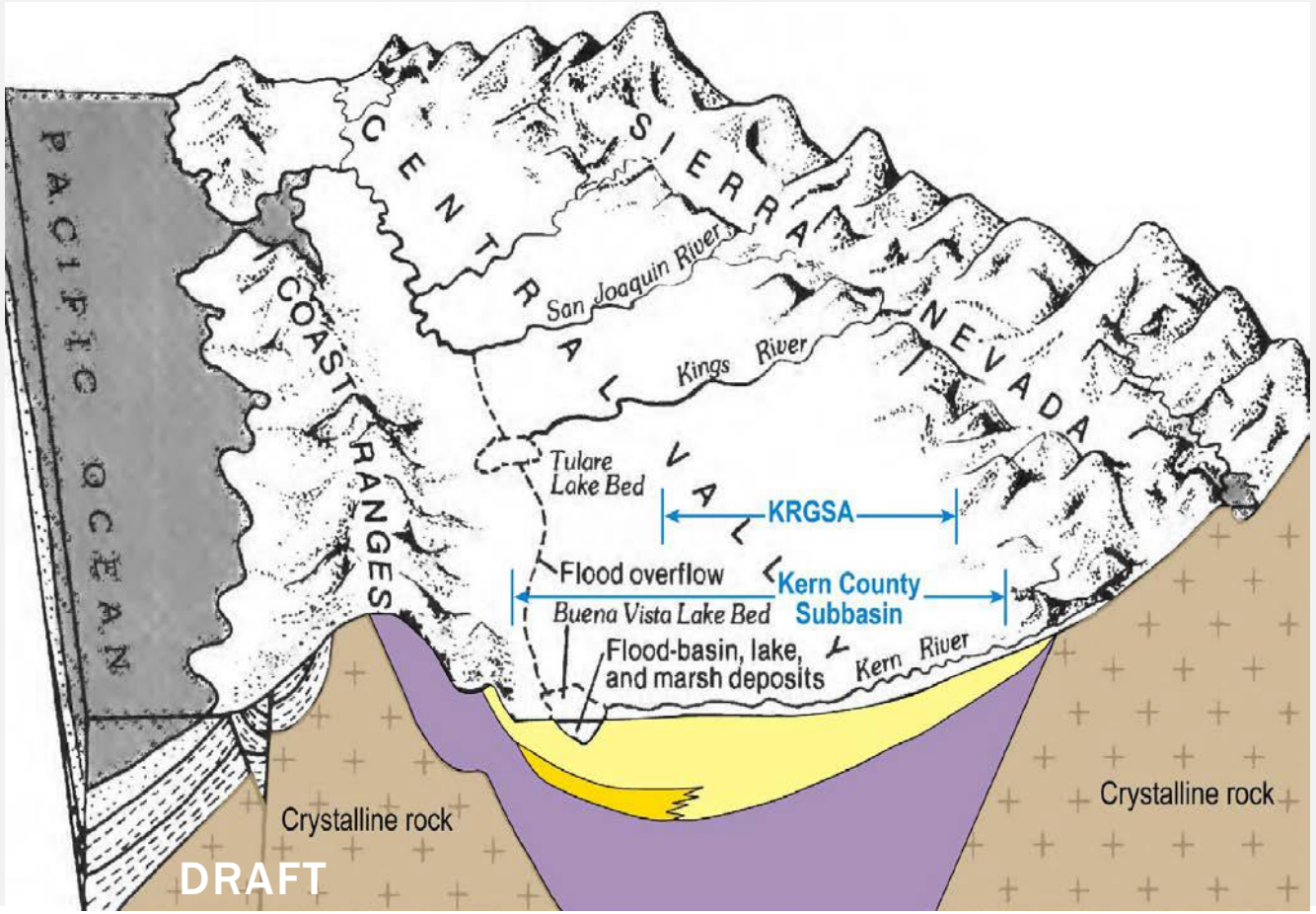
TODD GROUNDWATER

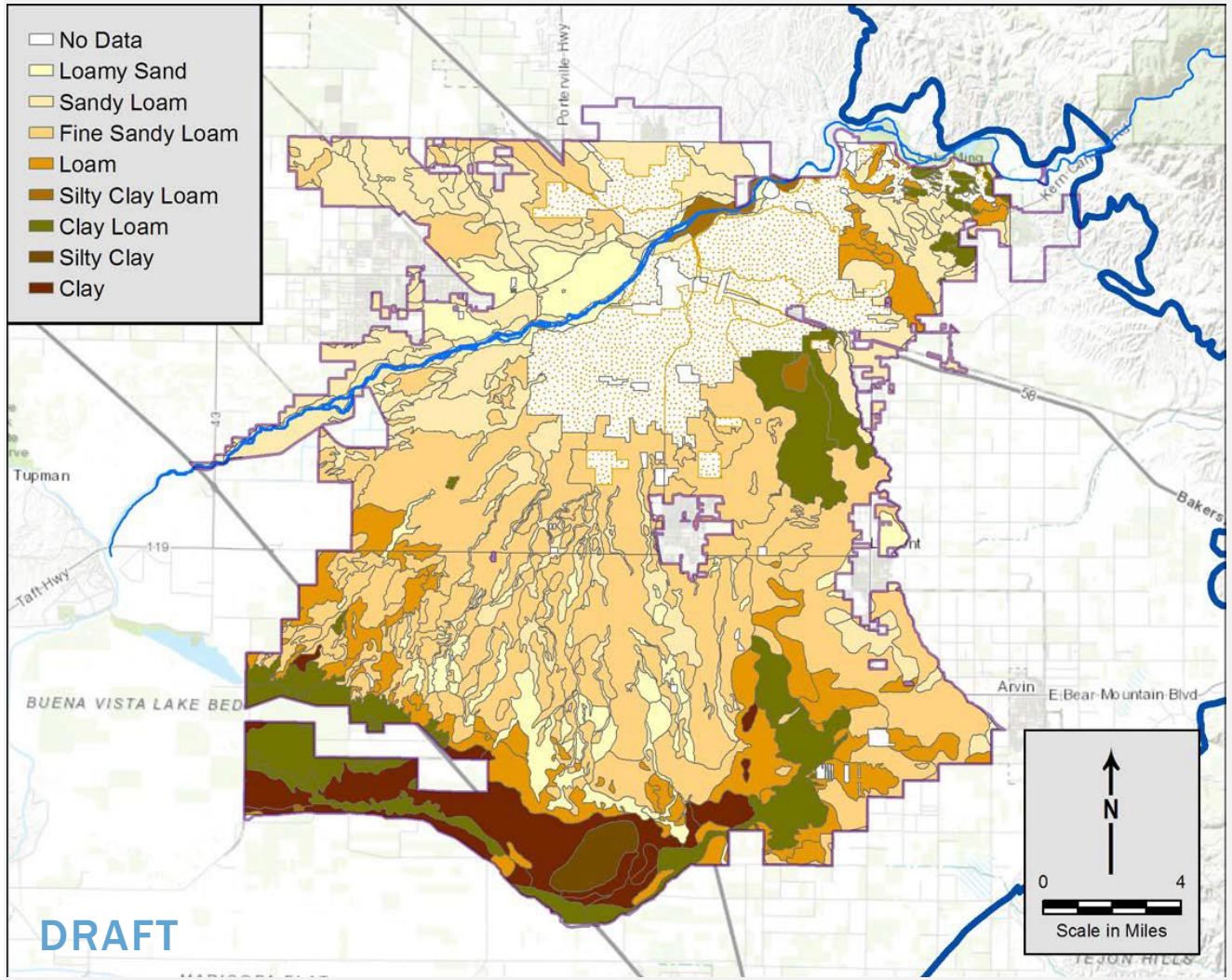
CONCEPTUAL HYDROGEOLOGIC SETTING
KERN COUNTY SUBBASIN



- Alluvial-filled trough between the Sierra Nevada and Coast Ranges
- Underlain by older marine sedimentary units
- Flanked by crystalline bedrock

