WMA

Santa Ynez River Valley Groundwater Basin
Western Management Area
Groundwater Sustainability Agency

August 25 2021
GSA 2021 Quarter 3 Meeting
Draft Groundwater Sustainability Plan

STETSON ENGINEERS INC.

DUDEK

Geosyntec consultants
engineers | scientists | innovators

Housekeeping

- Recording the meeting for the purpose of capturing public feedback
- Recording can be made available upon request
- Opportunities for public feedback and questions throughout the workshop
- Public comments should be submitted to the website:

www.santaynezwater.org

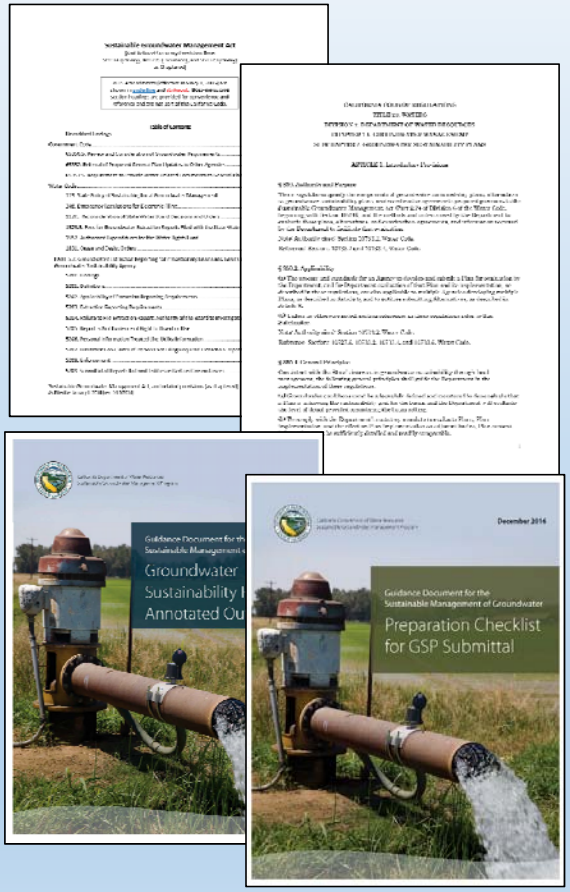
- Slide numbers in lower right

Agenda

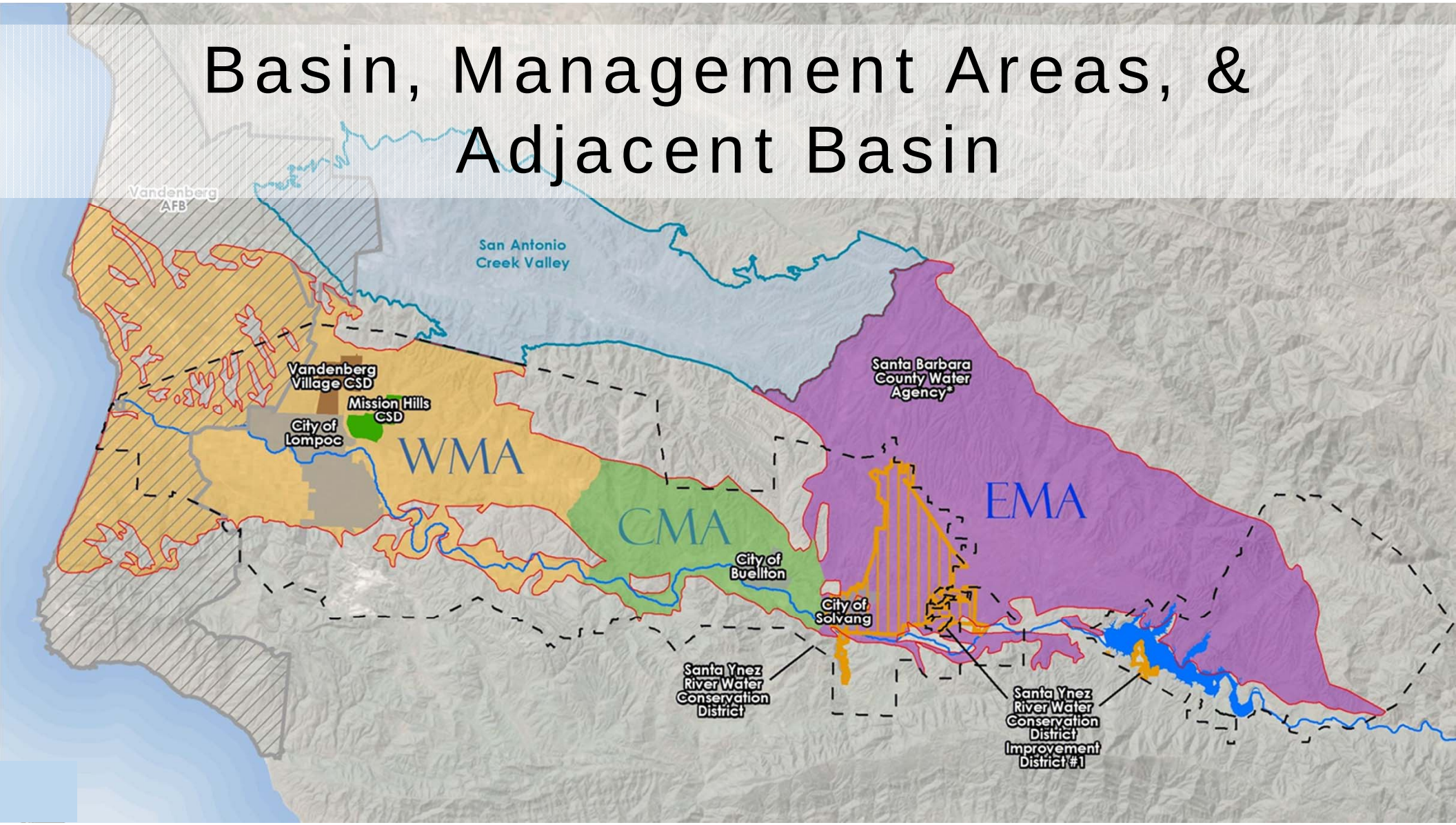
1. Staff Draft GSP Document
    a. Overview of GSP
    b. GSP Chapters and Sections
2. Review of GSP Document Parts
3. Way Ahead/ Schedule

SGMA Background

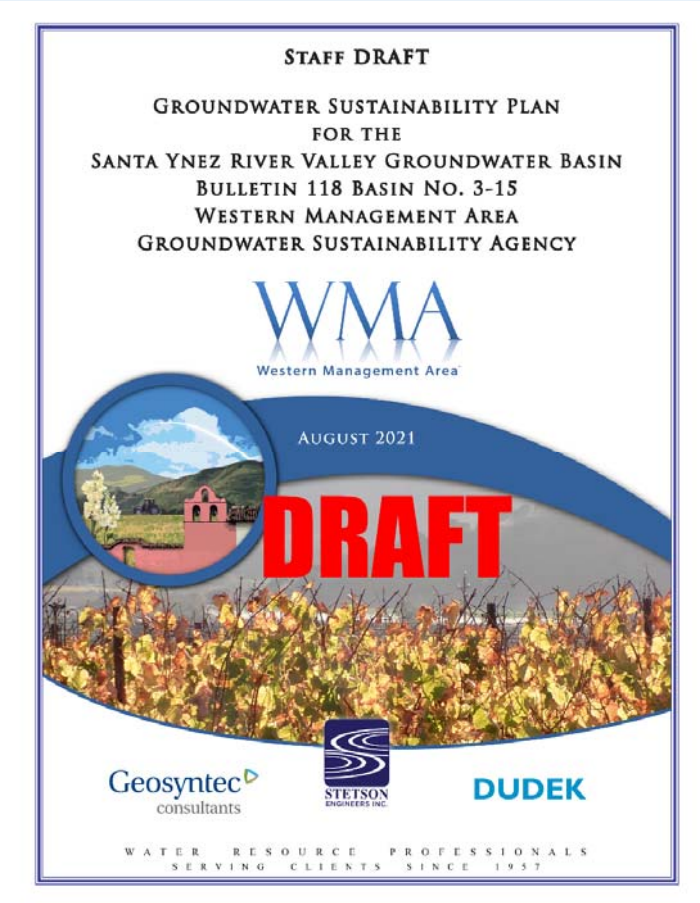
- 2015 SGMA law went into effect
- SYRVGW Basin is “medium priority”
- Basin must be sustainable in 20 years
- SGMA gives local control of water management
- Each GSA will prepare a Groundwater Sustainability Plan (GSP) and submit to DWR by January 2022
- State Water Board is enforcement if locals do not comply
- New law was in response to periodic droughts in California



Basin, Management Areas, & Adjacent Basin



Staff Draft WMA GSP Statistics



Part	Pages
Document	428
Figures	106
Appendix*	512
Total	1,026

*Pending items

186 citations
(some duplicates in multiple sections)

GSP Document Sections

Executive Summary

1 Introduction

2 Basin Setting

3 Monitoring Network and Sustainable Groundwater Management Criteria

4 Project and Management Actions

5 Implementation

6 References

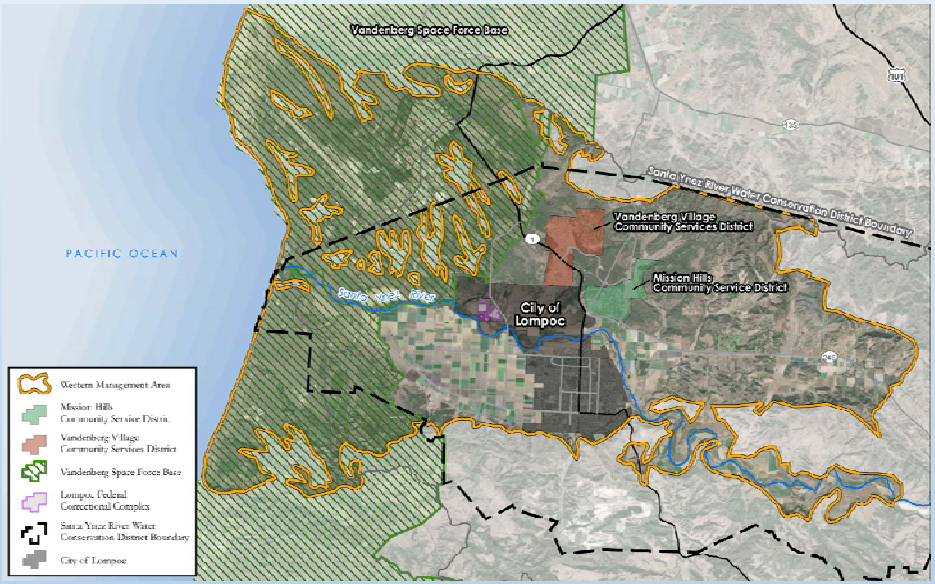
7 Appendices

Executive Summary

- Two Principal Aquifers:
  - Lower Aquifer - Paso Robles and Careaga Sand Formations in syncline
  - Upper Aquifer – younger alluvium in the Lompoc Plain
- Minimum thresholds were developed for each SGMA sustainability criteria. Current groundwater conditions are sustainable with no undesirable results
- Monitoring Network was established
- Historical, current, and future water budgets were developed
  - Growth
  - Climate change
  - Sustainable yield estimated at 26,500 afy
- Projects and management actions
  - Maintain and improve groundwater conditions
  - Reduce demand up to 10-20% with water conservation, well meters, and groundwater extraction fees

GSP Chapter 1:

Introduction and Plan Area
(details required for SGMA Regulations)



1a Introduction

- Introduces SGMA
- Purpose of Plan
- Introduces the WMA
  - GSA Member Agencies
  - WMA/CMA/EMA division
  - Contact

