APPENDIX 2.C. NOTICE AND COMMUNICATION

2.C.b. Madera Subbasin Interested Parties List

Prepared as part of the

Joint Groundwater Sustainability Plan
Madera Subbasin

January 2020

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Steve	Worthley			sworthley@co.tulare.ca.us
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JJ				jjohnston@teichert.com

First name	Last name	Job title	Company	Email address
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			Madera County Building Department	mcbuilding@co.madera.ca.gov
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				fjackson@co.tulare.ca.us
				aura@cacitrusmutual.com
			Merced County	mhendrickson@co.merced.ca.us
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			Kings County	greg.gatzka@co.kings.ca.us
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			City of Madera	cboyle@cityofmadera.com

APPENDIX 2.C. NOTICE AND COMMUNICATION

2.C.c. Madera Subbasin Engagement Matrix

Prepared as part of the

Joint Groundwater Sustainability Plan
Madera Subbasin

January 2020

GSP Team:

Davids Engineering, Inc
Luhdorff & Scalmanini
ERA Economics
Stillwater Sciences and
California State University, Sacramento

Madera Subbasin Outreach Check List
Subbasin-Wide Centralized Engagement
Informing the Public about GSP Development Progress

Meeting/Event	Location	Meeting/Event date	Topics presented	Audience (estimated # participants; interests represented)	E-blast to Interested Parties list? Which list and when?	Email to Others? Which list and when?	Flyer created?	Flyer distributed at other meetings/events? Where and when?	Information provided at other meetings/events? Where and when?	Additional outreach and publicity (e.g., pop-ups)?	Press release? Which outlets?	Advertised on website? Which website(s)?	Advertised on social media? Which platforms and accounts?	Translation of meeting provided?	Additional comments
SGMA GSP-Specific Events: Subbasin-wide meetings, capacity-building events, educational tours, e-blasts															
Madera Regional Water Management Group	Madera Irrigation District Boardroom	April 11, 2016	SGMA, DWR Grant, Subbasin Boundary lines	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	May 9, 2016	Groundwater legislation timeline, boundary modifications	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	June 13, 2016	Groundwater Management Plan requirements, list of groups filing for their own GSAs	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Madera Irrigation District Boardroom	July 11, 2016	Madera Grndwtr Authority meeting, DWR Grant PSP, forming a JPA	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	August 8, 2016	Ea. WD is forming a GSA, Triangle T is becoming a WD	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	September 12, 2016	GSP, GSAs, other requirements	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Madera Irrigation District Boardroom	October 10, 2016	Dissolving GWA/JPA and breaking into SGMA GSAs	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Public Informational Meeting	Harfield Hall, Madera Fair Grounds	October 11, 2016	Basic information to explain SGMA to the public	Approx. 100 landowners and growers	Yes, Interested Party List	Sent out 1,200 invitations to landowners in White Areas						Maderacountywater.com			
Public Informational Meeting	Harfield Hall, Madera Fair Grounds	October 25, 2016	Basic information to explain SGMA to the public	Approx. 100 landowners and growers	Yes, Interested Party List	Sent out 1,200 invitations to landowners in White Areas						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	November 14, 2016	Ea. WD is forming a GSA, Triangle T is becoming a WD	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	January 9, 2017	Approval of dissolving GWA JPA	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Public Hearing	Madera County Government Center	January 24, 2017	adopt resolution to form 3 GSAs	Public and County	Yes, Interested Party List	RWMG list serve, and the beginnig of interested party list						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	February 13, 2017	Filing and formation of all the GSAs in each Subbasin	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	March 13, 2017	EIR and Plan studies have started	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	April 10, 2017	SGMA Consolidation and Data Collection Phase reporting	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	May 8, 2017	SGMA and GSA formation and Financial aspects	Public and County	Yes, RWMG list	RWMG list serve, and the beginnig of interested party list						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	June 12, 2017	Deadline for GSA formation	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	July 10, 2017	Applying for DWR funding, Outreach to DACs	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	August 14, 2017	Creation of the Advisory Committees	Public and County	Yes, RWMG list	RWMG list serve, and the beginnig of interested party list						Maderacountywater.com			

Meeting/Event	Location	Meeting/Event date	Topics presented	Audience (estimated # participants; interests represented)	E-blast to Interested Parties list? Which list and when?	Email to Others? Which list and when?	Flyer created?	Flyer distributed at other meetings/events? Where and when?	Information provided at other meetings/events? Where and when?	Additional outreach and publicity (e.g., pop-ups)?	Press release? Which outlets?	Advertised on website? Which website(s)?	Advertised on social media? Which platforms and accounts?	Translation of meeting provided?	Additional comments
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	September 11, 2017	Chose David's Engineering and Ludhorff and Scalmanini	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	October 9, 2017	Reported on writing DWR grant with consultant's assisting	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	November 13, 2017	CWD submitted their DWR App.	Public and County	Yes, RWMG list	RWMG list serve, and the beginnig of interested party list						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	January 8, 2018	2 DWR Apps completed	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	February 12, 2018	Advisory Committee created and reporting	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	March 12, 2018	Preliminary water budget was discussed	Public and County	Yes, RWMG list	RWMG list serve, and the beginnig of interested party list						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	April 9, 2018	Groundwater model was discussed	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	May 14, 2018	Discussions of county white areas	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Public Technical Workshop (#1)	Madera County Juvenile Detention Facility Meeting Room	May 24, 2018	Mngmnt areas, Base Period, GSA Water Budgets, Projects/Mngmnt actions	100 in attendance	Yes, Subbasin List	Interested Party List	Yes					Maderacountywater.com; County Facebook		Yes	
Madera Regional Water Management Group	Madera County Government Center	June 11, 2018	Discussion of groundwater shortages	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Public Technical Workshop (#2)	Madera Farm Bureau	June 25, 2018	Basin Boundary Surface water system - Projects and Mngmnt	60 in attendance	Yes, Subbasin List	Interested Party List						Maderacountywater.com; County Facebook		Yes	
Friends of Fairmead Presentation	Fairmead Galilee Missionary Baptist Church	June 25,2018	SGMA	Fairmead Community	Fairmead and Friends		Yes					Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	July 9, 2018	Discussion of Management areas	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Groundwater Workshop	Frank Bergon Senior Center	August 2, 2018	SGMA & How to Participate	General Public	Yes, Subbasin List	Interested Party List	Yes					Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	August 13, 2018	Working with SHE on DAC outreach	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Supervisor Tom Wheeler, Town Hall Meeting	Bass Lake, The Pines Resort	August 30, 2018	Introduction to SGMA for the Up Stream Users	District 5 Constituents	Yes, District List	District 5 Constituents						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	September 10, 2018	FloodMar and WAFR and DAC outreach	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Community Outreach	Century 21 for Realtors	September 27, 2019	Introduction to SGMA for the Up Stream Users	25 in attendance	N/A	Realtor Association						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	October 8, 2018	Discussion of Modeling and DAC outreach	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
California Coordination with Denmark	Madera County Government Center	October 10, 2018	Knowledge sharing Workshop	50 in attendance	Yes, County List	N/A						Maderacountywater.com			
Public Technical Workshop (#3)	Frank Bergon Senior Center	October 18, 2018	Review SGMA Requirements & subbasin overdraft estimate, GSA conditions & solutions	100 Interested Parties; Consultants	Yes, Subbasin List	Interested Party List						Maderacountywater.com; County Facebook		Yes	
Supervisor Frazier - Coffee and Conversation	Supervisor Frazier and Constituants	October 25, 2018	Introduction to SGMA for the Up Stream and some Valley Users	District 1 Constituents	Yes, District List	District 1 Constituents						Maderacountywater.com			