TODD GROUNDWATER

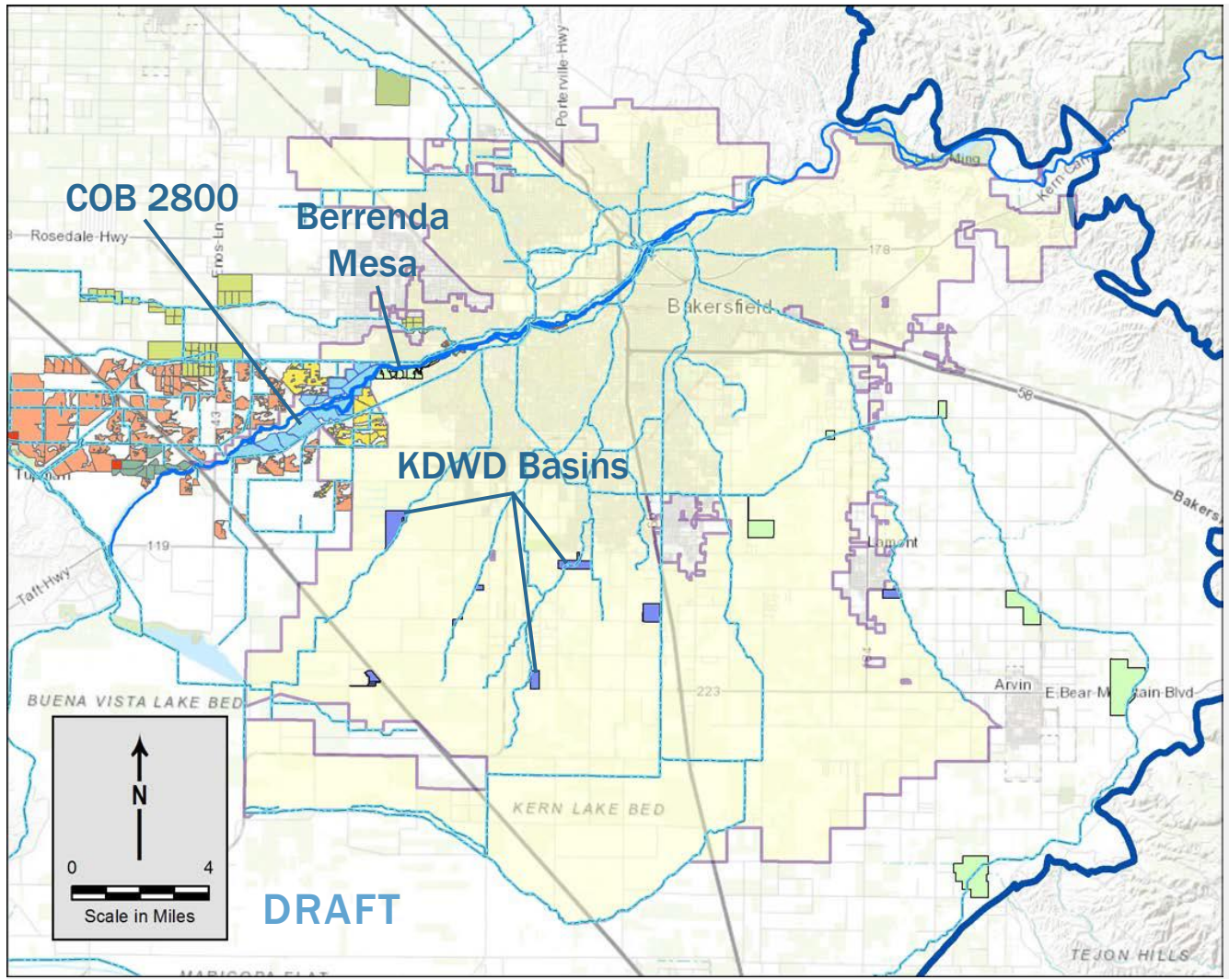
SOIL TEXTURES



- More permeable textures indicated by lighter colors (white, yellow, light orange)
- Lower permeability textures indicated by dark orange, green and brown
- Soil textures agree well with geologic framework

