NOTICE AND AGENDA OF SPECIAL MEETING

GROUNDWATER SUSTAINABILITY AGENCY
FOR THE WESTERN MANAGEMENT AREA
IN THE SANTA YNEZ RIVER GROUNDWATER BASIN

WILL BE HELD
AT **10:00 AM**, WEDNESDAY, APRIL 14, 2021

TELECONFERENCE MEETING ONLY – NO PHYSICAL MEETING LOCATION
PUBLIC PARTICIPATION DIAL-IN NUMBER: 1-267-866-0999
MEETING ID / PASSCODE: 8410 47 7155

Public participants can view presentation materials and live video on their device

Website: app.chime.aws (or download *Amazon Chime* app),
"Join a meeting without an account"
Meeting ID: 8410 47 7155

You do NOT need to create an Amazon Chime account or login with email for meeting participation.

Public participant phones and microphones will be muted, and webcams disabled.
Live Chat Text (online users only) will be enabled for questions.

If your device does not have a microphone or speakers, you can also call Phone Number & log in with Meeting ID listed above to listen while viewing the live presentation online.

Teleconference Meeting During Coronavirus (COVID-19) Emergency: As a result of the COVID-19 emergency and Governor Newsom's Executive Orders to protect public health by issuing shelter-in-home standards, limiting public gatherings, and requiring social distancing, this meeting will occur solely via teleconference as authorized by and in furtherance of Executive Order Nos. N-29-20 and N-33-20. **Virtual meeting is in accordance with the SB County Health Office Order 2021-12.2**

Important Notice Regarding Public Participation in Teleconference Meeting: Those who wish to provide public comment on an Agenda Item, or who otherwise are making a presentation to the GSA Committee, may participate in the meeting using the dial-in number and passcode above. **Those wishing to submit written comments instead, please submit any and all comments and materials to the GSA via electronic mail at bbuelow@syrwcd.com.** All submittals of written comments must be received by the GSA no later than 5:00 p.m. on Tuesday, April 13, 2021, and should indicate **"April 14, 2021GSA Meeting"** in the subject line. To the extent practicable, public comments and materials received in advance pursuant to this timeframe will be read into the public record during the meeting. Public comments and materials not read into the record will become part of the post-meeting materials available to the public and posted on the SGMA website.

In the interest of clear reception and efficient administration of the meeting, all persons participating in this teleconference are respectfully requested to mute their phones after dialing-in and at all times unless speaking.

AGENDA ON NEXT PAGE

GROUNDWATER SUSTAINABILITY AGENCY
FOR THE WESTERN MANAGEMENT AREA
IN THE SANTA YNEZ RIVER GROUNDWATER BASIN

WEDNESDAY, APRIL 14, 2021, 10:00 A.M.

AGENDA OF SPECIAL MEETING

I. Call to Order

II. Introductions and review of SGMA in the Santa Ynez River Valley Basin

III. Additions or Deletions to the Agenda

IV. Public Comment (Any member of the public may address the Committee relating to any non-agenda matter within the Committee's jurisdiction. The total time for all public participation shall not exceed fifteen minutes and the time allotted for each individual shall not exceed five minutes. No action will be taken by the Committee at this meeting on any public item.)

V. Receive Staff Memorandum regarding letter from the Santa Ynez Water Group

VI. Receive comments from WMA Citizens Advisory Committee on Draft Groundwater Conditions Technical Memorandum

VII. Receive Presentation from Stetson Team on "Draft Water Budget" and "Sustainable Yield Preliminary Discussion"

VIII. Receive Draft Water Budget Technical Memorandum and consider public comment period and assignment to CAG.

IX. Next "Special" WMA GSA Meeting: **Wednesday, April 28, 2021, 10:00 AM**

X. Next "Regular" WMA GSA Meeting: **Wednesday, May 26, 2021, 10:00 AM**.

XI. WMA GSA Committee requests and comments

XII. Adjournment

[This agenda was posted 72 hours prior to the scheduled regular meeting at 3669 Sagunto Street, Suite 101, Santa Ynez, California, and https://www.santaynezwater.org in accordance with Government Code Section 54954. In compliance with the Americans with Disabilities Act, if you need special assistance to review agenda materials or participate in this meeting, please contact the Santa Ynez River Water Conservation District at (805) 693-1156. Notification 72 hours prior to the meeting will enable the GSA to make reasonable arrangements to ensure accessibility to this meeting.]

STAFF MEMORANDUM

DATE: April 12, 2021

TO: WMA, CMA and EMA GSA Committees

FROM: GSA Member Agency Staff

SUBJECT: Santa Ynez Water Group Letter of March 22, 2021

Please see the attached March 22, 2021 letter from Mr. Doug Circle, representing the Santa Ynez Water Group (Water Group).

In the letter, Mr. Circle explains the Water Group's requests to "minimize GSP implementation costs to the maximum extent possible". To date, many of the Water Group's comments have focused on the reduction or elimination of data gaps and additional data acquisition that are not required to implement SGMA or manage groundwater in the Santa Ynez River Valley Groundwater Basin (Basin).

The Water Group further requested that the three GSAs combine to submit one Groundwater Sustainability Plan (GSP) instead of the planned three GSPs, indicating that a single GSP approach would save costs. However, staff advises that submitting one GSP instead of three is not feasible at this time, as it would require changing the three Memorandum of Agreements (MOAs) that established the three GSAs. There is not enough time in the schedule to modify the MOAs with concurrence of the eight agencies and approval by their Boards and Councils, much less revise the current versions of the GSPs into one in the remaining time. It also must be noted that the three GSAs would need to renegotiate the various consulting agreements currently in place for preparing the three GSPs.

The three GSP documents are scheduled to be ready for review this summer. Changing the format of the documents and coordinating with the three GSAs and two consultant teams would put the submission of the GSPs by the SGMA deadline of January 31, 2022 in jeopardy.

- **Staff recommendation:** Maintain current structure under the MOAs to submit three GSPs.

Additionally, the Water Group asked that the three GSAs consider consolidating into a single GSA to further reduce costs for meetings and other administrative requirements. The GSAs will consider potential options for future governance of SGMA in the Basin once the GSPs are submitted.

- **Staff recommendation:** Prior to submittal of the GSPs, Staff from each of the eight agencies in the Basin will discuss various governance options and present the topic to each of the GSA Committees.

Santa Ynez Water Group
c/o Doug Circle
Rancho Cañada de Los Pinos LLC
doug@circlevision.com

March 22, 2021

Board of Directors, Santa Ynez River Valley Basin Eastern Management Area GSA
Chair: Brett Marymee, SYRWCD (Cindy Allan, Alternate)
Brad Joos, SYRWCD Improvement District #1 (Paeter Garcia, Alternate)
Mark Infanti, City of Solvang (Ryan Toussaint, Alternate)
Joan Hartman, County of Santa Barbara (Meighan Dietenhofer Alternate)
Citizens Advisory Group, Santa Ynez River Valley Basin Easter Management Area

Board of Directors, Santa Ynez River Valley Basin Central Management Area GSA
Chair: Ed Andrisek, City of Buellton (John Sanchez, Alternate)
Art Hibbits, SYRWCD (Cindy Allan, Alternate)
Joan Hartman, County of Santa Barbara (Meighan Dietenhofer Alternate) (*non-voting member*)
Citizens Advisory Group, Santa Ynez River Valley Basin Central Management Area

Board of Directors, Santa Ynez River Valley Basin Western Management Area GSA
Chair: Chris Brooks, Vandenberg Village CSD (Katherine Stewart, Alternate)
Jim Mosby, City of Lompoc (Kristin Worthley, Alternate)
Bruce Nix, Mission Hills CSD (Myron Heavin, Alternate)
Steve Jordan, SYRWCD (Art Hibbits, Alternate)
Joan Hartman, County of Santa Barbara (Meighan Dietenhofer Alternate) (*non-voting member*)
Citizens Advisory Group, Santa Ynez River Valley Basin Western Management Area

c/o William (Bill) Buelow
Santa Ynez River Water Conservation District
3669 Sagunto Street, Suite 101
Santa Ynez, CA 93460

Transmitted via email attachment to bbuelow@syrwcd.com

Re: Request to Consolidate GSPs and GSAs to Mitigate SGMA Implementation Costs

Dear Directors and Staff:

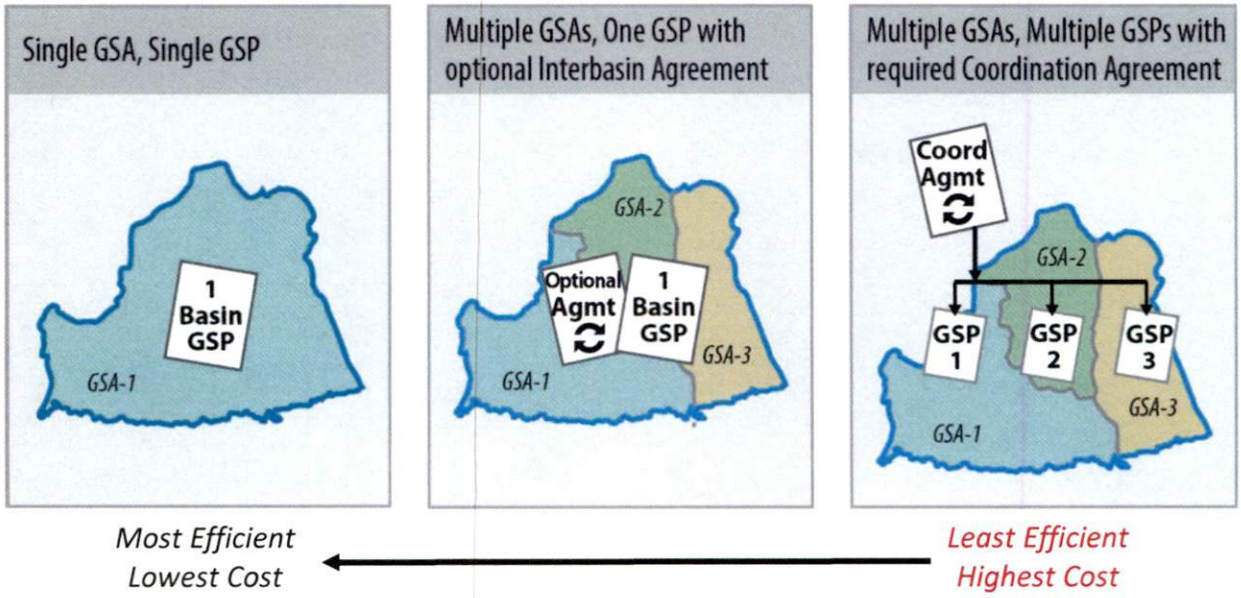
As you know the Santa Ynez Water Group (SYWG) was recently formed to engage on behalf of landowners with the three Groundwater Sustainability Agencies (GSAs) concerning development of the Santa Ynez River Valley Groundwater Sustainability Plans (GSPs). SYWG includes, vineyards, vegetables, and other interests and currently represents 54 landowners and 7,853 acres in the Santa Ynez River Valley Basin. SYWG desires to work cooperatively and collaboratively with the GSAs on planning issues that will impact sustainable management of the groundwater basin and our business.

SYWG is sending this letter to express its concerns about future costs for GSP implementation and to recommend steps that can be taken to reduce those costs. We are very concerned about implementation costs because we assume that those costs will be borne by the groundwater users in the basin through one of the fee mechanisms allowed under SGMA. Given the relatively small amount of pumping in the basin, those costs will result in significant per acre-foot pump fees that will impact our businesses and the local economy. For example, all the SGMA implementation costs for the CMA will be spread across only ~2,500 acre-feet of pumping. Assuming average annual GSP implementation costs of $200,000, the outlook is a $80 per acre-foot pump fee, which is very significant.

SYWG desires to minimize GSP implementation costs to the maximum extent reasonably possible. To date, out comments on draft GSP materials have focused on eliminating data collection recommendations that are not necessary for sustainable management of the Basin. We encourage the GSAs to carefully consider data needs and only commit to data collection efforts that will truly be necessary to sustainably manage the Basin. Looking ahead, we are also very concerned about the significant costs for implementing SGMA in a triplicate fashion with three GSAs and three GSPs.

GSP implementation costs will be significant. At a minimum, each GSA must develop and submit annual reports each year and update the GSP at least once every five years. The costs alone will be significant. Given the current management structure (three GSAs and three GSPs), a significant amount of effort will be triplicated. Clearly, preparing three annual reports and updating three GSPs will be significantly more expensive than preparing one annual report each year and updating one GSP. As shown in the DWR graphic below (Figure 1), it is perfectly acceptable for the three GSAs to adopt a single GSP for the Basin, which would eliminate the triplicated efforts going forward. In fact, DWR prefers this approach in basins that have multiple GSAs.

