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Summary of Tulare Lake Subbasin GSP

October 2019

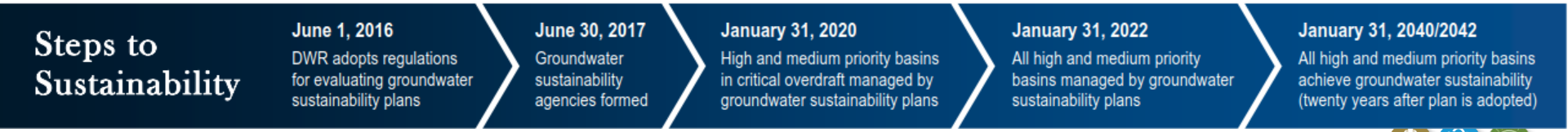
Presented By: Amer Hussain, PE

Introduction

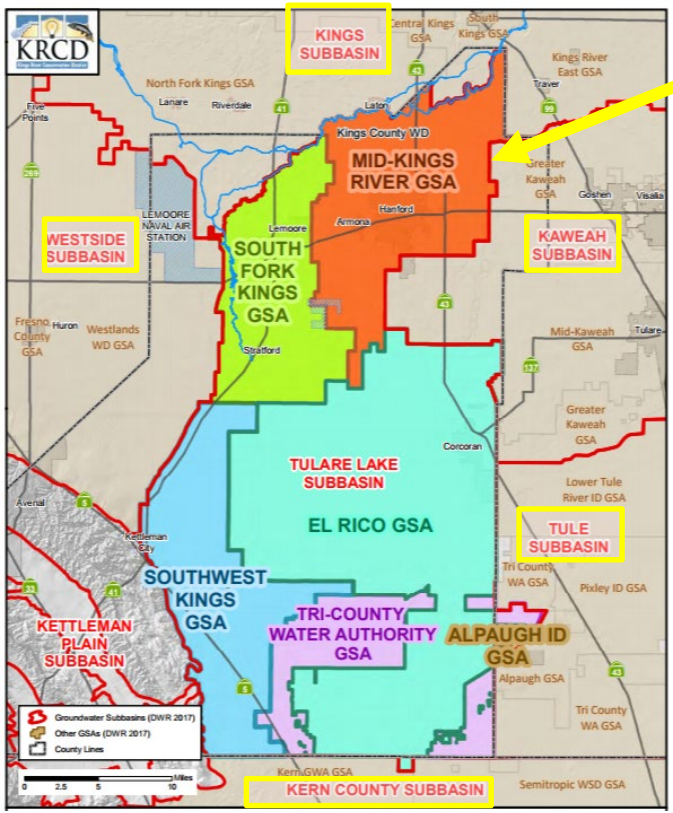
- Brief SGMA Overview
- GSP Development Process
- Key Chapters and Findings
- Public Review Process

SGMA Overview

- Groundwater sustainability agencies (GSAs) must submit a plan by January 2020 and reach sustainability by 2040
- Annual reports are due every April 1, starting in 2020, and GSP updates every 5 years



Tulare Lake Subbasin



Tulare Lake Subbasin

Neighboring Basins

- Westside
- Kings
- Kaweah
- Tule
- Kern

Sustainable Groundwater

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Sustainable groundwater management is defined as:

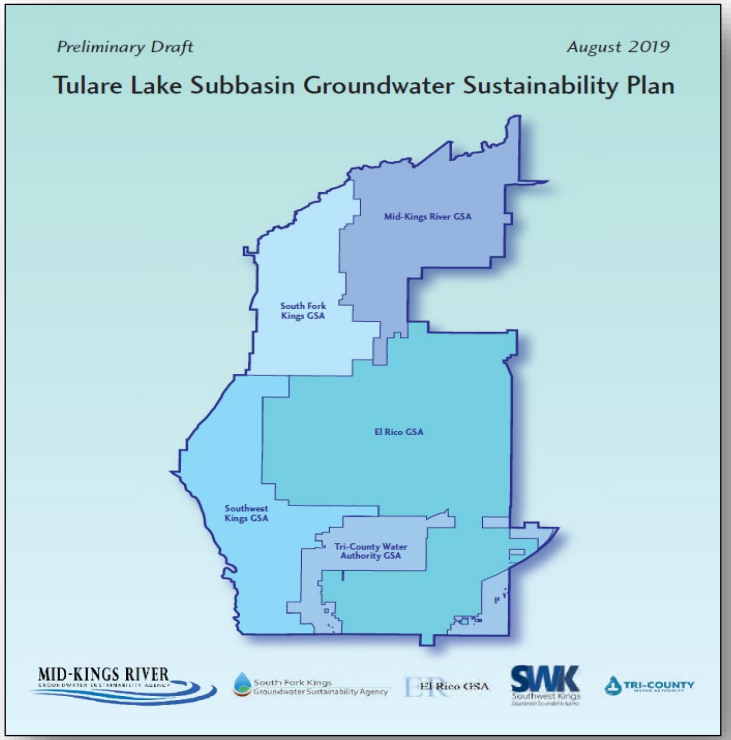
- "management of groundwater supplies in manner that can be maintained in planning and implementation phases without causing **undesirable results**"