TODD GROUNDWATER

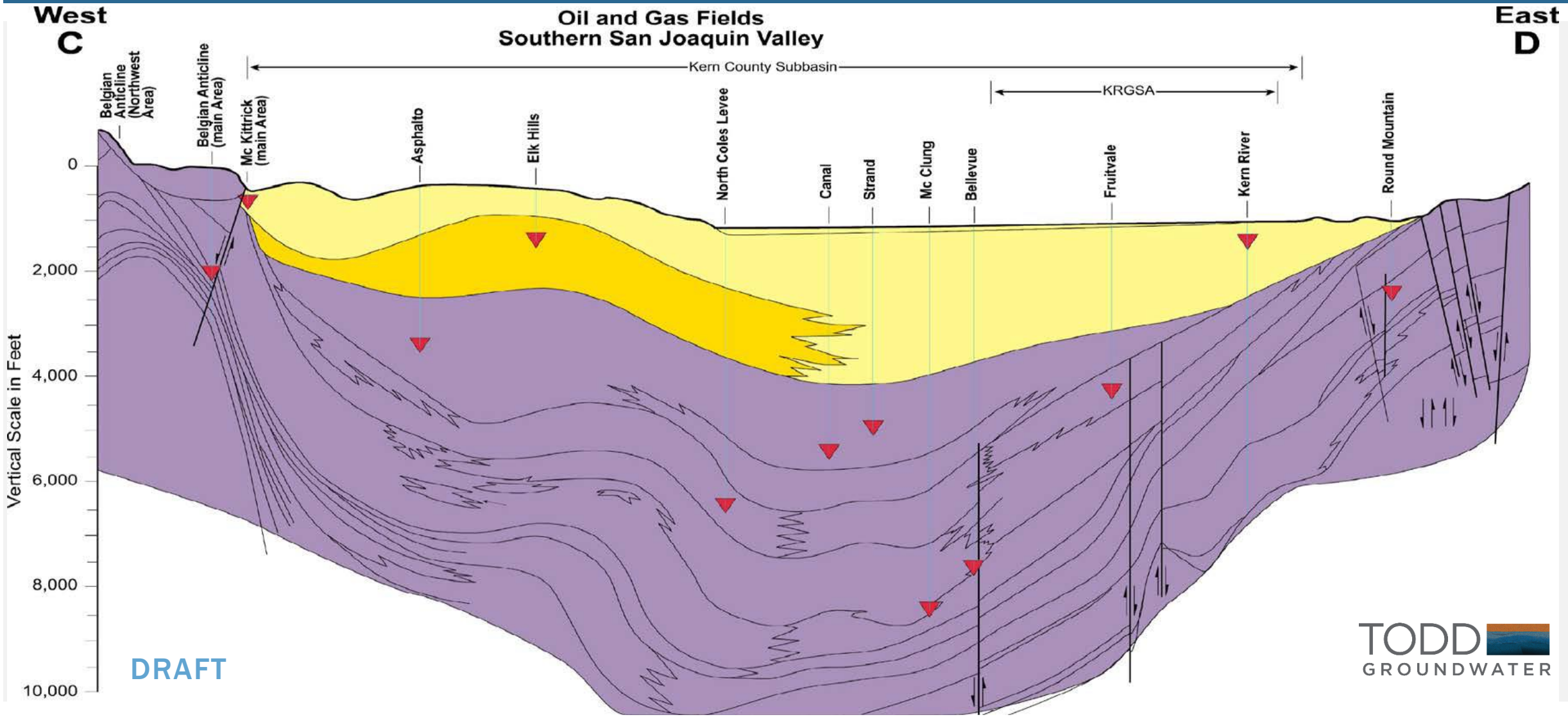
CANALS AND RECHARGE BASINS



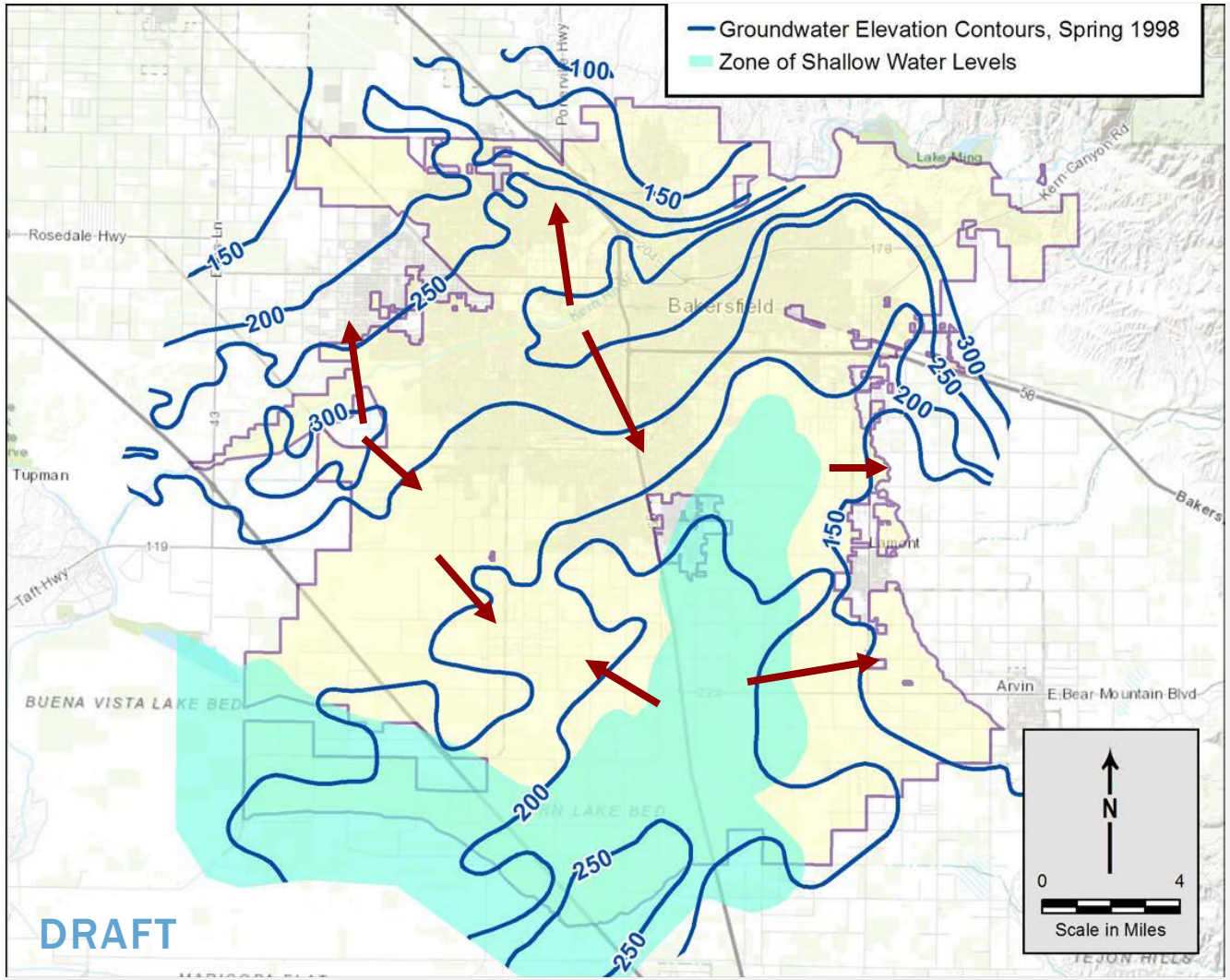
- Managed recharge in river channel, unlined canals, and basins
- KRGSA groundwater banking projects:
  - COB 2800 Acres
  - KCWA Berrenda Mesa
  - KDWD Metropolitan Project
- Numerous additional banking projects nearby