Figure 1
GSA and GSP Options for SGMA Implementation
(Source: DWR GSP Emergency Regulations Guide)



SYWG strongly recommends that the GSAs change their approach to a single GSP. The single GSP would incorporate differential management in WMA, CMA, and EMA by establishing three management areas[1] and specific objectives each, as is provided for in SGMA. A single GSP would reduce annual reporting and GSP update costs going forward because only one annual report and one GSP updated would be needed, instead of three. Additionally, we recommend exploring whether the three GSAs could eventually be consolidated into a single GSA to further reduce costs for meetings and other administrative activities.
It is not too late to decide to adopt a single GSP for the Basin. It is important that a decision to prepare and adopt a single GSP for the Basin be made now, as there is still time to implement this change before GSP adoption deadline in January 2022. If a single GSP is not adopted, it may be difficult or impossible to consolidate the GSPs later.

We respectfully request that the GSAs place an agenda item on the next Board meeting agendas to discuss this and that the three GSA Boards come together in a joint meeting as soon as possible to discuss switching to a single GSP.

Please let us know if there is anything SYWG can do to further the recommendations communicated in this letter.

Sincerely,

Doug Circle

cc: SYWG Members
Bryan Bondy, Bondy Groundwater Consulting, Inc.

[1] GSP Emergency Regulations § 354.20(a): Each Agency may define one or more management areas within a basin if the Agency has determined that creation of management areas will facilitate implementation of the Plan. Management areas may define different minimum thresholds and be operated to different measurable objectives than the basin at large, provided that undesirable results are defined consistently throughout the basin.

WESTERN MANAGEMENT AREA
CITIZEN ADVISORY GROUP
MEMORANDUM

DATE: March 16, 2021

TO: WMA GSA Committee

FROM: WMA Citizen Advisory Group

SUBJECT: Review and Discussion Draft Groundwater Conditions Technical Memorandum

Western Management Area (WMA) Citizens Advisory Group (CAG) Members:

CAG Members in attendance: Karen Kistler, Charles Witt, Kari Campbell-Bohard, Jose Baer, Derek McLeish and Scott Williams.

Staff and Consultants in attendance: Bill Buelow (SYRWCD), Miles McCammon and Curtis Lawlor (Stetson), Kristin Worthley (City of Lompoc).

Purpose

The WMA GSA Committee requested staff for the GSA agencies to coordinate meetings of the WMA CAG. Through a coordinated effort, the CAG held a meeting via teleconference due to the COVID-19 restrictions. The meeting was held on March 16, 2021. The purpose of the meetings was for the WMA CAG (CAG) to review the Draft Groundwater Conditions Technical Memorandum. The Memorandum was prepared by the Stetson Engineer's team. A copy of the documents was made available to the CAG prior to the meeting at www.SantaYnezWater.org.

CAG Comments on Draft Groundwater Conditions Technical Memorandum

- The CAG asked how the groundwater contours were done.
  - Consultant response: assigned wells in each aquifer were selected for contours.
- A CAG member asked the meaning of groundwater usage shown on Figures 2-1 and 2-4 change in storage and usage over time.
- Members of the CAG agreed that they would like to see as many "data gaps" closed as possible (pg 38) and referenced Groundwater Dependent Ecosystems (GDEs).
  - Consultant indicated that GDEs will be screened using the numeric groundwater model based on simulated groundwater elevations.
- The CAG was interested in how the Aerial Electromagnetic Survey (AEM) would be incorporated into the Groundwater Conditions TM.

    - Staff and Consultants indicated that as soon as the AEM data has been processed and interpreted, it will be integrated into the various models. This may be done during the next iteration of the GSP due to the timing.
- The CAG and consultants discussed how the amount of groundwater in storage is being presented as a relative number and not an actual number. There was further discussion about groundwater storage and its relationship to seawater intrusion, which does not occur in the WMA due to geology.
- CAG discussed section 4.1.2 and the physical separation of the Lompoc Terrance due to the syncline which separates the lower aquifer from seawater intrusion. The CAG further discussed minimum flows in the Santa Ynez River estuary and the role of Water Rights Releases from Lake Cachuma.
- The CAG discussed well hydrographs in Appendix A. They requested to add blanket statements when there are lapses in data to indicate the well was either decommissioned or there is no current data available.
- There was a discussion about the effect of the wastewater treatment plants on the upper aquifer.
- The CAG discussed page 12, second paragraph section 1.3.5 and the inclusion of water level data on a regional map given that it is suspected to be perched aquifer.
    - The Consultants are continuing to work on that issue and may remove the upper aquifer as a principal aquifer due to the perched conditions.

Comments by the Public in Attendance:

- Mr. Bryan Bondy of the Santa Ynez Water Group recommended adding some context to Figure 2-1 regarding the cumulative storage numbers and average changes in storage. Mr. Bondy further recommends a comparison figure with groundwater pumping and changes in storage.
- Mr. Bryan Bondy recommended screening GDEs now, and do not wait for model completion, using contours, aerial photographs or other sources. Mr. Bondy has a similar comment regarding screening springs and recommended a day in the field to evaluate the presence/absence of springs.
- Mr. Bondy discussed the proposed surveys for land subsidence and suggested it was unnecessary given the regional geology and suggests other less expensive alternatives.
- Mr. Steve Slack from the California Department of Fish and Wildlife remarked that the comments for the CMA were on the WMA page on the website and asked if there was a Groundwater Conditions TM for the EMA.
    - Staff will check on the website issue and clarified that the groundwater conditions were discussed in the Hydrogeologic conceptual model for the EMA.
- Mr. Slack asked about safety nets for Groundwater Dependent Ecosystems.

WMA

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

April 14 2021

Stakeholder Workshop

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
- Website for additional information:

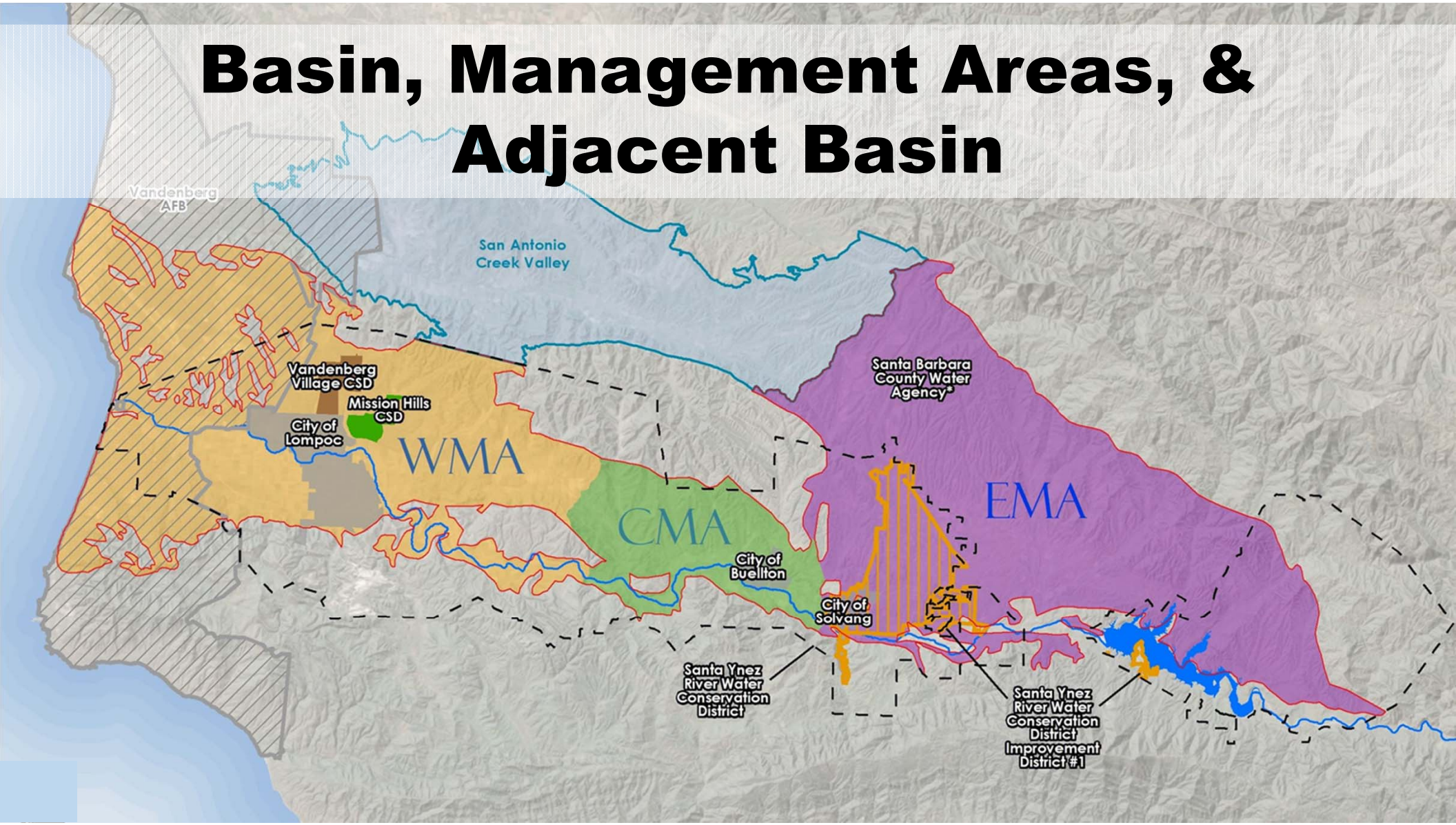
www.santaynezwater.org

- Slide numbers in lower right

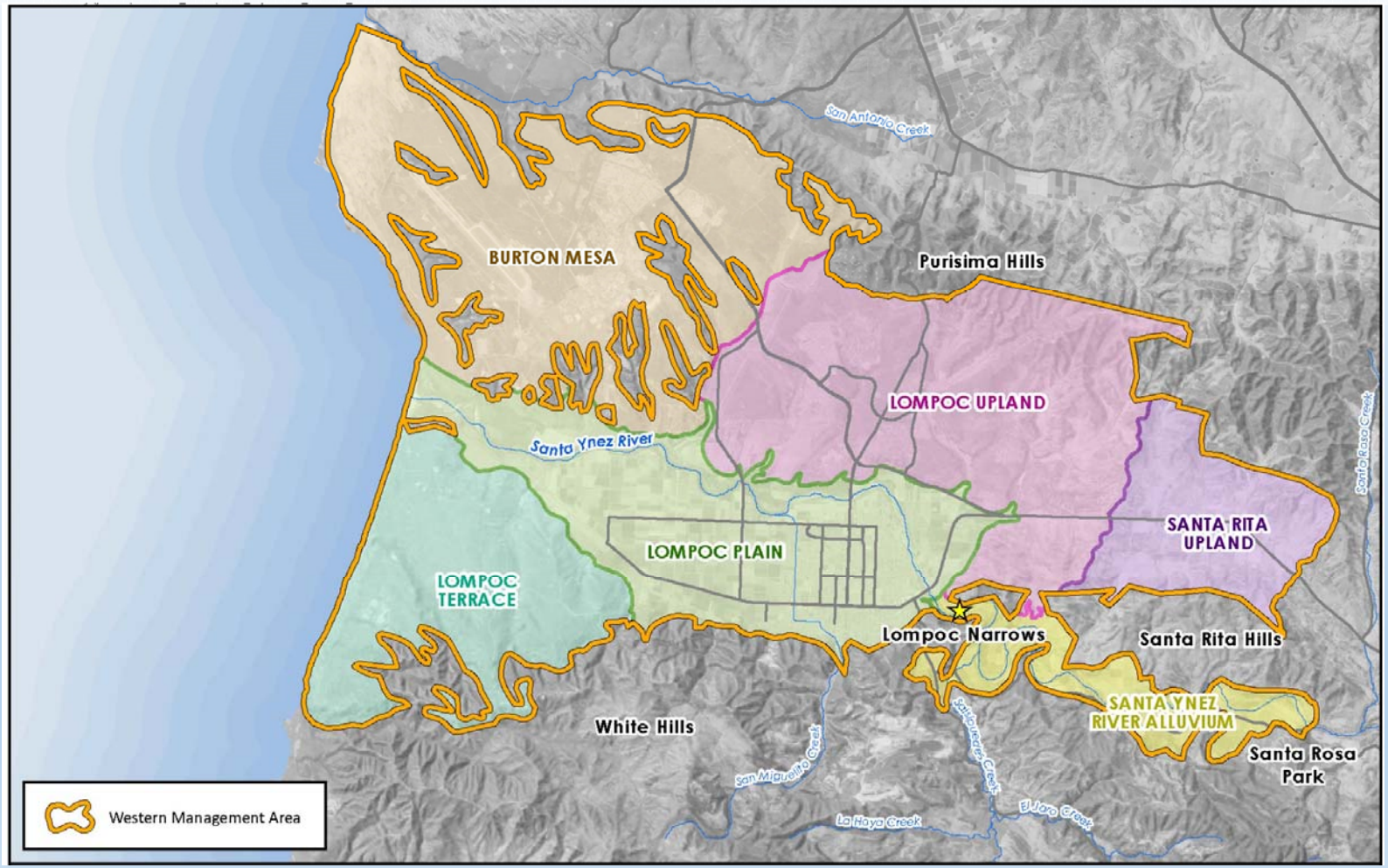
Agenda

1. Water Budget and Sustainable Yield Preliminary Determination and Discussion
    1. Time periods and data sources
    2. Historical and Current Analysis Results
    3. Future Period Assumptions and Analysis Results
2. Way Ahead/ Schedule