1b Administrative Information

- Formation Process
- Governance
- Legal Authority & Limits

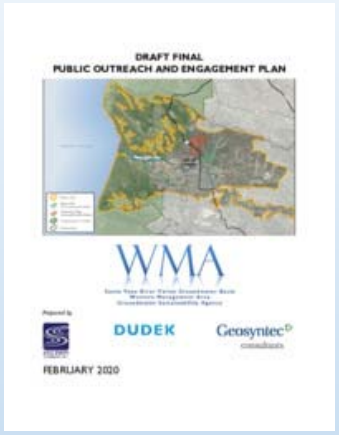
Ref: 23 CCR § 354.6

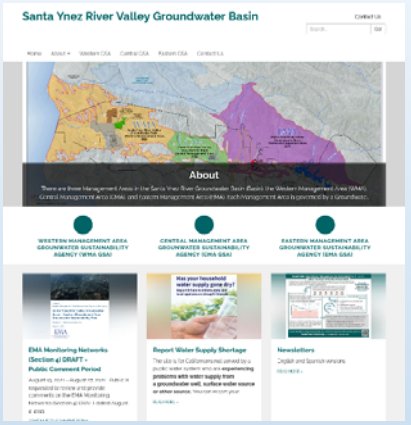
Sustainability Goal

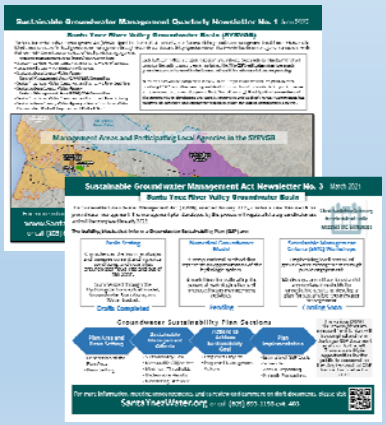
"The sustainability goal for the Santa Ynez River Valley Groundwater Basin is to sustainably manage the groundwater resources in the Western, Central, and Eastern Management Areas for current and future beneficial users of groundwater. The absence of undesirable results, defined as significant and unreasonable effects of groundwater conditions, throughout the planning horizon will indicate that the sustainability goal has been achieved."

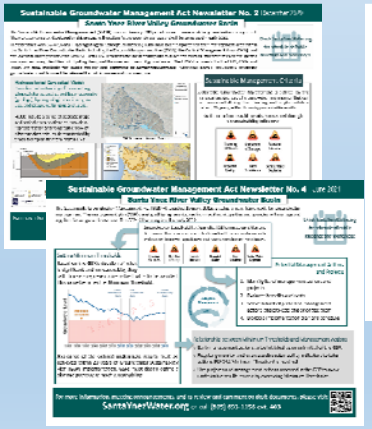
1c Notices And Communication

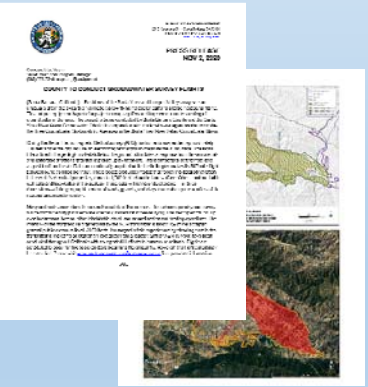
- Lists GSA Meetings
- Compliance with Brown act during COVID-19 pandemic
- Outreach and Engagement Plan*
- Stakeholder Categories and Identification
- Citizen Advisory Group
- Newsletters and Press Releases
- Communication Website (SantaYnezWater.Org)











*Provided to public in both draft and draft final versions

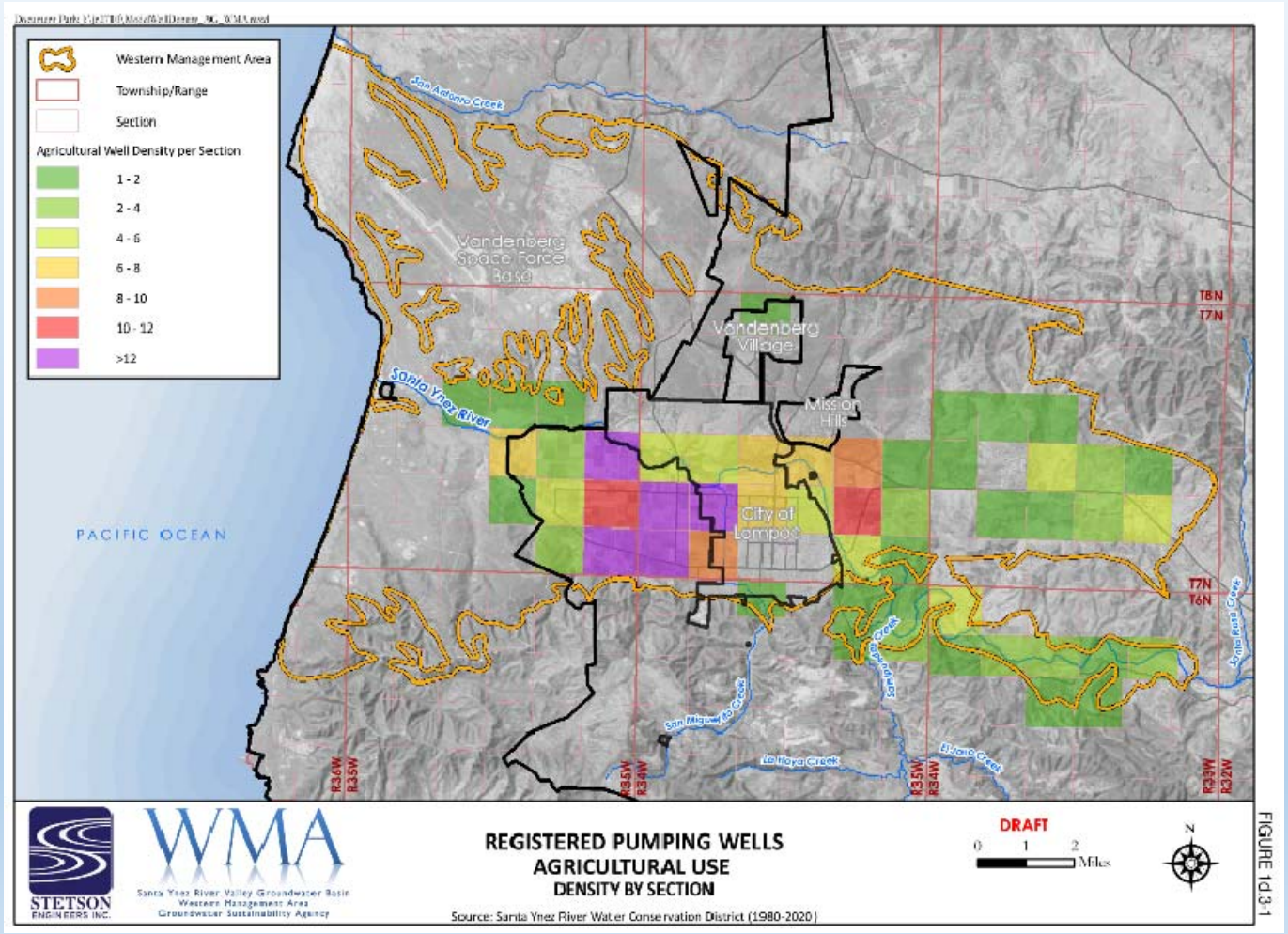
GSA Meetings:

July 2019 – Outreach and Communication Draft released

February 2020 – Draft Final released

Ref: 23 CCR § 354.10

1d.3 Well Density



Ref: 23 CCR § 354.8(a)(5)

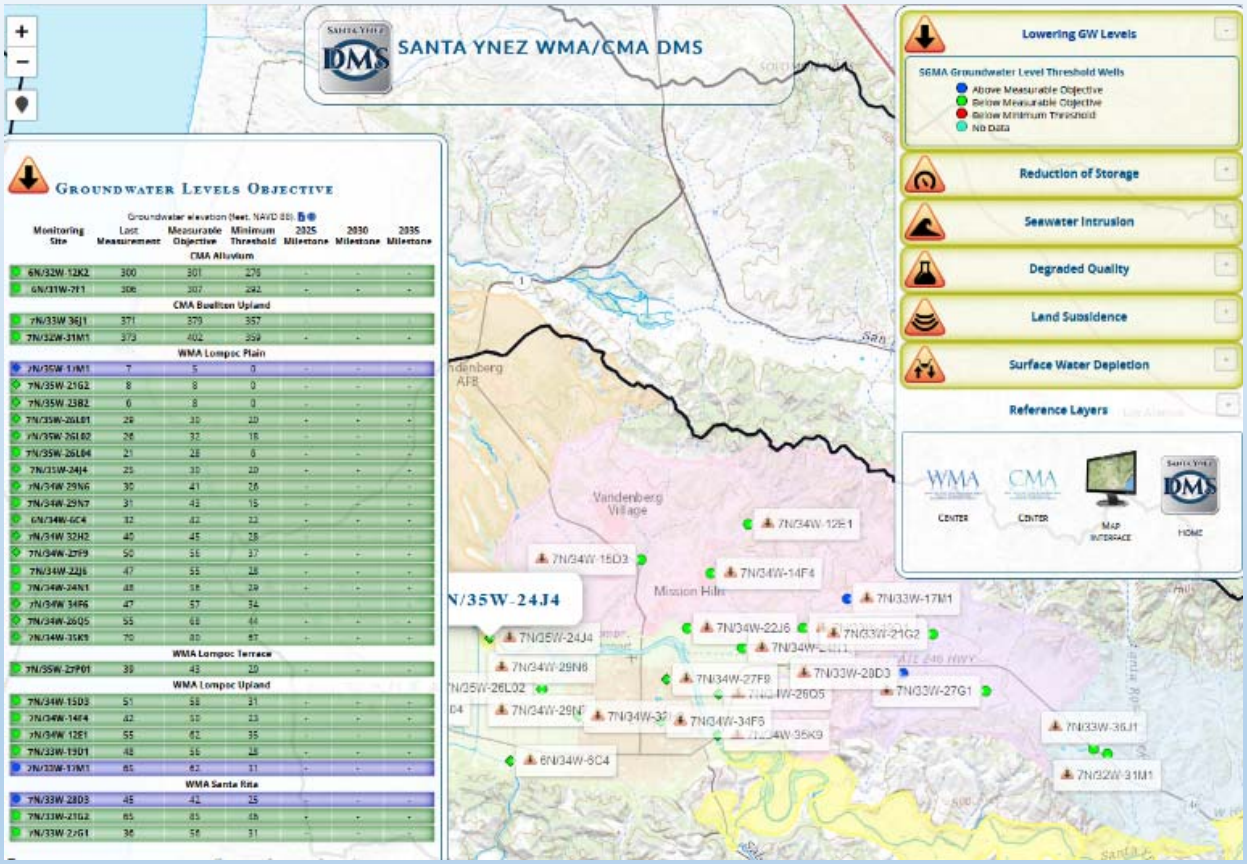
1e Additional GSP Elements – Data Management System

Documents the use of the data management system

DMP and Data Memo

GSA Meetings:

September 2019 – Draft Data Management Plan (DMP) released
October 2019 – Consultant Update
February 2020 – Draft Final DMP Released
May 2020 – Phase I TM Introduced
August 2020 – Phase I TM Release



DMS Screenshots (Aug 2021)

Ref: 23 CCR § 352.6

Chapter 2: Basin Setting

Previously these were provided to public as stand-alone draft documents.

Characterizes the groundwater system:

2a. Hydrogeologic Conceptual Model

Geology, Aquifers, Hydrologic Components, Users and Uses of water

2b. Groundwater Conditions

Current/recent status related to SGMA sustainability indicators

2c. Water Budget

Flows through basin: historical, current, and future projections

Notable edits to Basin Settings

Principal Aquifers and Aquitards
- Perched water not administered under SGMA.
- Subflow water in Santa Ynez River alluvium upstream of Narrows considered surface water administered by SWRCB.