TODD GROUNDWATER

REGIONAL CROSS SECTION AND OIL FIELDS



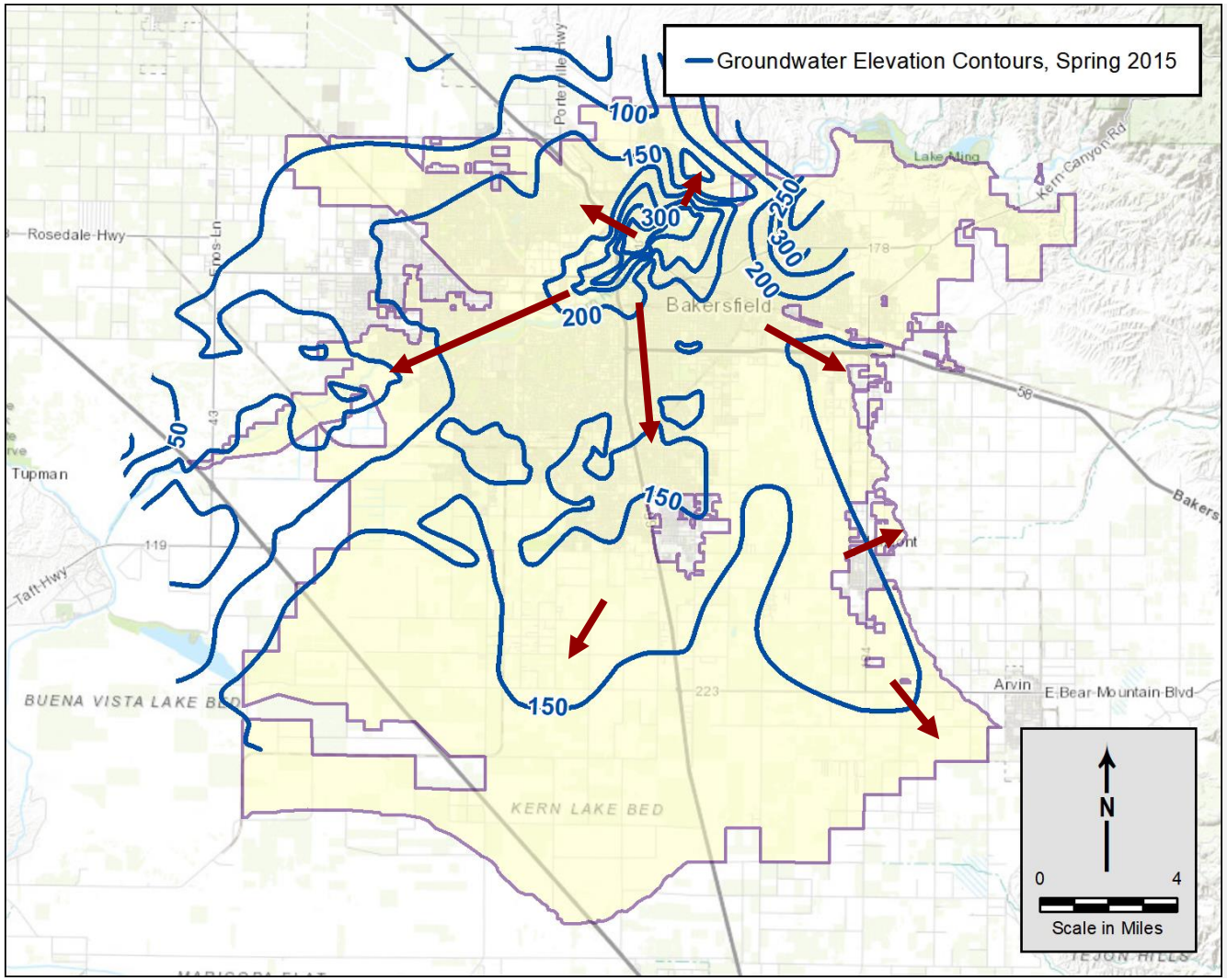
GROUNDWATER ELEVATION CONTOURS 1998



- 20 groundwater elevation contour maps (Spring data)
- Examined maps and data for perched layers (zone of shallow water levels)