Basin, Management Areas, & Adjacent Basin



WMA Subareas



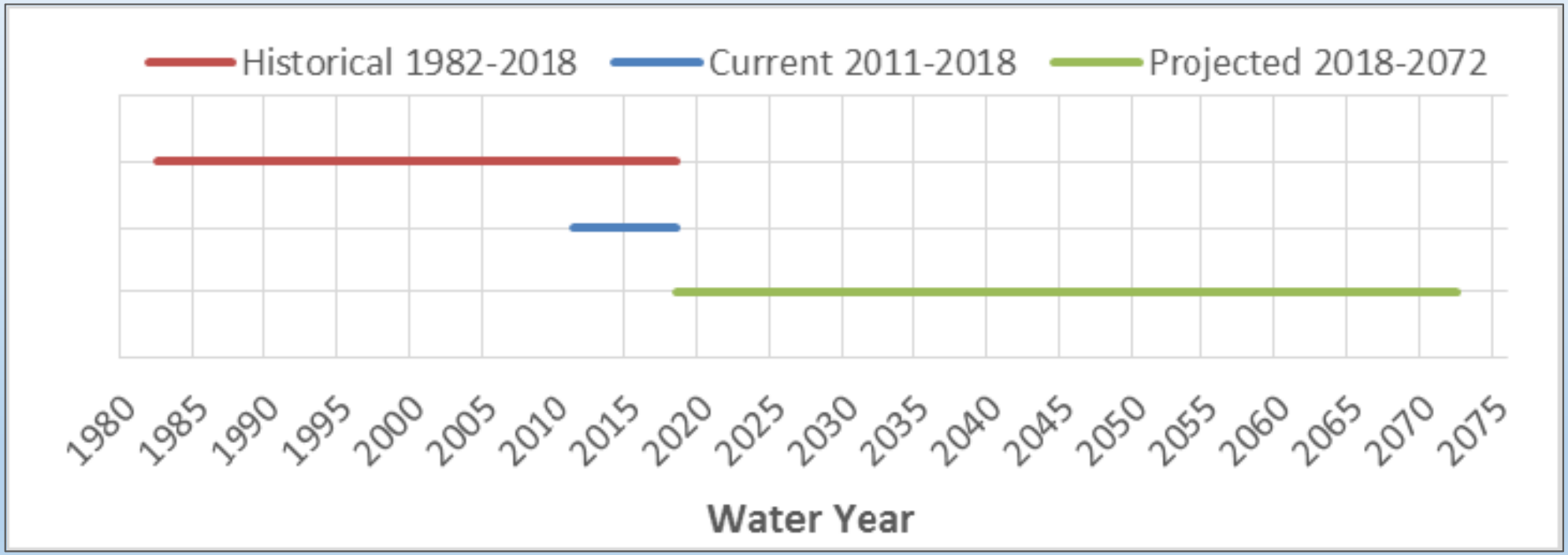
Water Budget and SGMA – Background/ Goals

- SGMA requires that the GSP water budget include: "the total annual volume of groundwater and surface water entering and leaving the basin, including historical, current and projected water budget conditions, and the change in the volume of water stored." (GSP Regulations 23 CCR 354.18.)
- Other requirements:
  - Coordinated water budget for the entire basin (WMA, CMA, and EMA)
  - The water year type associated with the annual supply, demand, and change in groundwater stored.
  - If overdraft conditions occur, as defined in Bulletin 118, quantification of overdraft over average conditions.
  - An estimate of sustainable yield for the basin.

Definitions for Groundwater Planning and Sustainable Management

- "Perennial Yield" (Stetson, 1992) = Determined from water budget. **Average Annual Pumping + Average Annual Change in Storage**; Over long-term average conditions. Also referred to as safe yield.
- "Overdraft" (DWR Bulletin 118): "Condition of a groundwater basin in which the amount of water withdrawn by pumping exceeds the amount of water that recharges the basin over a period of years, during which the water supply conditions approximate average conditions. **Overdraft can be characterized by groundwater levels that decline over a period of years and never fully recover, even in wet years**."
- "Sustainable yield" (SGMA) = "Maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing **an undesirable result" (UR)**. Absence of URs are determined based on interpretation of the sustainable management criteria (SMCs).

Water Budget Time Periods



Historical Time Period - Baseline

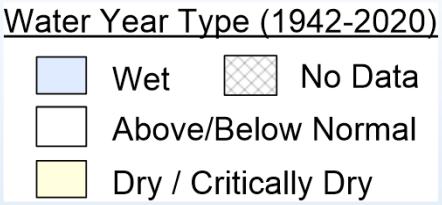
- **Historical – 1982 -2018**
  - **37 years, with two major drought periods**

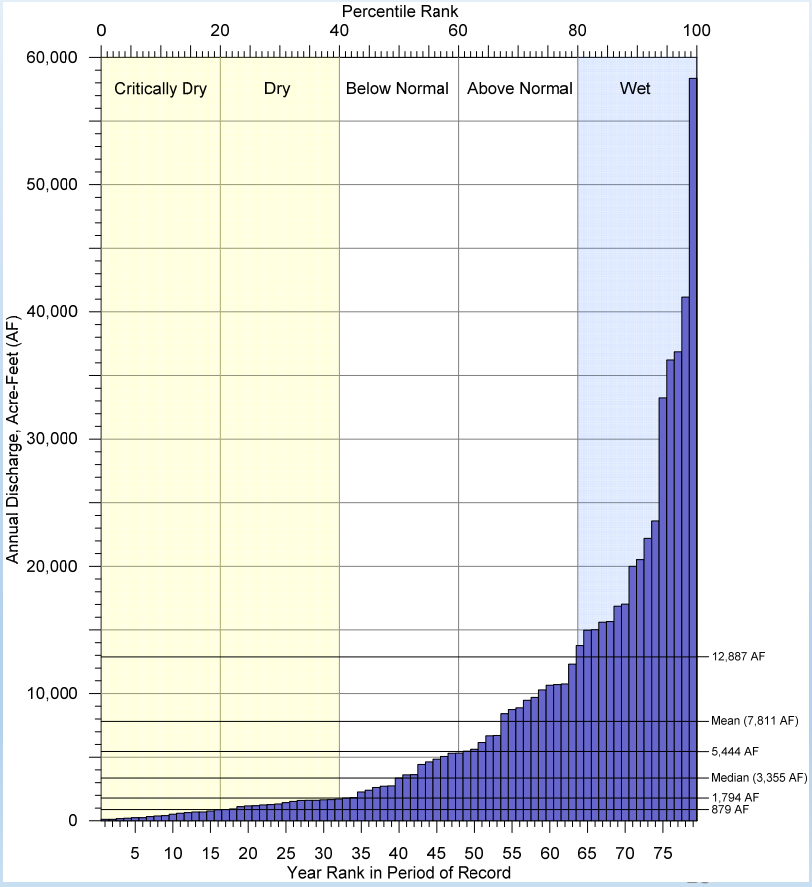
    Meets SGMA requirement of extending back at least 10 years.
  - **Average Hydrologic Conditions**

    Average precipitation at Lompoc City Hall is 14.6 inches per year for the period of 1955–2020 and 14.7 inches for the period of 1982–2018 (<1% difference).
  - **Pumping and Diversion records reported to District starting early 1980s**
  - **Coordinated with CMA and WMA**

Water Year Types

			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 Ranking

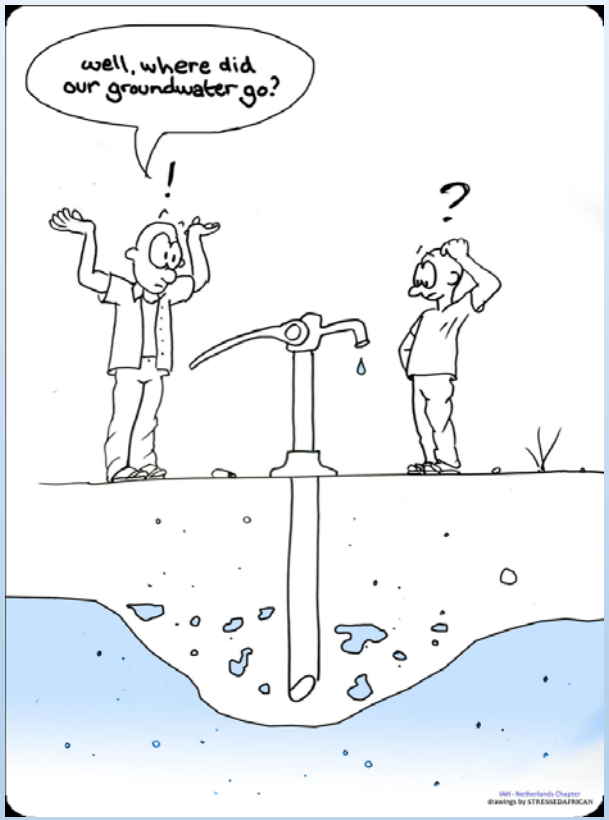
Current and Future Time Periods

- Current – 2011-2018 (8 years)
  - Includes water year 2015- SGMA's benchmark year for current conditions
  - Includes "most recent hydrology, water supply, water demand, and land use information" (GSP Regulations); used to project the future baseline
  - Critical Drought period 2012-2018. Does not represent long-term average conditions.
- Future – 2018 -2072 (55 years)
  - 2042: Meet sustainability goal in 20 years
  - 2072: "Projected hydrology shall utilize 50 years"

Water Budget Keys

Basic Equation for Groundwater Storage:

Inflows – Outflows = Change in Storage



More inflow than outflow:

Groundwater levels and Storage increase

More outflow than inflow:

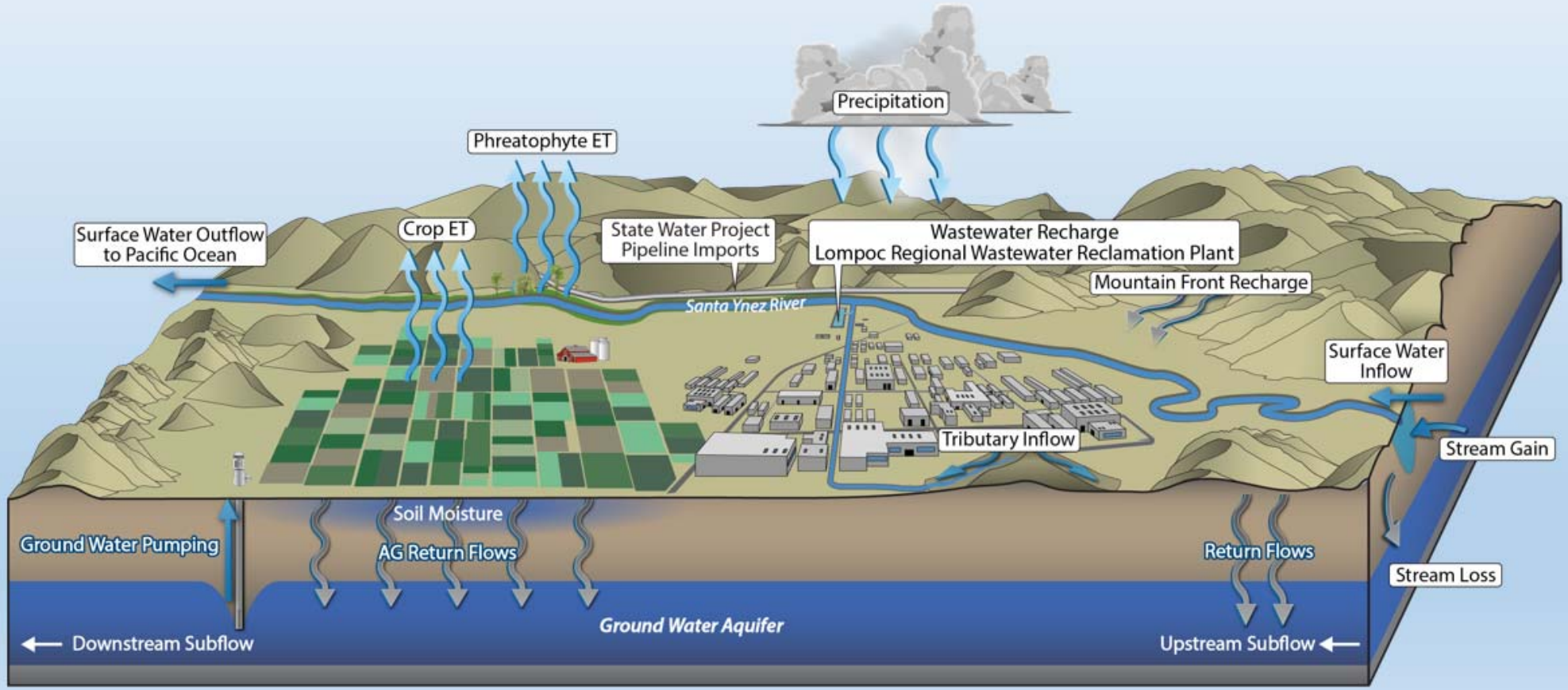
Groundwater levels and Storage decrease

Water Budget will address variability:

- Hydrologic- Droughts 1987-1991, 2012-2018; Floods i.e. 1998
- Changes in Land Use/Demands, quantity and timing
- Climate Change, quantity and timing
- Changes in land use, demands, climate, etc. are considered by the regulations as uncertainty in the projected future water budget, which is based on current conditions.