Meeting/Event	Location	Meeting/Event date	Topics presented	Audience (estimated # participants; interests represented)	E-blast to Interested Parties list? Which list and when?	Email to Others? Which list and when?	Flyer created?	Flyer distributed at other meetings/events? Where and when?	Information provided at other meetings/events? Where and when?	Additional outreach and publicity (e.g., pop-ups)?	Press release? Which outlets?	Advertised on website? Which website(s)?	Advertised on social media? Which platforms and accounts?	Translation of meeting provided?	Additional comments
Madera Regional Water Management Group	City of Chowchilla, City Hall	November 13, 2018	Discussions of joint Subbasin meetings and Groundwater Dependent Ecosystems	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Oakhurst, Raley's Community Room	January 14, 2019	Discussion of DAC outreach	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Community Pop-Up event	Madera Main Library	January 30, 2019	SGMA and other water information for the public	General Public	N/A	N/A						Maderacountywater.com			
Supervisor Tom Wheeler, Town Hall Meeting	Oakhurst Community Center	January 31, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents	Yes; District list	District 5 Constituents						Maderacountywater.com			
Supervisor Frazier, Coffee and Conversation	Ranchos Café	January 31, 2019	Introduction to SGMA for the Up Stream and some Valley Users	District 1 Constituents	Yes; District list	District 1 Constituents						Maderacountywater.com			
Madera and Chowchilla Subbasins Joint Meeting		February 7, 2019	Conceptual Undesirable Results	agriculture, small water users, DACs	Madera Subbasin, County GSA, RWMG	1/28/19 MID send flyer e-blast	Yes	Madera/Chowchilla RCD - 01/09/19, Red Top Landowners - 01/25/19, Triangle T Water District Board and GSA- 02/01/19, Fairmead & Friends meeting	Madera RWMG, Yosemite/Sequoia RC & DC	Pop-up - Madera Library - w/SHE and LC - 01/30/19	Advertised in the "Chatter"	Maderacountywater.com	Self Help SM	Yes	co-sponsored by Self-Help Enterprises and Leadership Counsel for Justice & Accountability
Madera Regional Water Management Group	City of Chowchilla, City Hall	February 11, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests	Yes, RWMG list	RWMG list serve						Maderacountywater.com			
Supervisor Frazier - Coffee and Conversation	Axis Coffee Shop	February 20, 2019	Introduction to SGMA for the Up Stream and some Valley Users	Distirct 1 Constituents	Yes, District List	Distirct 1 Constituents						Maderacountywater.com			
Madera Regional Water Management Group	Madera County Government Center	March 11, 2019	Discussion of SGMA, DAC Outreach, Upcoming meetings	RWMG Board and guests	Yes, RWMG list	RWMG List Serve						Maderacountywater.com			
Supervisor Tom Wheeler, Town Hall Meeting	Raymond Elementary School	March 14, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents	Yes; District list	District 5 Constituents						Maderacountywater.com			
Subbasin Informational Pop-Up	Madera County Main Library	March 20, 2019	Discuss Stakeholder Water issues	Public input	N/A	N/A						Maderacountywater.com			
SGMA Madera Subbasin Coordination Committee	Frank Bergon Senior Center	March 21, 2019	State Water Board's Role in SGMA	100 Interested Parties; Consultants	Yes, Subbasin List	Interested Party List; County GSA List	yes					Maderacountywater.com		Yes	
Madera Regional Water Management Group	Raleys Community Room, Oakhurst	April 8, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests	Yes; RWMG list	RWMG list serve						Maderacountywater.com			
Supervisor Tom Wheeler, Town Hall Meeting	Yosemite Lakes Park's Clubhouse	April 9, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents	Yes; District list	District 5 Constituents						Maderacountywater.com			
Madera Subbasin Technical Meeting	Madera County Govt Center	April 18, 2019	Minimum Thresholds	100 Interested Parties; Consultants	Yes; Subbasin list	County list						Maderacountywater.com			
SGMA Madera Subbasin Coordination Committee	Frank Bergon Senior Center	April 25, 2019	State Water Board's Role in SGMA	120 Interested Party List; SWRCB	Yes; Subbasin list	Interested Party List; County GSA List	yes					Maderacountywater.com		Yes	
Madera Subbasin Technical Meeting	Madera County Govt Center	May 6, 2019	Minimum Thresholds	Consultants and Interested Parties	Yes; Subbasin list	County list						Maderacountywater.com			
San Joaquin Valley Region, Area IX - of Resource Conservation Districts	Clovis Veterans Memorial Building	May 10, 2019	SGMA Overview and possible roles for RCDs	Resource Conservation Districts, NRCS, other agencies	Yes; RWMG list	RWMG List & Area IX List	yes					Maderacountywater.com			
Madera Regional Water Management Group	City of Chowchilla, City Hall	May 13, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests	Yes; RWMG list	RWMG list serve						Maderacountywater.com			
Release of Water & Natural Resources Newsletter	Internet	May 14. 2019	Introduction to SGMA, Chapter 1 & 2 of the GSP, Tree Mortality	447 Interested Parties & 109 RWMG	Yes	RWMG list serve						Maderacountywater.com			
Pop-Up Event	Madera Fair Grounds	May 15, 2019	General SGMA Information	Various Stakeholders	N/A	N/A						Maderacountywater.com			