- Example for wet year - Spring 1998

TODD GROUNDWATER

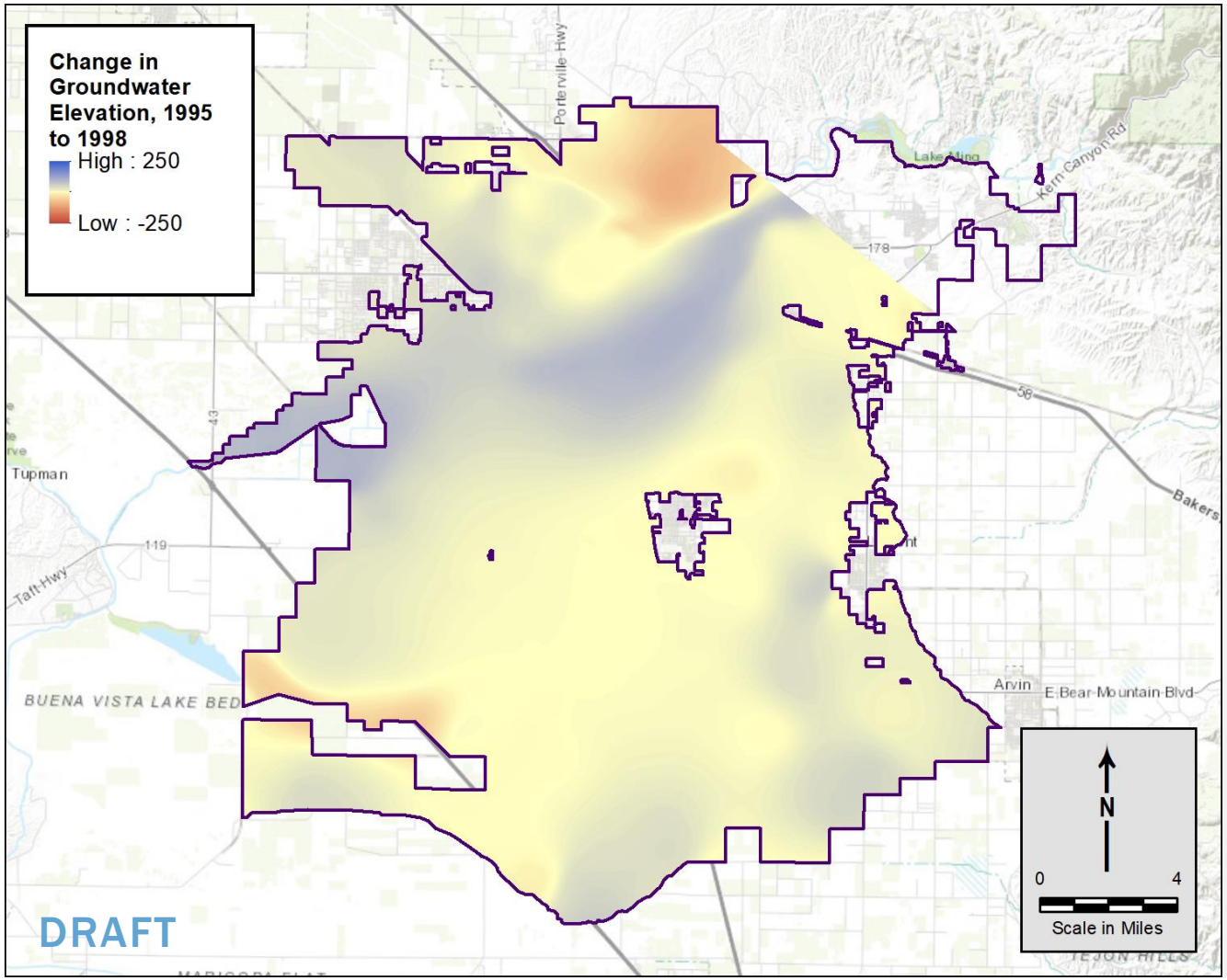
GROUNDWATER ELEVATION CONTOURS 2015



- Severe Drought year
- In general, higher water levels than surrounding areas
- Except for the river, groundwater is flowing out of the KRGSA area