12

WMA Water Budget



WMA Water Budget Data Sources

TABLE 1-2 WATER BUDGET DATA SOURCES

Water Budget Component	Data Source(s)	Comment(s)	Qualitative Data Rating
Surface Water Inflow Components			
Santa Ynez River Inflow	USGS	Narrows Gauge	Gauged – High
Tributary Inflow	Correlation with gauged data	Methods described in text	Calibrated Model – Medium
Lompoc Regional Wastewater Reclamation Plant	City of Lompoc	Methods described in text	Metered – High
Imported: SWP	Central Coast Water Authority	—	Metered – High
Groundwater Inflow Components			
Deep Percolation of Precipitation: Overlying and Mountain Front Recharge	USGS BCM Recharge	BCM calibrated to Basin precipitation station data	Calibrated Model – Medium
Streamflow Percolation	Santa Ynez RiverWare Model, USGS BCM	Collaborative Modeling effort: Stetson and GSI	Calibrated Model – Medium
Subsurface inflow	Darcian flux calculation	Collaborative Modeling effort: Stetson and GSI	Estimated – Medium
Irrigation Return Flows	Land use surveys, self-reported pumping data	Basinwide Collaborative Estimation: Stetson and GSI using Yates 2010	Estimated – Low
Percolation of Treated Wastewater	Mission Hills CSD and Lompoc Penitentiary	Received	Metered – High
Percolation from Septic Systems	SYRWCD self-reported data, Santa Barbara County Water Agency return estimates	Methods described in text	Estimated – Low

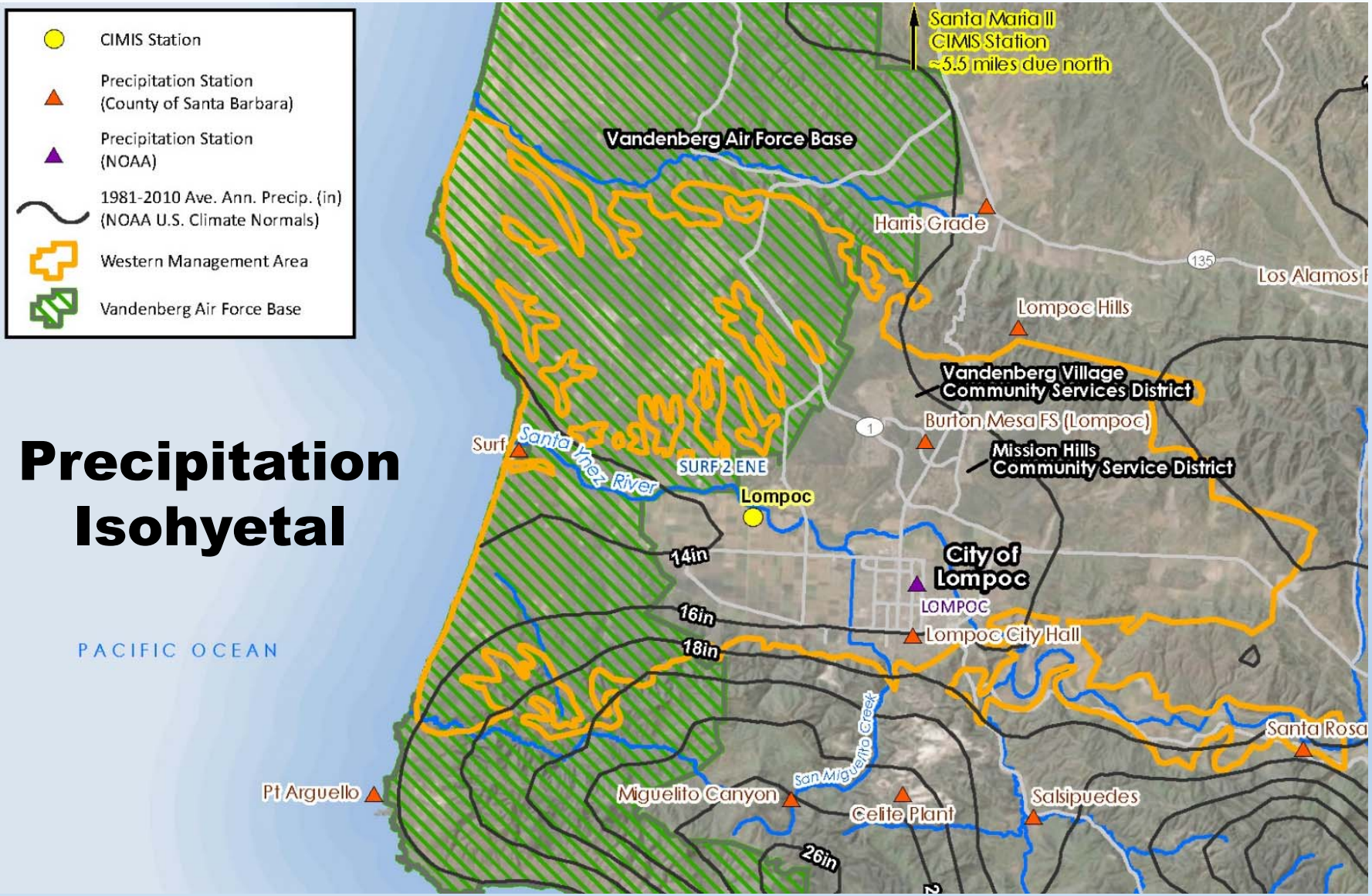
WMA Water Budget Data Sources

TABLE 1-2 WATER BUDGET DATA SOURCES

Water Budget Component	Data Source(s)	Comment(s)	Qualitative Data Rating
Surface Water Outflow Components			
Santa Ynez River Outflow	USGS	Methods described in text	Calibrated Model - Medium
Streamflow Percolation	Santa Ynez RiverWare Model, USGS BCM	Collaborative modeling effort: Stetson and GSI	Calibrated Model - Medium
Riparian Evapotranspiration	Aerial photography, NCCAG/NWI data sets, CIMIS weather station	Methods described in text	Estimated – Medium/Low
Groundwater Outflow Components			
Agricultural Irrigation Pumping	Land use surveys, self-reported pumping data	Methods described in text	Estimated – Medium/Low
Municipal Pumping	Self-reported pumping data	Methods described in text	High/Medium
Rural Domestic/Small Public Water Systems Pumping	SYRWCD self-reported data, DRINC	Methods described in text	Estimated – Medium/Low
Riparian Evapotranspiration	Aerial photography, NCCAG/NWI datasets, CIMIS weather station	Methods described in text	Estimated – Medium/Low
Subsurface Outflow	Darcian flux calculations, groundwater model	Methods described in text	Estimated – Medium

Notes: USGS = U.S. Geological Survey; SWP = State Water Project; BCM = Basin Characterization Model; Stetson = Stetson Engineers; GSI = GSI Water Solutions, Inc.; SYRWCD = Santa Ynez River Water Conservation District; NCCAG = The Natural Communities Commonly Associated with Groundwater (NCCAG) Wetland dataset; NWI = National Wetlands Inventory; CIMIS = California Irrigation Management Information System; DRINC = Drinking Water Information Clearinghouse.

Precipitation Isohyetal



WMA Tributaries

TABLE 1-3 TRIBUTARY CREEKS OF THE WMA

North of the Santa Ynez River	Drainage Area (mi^2)	Average Annual Precipitation (in/year)[1]
Santa Rita Creek	4.5	18.6
Cebada Canyon Creek	6.2	17.1
Purisima Canyon Creek	2.6	17.2
Davis Creek	4.6	16.1
Santa Lucia Canyon	9.5	15.1
Unnamed Tributaries	11.7	16.2
South of the Santa Ynez River		
Salsipuedes Creek	51.1	22.6
Miguelito Creek	10.4	22.4
Sloanes/ Le Salle Canyon	7.8	20.1
Lompoc Canyon	1.4	19.6
Bear Creek (La Honda watershed)	2.8	17.3
Unnamed Tributaries	4.75	21.2

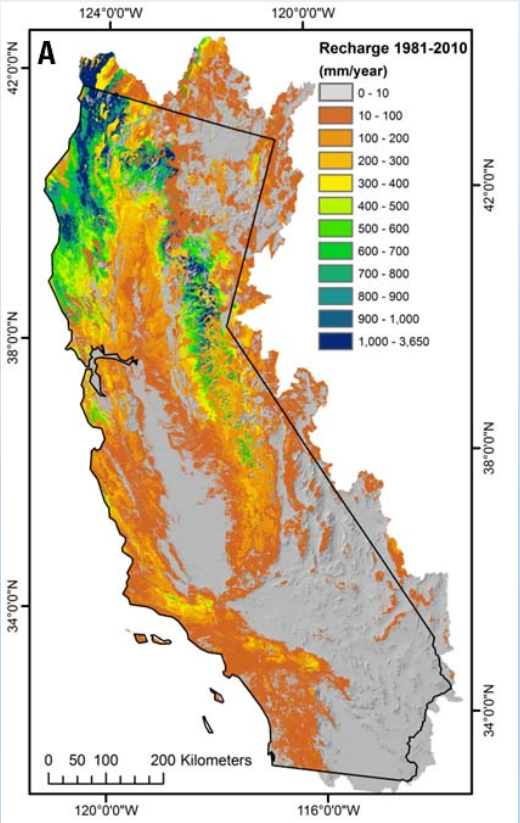
Notes: WMA = Western Management Area.