Undesirable Results

Sustainability Indicators	
	Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon.
	Significant and unreasonable reduction of groundwater storage
	Significant and unreasonable seawater intrusion
	Significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies
	Significant and unreasonable land subsidence that substantially interferes with surface land uses
	Depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water

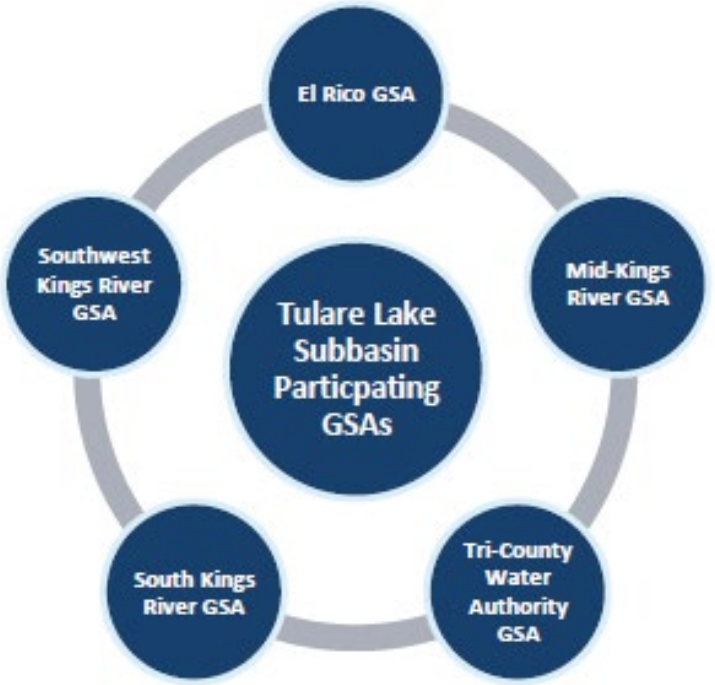
GSP Document

1. Introduction
2. Plan Area
3. Basin Setting
4. Sustainable Management Criteria
5. Monitoring Network
6. Projects & Management Actions
7. Plan Implementation