TODD GROUNDWATER

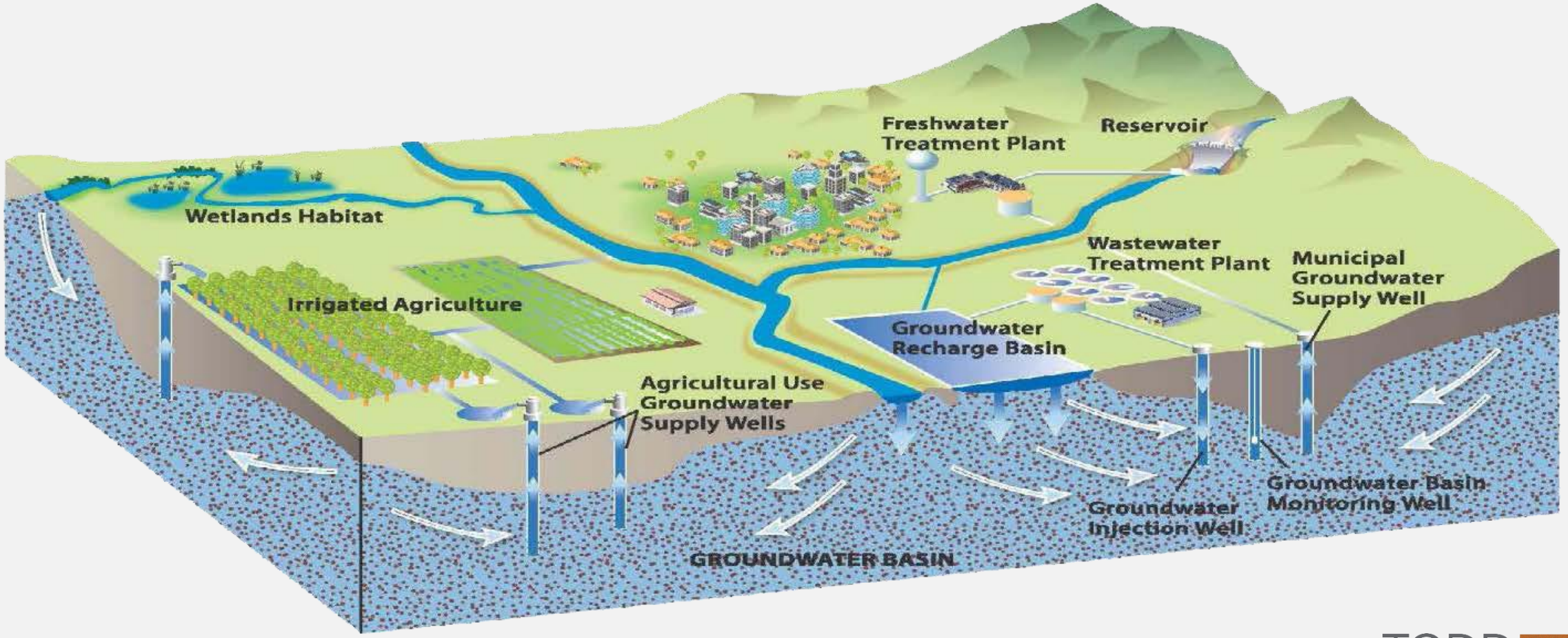
CHANGE IN GROUNDWATER IN STORAGE, 1995-1998



- Created 20 annual water level change maps using KCWA Spring water level contour maps
- Blue areas indicate water level rise; red areas indicate water level declines
- Limited data create uncertainty for some areas and time periods

TODD GROUNDWATER

FINALIZING THE KRGSA WATER BUDGET



CA Water Foundation

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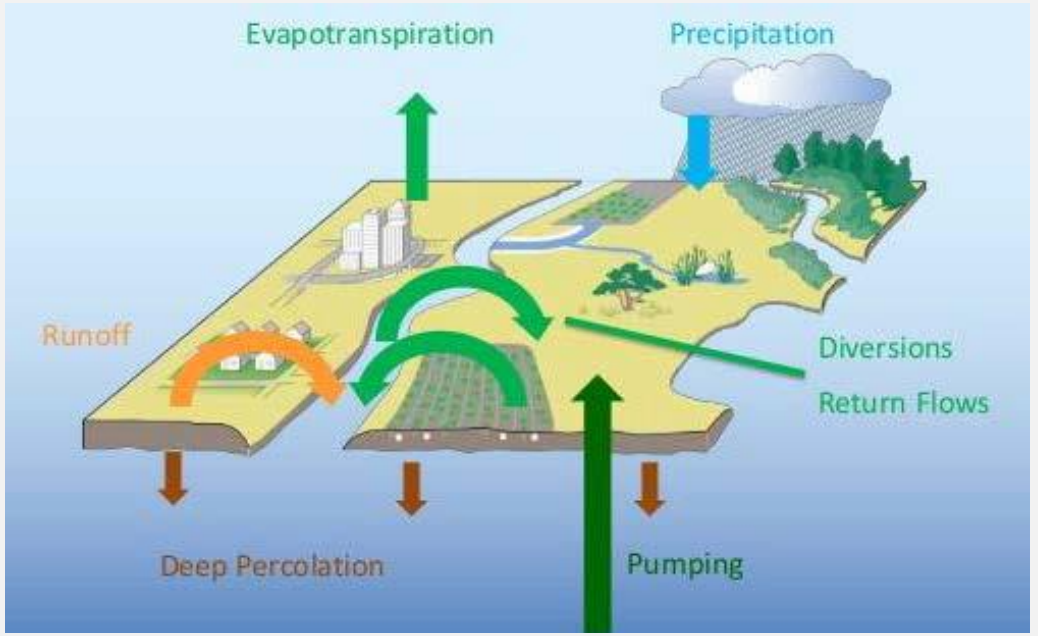
TODD GROUNDWATER