Meeting/Event	Location	Meeting/Event date	Topics presented	Audience (estimated # participants; interests represented)	E-blast to Interested Parties list? Which list and when?	Email to Others? Which list and when?	Flyer created?	Flyer distributed at other meetings/events? Where and when?	Information provided at other meetings/events? Where and when?	Additional outreach and publicity (e.g., pop-ups)?	Press release? Which outlets?	Advertised on website? Which website(s)?	Advertised on social media? Which platforms and accounts?	Translation of meeting provided?	Additional comments
Supervisor Tom Wheeler, Town Hall Meeting	Coarsegold Community Center	May 23, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents	Yes; District list	District 5 Constituents						Maderacountywater.com			
SGMA Madera Subbasin Coordination Committee	County Government Building, Madera	May 29, 2019	State Water Board's Role in SGMA	100	Yes; Subbasin list	Interested Party List; County GSA List	yes					Maderacountywater.com		Yes	
Water & Natural Resources Newsletter	Internet	May 31. 2019	SGMA and related Grants, Flood Related Grant Awards, Chapter 1 & 2 of the GSP, Keeping Your Property Firesafe	447 Interested Parties & 109 RWMG	Yes	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	County Government Building, Madera	June 24, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests	Yes; RWMG list	RWMG list serve						Maderacountywater.com			
Supervisor Tom Wheeler, Town Hall Meeting	North Fork Mono Rancheria Community Center	June 27, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents	Yes, District List	District 5 Constituents						Maderacountywater.com			
Water & Natural Resources Newsletter	Internet	June 28. 2019	Advisory Committee for the County GSAs, Flood Control and Water Conservation Agency, Chapter 1 & 2 of the GSP,Non-Native Plants on Rangelands	447 Interested Parties & 109 RWMG	Yes	RWMG list serve						Maderacountywater.com			
Madera Regional Water Management Group	Raleys Community Room, Oakhurst	July 22, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests	Yes; RWMG list	RWMG list serve						Maderacountywater.com			
Brett Frazier Coffee and Cnversation	Rancho's Café - Madera Ranchos	July 24, 2019	Release of the SGMA Plan	Madera Ranchos Community Members	Yes; District list							Maderacountywater.com			
Water & Natural Resources Newsletter	Internet	July 31. 2019	Advisory Committee for the County GSAs, Flood Control and Water Conservation Agency, Chapter 1 & 2 of the GSP,Non-Native Plants on Rangelands	447 Interested Parties & 109 RWMG	Yes	RWMG list serve						Maderacountywater.com			
On the Road - Board of Supervisor Meeting and GSA Update	Fairmead Middle School	August 6, 2019	GSA Update	Community Members	Yes							Maderacountywater.com			
Madera Subbasin GSA Meeting	Madera County Board of Supervisor Chambers	August 7, 2019	GSA Update	Advisrory Committee and Interested Parties	Yes	Interested Party						Maderacountywater.com			
Brett Frazier Coffee and Cnversation	Rancho's Café - Madera Ranchos	August 21, 2019	Release of the SGMA Plan	Madera Ranchos Community Members	Yes; District list							Maderacountywater.com			
Supervisor Tom Wheeler, Town Hall Meeting	The Pines - Bass Lake	August 22, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents	Yes; District list	District 5 Constituents						Maderacountywater.com			
Madera Regional Water Management Group	City Hall, Chowchilla	August 26, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests	Yes	RWMG list serve						Maderacountywater.com			
Water & Natural Resources Newsletter	Internet	August 30. 2019	Advisory Committee for the County GSAs, Flood Control and Water Conservation Agency, Chapter 1 & 2 of the GSP,Non-Native Plants on Rangelands	447 Interested Parties & 109 RWMG	Yes	RWMG list serve						Maderacountywater.com			
Supervisor Frazier - Coffee and Conversation	Axis Coffee Shop	September 18, 2019	Introduction to SGMA for the Up Stream and some Valley Users	Distirct 1 Constituents		Distirct 1 Constituents									
Supervisor Tom Wheeler, Town Hall Meeting	Ahwahnee Elementary School	September 19, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents		District 5 Constituents									
Madera Regional Water Management Group	County Government Building, Madera	September 23, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests		RWMG list serve									
Water & Natural Resources Newsletter (October)	Internet	October 1, 2019	Links to all GSAs, Sediment Removal Permits,Protect your waterways	447 Interested Parties & 109 RWMG	Yes	RWMG list serve									
San Joaquin Valley Region, Area IX - of Resource Conservation Districts	Vineyard Restaurant Community Room	October 11, 2019	SGMA Overview and possible roles for RCDs	Resource Conservatin Districts, NRCS, other agencies		RWMG List & Area IX List	yes								
Supervisor Tom Wheeler, Town Hall Meeting	Oakhurst Community Center	October 17, 2019	Introduction to SGMA for the Up Stream Users	District 5 Constituents		District 5 Constituents									
SGMA Madera Subbasin Coordination Committee	County Government Building, Madera	October 22, 2019	Comment Period Listening Session	40 interested parties, consultants		Interested Party List; County GSA List	yes							Yes	
Madera Regional Water Management Group	Raleys Community Room, Oakhurst	October 28, 2019	Discussion of the GSP and continued DAC outreach	RWMG Board and guests		RWMG list serve									

Meeting/Event	Location	Meeting/Event date	Topics presented	Audience (estimated # participants; interests represented)	E-blast to Interested Parties list? Which list and when?	Email to Others? Which list and when?	Flyer created?	Flyer distributed at other meetings/events? Where and when?	Information provided at other meetings/events? Where and when?	Additional outreach and publicity (e.g., pop-ups)?	Press release? Which outlets?	Advertised on website? Which website(s)?	Advertised on social media? Which platforms and accounts?	Translation of meeting provided?	Additional comments
Water & Natural Resources Newsletter (November)	Internet	October 31. 2019	County GSA Fees, Flood Control and Water Conservation Agency, Links to all GSPs,Fractured Rock Groundwater	447 Interested Parties & 109 RWMG	Yes	RWMG list serve									
Yosemite/Sequoia Resource Conservation & Development Council	Clovis Veterans Memorial Building	October 31. 2019	Introduction to SGMA for the Up Stream Users	Members of agencies, RCDs, Tribes, etc over four counties											
SGMA Madera Subbasin Coordination Committee	County Government Building, Madera	December 2, 2019	Review of GSP and vote on Recommendation to Adopt Plan			Interested Party List; County GSA List	yes							Yes	
Other Events/Meetings: non-SGMA meetings at which information was provided about GSP development, updates provided to area legislative bodies															

APPENDIX 2.C. NOTICE AND COMMUNICATION

2.C.d. Madera Subbasin Stakeholder Input Matrix

Prepared as part of the

Joint Groundwater Sustainability Plan
Madera Subbasin

January 2020

GSP Team:

Davids Engineering, Inc
Luhdorff & Scalmanini
ERA Economics
Stillwater Sciences and
California State University, Sacramento

Madera Subbasin Stakeholder Input

Type of Beneficial User	Interests of Beneficial User	How interests were taken into consideration in GSP development

APPENDIX 2.C. NOTICE AND COMMUNICATION

2.C.e. Responses to Comments

Prepared as part of the

Joint Groundwater Sustainability Plan
Madera Subbasin

January 2020

GSP Team:

Davids Engineering, Inc
Luhdorff & Scalmanini
ERA Economics
Stillwater Sciences and
California State University, Sacramento

TABLE OF CONTENTS

1 COMMENTS RECEIVED

Under the Sustainable Groundwater Management Act (SGMA), the four GSAs, City of Madera, Madera County--Madera GSA, Madera Irrigation District GSA, and Madera Water District GSA for the Madera Subbasin (Subbasin) have solicited and responded to comments from the public and from other agencies concerned with the Draft Groundwater Sustainability Plan (GSP). The Draft GSP was made available by the GSA's for public review on August 7, 2019. The public comment period for the Draft GSP ended on November 9, 2019. Agencies, organizations, and individuals submitting comments on the plan are listed below.