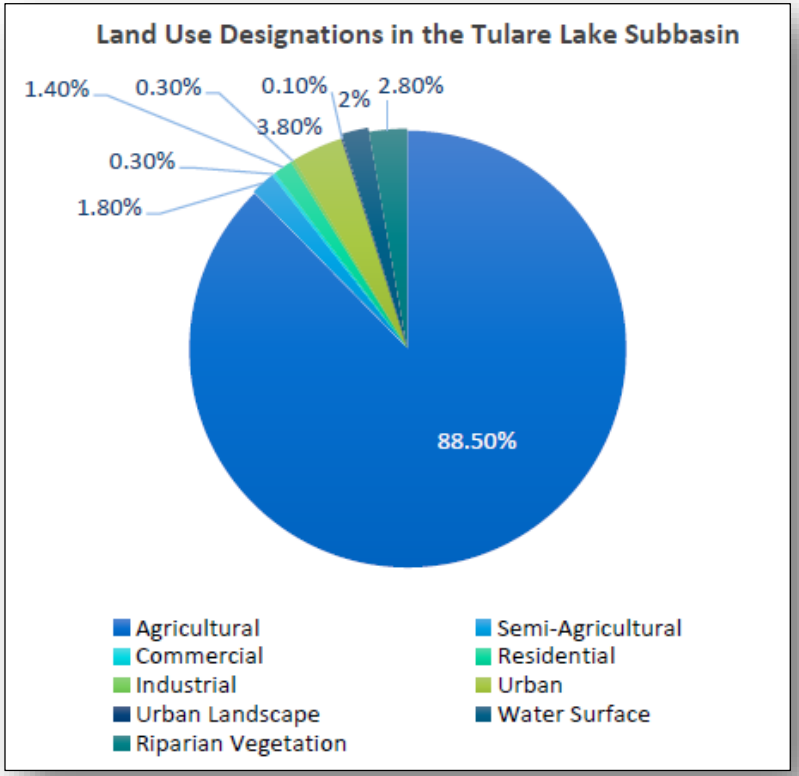
Chapter 1: Introduction

- Subbasin Overview
- Purpose of the GSP
- Sustainability Goal
- GSAs Organization & Management
- GSP Organization



Chapter 2: Plan Area

- Description of each GSA's area
- Relation to General Plans/Other Land Use Plans
- Notice & Communication



Chapter 3: Basin Setting

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- Provides hydrogeologic basis for the GSP technical elements
- 4 main subsections:
  - 3.1 Hydrogeologic Conceptual Model (HCM)
  - 3.2 Groundwater Conditions
  - 3.3 Water Budget Information
  - 3.4 Management Areas

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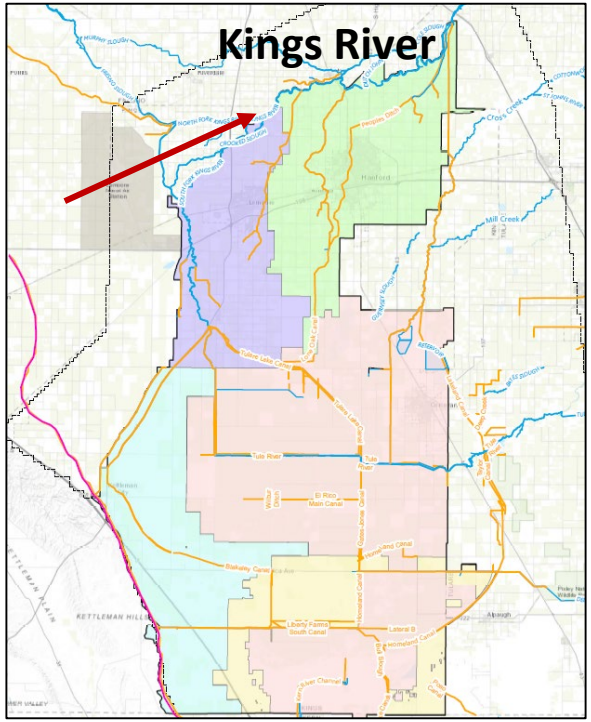
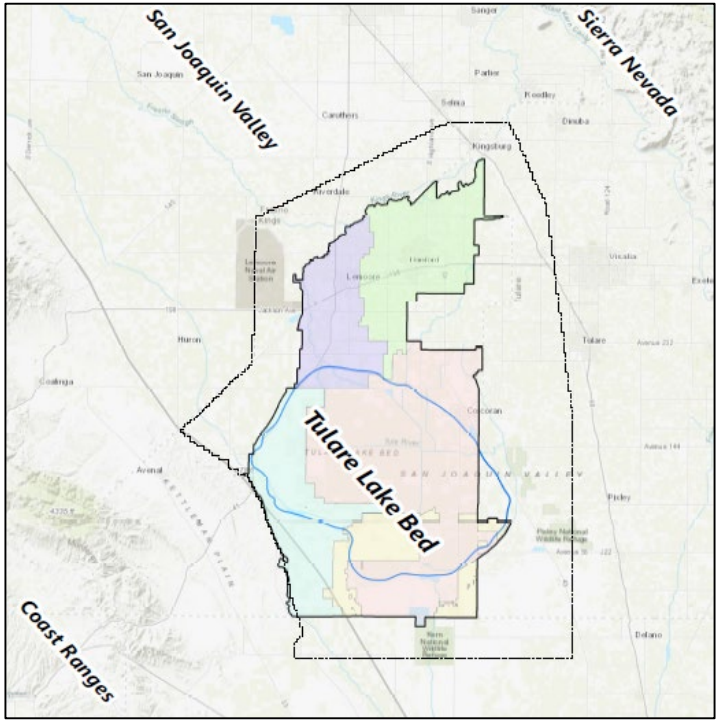
3.1 Hydrogeologic Conceptual Model