Hydrologic Characteristics
- Added discussion of precipitation including supporting figures showing isohyetal, and cumulative departure from mean. Added table and figure summarizing imported water quantity and quality.

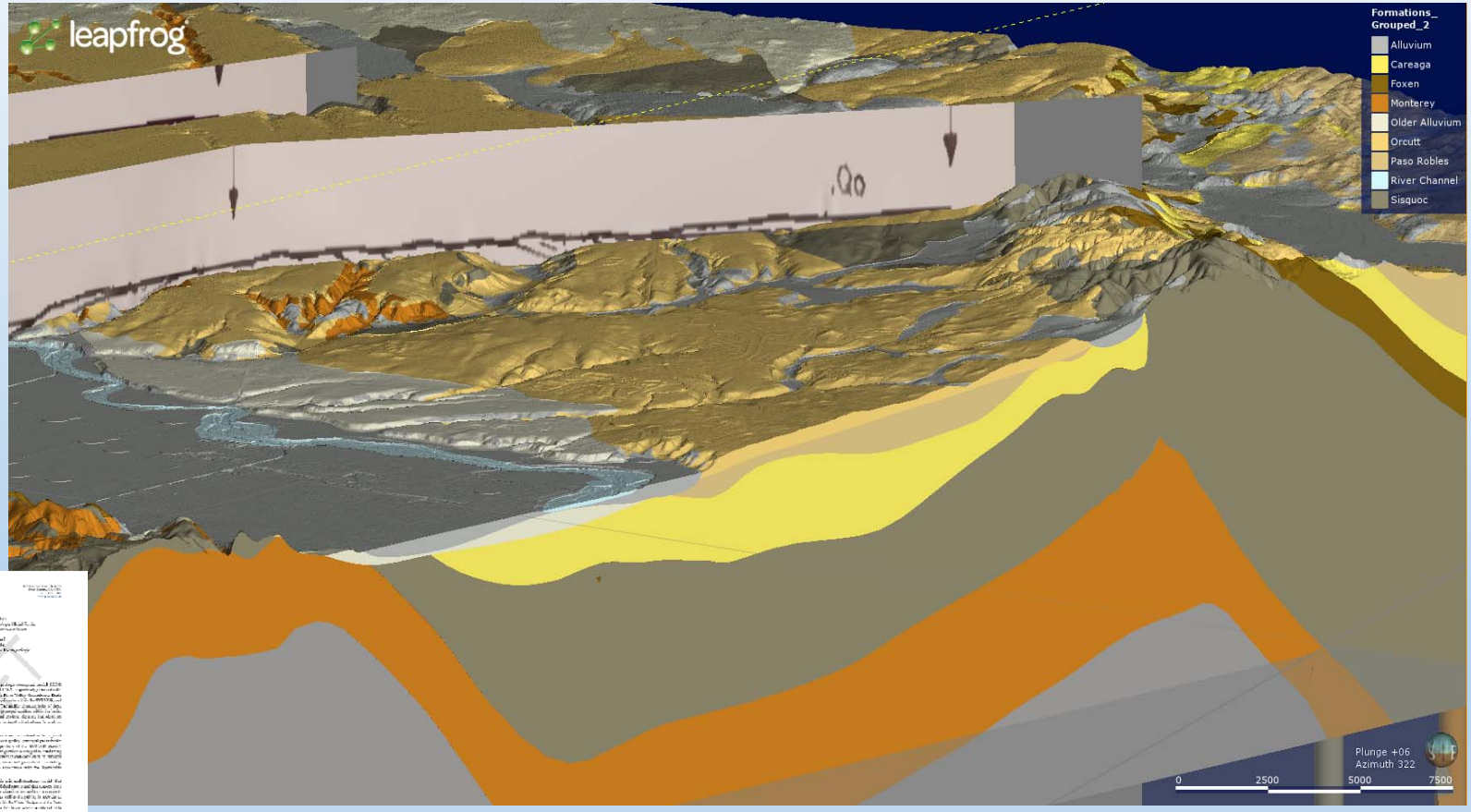
Uses and Users of Groundwater
- Expanded agricultural use discussion including added table summarizing agricultural land use by crop type. Expanded discussion of potential industrial use including map showing oil and gas well locations.

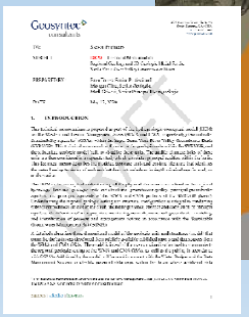
Groundwater and Land Subsidence Data
- Water level and water quality hydrographs updated through Spring 2021
- Added discussion of USGS continuous global positioning system (CGPS) station.

Interconnected Surface Water and Groundwater Dependent Ecosystems
- New expanded discussion of GDE screening. Expanded discussion of endangered and threatened species.

Water Budget
- Updated future demand and supply projections.

Geologic Model

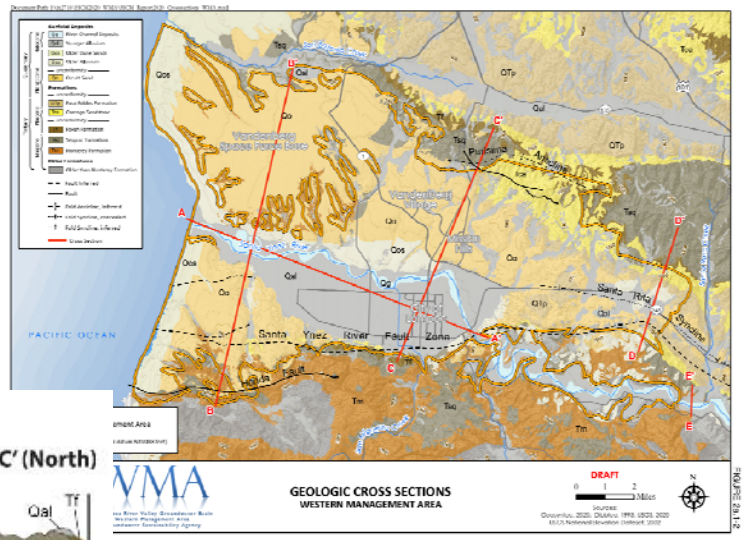


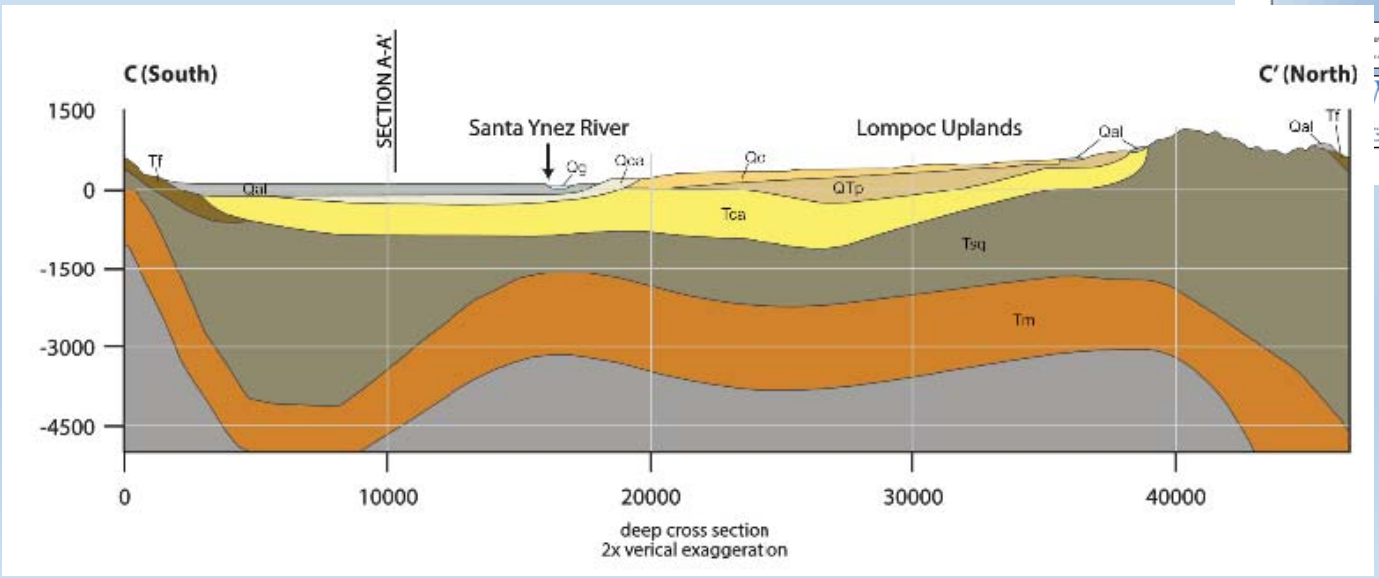


Geosyntec (May 2020)

2a.1 Geology of the Western Management Area

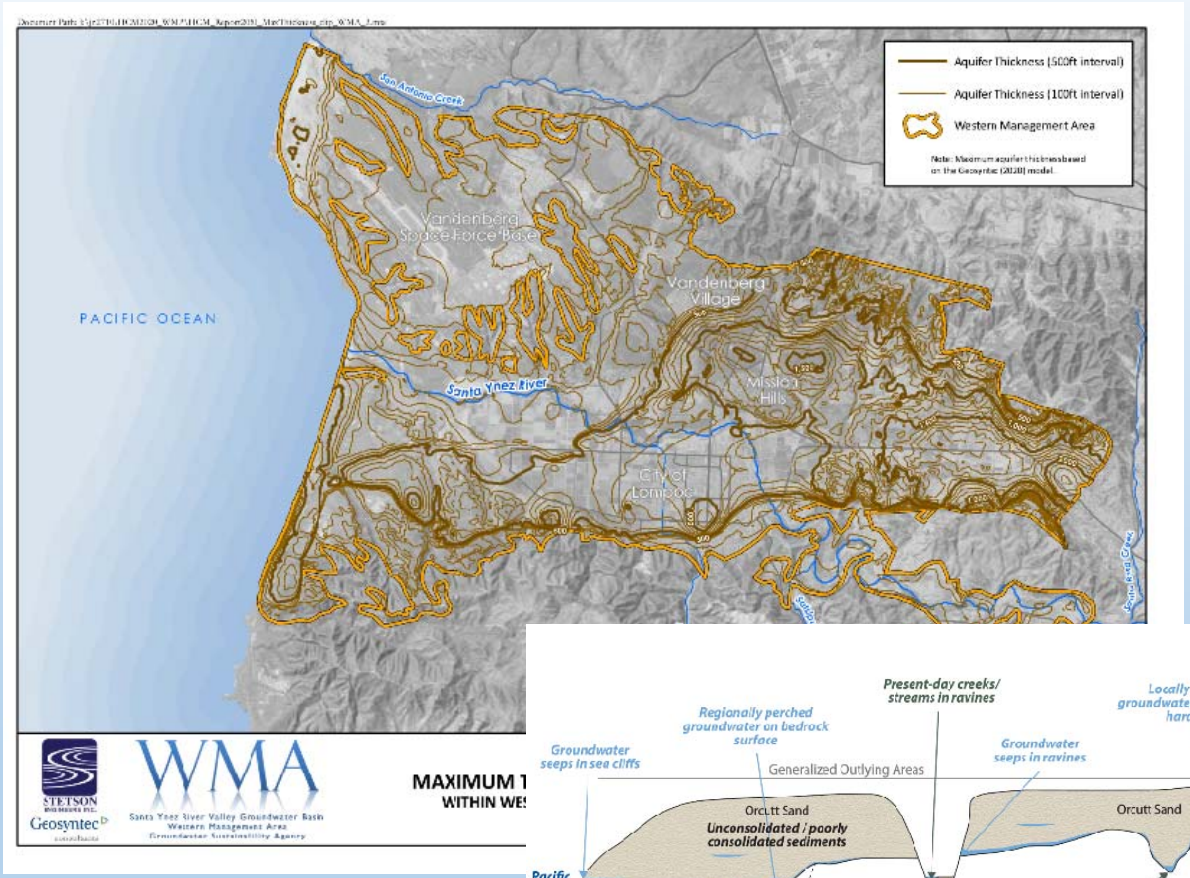
Introduction and overview of the geology. This includes a description of the regional geologic structural setting, relevant geologic units, surface geologic mapping, and major structural features. A three-dimensional geologic model was developed for the Basin, and cross-sections developed from this model are provided.