- Al Solis (4/2)
- Anonymous (7/16) – two copies
- Bill Diedrich (5/19)
- Bill Diedrich (11/8)
- California Poultry Federation (11/8)
- Erik Smith (4/3)
- Food Commons Fresno/Road 20 Farm (11/8)
- Fresno Irrigation District (11/8)
- Hancock Farmland Services (11/8)
- James Paul Provenzano (9/4)
- James Paul Provenzano (10/22)
- Jeannie Habben (4/17)
- Joint Letter/Ag Innovations (11/8)
- Leadership Counsel for Justice and Accountability (LCJA) (6/27)
- Leadership Counsel for Justice and Accountability (11/8)
- Madera Valley Water Company (11/8)
- Mark Hutson (11/2)
- Madera Agricultural Water Association (11/9)
- McCormick, Barstow, Sheppard, Wayte & Carruth LLP (10/21)
- North Kings GSA (11/8) – submitted twice (once by Kassy Chauhan and once by Lynn Rowe)
- Provost & Pritchard (11/1)
- Root Creek Water District (11/9)
- Sarb Johal (10/22)
- Self-Help Enterprises (11/8)
- San Joaquin River Exchange Contracts GSA (11/8)
- The Nature Conservancy (7/1)
- The Nature Conservancy (11/8)
- Valley Children's Hospital (11/8)
- Verbal comments from 10/22 meeting
- Wonderful Citrus (11/8)

To finalize the GSP, the GSA's have prepared the following responses to comments that were received during the public review period. First, in Section 2, responses are given for subjects with multiple comments. The next section, Section 3, provides a table of all the comments and responses, with reference to the multiple comment subject area responses where appropriate. The last section, Section 4, provides every comment received for review.

2 MULTIPLE COMMENT SUBJECT AREA RESPONSES

2.1 Demand Management Reduction Program

2.1.1 Comment Summary

Numerous comments have been received from the community stating that the GSP does not adequately develop the details of the demand management program. Many commenters believe that pumping restrictions should only be implemented if necessary to achieve sustainability, and should gradually ramp down pumping over the implementation period to avoid a sudden adverse impact on the local economy. Other commenters believe that demand management should start immediately. The overarching sentiment is that the demand management program should be developed through a stakeholder driven process.

2.1.2 Response

The demand reduction targets described in the GSP correspond to the estimated subbasin groundwater budget shortage (i.e., incorporates only vertical inflows/outflows within Subbasin boundaries) after inclusion of planned water supply projects. The details of demand reduction are being evaluated and vetted with stakeholders and the public through numerous venues including the Madera County GSA's Advisory Committee (Committee), Madera County GSA meetings, Coordination Committee meetings, discussions with Madera County Farm Bureau, and the Madera Ag Water Association. The vast majority of demand reduction is anticipated to occur within the Madera County GSA area. The required scale of the demand management program will be reassessed every five years as part of the five-year review. It will be scaled down, or up, as necessary to balance groundwater extraction and groundwater recharge as other projects are implemented over the 20-year implementation period and subsequent sustainability period. The Madera County GSA has been meeting regularly and will continue to meet regularly with stakeholders, the Committee and the other organizations highlighted above with the objective of formulating workable demand management programs acceptable to stakeholders that meet subbasin sustainability objectives, and providing such information to the Madera County Board of Supervisors (the elected body for the Madera County GSA) for implementation consideration.

Based on the best available data and appropriate analytical tools applied in the GSP, significant demand reductions are necessary in the Madera Subbasin in order to achieve long-term groundwater sustainability. These reductions are focused primarily within the Madera County GSA's service area. To avoid a sudden and adverse disruption to the local economy, the anticipated demand reductions will be introduced gradually during the implementation period, as described in Section 4.4.4 of the GSP.

The method for monitoring and enforcing anticipated demand reduction is being developed by the GSAs, with input provided to Madera County GSA from the various stakeholders and groups identified above. Demand reductions will likely be verified through a combination of remote sensing and water meters, the details of which will be further developed during the initial year of the implementation period.

2.2 Groundwater Dependent Ecosystems

2.2.1 Comment Summary

Comments regarding groundwater dependent ecosystems (GDEs) focused on the methods used to identify potential GDEs, data gaps related to shallow groundwater, the analysis of potential impacts to potential GDEs, consideration of protected species and habitats, and the consideration of potential GDEs in setting sustainability goals, measurable objectives, and minimum thresholds. Comments included recommendations that environmental uses and users of groundwater, including potential GDEs, should receive additional attention in the GSP and that environmental priorities and benefits should be a consideration in selecting and describing projects and management actions. Several comments identified perceived deficiencies in the data used to map shallow groundwater levels, the use of a depth to water (DTW) criterion to screen potential GDEs, and the assumptions regarding surface water – groundwater interactions in the San Joaquin River and Fresno River in the subbasin. Comments regarding surface water – groundwater interactions are addressed in Section 2.3 below. One comment expressed appreciation for the comprehensive evaluation of the four potential GDE units identified in the subbasin and acknowledged the appropriate use of tools and guidance recommended by The Nature Conservancy.

2.2.2 Response

Methods used to identify and screen potential GDEs for further analysis included analyzing shallow groundwater depth beneath areas mapped as potential GDEs. A DTW of 30 feet was used as one of the primary criteria in the initial screening of potential GDEs. Potential GDEs were retained for further analysis if the underlying DTW in either winter/spring 2014 or winter/spring 2016 was equal to or shallower than 30 feet. The 2014 and 2016 DTW data were the most accurate and recent DTW data available for the Madera Subbasin. While the 2016 data represent conditions after the 2015 SGMA baseline, the use of shallow groundwater data from both years was deemed appropriate because it provided a more conservative (i.e., more inclusive) indicator of potential GDEs than the use of a data from a single year. Where DTW was greater than 30 feet, other criteria including surface flow characteristics of waterbodies were used to determine whether potential GDEs should be subject to further analysis. The GSP has been revised to clarify the data and approach used for identification and screening of potential GDEs and to provide additional description of environmental uses and users of groundwater, including potential GDEs. The GDE Appendix (Appendix 2.B) has also been revised to include these clarifications.