- Provides a general understanding of the physical setting and the characteristics and processes that govern groundwater occurrence and movement, including:
  - Geographic setting
  - Geology
  - Basin geometry and features affecting groundwater flow
  - Principal aquifers
  - Hydraulic parameters
  - Groundwater recharge and discharge

Key Hydrogeologic Features





3.2 Groundwater Conditions

- Describes the historical and current groundwater conditions necessary to understand groundwater flow within the subbasin, groundwater quality, and the water budget
- Also discusses:
  - Subsidence
  - Surface and groundwater interactions

Groundwater Flow

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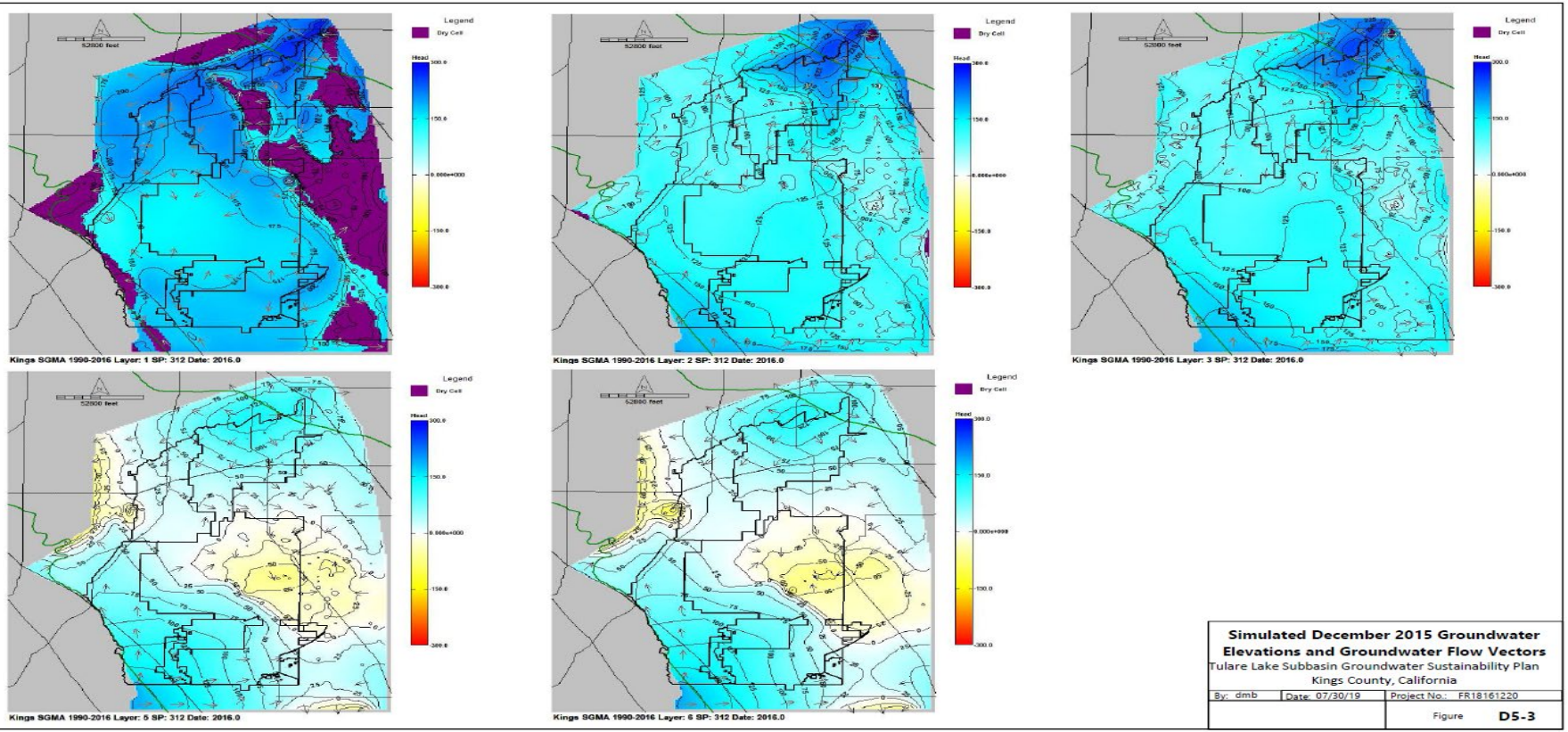
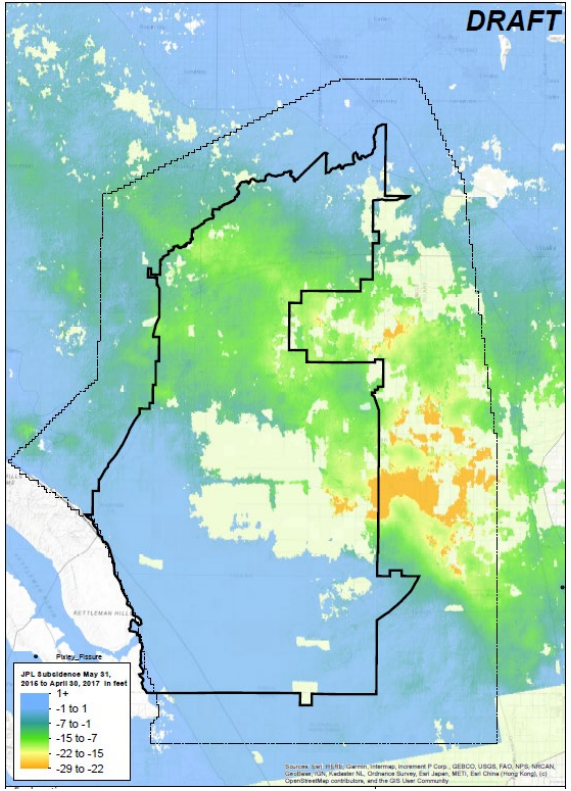