1 PRISM 2014.

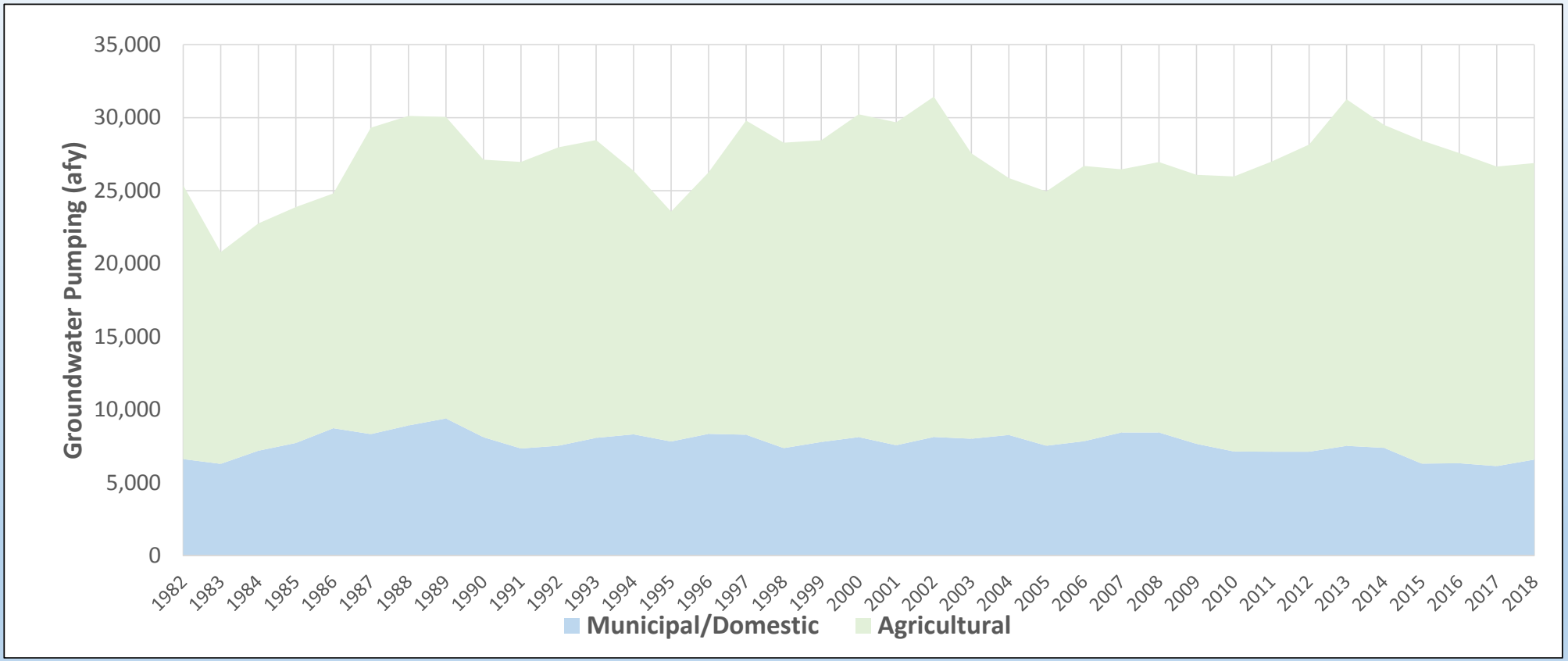
Recharge – USGS Basin Characterization Model

https://ca.water.usgs.gov/projects/reg_hydro/basin-characterization-model.html

- **Complex inputs to determine recharge**
  - **Precipitation, Temperature, Solar Radiation, Soil Properties**
- **20-acre cells**
  - **Covers Santa Ynez Basin**
  - **Integrates State-wide findings (see recharge map on right)**
- **Monthly Timesteps**
- **1980-2018**
- **Coordinated and corrected with CMA and WMA**



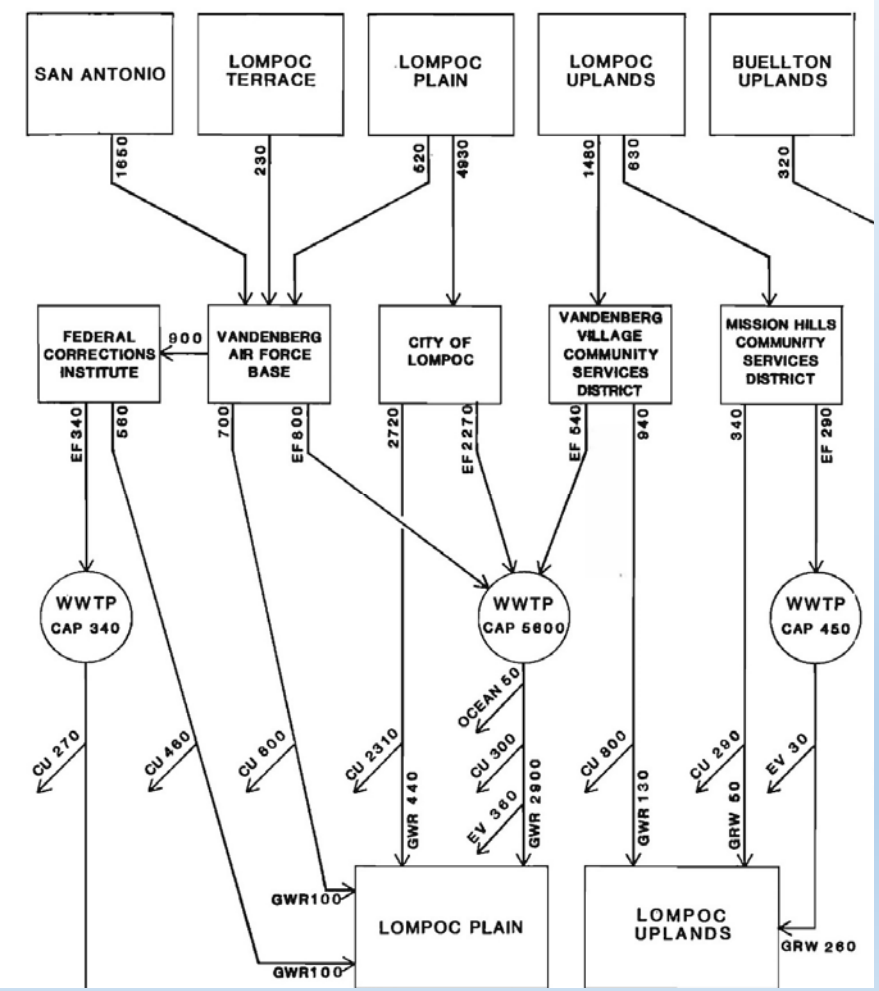
WMA Groundwater Pumping



Annual pumping based on reporting to SYRWCD. Total pumping ranges from about 21,000 to 31,00 afy.
Does not include Santa Ynez River underflow diversions (SWRCB).

RETURN FLOWS

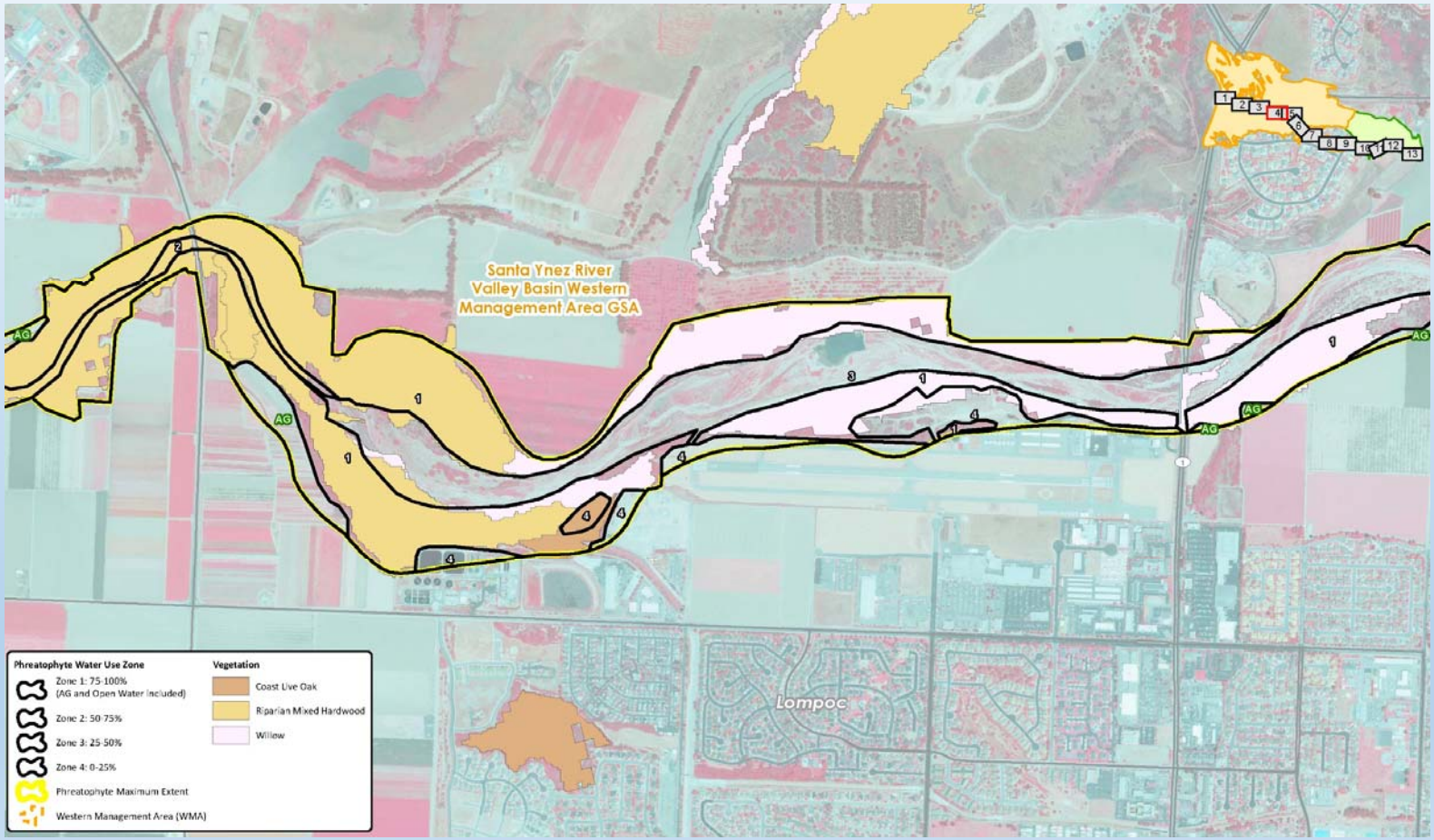
- City of Lompoc and Mission Hills Wastewater Treatment- historical inflow records available; Penitentiary estimated based on Lompoc
- Agricultural Return Flows
  - 20% Assumed for all crops except vineyards
    - 5% Assumed for vineyards
- Urban Return Flows
  - Net 44% Assumed
    - Based on 60% Outdoor/ 40% Indoor
- Agrees with available literature and used in CMA and WMA (i.e. District's Water Resources Management Plan, 1992; excerpt of return flow accounting shown in figure on right)



SYRWCD Water Resources Management Plan 1992

Phreatophytes

- Phreatophyte acres reviewed with color infra-red aerial photography
- Consumptive Use based on CIMIS station climate data (California Irrigation Management Information System)



Water Budget – Time Periods and Sources

Questions?

Surface Water Inflow

1982-2018

Surface Water Inflow Component	Average AFY
Santa Ynez River Inflow from CMA	91,320
Santa Ynez River Tributary Inflow	16,130
Lompoc Regional Wastewater Treatment Plant	3,790
Imported SWP	1,470
Santa Ynez River Alluvium Subarea	
Subflow	800
Recharge from Precipitation (Overlying and Mountain Front)	1,900
Recharge from Agricultural Return Flows to Underflow	860
Recharge from Domestic Return Flows to Underflow	20
TOTAL	**116,290**

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Surface Water Outflow

1982-2018

Surface Water Outflow Component	Average AFY
Santa Ynez River Outflow to Pacific Ocean	89,150
Net Channel Percolation to Groundwater	14,340
Santa Ynez River Alluvium Subarea	
Santa Ynez River Underflow Out	1,200
River well pumping – Agriculture	4,510
River well pumping – Domestic	50
Riparian Vegetation Evapotranspiration	3,170
TOTAL	**112,420**

Ground Water Inflow

1982-2018

Groundwater Inflow Component	Average
	AFY
Subflow	1,200
Recharge from Precipitation – Overlying	7,990
Recharge from Precipitation – Mountain Front	2,730
Net Channel Percolation from Surface Water	14,300
Agricultural Return Flows	3,820
Municipal Return Flows	880
Domestic Return Flows	110
TOTAL	**31,030**

Ground Water Outflow

1982-2018

Groundwater Outflow Component	Average
	AFY
Pumping – Agriculture	19,570
Pumping – Municipal	7,480
Pumping – Domestic	240
Riparian Vegetation Evapotranspiration	4,630
Subflow	100
TOTAL	**32,020**