Identification of final potential GDEs and analysis of potential impacts related to groundwater use was based on multiple sources of information to identify historical and current ecological conditions and trends, ecological value, and vulnerability to future changes in groundwater and interconnected surface water (if any). Information sources included multiple vegetation mapping datasets; field evaluation of potential GDEs; climate and surface hydrology data; satellite-derived vegetation data; hydrogeology data; lists and spatial data for potentially-occurring special-status and groundwater-dependent species and natural communities provided by the California Department of Fish and Wildlife, U.S. Fish and Wildlife Service, National Marine Fisheries Service, Pacific Fishery Management Council, and The Nature Conservancy; and beneficial uses of water from the Basin Plan. Appendix 2.B describes the sources of data used for the GDE analysis and how protected species and habitats were considered in the analysis of potential impacts to GDEs. It also describes gaps in the shallow groundwater data for some of the potential GDE units and recommended methods for collecting data to fill these gaps and periodically re-evaluate potential GDE conditions using an adaptive management approach

The GDE analysis determined there were no undesirable results related to potential GDEs. Groundwater in the Friant Riparian, Fresno River, and San Joaquin River Riparian potential GDE Units are tightly coupled with surface flow and runoff, with surface flow likely contributing directly to the shallow groundwater systems that support the vegetation in the units. Based on current evidence and recent historical response patterns, the dominant native vegetation composing these potential GDE units and the Sumner Hill Potential GDE Unit appear sufficiently resilient to maintain ecosystem integrity and function in the face of predicted fluctuations in groundwater conditions around the recent historical baseline level. The susceptibility of the Sumner Hill Potential GDE Unit to changing shallow groundwater conditions cannot be determined based on a lack of shallow groundwater data. Evidence suggests that groundwater quality is not limiting ecosystem functions essential for the survival and reproduction of riparian plant species in these potential GDE units.

The sustainability goal developed for the Madera Subbasin is expected to maintain the ecological integrity and function of the potential GDE Units. This includes maintenance of riparian habitat conditions for special-status species and other native species in the units or those likely to occur, and provision of important ecosystem support functions for Central Valley spring-run Chinook salmon, Central Valley steelhead, and other special-status species and native aquatic species in the adjacent San Joaquin River (for applicable potential GDE Units in these areas). Restoration flows in the San Joaquin River under the San Joaquin River Restoration Program (SJRRP) are expected to provide continued hydrologic inputs contributing to long-term support of the Friant Riparian Potential GDE Unit and the San Joaquin River Riparian Potential GDE Unit. The GSP's sustainability goal is unlikely to affect the hydrological or ecological conditions of the other potential GDE units in the Madera Subbasin, as these potential GDE units are not expected to be affected by groundwater management under the GSP. The vegetation communities composing the potential GDE units in the subbasin are expected to be largely unaffected by sustainable groundwater management in the Madera Subbasin and thus the minimum thresholds are not expected to cause adverse impacts to potential GDEs. The native vegetation communities composing the potential GDE units are expected to be maintained in good health by sustainable groundwater management in the Madera Subbasin and are therefore resilient to short-term adverse impacts, thus the minimum thresholds are not expected to cause substantial adverse impacts to potential GDEs. Measurable objectives and interim milestones for groundwater levels, the sustainability indicator most likely to affect potential GDEs in the subbasin, have been established for the four wells that are considered to represent the shallow groundwater conditions associated with the potential GDE units in the subbasin.

2.3 Surface Water – Groundwater Interactions

2.3.1 Comment Summary

The comments received regarding surface water – groundwater interaction center around there being insufficient characterization of surface water – groundwater interactions, insufficient description of data gaps and how they will be filled, that the GSP states a surface water – groundwater connection did exist for the San Joaquin River prior to 2008, and disagreement with the conclusion that surface water and groundwater are disconnected in the subbasin.

2.3.2 Response

The evaluation of surface water – groundwater interaction included: evaluation of DWR unconfined groundwater elevation contour maps and data from the late 1950s through 2016; compilation and contouring of shallow groundwater level data representative of SGMA baseline conditions for

winter/spring 2014 and winter/spring 2016 time periods (to bracket January 2015 conditions for which very limited data are available); evaluation of the presence of shallow clay layers – particularly the "A" and "C" Clays of the Tulare Formation (and other shallow clay layers at equivalent depths or shallower) that are above the Corcoran Clay; evaluation of perched groundwater conditions relative to conditions in the regional unconfined groundwater system; review of existing studies on stream infiltration; stream gaging data; and discussion with local GSA representatives regarding seepage of irrigation water conveyed through natural waterways during the irrigation season.

As described in various sections of the GSP, these data consistently demonstrate a lack of groundwater – surface water interaction throughout the vast majority of the subbasin because of the great depths to the regional groundwater system. As noted previously, based on groundwater levels alone, only the San Joaquin River has a potential for a surface water – groundwater connection, although hydrogeologic conditions along the San Joaquin River are considerably more complicated than for other rivers/streams. This is due to the presence of shallow clay layers along the San Joaquin River combined with stream infiltration leading to unusually shallow groundwater levels in isolated areas. These shallow clay layers extend a short distance into the Madera Subbasin in some areas, causing pockets of shallow groundwater levels along the San Joaquin River within Madera Subbasin.

The depths to shallow groundwater increase rapidly where the shallow clay layers pinch out within Madera Subbasin (see Figures 2-71 and 2-72), which demonstrates the important role that shallow clay layers play in maintaining shallow groundwater levels and impeding vertical water movement. Were it not for the shallow clay layers, shallow groundwater levels would likely be considerably deeper. The connection between regional groundwater pumping at greater depths within the Upper Aquifer and shallow groundwater levels that are essentially perched/mounded on shallow clay layers is not well defined.

As described in the GSP, even when considering the very shallowest wells screened above the shallow clay layers, shallow groundwater levels for winter/spring of 2014 and 2016 appear to be below the San Joaquin River thalweg. While shallow groundwater levels rise and fall from wet to dry season and wet year to dry year and may become connected to surface water for short durations, defining an interconnected surface water – groundwater system should require that such a connection exists under a broad range of seasonal and climatic year conditions. It is important to note that regional groundwater pumping is most substantial during dry seasons and dry years, when the connection between groundwater and surface water is least likely to exist.

While it appears that a surface water – groundwater connection to the San Joaquin River did exist historically (prior to 2008), SGMA does not require restoration of basin groundwater conditions prior to January 2015. However, there remains a possibility that projects/management actions implemented to reach sustainability may ultimately restore the surface water – groundwater connection for the San Joaquin River.

As described above, a detailed analysis of surface water – groundwater connection has been conducted for the GSP based on available data. In addition, seven new monitoring locations are currently under construction for nested monitoring wells screened at three different depths, including a shallow well to represent the unconfined aquifer water table at each location. This new nested monitoring well data, data being collected under the GSP monitoring program, and other ongoing data collection efforts (e.g., SJRRP, ILRP) will be evaluated in terms of surface water – groundwater connections as part of the five-year progress evaluation report.