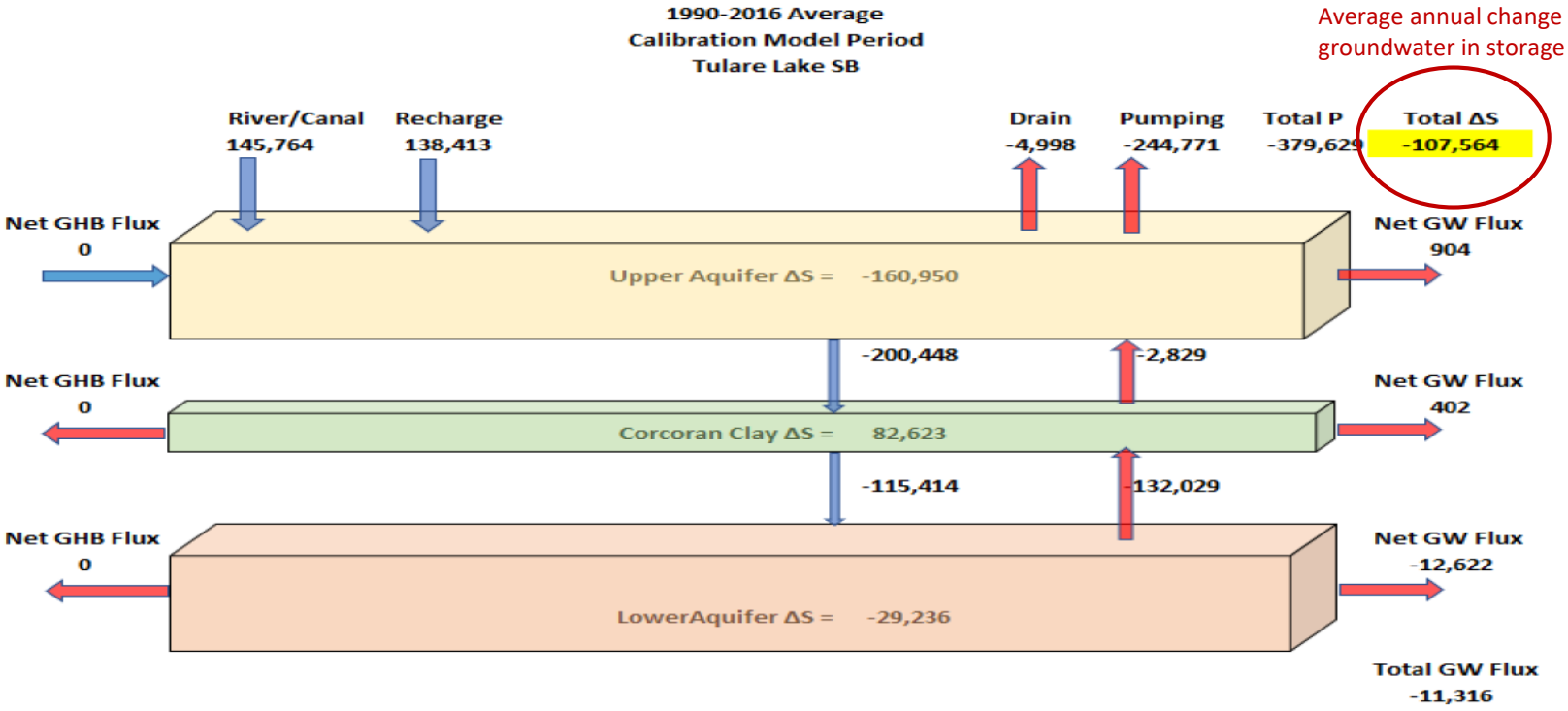
Simulated December 2015 Groundwater Elevations and Groundwater Flow Vectors
Tulare Lake Subbasin Groundwater Sustainability Plan
Kings County, California