KRGSA WATER BUDGETS – APPROACH

- Kern County water managed in real time for optimal use
- Provides flexibility and optimization of water but results in complex accounting of physical molecules
  - Focus on the physical system
    - Where does the "wet water" go? (not paper exchanges)
    - Water budget process follows the molecules – does not assign "ownership" of the water
    - Prevent "double-counting"



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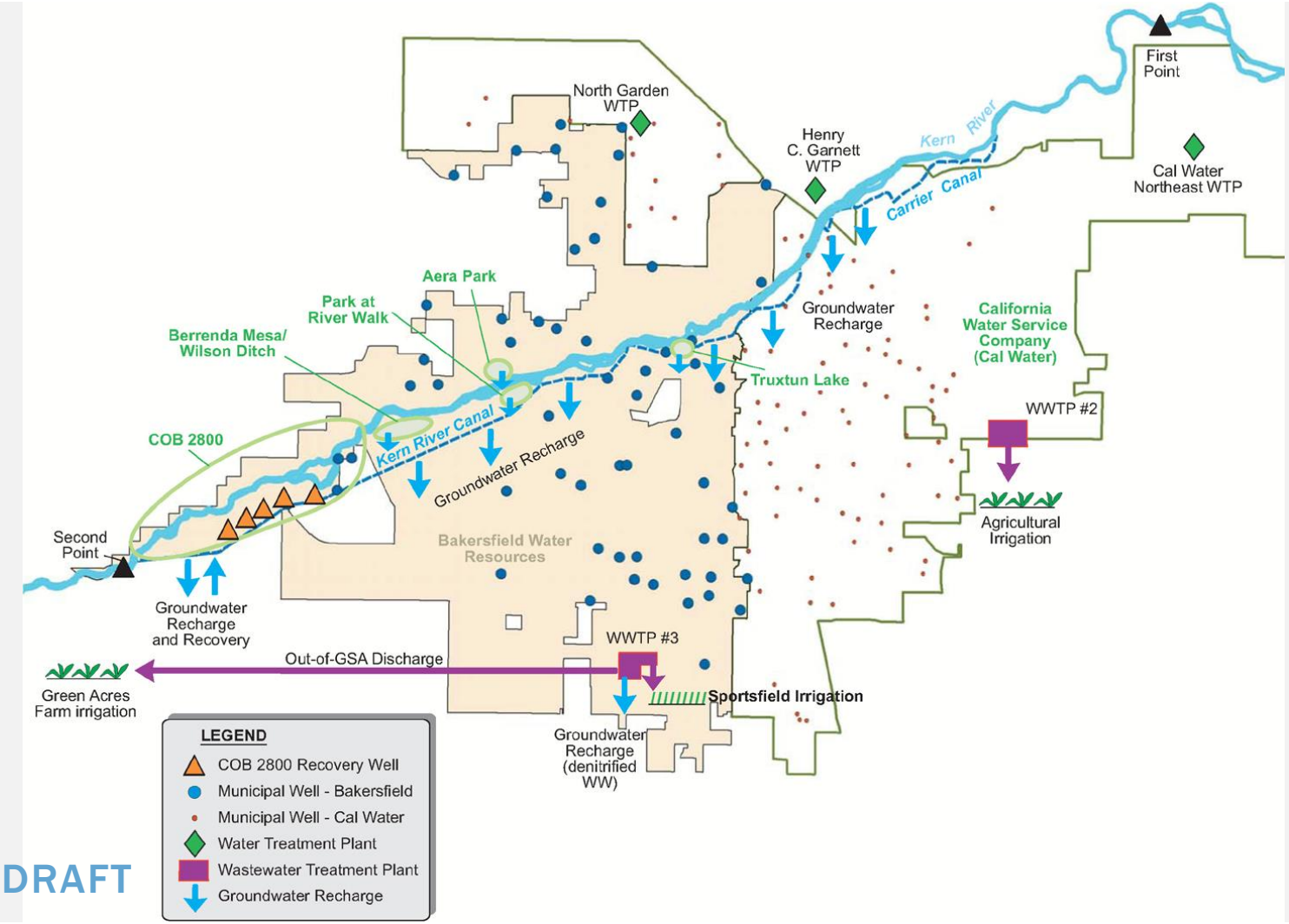
TODD GROUNDWATER