2.4 Outreach (including DACs/SDACs)

2.4.1 Comment Summary

The comments received regarding outreach and disadvantaged/severely disadvantaged communities (DACs/SDACs) relate to stakeholder engagement during plan development and implementation, and to protecting the needs of DACs and drinking water users. One comment says that certain kinds of beneficial users, such as small sustainable farmers, socially disadvantaged farmers, and drinking water users, have not been adequately involved in development of the GSP and their input has not been sufficiently incorporated into the GSP. Another requests a specific plan be set forth for stakeholder engagement throughout implementation. A comment recommends that a stakeholder-driven process to establish details of demand management policy should also ensure that the allocation methodology is consistent with established water rights doctrines.

Comments related to DACs and SDACs focus on the need for the GSP to clearly demonstrate how DACs and drinking water users will be protected. One comment asserts that 63% of wells are likely to go dry under the current plan and adequate funding to address these impacts is not provided. Multiple comments state that the monitoring network fails to capture drinking water impacts to DACs, small water systems, and domestic wells, so the Plan is likely to cause a disparate impact on these groups. A comment suggests additions to the monitoring network should consider the locations of these beneficial users. A comment says that the GSP should provide additional information about how the risks associated with projects such as on-farm recharge will be monitored and evaluated. Another says that the GSP should explain how drinking water use and users are being considered in development of the demand management program, especially the allocation framework and groundwater market. Another comment advises that in establishing project priorities, criteria should include multi-benefit projects that address water quantity as well as providing environmental benefits or benefits to DACs.

2.4.2 Response

Some of the comments cited above are addressed under Section 2.7 of this response to comments. Further detail was added to Section 2.1.5.3 of the GSP about how engagement efforts encouraged the active involvement of DACs. Madera County worked with Self-Help Enterprises (SHE) and the Leadership Counsel for Justice and Accountability (LCJA), organizations that represent DAC communities, to inform DAC members about the plan and encourage their involvement. LCJA and SHE were also consulted to help determine how to facilitate participation by DAC members in outreach activities, for example by holding workshops at different times or locations. LCJA and SHE each received grants between $750,000 to $1 million from the Department of Water Resources for outreach to promote meaningful participation of SDACs in groundwater sustainability activities in multiple subbasins in the state, including Madera subbasin. Under the grants, they promoted community participation through community involvement, outreach, and technical assistance. The GSAs provided letters of support for SHE and LCJA's applications for this funding.

Engagement matrices in Appendix 2.C.c list the numerous opportunities for engagement and the participation in these events. Participants in engagement efforts, such as attendees of public meetings, were not asked to identify themselves by beneficial user category.

The Environmental and Ecosystem category of interest in Table 2-4 has been expanded with the names of specific groups. Throughout GSP development and beyond, any interested person or organization could be added to the Interested Parties list by submitting a request at https://www.maderacountywater.com/join-list/.

2.5 Subsurface Inflows

2.5.1 Comment Summary

The comments received on subsurface inflows relate to the need to calculate subsurface inflows/outflows separately for the Upper Aquifer and Lower Aquifer, subsurface inflows/outflows were calculated using an uncalibrated numerical model, there have historically and consistently been subsurface inflows to Madera Subbasin from Delta-Mendota Subbasin, net subsurface inflows to Madera Subbasin from the Delta-Mendota Subbasin have caused migration of high TDS groundwater into Delta Mendota Subbasin, and that Madera Subbasin is not properly accounting for subsurface inflows from Kings Basin in its water balance and sustainable yield calculations.

2.5.2 Response

In the Madera Subbasin area, subsurface groundwater flows between subbasins likely occurred naturally under historical and pre-development conditions. More recently, groundwater development in and around the Madera and adjacent Subbasins has likely resulted in alterations of groundwater flows between subbasins; however, SGMA does not require correction of conditions that existed prior to 2015. The estimates of projected future conditions based on the best available data and scientific methods show lateral inflow decreasing over the 2020 to 2040 implementation period and the 2040 through 2090 sustainability period, such that the lateral inflows from adjacent subbasins will be significantly reduced during the sustainability period. Calibrated model estimates indicate that due to projects and management actions implemented in the Madera Subbasin, the cumulative lateral inflows from other subbasins to the Madera Subbasin will be significantly less than they would be without SGMA.

The calibrated numerical groundwater model estimates of net subsurface inflow/outflow are highly dependent on available groundwater level data for the Upper and Lower Aquifers in adjacent subbasins, which provide important boundary conditions for the model. There is a particular lack of data for the Lower Aquifer in the Delta-Mendota Subbasin and Kings Subbasin, which impact reliability of absolute estimates of groundwater inflow/outflow regardless of whether a calibrated numerical groundwater model (computer model) or analytical approaches (e.g., Darcy's Law calculation) is being used. Numerical and analytical modeling techniques rely on many of the same assumptions and both rely heavily on observed data for calibrating a numerical model or for input in analytical methods. A numerical modeling approach provides the additional ability to evaluate conditions at a higher temporal resolution that is typically possible with analytical techniques and also enables the ability to simulate outcomes under future scenarios of conditions/activities. It is more important to evaluate how historical/current groundwater inflows/outflows are anticipated to change as the Madera Subbasin and surrounding subbasins evolve towards sustainability in 2040 and beyond, and a calibrated numerical groundwater model is a commonly used and widely accepted tool that can be used to evaluate the relative change in groundwater levels and subsurface inflow/outflows. The calibrated numerical groundwater developed and utilized in the Madera Subbasin GSP analyses was refined from DWR's C2VSim regional model and recalibrated to local conditions. Still, there is need for additional review and analysis of hydrogeologic conditions within and around Madera Subbasin, particularly in the area adjacent to the southeast boundary with Kings Subbasin, and it is anticipated that revisions to the model will be conducted as part of the model update to be completed in conjunction with five-year reporting in 2025. It is expected that the model revisions will likely reduce the estimated inflows currently being simulated from Kings and Delta-Mendota Subbasins.

Regardless of how subsurface inflow/outflow is quantified and what the estimated values are historically, currently, and in the future; the most important point to recognize related to the Madera Subbasin GSP is that net subsurface inflow does not factor into the water balance shortage (also described as net recharge in the GSP) that forms the basis for required projects and management actions to reach sustainability. Thus, relative to sustainability as defined in the GSP, subsurface inflows do not contribute to meeting the sustainability goals.

The comment regarding migration of high TDS groundwater related to subsurface flow between subbasins appears to be based on analyses conducted for the Delta-Mendota Subbasin GSP (for SJREC Plan Area) that are not yet available for public review and comment. Thus, it is not possible to evaluate this comment. It is notable that groundwater occurring on the west side of the San Joaquin Valley associated with Coast Range-sourced sediments from the west, including throughout much of the Delta-Mendota Subbasin, has naturally high salinity, at levels considerably higher than in most of the Madera Subbasin. However, the mechanism and/or conditions that would cause or exacerbate migration of high TDS groundwater into the Delta-Mendota Subbasin is not described in the comment.