By: dmb	Date: 07/30/19	Project No.: FR18161220
		Figure D5-3

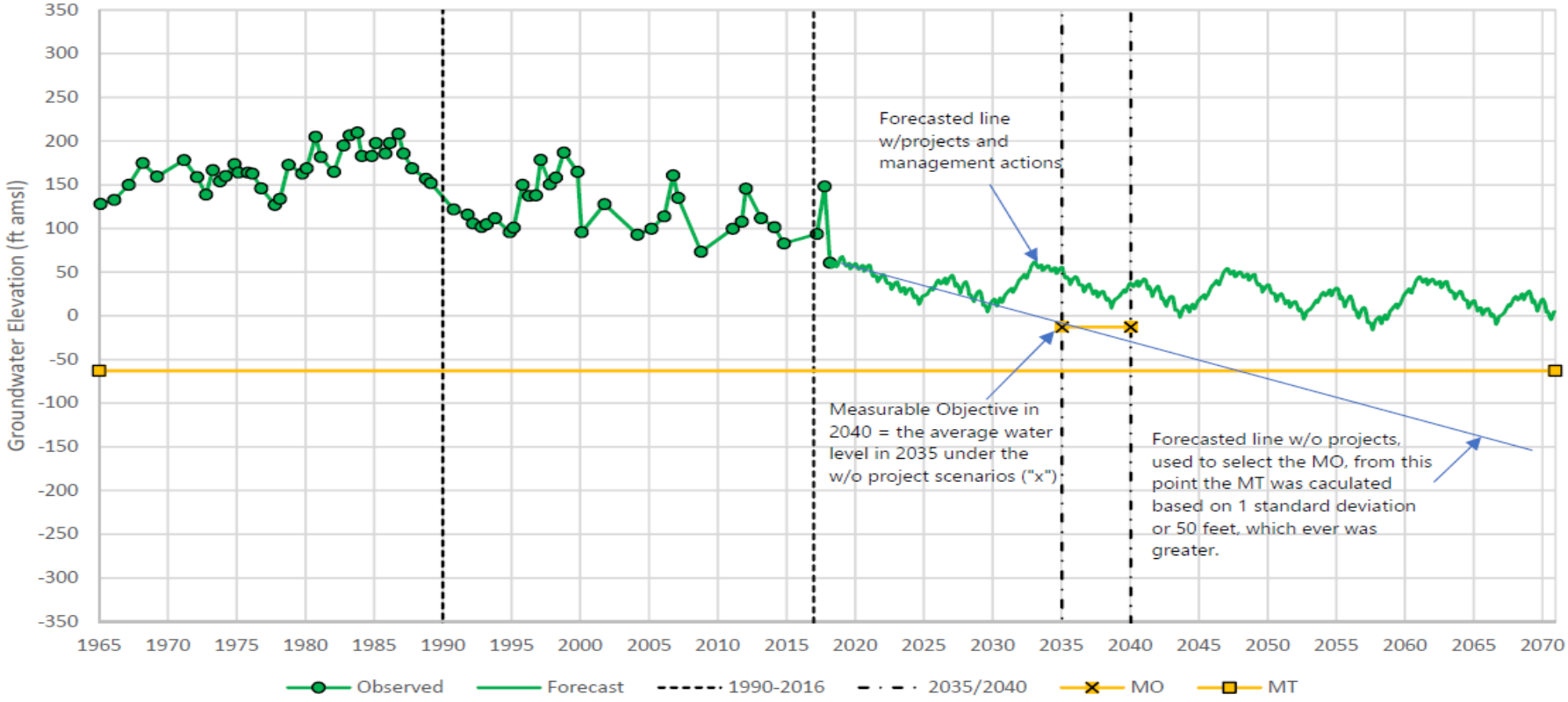
Subsidence



Water Budget



Chapter 4: Sustainable Management Criteria



Metrics Indicating Criteria Exceedance

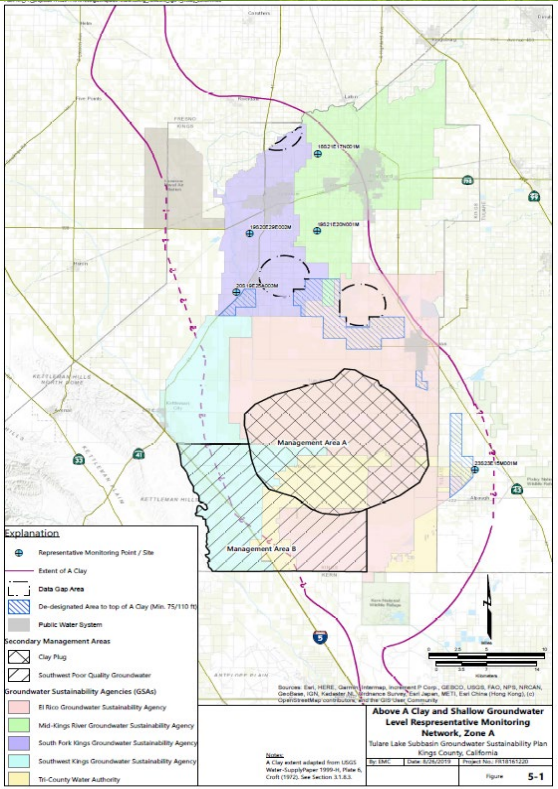