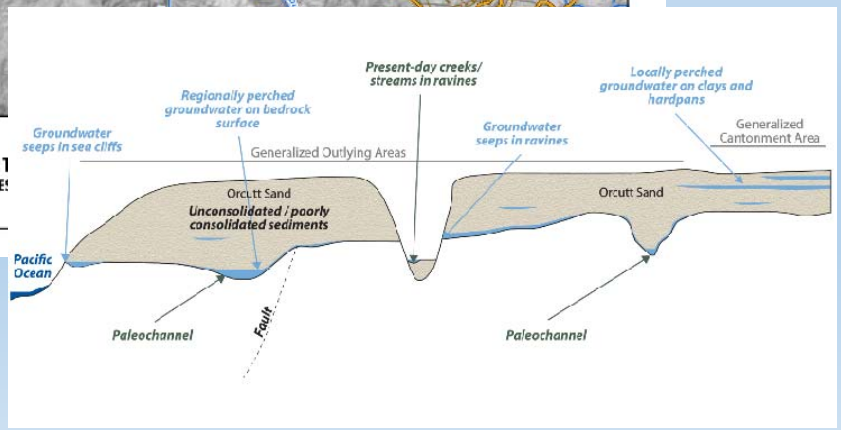




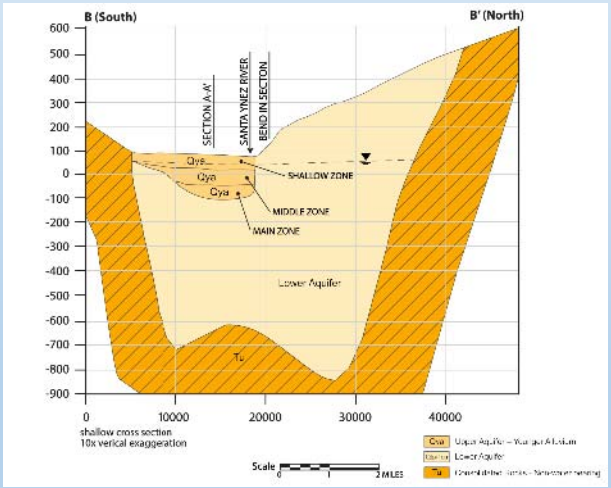
Selected Figures

2a.2 Principal Aquifers and Aquitards

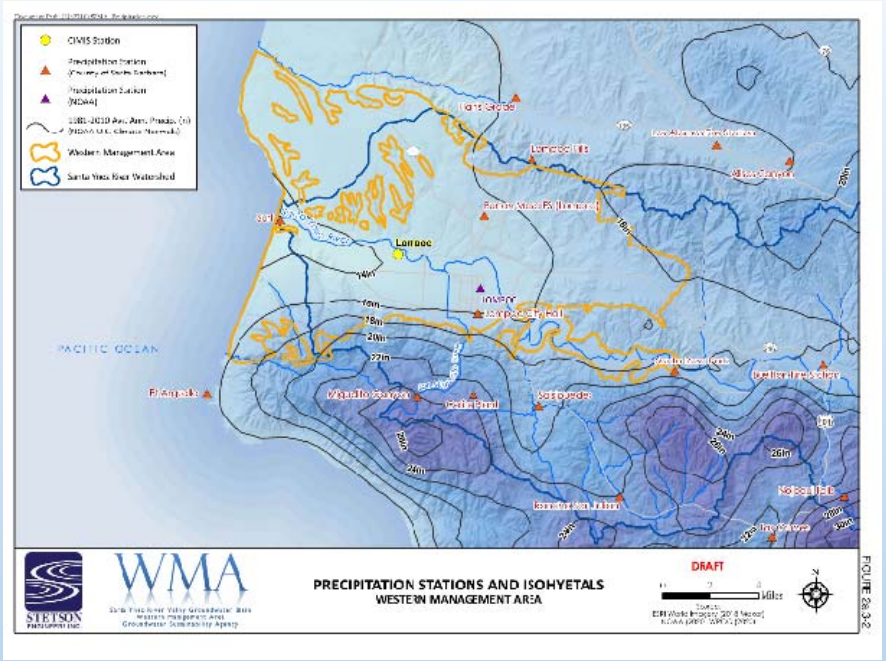




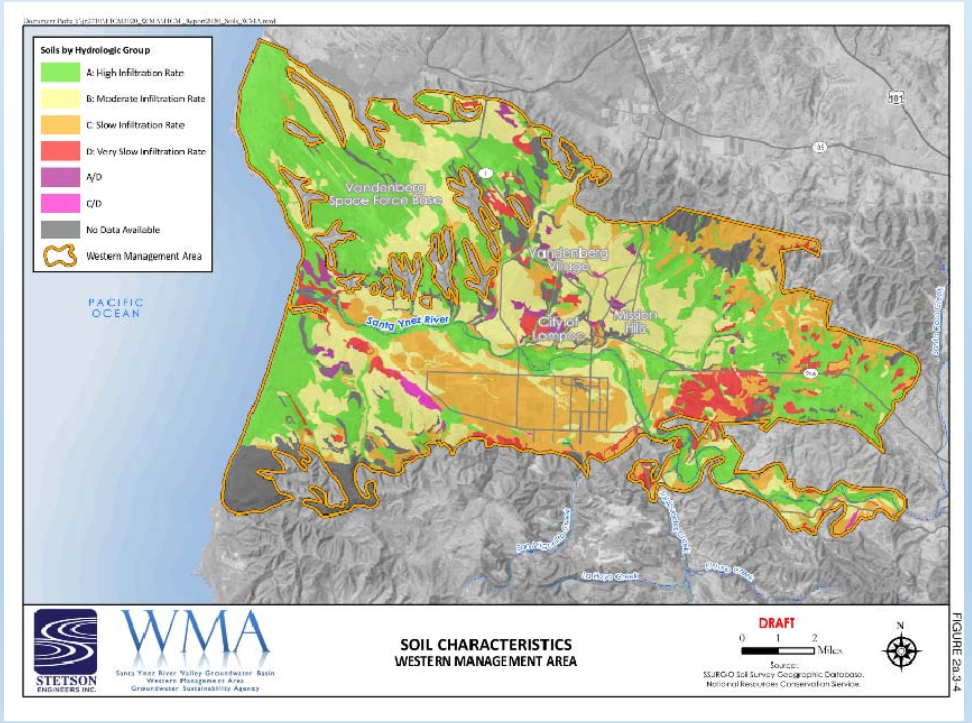
Discussion of geologic units corresponding to aquifers, including the three-dimensional Basin boundaries (lateral and basal boundaries). The physical characteristics of the aquifers in each subarea are summarized.



2a.4 Hydrologic Characteristics

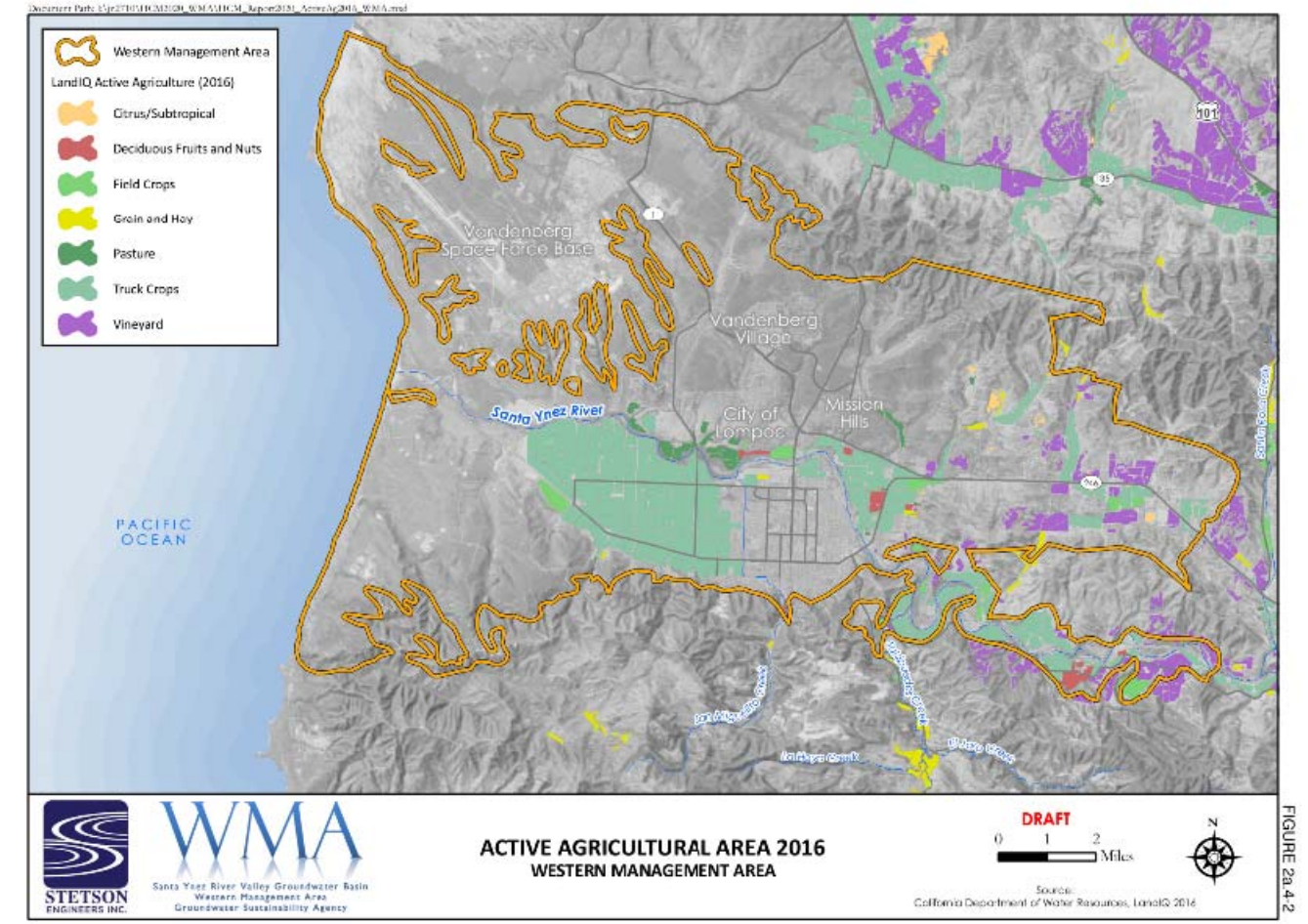


Physical surface conditions that interact with the groundwater.



2a.4 Uses and Users of Groundwater

Describes uses and potential uses of groundwater or surface water.



2b. Groundwater Conditions

DRAFT TECHNICAL MEMORANDUM

INTRODUCTION

Previously provided to public as a stand-alone draft document.