The Madera Subbasin anticipates updating the calibrated numerical groundwater model with new information collected between now and the five-year update in 2025. Subsurface inflows and outflows from the updated model will be re-evaluated during preparation of the five-year update report in 2025. These updates will include a review of a refined calibrated regional model (Central Valley IWFM) that DWR is continuing to work on in 2019, additional water level data from existing and new monitoring wells being installed in Madera Subbasin, and possibly additional water level data in adjacent subbasins that are lacking key data as of 2019 (e.g., Lower Aquifer in Delta-Mendota Subbasin).

2.6 Groundwater Quality

2.6.1 Comment Summary

Several comments were received regarding how the GSP addresses the groundwater quality degradation sustainability indicator. Comments received focus on constituents not specifically included as key constituents in the GSP (e.g., manganese, uranium, DBCP, EDB, 1,2,3-TCP, perchlorate, BTEX, pesticides); uncertainty regarding what are being used as water quality MTs; confusion regarding RMS sites for water levels vs. water quality; general concern about groundwater contamination impacting domestic wells and associated lack of SMCs for various potential groundwater contamination constituents; SGMA charges GSAs with responsibility to protect groundwater quality from further degradation due to groundwater management practices; proposed GSP activities present groundwater quality risks (e.g., increase in naturally occurring contaminants; movement of contaminant plumes; on-farm recharge causing vertical migration of various constituents); the GSP should include monitoring for a long list of constituents including all constituents with primary drinking water standards, PFOSs/PFOAs at all RMS sites and wherever domestic wells are present; the MTs/MOs are set are too high; the definition of undesirable results for groundwater quality degradation is inadequate; and the groundwater quality monitoring network is inadequate.

2.6.2 Response

The SGMA process and GSPs are not the primary means of addressing groundwater quality issues resulting from waste discharges, which are under the jurisdiction of the other regulatory programs overseen by the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Board (RWQCB). By far, the main constituent of concern to domestic wells in Madera Subbasin is nitrate. Nitrate

contamination is already being addressed by the RWQCB and SWRCB, which have primary responsibility for addressing groundwater quality issues in general. The RWQCB also addresses other contaminants that are or may become a concern in the subbasin in the future. The responsibility of the GSP relative to groundwater quality mainly falls into the following categories: 1) Altering the movement and spread of known contaminant plumes due to GSP projects/management actions; 2) Impacts that are specifically related to declining groundwater levels (e.g., arsenic, possibly TDS); 3) Flushing of contaminants from the vadose zone in recharge project areas (although this may be more of a short-term impact issue with ultimately beneficial impacts to the basin through dilution and recharge of higher quality water). These three issues are described and addressed in the GSP.

With regard to comments on groundwater quality MTs, we note the following:

- it is not reasonable to set MTs below existing concentrations because there would be an exceedance of the MT before GSP Implementation even starts;
- policies specifically designed solely to improve water quality issues unrelated to GSP implementation are not required for a GSP; nonetheless, recharge projects have the potential to improve water quality in the long term;
- it is unreasonable to set MTs for all potential contaminants; one of the tasks of the studies conducted for the GSP is to identify the primary constituents of concern for setting MTs;
- oversight of subbasin groundwater quality is primarily the responsibility of the RWQCB and SWRCB and corresponding programs, not the GSP.

Following up on item 3 in the above paragraph, it is not the responsibility of the GSAs or GSP to monitor all groundwater contaminants. Public and community small water systems have certain groundwater sampling and reporting requirements for a range of constituents. Such information is collected and reported to various State agencies (e.g., Division of Drinking Water). When specific contaminants of concern are identified, the RWQCB and SWRCB have jurisdiction on requiring additional monitoring and remediation for protection of beneficial uses, if required.

The RMS networks for groundwater levels and groundwater quality are shown in GSP Figures 3-1 and 3-2. While there is considerable overlap between the two RMS networks that will result in many RMS locations collecting both groundwater level and quality data, the RMS locations for groundwater levels and groundwater quality are not the same. Each RMS network presented in the GSP is considered adequate as a starting point, but will be supplemented as data gaps are filled during the Implementation Period.

2.7 Groundwater Levels Related to Domestic Wells

2.7.1 Comment Summary

The comments on this topic are related to the number of domestic wells to be impacted by declining groundwater levels during the Implementation Period; the GSP did not fully and/or equally consider input from disadvantaged communities and potential impacts to domestic wells vs. agricultural groundwater users; groundwater level MTs/MOs are too low and do not protect domestic wells; and presenting alternative analyses regarding the estimated number of domestic wells that will be partially dewatered or go dry during the Implementation Period.

2.7.2 Response

The GSAs have seriously and meaningfully considered various inputs received from disadvantaged communities and other beneficial users in the subbasin, which often present conflicting opinions on GSP sustainable management criteria. During the GSP development process, reactions and concerns of basin stakeholders regarding initial draft MOs/MTs ranged broadly from those concerned they were too high to others feeling they were too low. With specific regard to the basin stakeholders claiming the currently proposed groundwater level MTs are too low, we note the following:

- the MTs cannot be interpreted in isolation from the rest of the Plan; the MTs are designed to work in conjunction with the domestic well mitigation program;
- the MTs are generally not an indication of where the basin water levels are expected to be with proper implementation of the GSP; rather the interim milestones and the MO's represent anticipated typical basin water levels after 2020 and 2040, respectively;
- The most challenging period for groundwater levels moving forward is expected to be the early to middle portions of the Implementation Period, and the single biggest factor impacting groundwater levels during this time is expected to be climatic fluctuations in wet and dry years and the sequence of these wet and dry years.

The comment letters' characterization of domestic wells expected to go dry does not appear to be accurate; however, at a minimum the underlying assumptions and methodology for the analysis are not presented and/or are not clear. For example, stating that a large number of wells (570) will go dry if the groundwater levels represented by MOs are reached does not consider that virtually all RMS sites show recent and/or current groundwater levels below the MO, indicating such wells would already be dry and (in most cases) have been dry for several years now. In addition, any such analysis needs to have a time element in the analysis to understand how many currently viable wells are impacted during the Implementation Period.

Furthermore, for RMS wells that are screened below typical domestic wells, the groundwater levels represented on the hydrographs for Lower Aquifer wells are typically deeper than what would be experienced at the shallower domestic wells – meaning impacts to domestic wells will be less than indicated by this review of hydrographs. Again, the domestic well mitigation plan component of the GSP is being designed to address domestic wells that may go dry.

The projects and management actions by GSAs to be put in place during the Implementation Period (including some projects that have already been implemented) will protect a number of domestic wells from going dry after implementation begins in 2020. It is anticipated that owners of domestic wells that do go dry and meet conditions set forth in the planned domestic well mitigation program will have recourse through the domestic well mitigation program. Setting much higher minimum thresholds to ensure no domestic wells go dry will cause major economic impacts to the community at large, including DACs/SDACs and domestic well owners. The GSP provides the most reasonable solutions available to address concerns of all basin stakeholders, while still achieving sustainability by 2040 as required by SGMA. Alternatives that may reduce the decline in groundwater levels have sudden economic impacts to all beneficial users.