- Groundwater Levels
  Groundwater levels decline to below the Minimum Thresholds at 45% of the Representative Monitoring Sites for 3 consecutive years

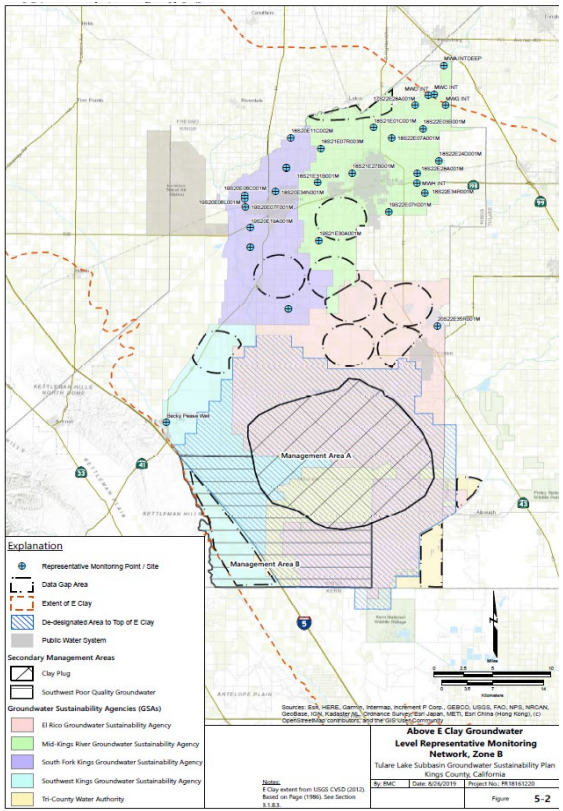
- Groundwater in Storage
  Use groundwater levels metric