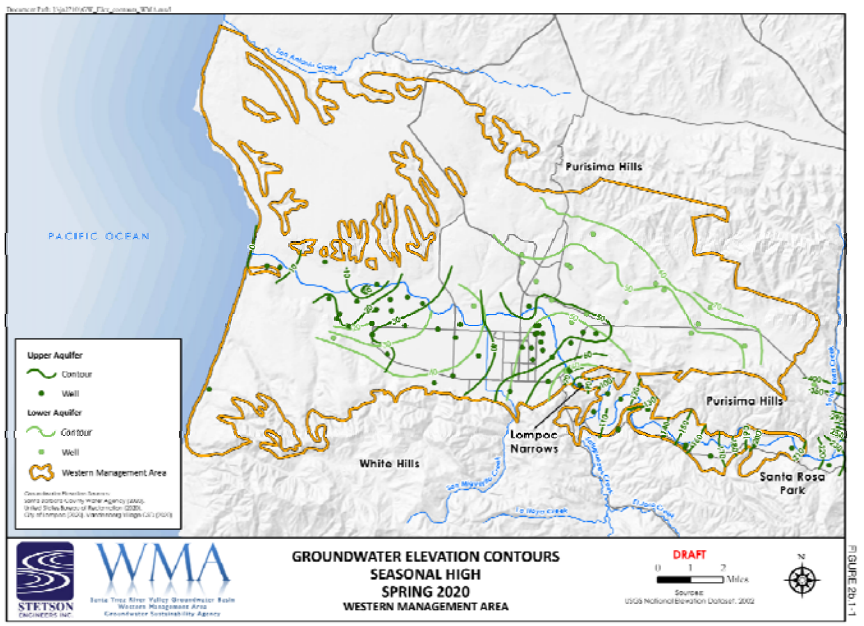
- **2b.1 Groundwater Elevation**
- **2b.2 Groundwater Storage**
- **2b.3 Water Quality**
- **2b.4 Seawater Intrusion**
- **2b.5 Land Subsidence**
- **2b.6 Interconnected Surface Water and Groundwater Dependent Ecosystems**

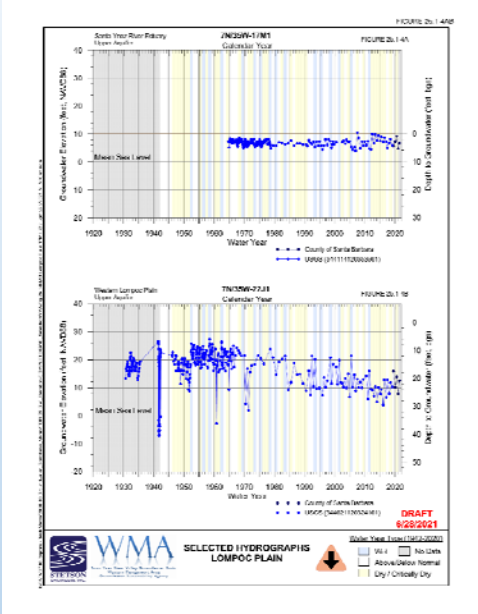
GSA Meetings:
November 2020 – Groundwater Conditions Workshop
January 2021 – Groundwater Conditions, supplemental items

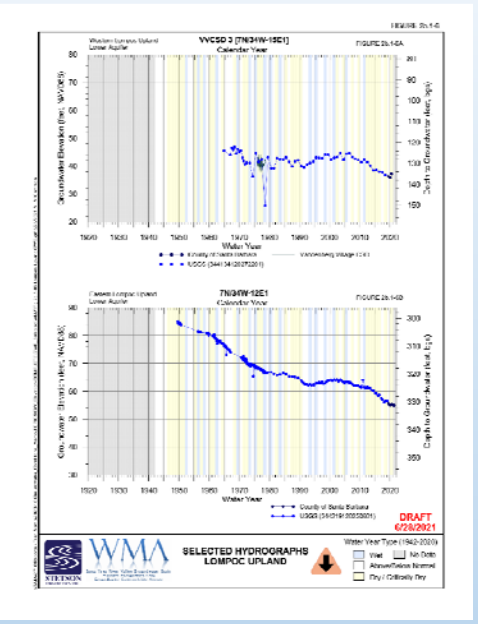
Ref: 23 CCR § 354.16

2b.1 Groundwater Elevation

Hydrographs, groundwater flow directions and maps, lateral and vertical groundwater gradients, regional groundwater pumping patterns, and changes in groundwater elevations over time.



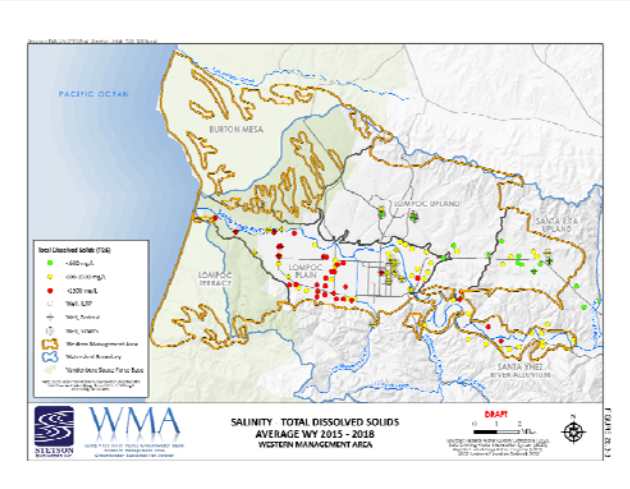


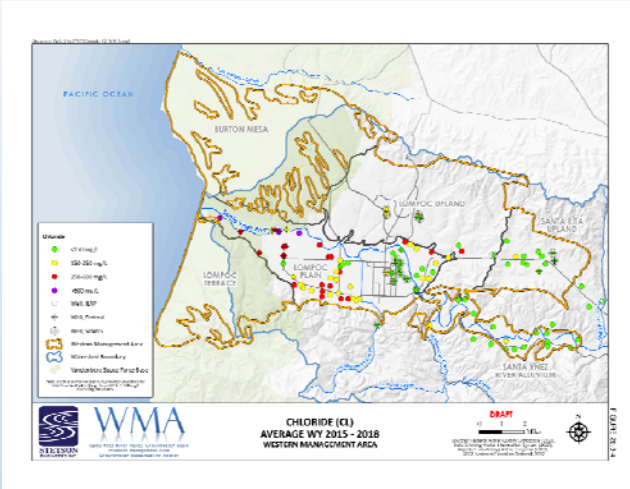


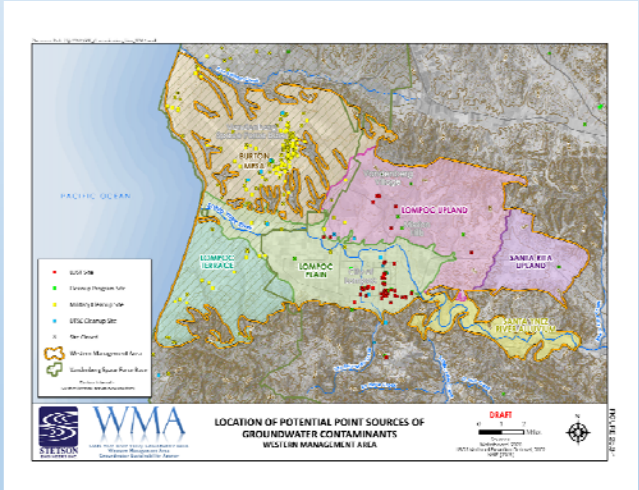
Selected Figures

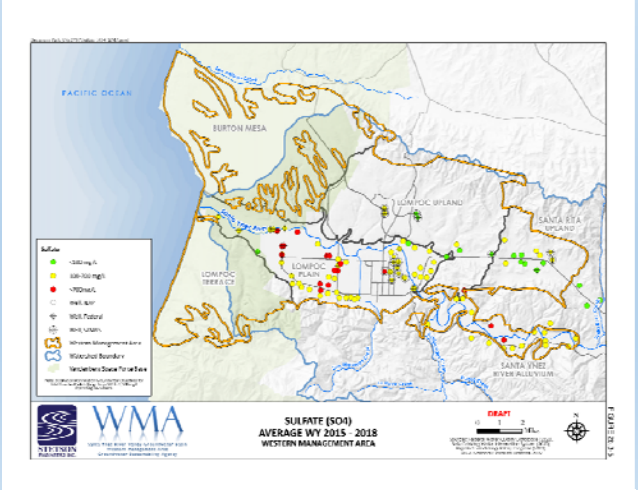
2b.3 Water Quality

Beneficial uses, suitability, groundwater contamination sites and plumes, major water quality for six components identified in the Basin Plan.





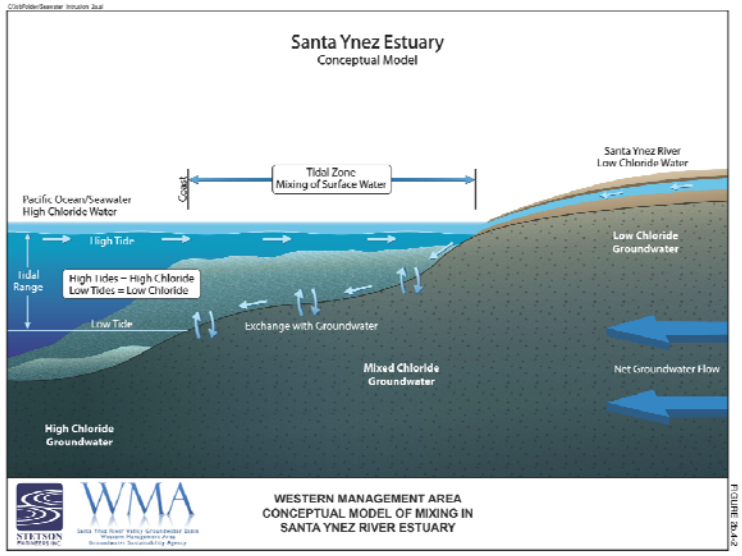


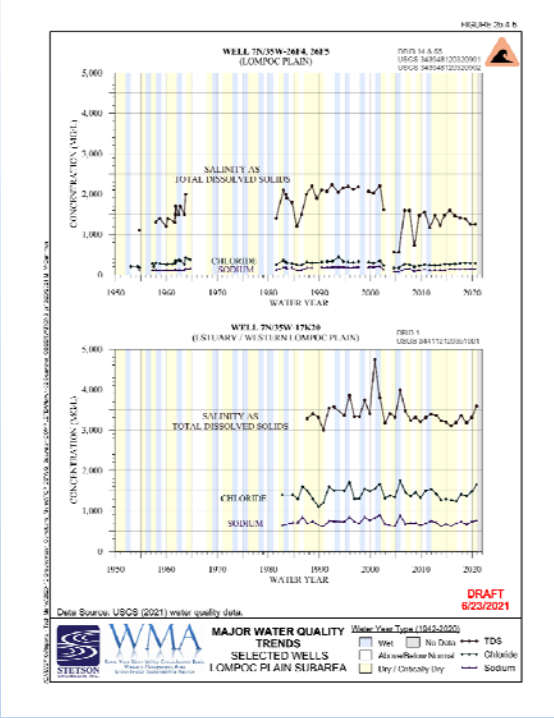


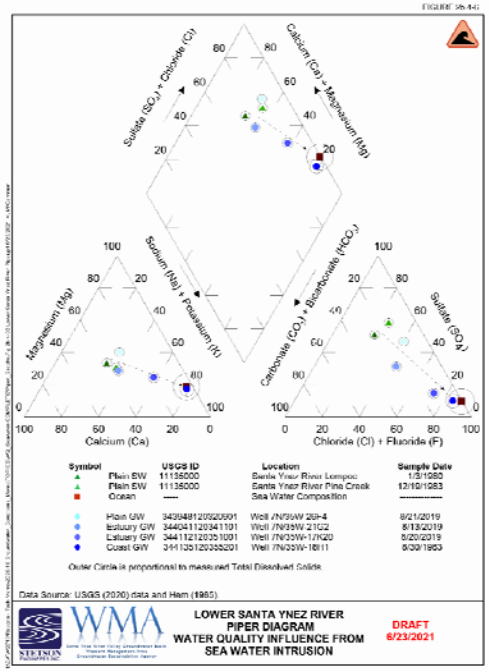
Selected Figures

2b.4 Seawater Intrusion

Very high chloride (>500mg/L) as indicator of seawater and higher than background and association with other seawater indicators; time series indicating no historical seawater intrusion.