Key Groundwater Fluxes - Average 1982-2018

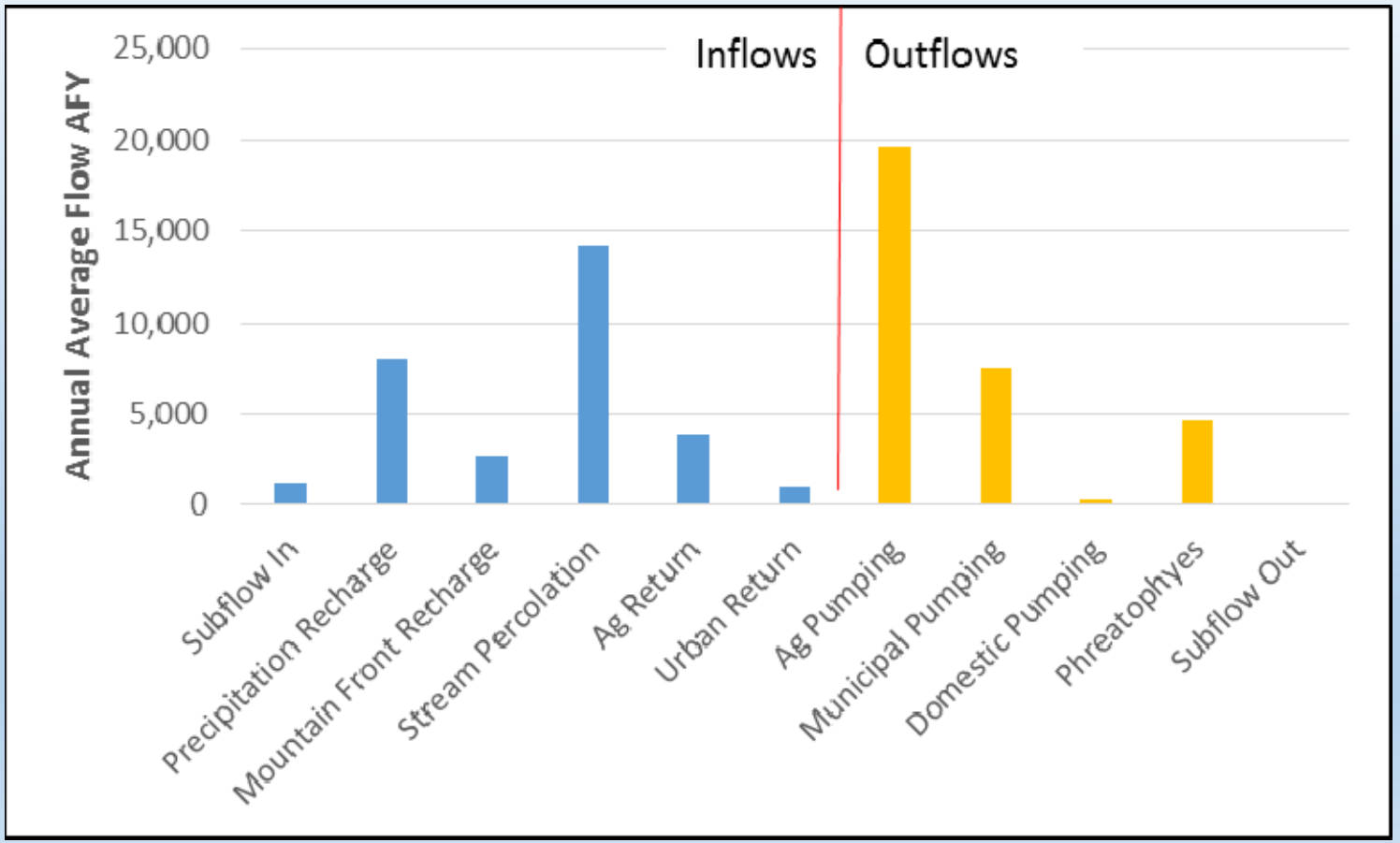
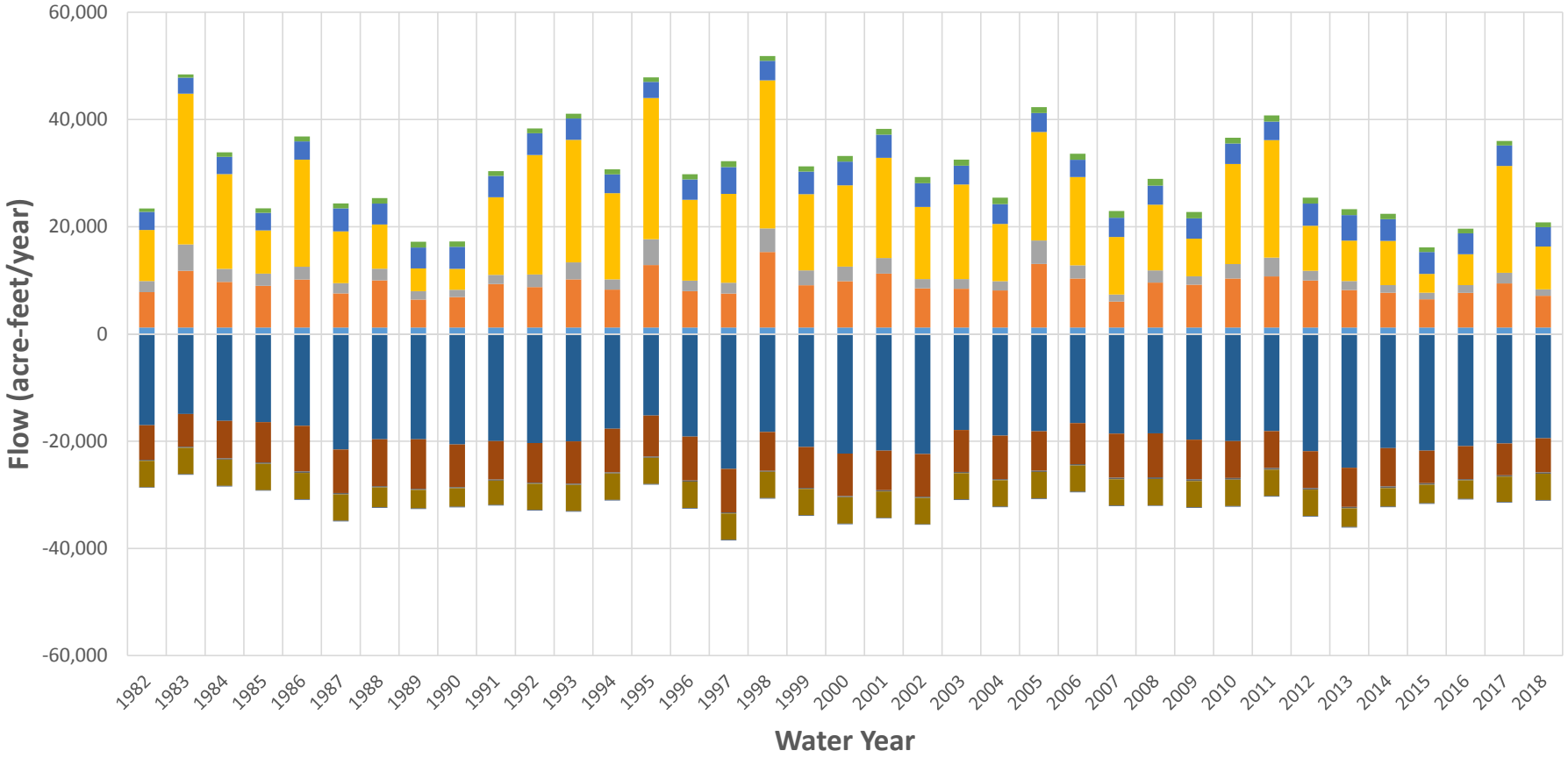
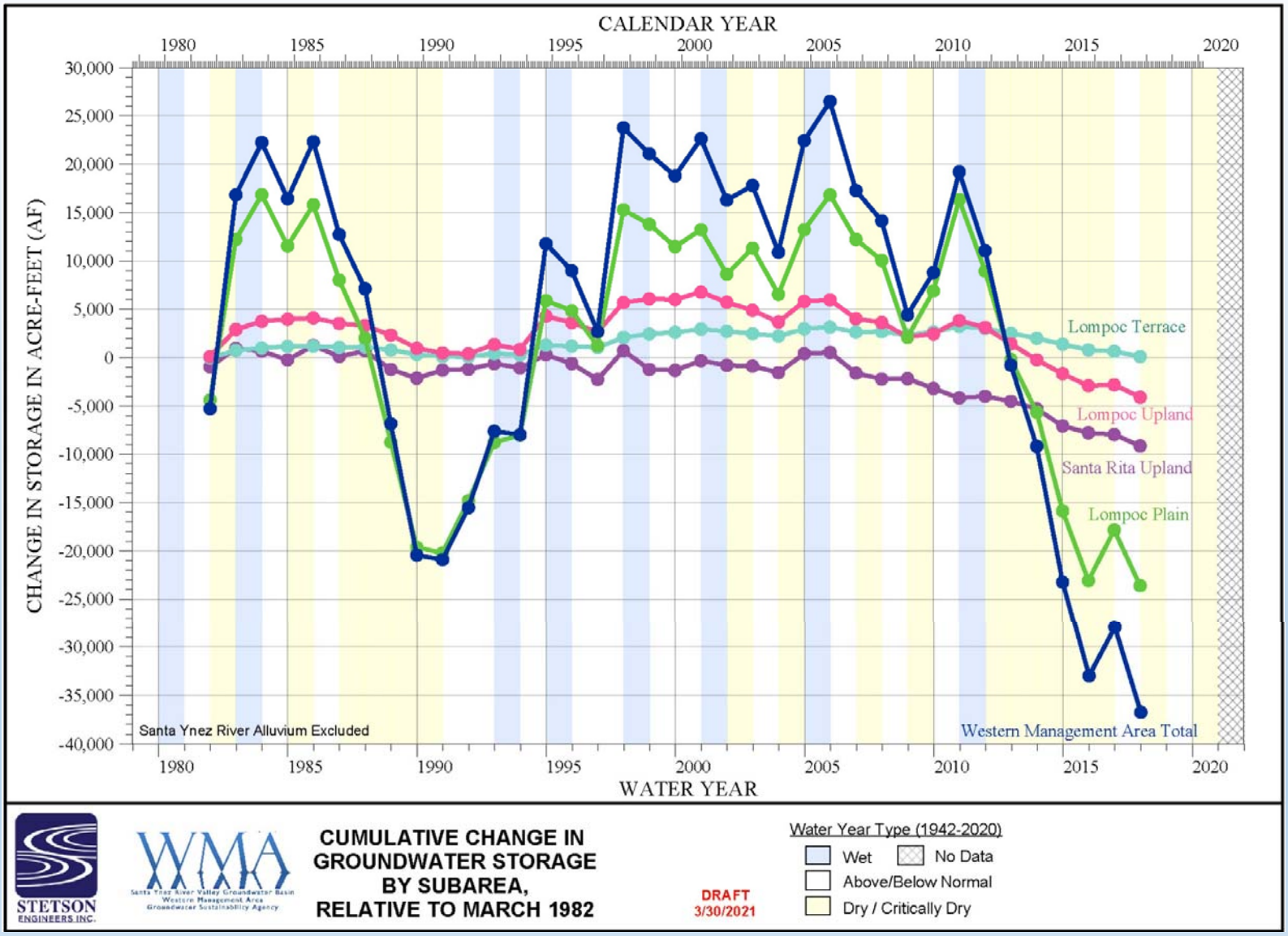


Figure 2-5 Historical Groundwater Budget, WMA




CALENDAR YEAR
1980
1985
1990
1995
2000
2005
2010
2015
2020
30,000
25,000
20,000
15,000
10,000
5,000
0
-5,000
-10,000
-15,000
-20,000
-25,000
-30,000
-35,000
-40,000
CHANGE IN STORAGE IN ACRE-FEET (AF)
Lompoc Terrace
Lompoc Upland
Santa Rita Upland
Lompoc Plain
Santa Ynez River Alluvium Excluded
Western Management Area Total
WATER YEAR
STETSON ENGINEERS INC.
WMA
CUMULATIVE CHANGE IN GROUNDWATER STORAGE BY SUBAREA, RELATIVE TO MARCH 1982
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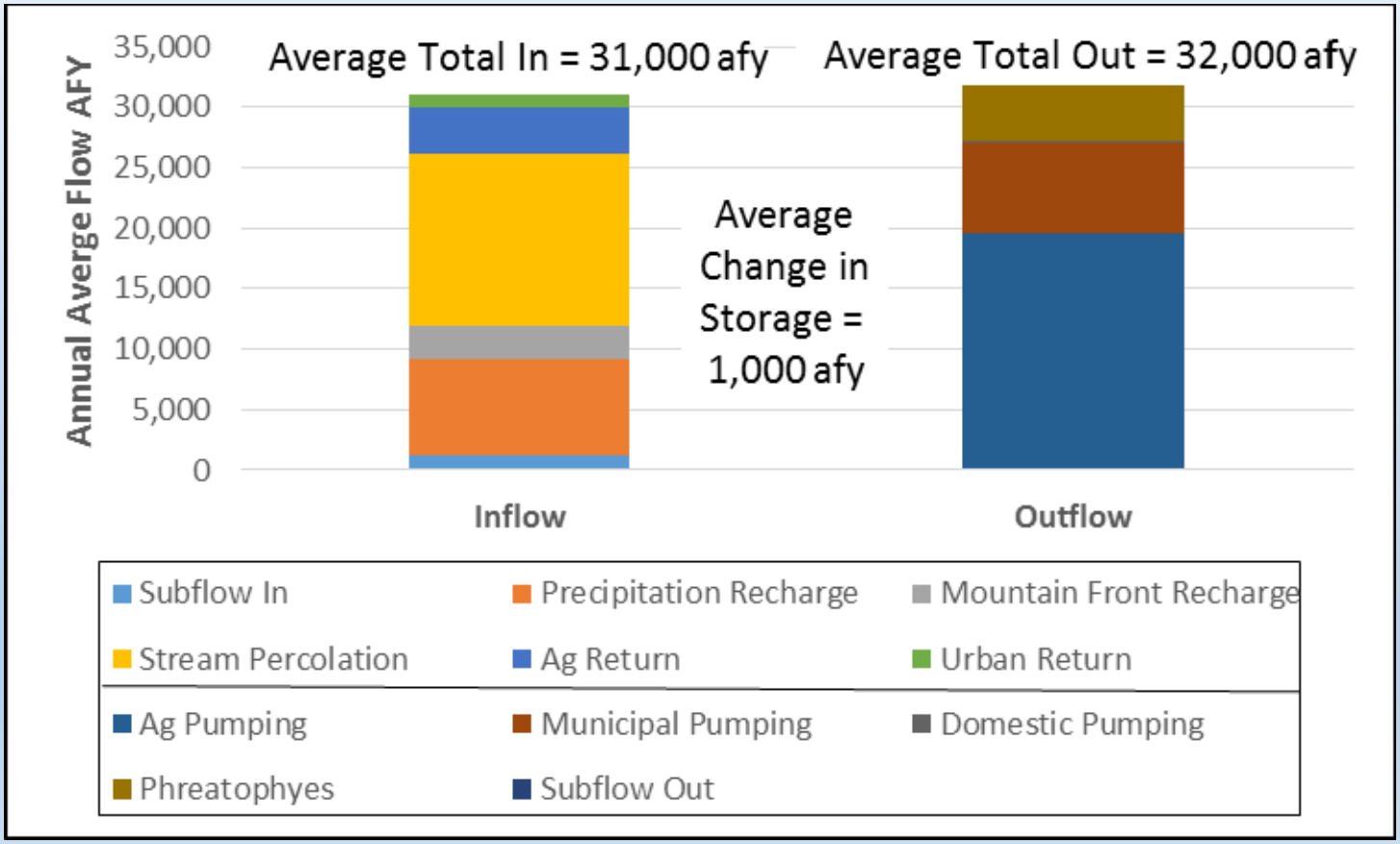
3/30/2021
Water Year Type (1942-2020)
Wet
No Data
Above/Below Normal
Dry / Critically Dry