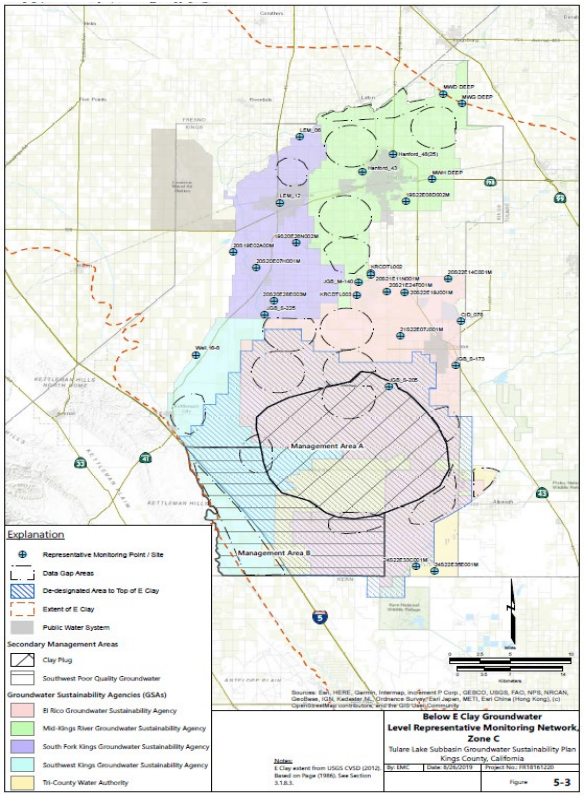
- Subsidence
  Combination of groundwater levels metric and Minimum Threshold for subsidence (16 ft)

- Groundwater Quality
  Specific actions taken through GSP implementation degrades groundwater quality – GSAs will work with existing groundwater quality programs to monitor and evaluate (RWQCB, ILRP, GAMA, CV-SALTS, etc.)

Monitoring Network







Projects and Management Actions

- Projects and management actions will be implemented by GSAs or their member agencies to help achieve sustainability

- *Projects* generally are designed to increase water supply
  - ✓ *Ex: recharge basins*
- *Management actions* generally are designed to reduce demand
  - ✓ *Ex: improved water use efficiencies*

- Rehab of existing recharge basins
- Construction of new recharge basins
- Conveyance improvements
- Construction of new conveyance
- Land Fallowing
- GW measurement and reporting
- On-farm improvements
- Cropping changes
- Surface storage
- Aquifer storage and recovery

Proposed Projects

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Mid-Kings GSA – Land Retirement & Recharge Basins

- Build out 1,350 acres of ponds on 1,500 acres of land
- Build out 4 phases every 5 years starting 2020
- Reduce Ag Demand by 4,500 AF/Y, 200,000 AF flood water percolation in flood years

El Rico GSA – Intermittent SW Ponds

- Build out 6,400 acres of SW ponds
- Reduce Ag Demand ~20,000 AF/Y in flood years
- Make 40,000 AF available for SW supply following flood years starting 2030

South Fork Kings GSA – Land Retirement & SW Ponds

- Make 60,000 AF available for SW supply and/or ASR in flood years
- Reduce Ag Demand by 15,000 AF/Y

Tri-County GSA – SW Ponds

- Build out 13,440 acres of SW ponds – 6.25 feet deep on Retired Lands

All GSAs - Programmatic Ag Demand Reduction

- Develop program to fallow land at 2%/year starting in 2025 until 25% reduction in demand is achieved
- Program fully implemented by 2037 (12 years)

Chapter 7: Implementation

- GSP Implementation costs
  - Ongoing Administrative and Project Costs
  - Cost Sharing TBD
- Projects schedule and priority TBD
- Data Management System (DMS)
  - Coordinated with Subbasin GSAs
- Annual Reporting
  - First report due April 2020

Public Review Process

- The GSAs are accepting written comments on the GSP through December 2, 2019
- Public Hearing: 10 a.m., Monday, December 2, 2019, Kings County Board of Supervisors Chambers – will accept oral comments

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Questions