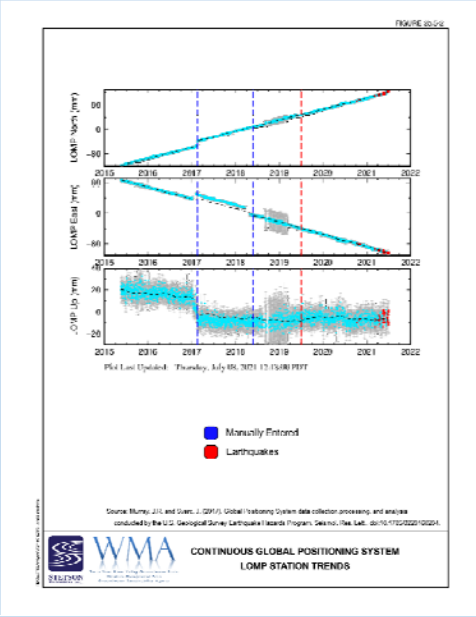


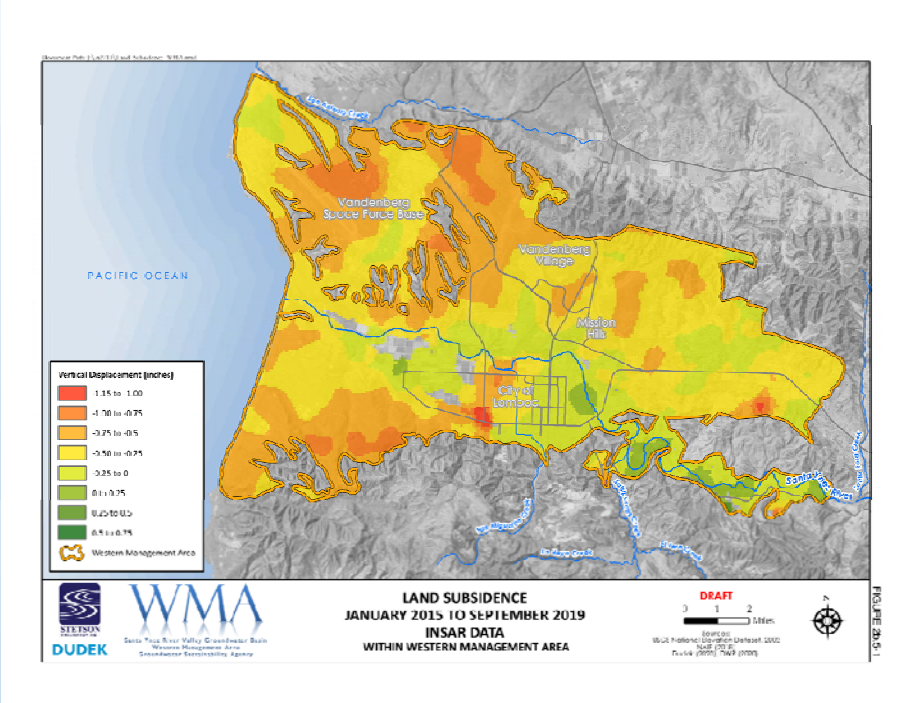


Selected Figures

2b.5 Land Subsidence

Unlikely due to the geologic setting of the WMA and the nature of the aquifer. Additionally, historical infrastructure records do not indicate land subsidence. Recent remote sensing data provided by DWR from 2015 – present show very little change in land surface elevation.





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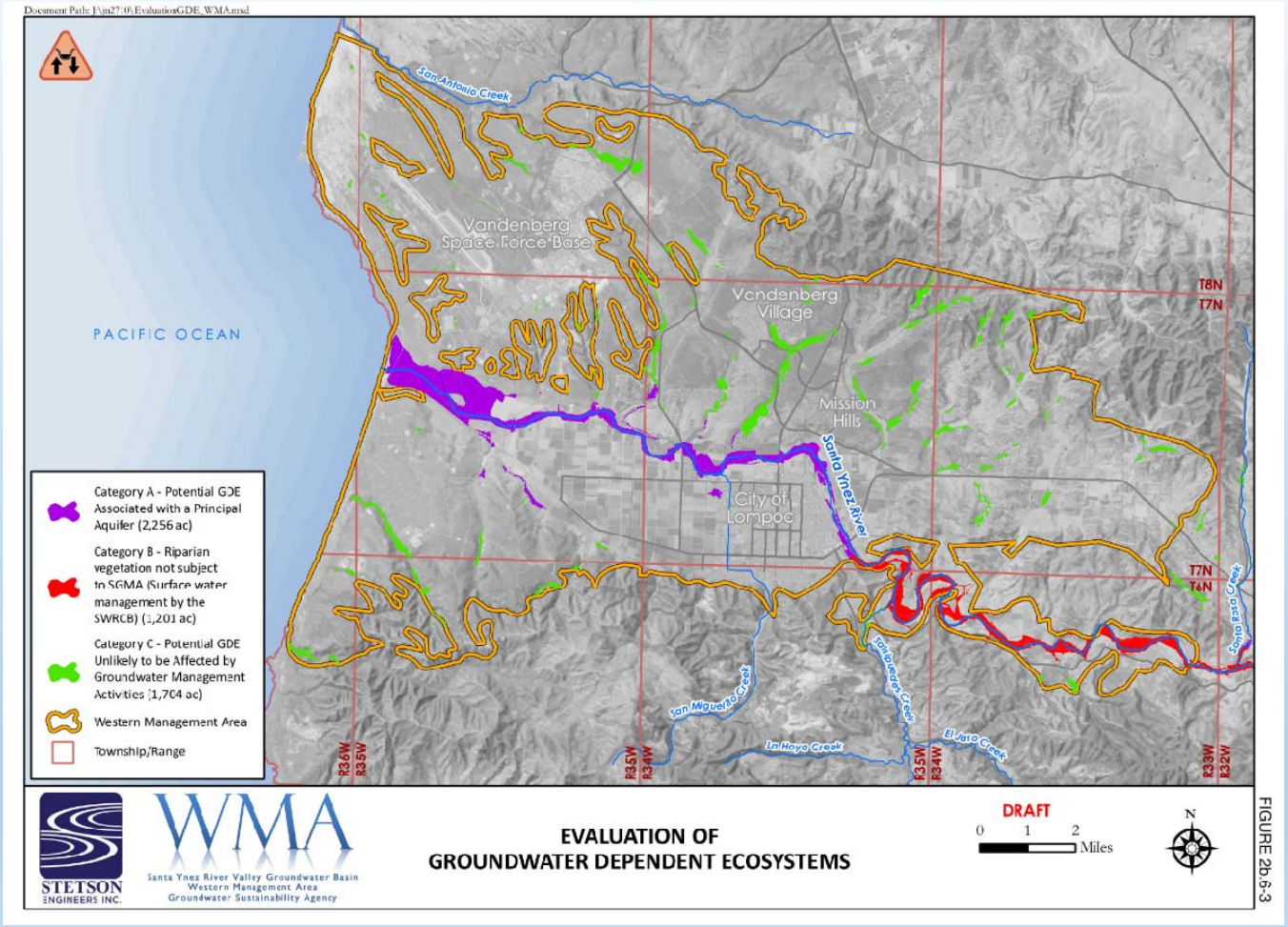
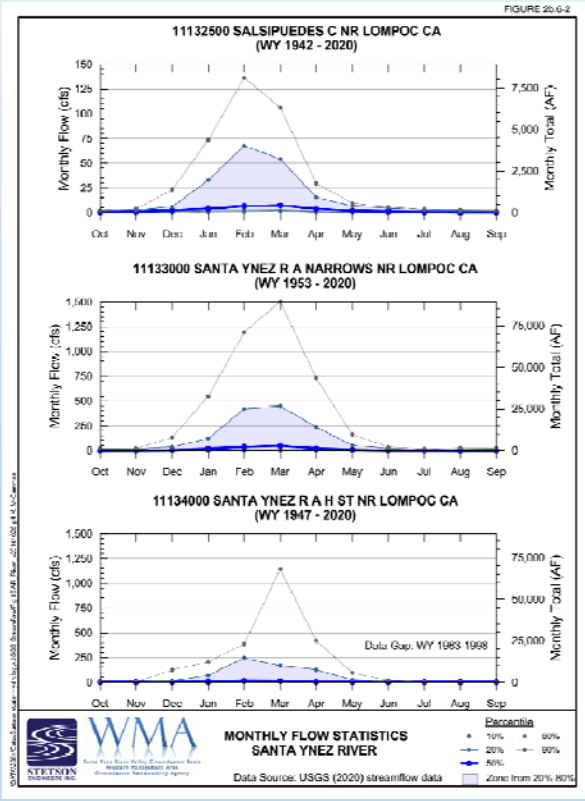
2b.6 Interconnected Surface Water and Groundwater Dependent Ecosystems



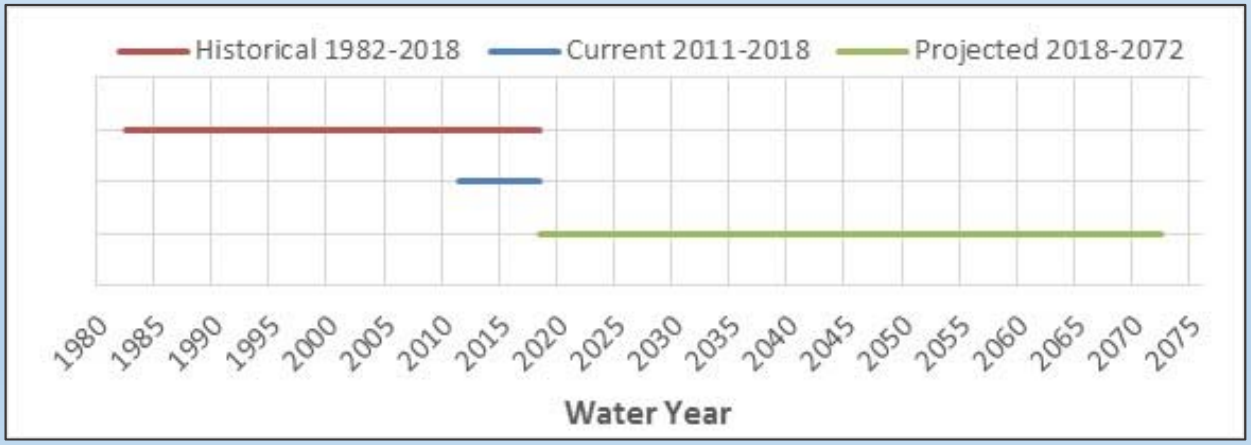
Identifies perennial/ephemeral surface flows, potential GDEs that are disconnected from groundwater.