Inflows versus Outflows 1982-2018



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Perennial Yield Estimates from Water Budget Analysis in Average Hydrologic Conditions

	Average 1982-2018			Average 2002-2011		
Groundwater Subarea	**Annual Pumping (AFY)**	**Annual Change in Storage (AFY)**	**Pumping + Change in Storage (AFY)**	**Annual Pumping**	**Annual Change in Storage (AFY)**	**Pumping + Change in Storage (AFY)**
Lompoc Plain	22,800	-600	22,200	21,700	300	22,000
Lompoc Upland	3,100	-100	3,000	3,400	-300	3,100
Santa Rita Upland	1,400	-300	1,100	1,700	-400	1,300
Lompoc Terrace	0	0	0	0	0	0
TOTAL WMA:	**27,300**	**-1,000**	**26,300**	**26,800**	**-400**	**26,400**

Lompoc City Hall Precipitation- Average 1955–2020 is 14.6 inches per year. Average 1982-2018 is 14.7 inches per year. Average 2002-2011 is 14.5 inches per year.

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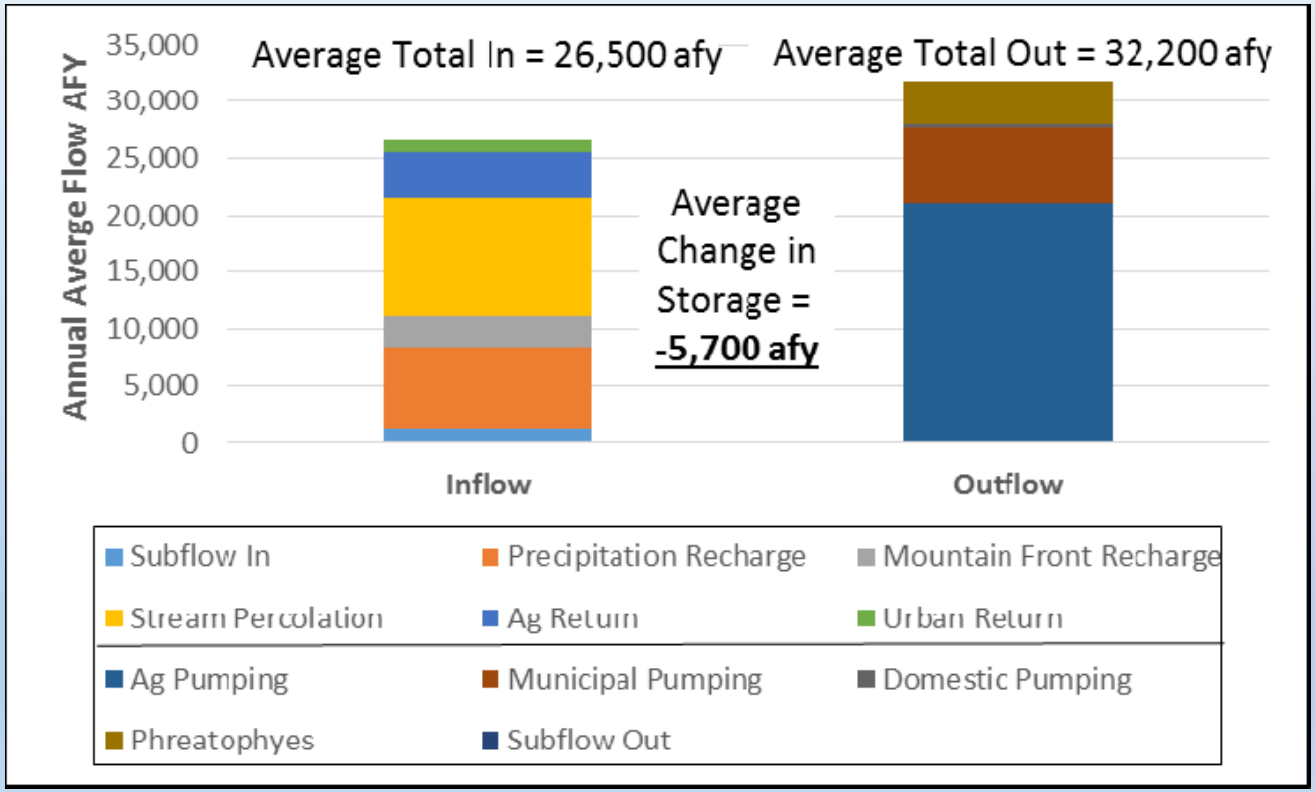
Inflows versus Outflows 2011 - 2018



Total groundwater storage decreased by 45,600 AF over eight year current period (average -5,700 AFY). This negative storage change is due to critical drought conditions.

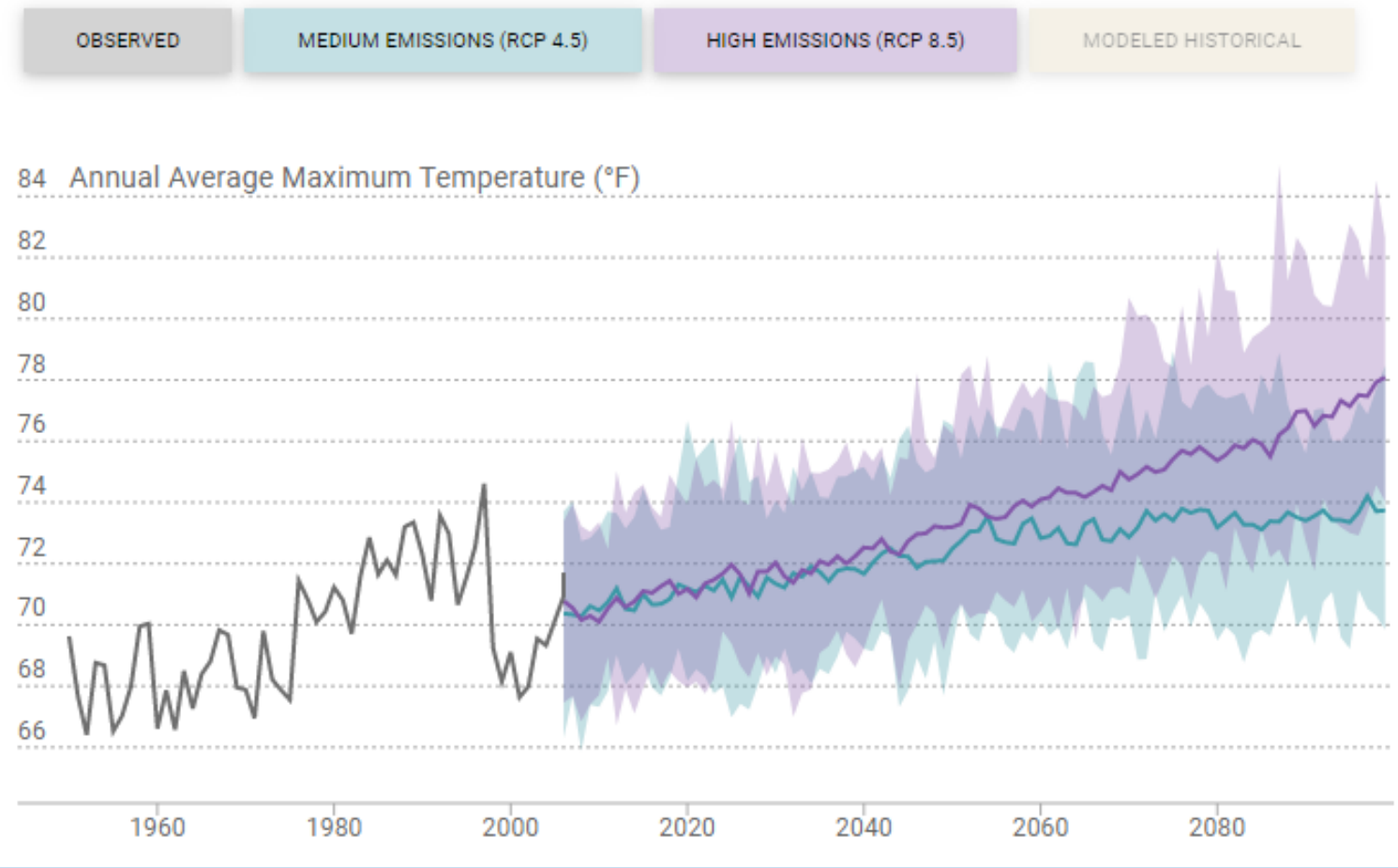
Water Budget – Historical and Current

Questions?

Climate Change and the Santa Ynez River Valley Groundwater Basin 2018 - 2072

- DWR's Climate Change Technical Advisory Group has identified the most applicable and appropriate global circulation model (GCMs) out over 30 models for water resource planning and analysis in California.
- GSP must include the "Central Tendency" Scenario for future hydrologic projections.
  - Reflects the mean of the 20 climate projections.
    - 10 selected GCMs are combined with two emission scenarios for a total of twenty scenarios utilized. The two emissions scenarios include a "middle" scenario (RCP 4.5) with emissions peaking around 2040 and a "business as usual" scenario with emission peaking around 2080 (RCP 8.5).
- Drier/Extreme Warming (2070DEW) and Wetter/Moderate Warming (2070WMW) conditions in GSPs is optional.

Future Projected Hydrology 2018-2072



Lompoc CA; https://cal-adapt.org/tools/local-climate-change-snapshot/

DWR has provided summaries of climate change.

The 2030 and 2070 precipitation and ET climate change factors are available on 6-kilometer resolution grids.

Implications for WMA Hydrology

- Crop Water Use - Greater ET due to higher temperatures. By 2040, 3.2 percent increase relative to the baseline period. By 2070 conditions, 7.9 percent relative to the baseline period.
- Precipitation –
  - Seasonal timing changes
    - Sharp decreases are projected early fall and late spring
    - Increases in winter and early summer precipitation.
  - The WMA is projected to experience minimal changes in total annual precipitation.
    - 2030 – no change; 2070 conditions, 3 percent decrease in annual precipitation
- Streamflow - projected to increase slightly by 0.5 percent in 2030 and 3.8 percent in 2070
- Recharge- Assume same changes as precipitation

Assumptions for Future Demand

- Agriculture
  - No change in acres/ crop types assumed.
  - Consumptive use increases 3.2 percent relative to the baseline period due to higher ET rates under climate change. By 2070 conditions, 7.9 percent relative to the baseline period.
- Urban
  - Santa Barbara County Association of Governments' Regional Growth Forecasts estimate increases in population for the Lompoc area: 10% by Year 2040
  - This analysis assumes 10% by 2042 and 15% by 2072 for the City of Lompoc. For the remaining municipal and rural domestic demands, more modest growth is assumed at 5% by 2042 and 10% by 2072.