SCHEMATIC DIAGRAM – BAKERSFIELD WATER RESOURCES



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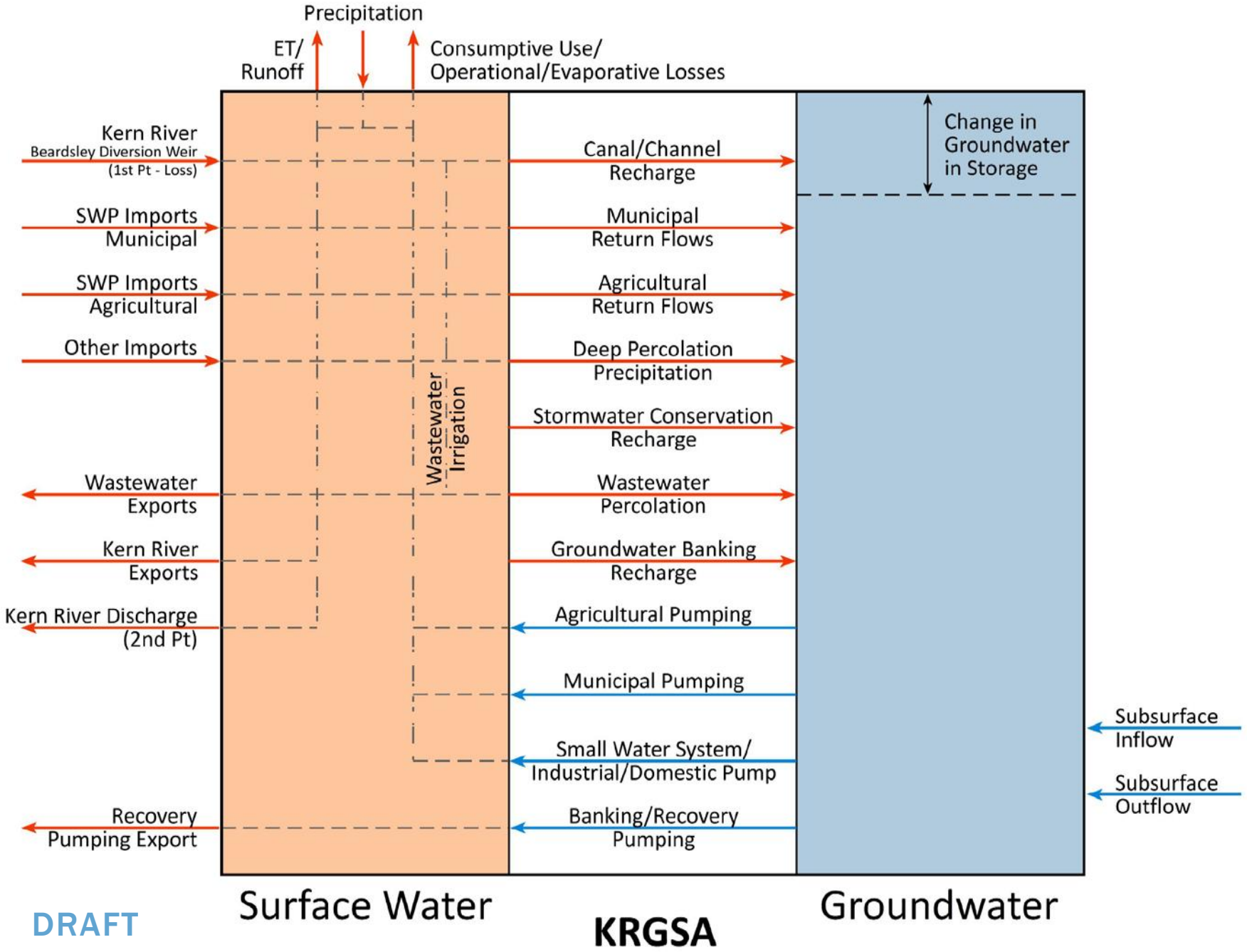
- **Inflows**
  - Managed recharge
  - Urban return flows
  - Treated wastewater recharge and irrigation return flows
  - Precipitation infiltration
  - Stormwater conservation
- **Outflows**
  - Municipal and recovery pumping

TODD GROUNDWATER

KRGSA COMBINED WATER BUDGET COMPONENTS



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TODD GROUNDWATER

NEXT STEPS

- Work with agencies to reconcile data and local water budgets
- Compile for KRGSA
- Format data sets for model

Horizon WATER and ENVIRONMENT

TODD GROUNDWATER

QUESTIONS & ANSWERS

PARTICIPATE IN GSP DEVELOPMENT

You can help shape what is included in the plan by:

- Providing information about your past or present groundwater challenges
- Sharing information about your water usage and/or water well
- Sharing your vision for sustainability
- Identifying projects that can help address the groundwater conditions
- Completing the Stakeholder Survey

STAKEHOLDER SURVEY

We want to hear from you!

- What do you know about SGMA?
- How do you use water?
- What else should we know?

STAY INVOLVED

- Attend GSA Meetings
  - KRGSA Board Meetings are held the last Wednesday of each month at 8 a.m. at 1600 Truxtun Avenue, Bakersfield, CA 93301
- Get on the “interested parties” list to receive correspondence and information from the KRGSA
- Visit the website to learn more: http://www.kernrivergsa.org/
- Attend future workshops

ADDITIONAL INFORMATION AND RESOURCES

- Technical Assistance for Severely Disadvantaged Communities
  - Self-Help Enterprises: https://www.selfhelpenterprises.org
    - Eva Dominguez, 559-802-1634, EvaD@selfhelpenterprises.org
    - Maria Herrera, 559-802-1676, MariaH@selfhelpenterprises.org
- Local Information – Kern River GSA: https://kernrivergsa.org
  - Art Chianello, 661-326-3715, AChianel@bakersfieldcity.us
- Statewide Information
  - Department of Water Resources: https://sgma.water.ca.gov/portal/
  - State Water Resources Control Board: https://www.waterboards.ca.gov/water_issues/programs/gmp/sgma.html

UPCOMING WORKSHOPS

- Groundwater Quality Roundtable – October 3, 2018
- Groundwater Workshop 2.0 – October 27, 2018

THANK YOU!