2c. Water Budget

- 2c.1 Water Budget Elements
- 2c.2 Historical Water Budget
- 2c.3 Current Water Budget
- 2c.4 Projected Water Budget

Key GSA Meetings: January, February, & March 2021



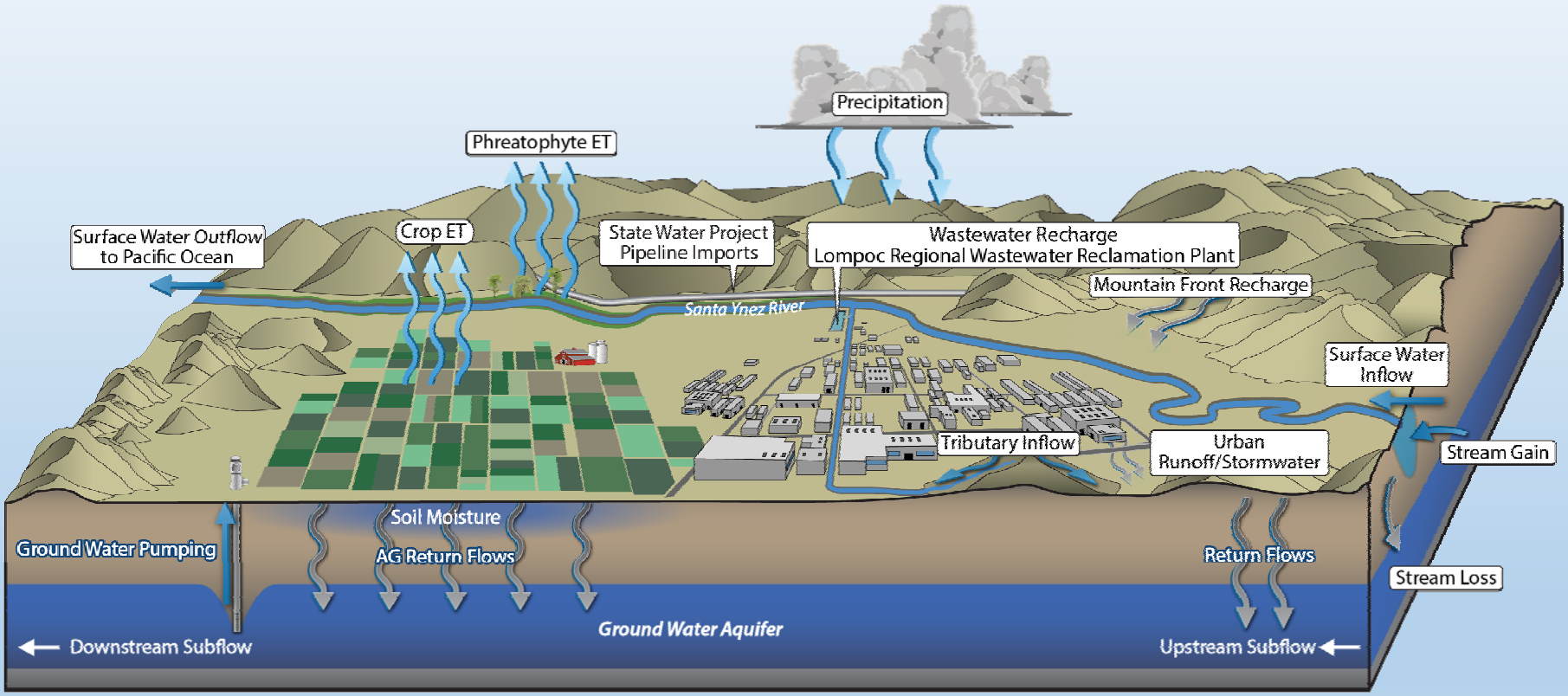
Time Periods

			Hydrologic Year Type Classification [1]		
	Lompoc City Hall		WMA	Upper Santa Ynez River	
Water Year	Precipitation (in/year)	% of Average [2]	USGS Gage 11132500 (Salsipuedes Creek)	SWRCB WRO 2019-148	Climatic Trends [3]
1982	11.9	81%	Dry	Below normal	Wet
1983	34.0	231%	Wet	Wet	Wet
1984	8.0	54%	Below normal	Above normal	Dry
1985	9.8	67%	Dry	Dry	Dry
1986	19.3	131%	Above normal	Above normal	Dry
1987	11.2	76%	Dry	Critically Dry	Dry
1988	15.4	105%	Dry	Dry	Dry
1989	6.6	45%	Critically Dry	Critically Dry	Dry
1990	6.6	45%	Critically Dry	Critically Dry	Dry
1991	15.0	102%	Below normal	Above normal	Dry
1992	15.8	107%	Above normal	Wet	Wet
1993	17.7	120%	Wet	Wet	Wet
1994	12.8	87%	Below normal	Below normal	Wet
1995	33.8	229%	Wet	Wet	Wet
1996	12.2	82%	Below normal	Below normal	Wet
1997	12.0	82%	Above normal	Above normal	Wet
1998	34.3	233%	Wet	Wet	Wet
1999	15.2	103%	Above normal	Below normal	Normal
2000	15.1	103%	Above normal	Above normal	Normal
2001	17.8	121%	Wet	Wet	Normal
2002	7.5	51%	Dry	Dry	Normal
2003	11.7	79%	Below normal	Below normal	Normal
2004	8.6	58%	Dry	Dry	Normal
2005	24.9	169%	Wet	Wet	Normal
2006	16.8	114%	Above normal	Above normal	Normal
2007	5.3	36%	Critically Dry	Critically Dry	Normal
2008	13.6	92%	Above normal	Above normal	Normal
2009	10.4	71%	Critically Dry	Dry	Normal
2010	19.5	132%	Below normal	Above normal	Normal
2011	26.8	182%	Wet	Wet	Normal
2012	10.6	72%	Dry	Dry	Dry
2013	7.2	49%	Critically Dry	Critically Dry	Dry
2014	7.2	49%	Critically Dry	Critically Dry	Dry
2015	8.0	55%	Critically Dry	Critically Dry	Dry
2016	11.7	79%	Critically Dry	Dry	Dry
2017	22.5	153%	Above normal	Above normal	Normal
2018	8.3	56%	Critically Dry	Dry	Normal

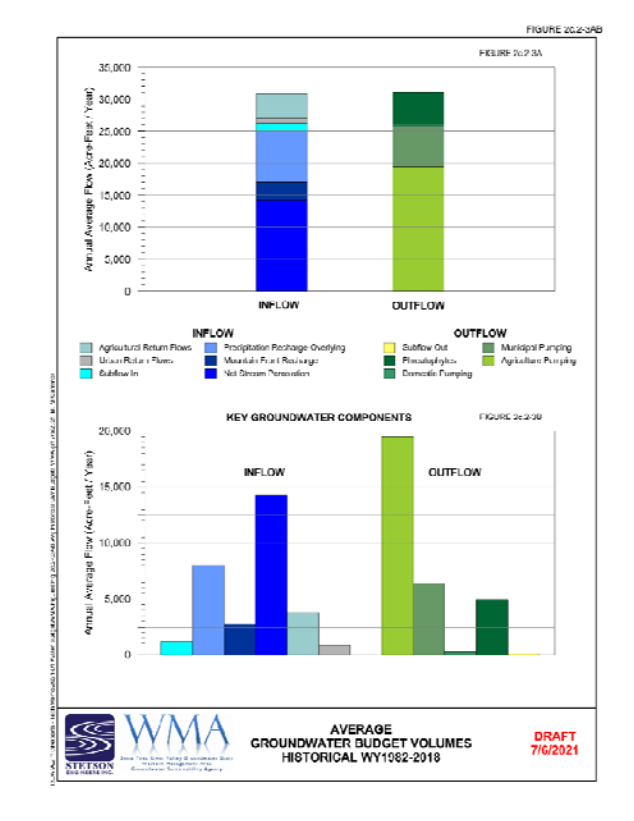
Water Year Type

Ref: 23 CCR § 354.18

2c.1 Water Budget Elements

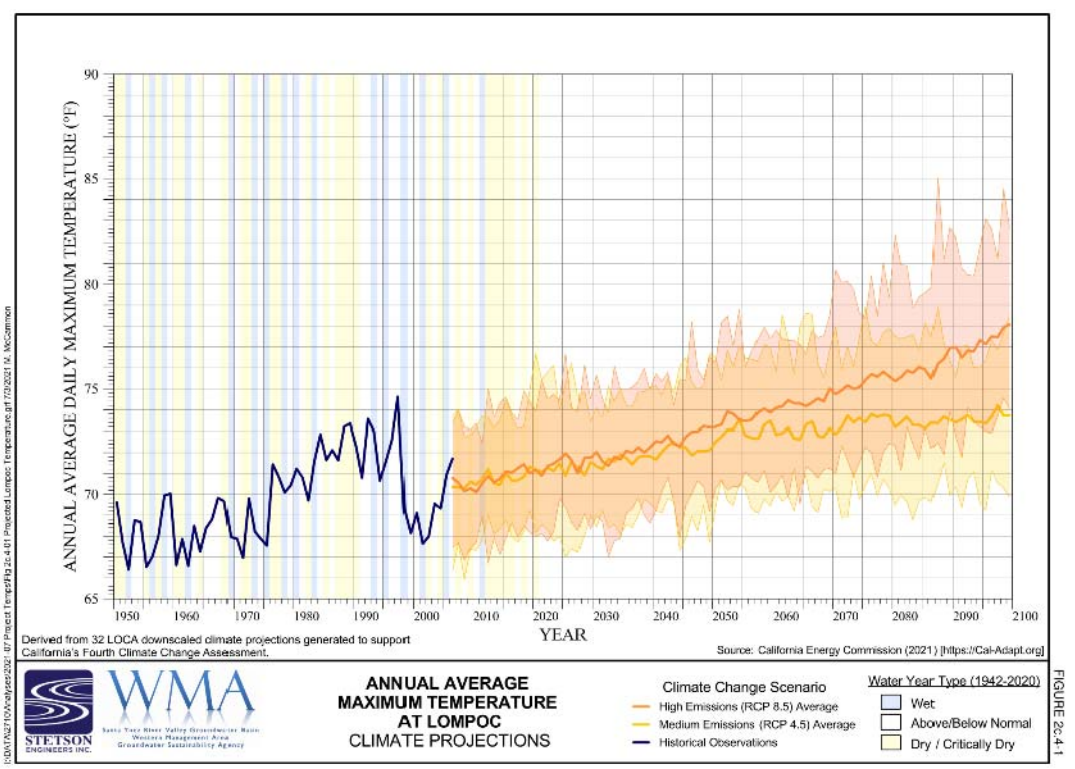


2c.2 Historical Water Budget



- 1982 – 2018 Balanced Hydrologic Period (37 years)
  - Outflow > Inflow by 1,000 AFY on average (4% of pumping)
- Annual groundwater production within the WMA is within 5% of the estimated sustainable yield of the WMA Basin 26,500 AFY
- Current water demands in Santa Rita Upland and Lompoc Upland about 500 AFY higher than sustainable yield.

2c.4 Projected Water Budget



2018-2072

- Temperatures estimated to rise by 3 to 7° Fahrenheit between 2020 and 2070
- Total water budget indicates deficit of about 3,000 AFY (~11% of sustainable yield) by 2070 if no actions are taken to remedy.