PROJECTED WATER DEMAND FOR WMA

	2018 Demand	Estimated 2042 Demand	Estimated 2072 Demand
	(Acre-Feet per Year)		
Groundwater Demand			
Pumping – Agriculture	19,500	20,125	21,040
Pumping – Municipal	6,350	6,890	7,205
Pumping – Domestic	250	265	275
TOTAL Groundwater Demand	26,100	27,280	28,520
Surface Water Demand			
Santa Ynez River Alluvium Upstream of Narrows - Agriculture	6,500	6,710	7,015
Santa Ynez River Alluvium Upstream of Narrows - Domestic	60	65	65
VAFB SWP Imports	2,300	2,415	2,530
TOTAL Surface Water Demand	8,860	9,190	9,610
TOTAL	34,960	36,470	38,130

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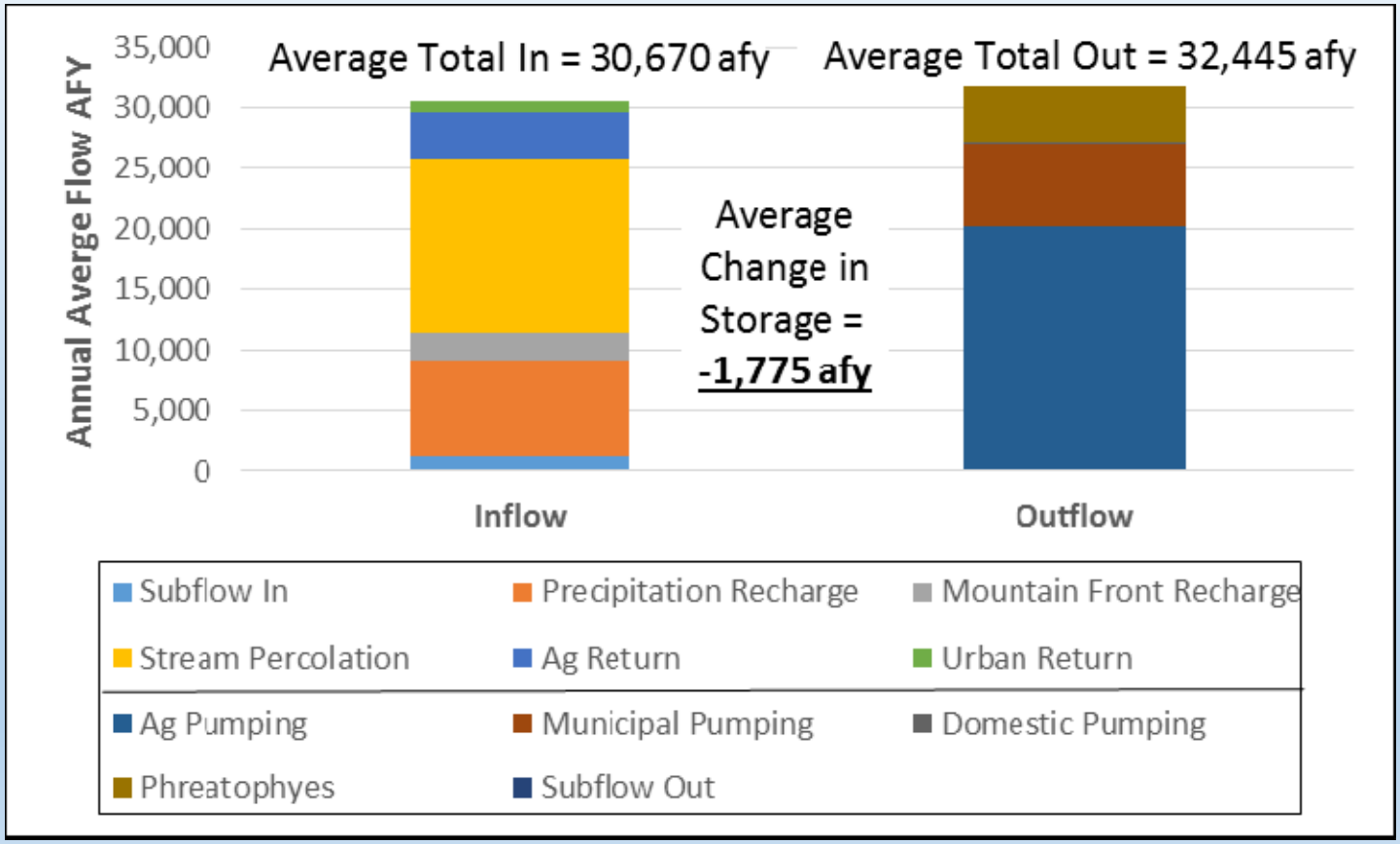
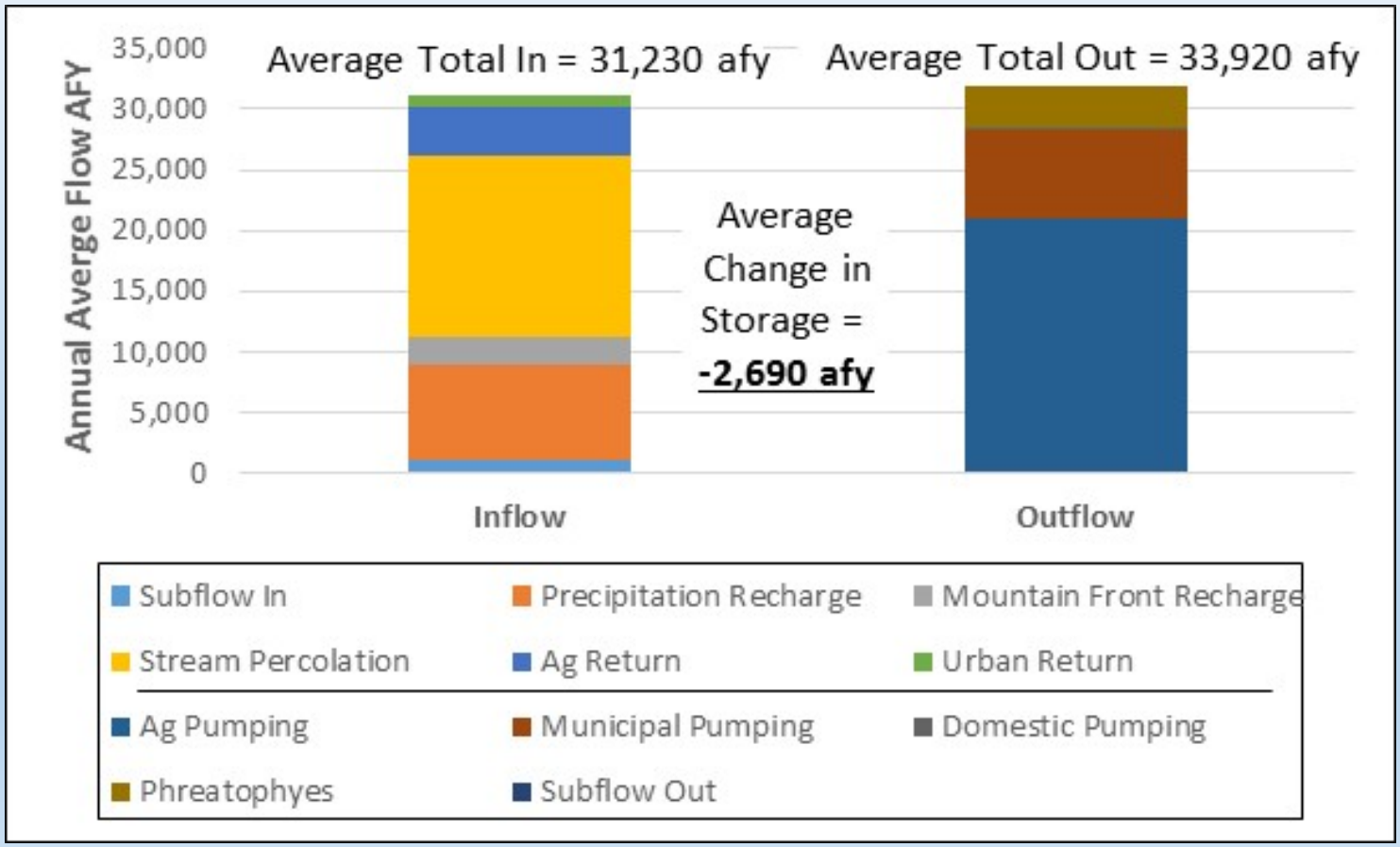
Inflows versus Outflows 2042



Inflows versus Outflows 2072



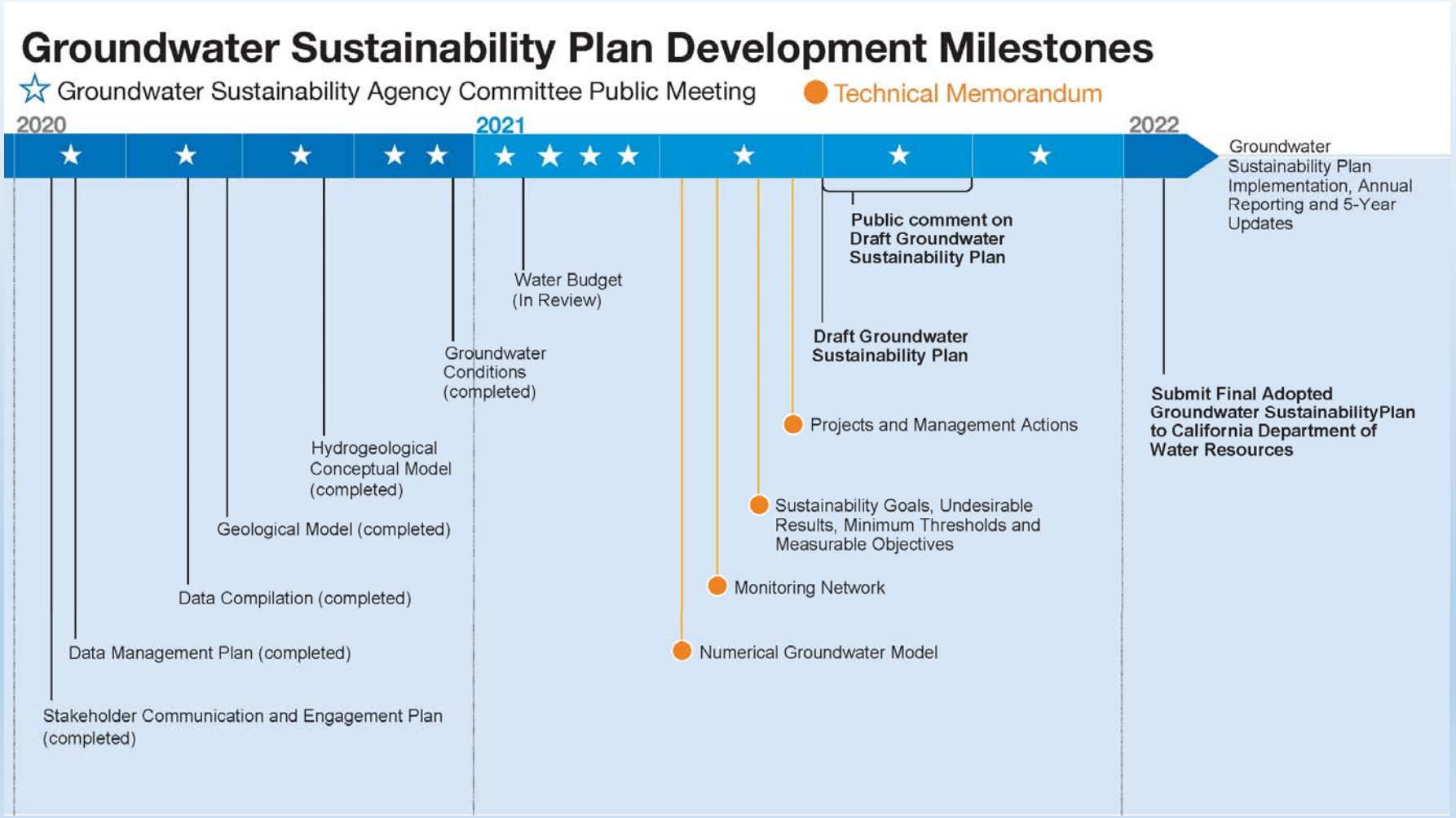
Water Budget – Future

Questions?

The Way Ahead

- ~~Complete the Groundwater Conditions Tech Memo~~
- ~~Complete the Water Budget~~
- Complete the Groundwater Model
- Establish Monitoring Network
- Establish Sustainable Management Criteria Thresholds
- Identify Projects and Management Actions
- Release DRAFT GSP

The Way Ahead



Questions?

Comments can be submitted to the website:

www.santaynezwater.org