Chapter 3: Monitoring Networks and Sustainable Management Criteria

Quantitively measure un-sustainability/sustainability:

3a. Monitoring Networks

Existing Networks, Recommended Monitoring Networks

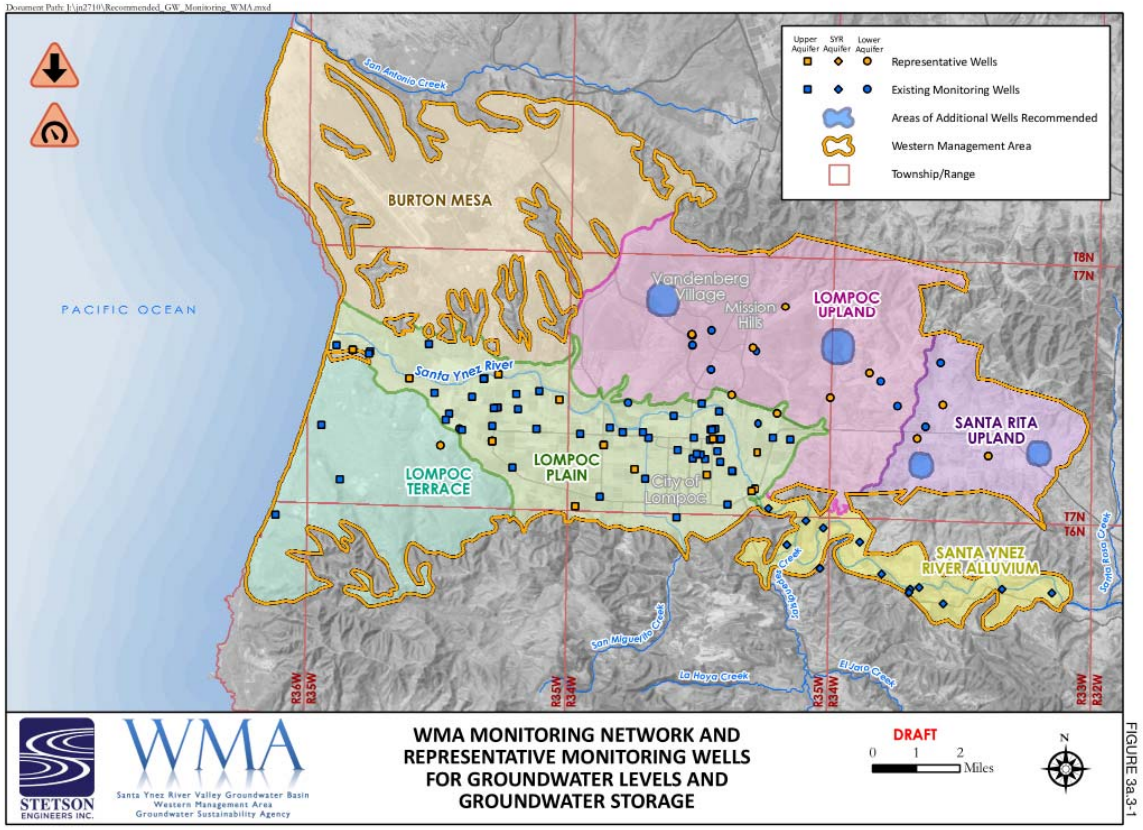
3b. Sustainable Management Criteria

Sustainability goals, Undesirable Results, Minimum Thresholds, and Measurable Objectives

Notable edits to Chapter 3 since public draft:

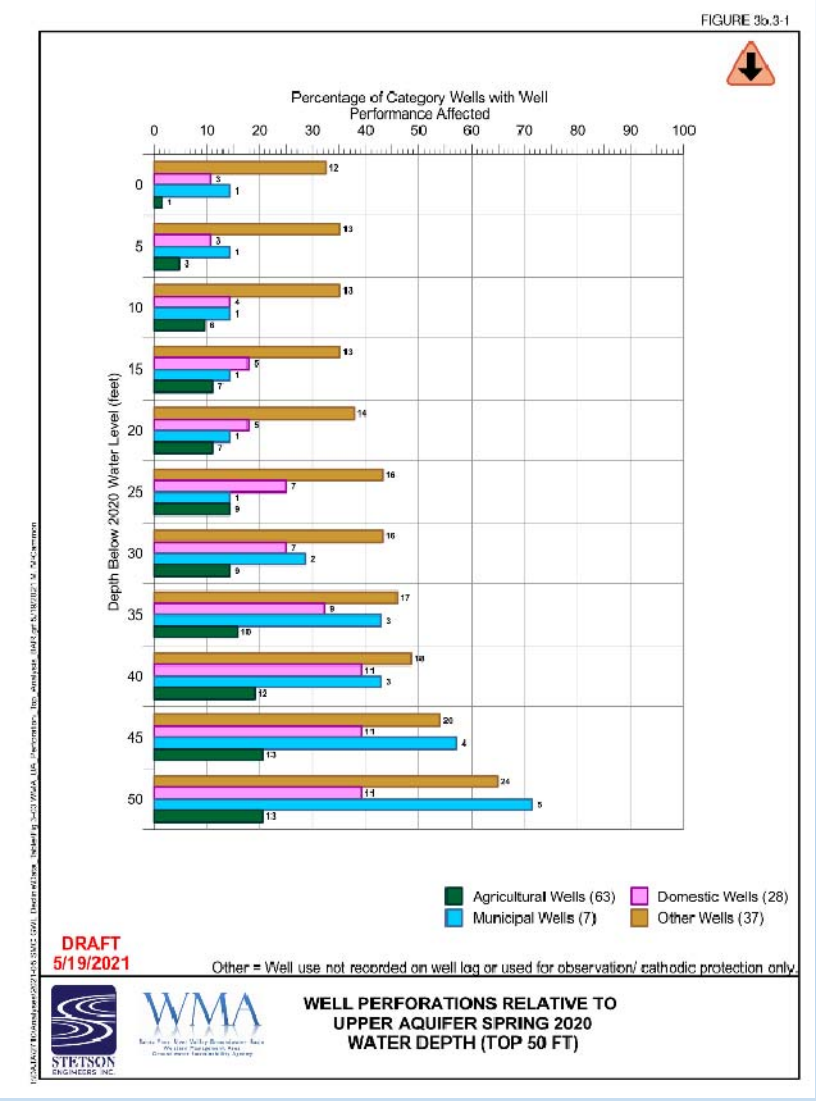
Reordering of Section- Monitoring Network moved prior to Sustainable Management Criteria

3a. Monitoring Networks



- 3a.1 Monitoring Networks Objectives
- 3a.2 Existing Monitoring Networks
- 3a.3 Recommended Monitoring Networks
- 3a.4 Monitoring Protocols

Ref: 23 CCR § 354.34
23 CCR § 354.36
23 CCR § 354.38



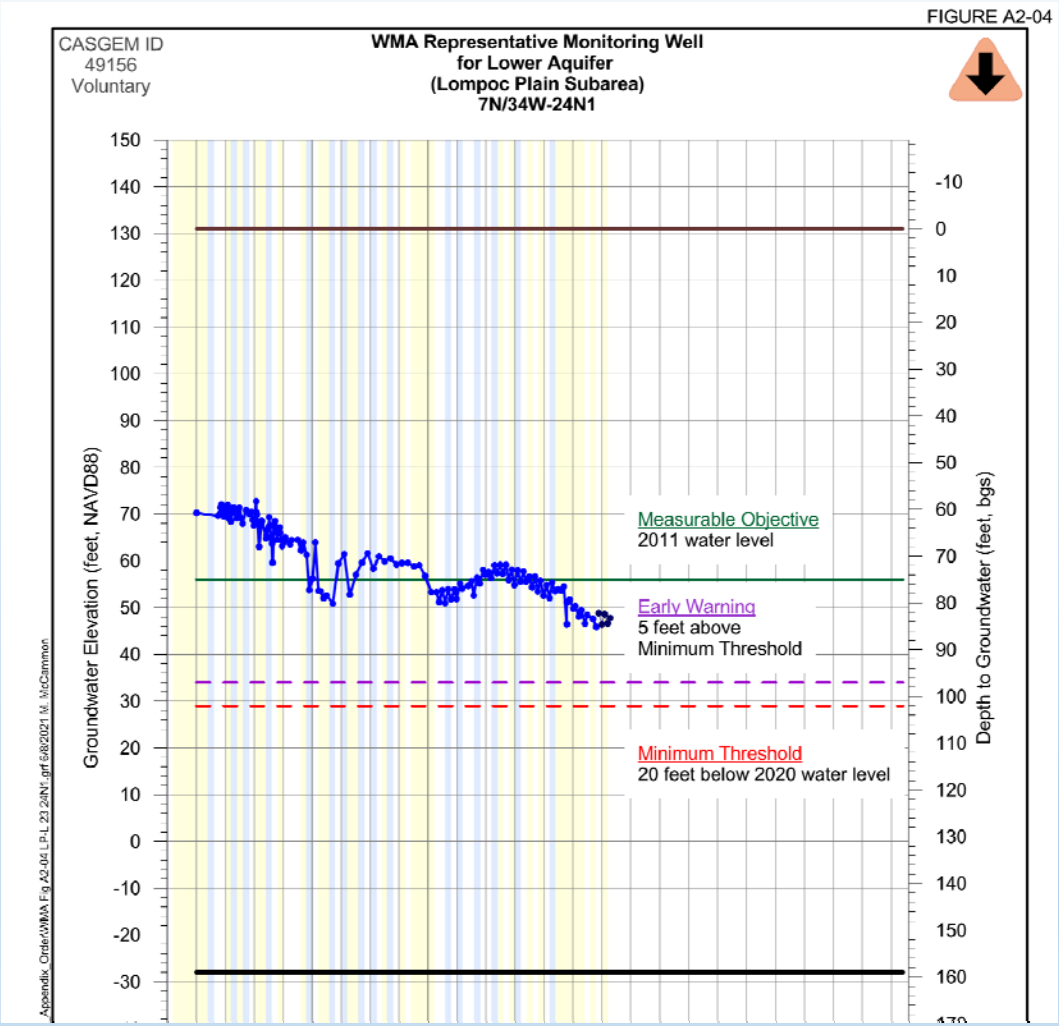
3b. Sustainable Management Criteria

- **3b.1 Sustainability Goal**
- **3b.2 Undesirable Results**
- **3b.3 Minimum Threshold**
- **3b.4 Measurable Objectives**
- **3b.5 Effects of Sustainable Management Criteria on Neighboring Basins**

GSA Meetings:

November 2020 – SMCs Concept
January 2021 – Minimum Thresholds Concept
May 2021 – SMC Workshop

Ref: 23 CCR § 354.24
23 CCR § 354.26
23 CCR § 354.28
23 CCR § 354.30



Minimum Threshold for Groundwater Elevation

- 10’ (Upper) or 20’ (Lower) below 2020 water level
- Protective of Domestic and Municipal Supply (see well screen analysis)
- Protective of other Sustainability Criteria by setting threshold at 10’ below historical water levels along river.
- Early warning trigger of 5’ above minimum threshold 2020 water level to trigger early management action to avoid groundwater levels falling below minimum threshold.

Chapter 4: Project and Management Actions

Projects and Management Actions (PMAs) are items to Improve Basin Conditions depending on triggering conditions:

Detailed presentation at July 2021 GSP meeting.

Group 1: General Management PMAs
Recommend under all conditions

Group 2: Early Warning PMAs
Recommend if conditions are degrading

Group 3: Minimum Threshold PMAs
Recommend if conditions are below minimum thresholds

Group 4: Other PMAs
Additional actions the GSA could consider.

Ref: 23 CCR § 354.44

Summary of Projects and Management Actions

	Demand	Supply
Group 1	Water Conservation	Recycled Water Non-potable Use
	Tiered Fees	Increased Storm Recharge/Supply
		Ban on Water Softeners
Group 2	Supplemental conditions on New Wells	Water Rights Releases Request
Group 3	Annual Pumping Allocation Plan/ Voluntary Fallowing Program	
Group 4	Non-native Vegetation Removal	Drought Mitigation (Deepen wells, Pumping Optimization)
	Agricultural Land/ Pumping Allowance Voluntary Retirement	Supplemental Imported Water Program
		Well-head pre-treatment

Chapter 5. Implementation

- Reporting and Updates
  - Annual Reports
  - 5-Year Updates
- Initial Implementation Actions
  - Update Well Registration
  - Require Meters for Groundwater Pumping
  - Coordination Agreement
- Ongoing Data Gap Resolutions
  - Well Measuring Point Survey
  - Well Sounding and Video Logging
  - New Monitoring Wells
  - New Surface Water Gauge
  - Geophysics Data Analysis

The Way Ahead

Santa Ynez River SGMA Project Schedule	
Public Draft GSP	September 1, 2021
Public Comment Period	September 1 - October 15
GSA Meetings to discuss draft GSP	8/25/2021, 10/6/2021, 11/17/2021
Final Draft GSP to Staff	October 29, 2021
Final Draft GSP to Public	December 3, 2021
GSA Committee Adopt GSP	12/15/2021
Submit GSP to DWR on or before	January 14, 2022

Questions?

Comments can be submitted to the website:

www.santaynezwater.org