The Self-Help Enterprises (SHE) analysis of the number of domestic wells projected to go dry yielded considerably different results than described in the public draft GSP. Such analyses can vary widely depending on key assumptions applied. It appears that one of the major differences in assumptions is that the analysis presented in the GSP is focused on how many domestic wells may be impacted after 2020 (i.e., it is time dependent), whereas the analysis conducted by SHE does not appear to distinguish

between wells that were previously impacted versus wells that would be impacted during the Implementation Period. To address these different results, a sensitivity analysis was added to Appendix 3.D to examine costs to replace 500 to 1,000 domestic wells during the Implementation Period. As described in Appendix 3.D, the costs for replacement of up to 1,000 domestic wells remains a very small fraction of the economic cost of the alternative involving immediate implementation of the full volume of demand management.

Madera County prepared and recently submitted a Prop 68 grant application to conduct a detailed domestic well inventory. This more detailed analysis of domestic wells will provide a considerably more accurate database to support development of the domestic well mitigation program through analyses of potential domestic well impacts during the Implementation Period.

2.8 Subsidence Issues

2.8.1 Comment Summary

The comments on this topic are related to the reported occurrence of significant infrastructure impacts related to subsidence in Madera Subbasin; the GSP should set SMC for subsidence regardless of the historical non-occurrence of significant impacts to infrastructure, the GSP is not in compliance with SGMA related to lack of subsidence SMC being established in the GSP; the GSP should set subsidence SMC now instead of doing adaptive management; there is no discussion of subsidence along the Eastside Bypass near the Fresno River, there is no discussion of collapsed wells; western Madera County adjacent to Delta-Mendota Subbasin should be implementing similar mitigation measures as provided for the in the Triangle T Water District agreement with SJREC – including reducing pumping from the Lower Aquifer to no more than the sustainable yield ; and the GSP fails to identify/address subsidence occurring along the Eastside Bypass and near the Delta-Mendota Subbasin.

2.8.2 Response

The GSP consultant team and GSA representatives reviewed their understanding of the occurrence of significant impacts to infrastructure related to subsidence. The GSAs concluded that, while some small amounts of subsidence had occurred in Madera Subbasin (within the area of the joint GSP), there had not been significant infrastructure impacts in the Plan Area. This conclusion was presented in public meetings and the GSAs received no comments claiming significant infrastructure impacts had occurred related to subsidence.

It is acknowledged that significant infrastructure impacts have occurred along the Eastside Bypass near the Fresno River; however, this location is in the adjacent Chowchilla Subbasin. One commenter mentions collapsed wells without providing well locations or supporting data, while another commenter mentions “well casing fractures caused by subsidence affecting two wells” without supporting documentation/evidence. It is difficult to evaluate potential well casing issues (which can be caused by a number of factors not related to subsidence as well) without being provided specific well locations and supporting documentation. At this time there is no indication of this being a significant problem in the Madera Subbasin; however, the GSAs’ ongoing evaluation of subsidence will look more closely at this potential issue. While it is true that the GSP concluded a lack of significant infrastructure impacts within Madera Subbasin as support for not yet establishing specific subsidence sustainable management criteria, the GSP does provide for close monitoring of subsidence with triggers for adaptive management in the future.

The agreement between SJREC and Triangle T Water District covers an area in the adjacent Chowchilla Subbasin that has experienced documented and significant infrastructure impacts related to subsidence over the last 10 years. Such infrastructure impacts did not occur in Madera Subbasin over the same time frame, and therefore, western Madera Subbasin was not involved in establishing a similar agreement. Some of the comments received appear to be assuming that Madera Subbasin has had similar historical subsidence impacts as seen in western Chowchilla Subbasin; however, this is not the case and subsidence is treated accordingly in the Madera Subbasin GSP. That being said, groundwater levels and subsidence that may occur within Madera Subbasin during the Implementation Period will be closely monitored by Madera Subbasin GSAs and adaptive management actions implemented related to subsidence, if necessary. In addition, Madera Subbasin GSA technical representatives are currently working with SJREC GSA representatives to establish a technical group to collaborate in ongoing data collection and review regarding issues of interest to both subbasins, including subsidence.

3 ALL COMMENTS AND RESPONSES

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Demand Management	4-27	HFS encourages the development of a coordinated basin-wide data management system (DMS) that is capable of tracking groundwater and surface water use at the landowner, field, or parcel level, and a coordinated methodology for measuring landowner-level use of groundwater. The DMS should also include, or be capable of interfacing with, a groundwater market platform that allows for individual users to conduct transactions. Markets are essential in facilitating the highest and best use of a limited resource and will be most effective if there is trust in the accuracy of measurements and consistency in data sources, and flexibility available to allow for transactions across the basin.	See Multiple Comment Subject Area Response.	Hancock Farmland Services
Demand Management	4-27	HFS applauds Madera County's efforts to work with stakeholders in developing specific details of a demand management policy. We encourage the GSAs in the basin to initiate a stakeholder-driven process to develop a methodology for establishing landowner-level allocations of native yield that are coordinated across the basin. The allocation methodology should be consistent with various legal considerations drawn from applicable case law and attempt to be consistent with groundwater rights, recognizing that GSAs do not have statutory authority to make a final determination of water rights. An equal-per-gross acre approach to allocations is not likely to be consistent with established water rights doctrine, which must recognize many equitable considerations, in addition to acreage owned, to determine a legally defensible allocation. Further information regarding allocation methodology can be found in Groundwater Pumping Allocations Under California's Sustainable Groundwater Management Act – EDF and NCWL, dated July 2018.	See Multiple Comment Subject Area Response.	Hancock Farmland Services

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Demand Management	4-28	While HFS encourages the use of remote sensing to calculate crop evapotranspiration (ET) as a measurement of consumptive use, we also request the development of methodologies and quality assurance elements to allow for grower provided information to be included into the ET calculation and calibration. These methodologies should be developed in consultation with the vendor providing ET data to ensure it is applicable and useful in creating the best available data set. Additionally, GSAs should establish criteria and procedures to address apparent inaccuracies in the ET calculations. An obvious use of the procedure would be in instances where the grower can demonstrate that applied water, plus precipitation, is less than the calculated ET. In these instances, and subject to any requirements established by the GSA, the grower's use of groundwater should be reduced to the applied water total as the ET calculation should not be greater than applied water.	See Multiple Comment Subject Area Response.	Hancock Farmland Services
Demand Management	4-28	Section 4.2.3.2 also describes groundwater pumping limits, beginning in 2020, to be imposed by Madera County. The GSA should implement pumping restrictions, only if necessary to achieve sustainability, when supported by the best available data and appropriate analytical tools and implement such reductions by gradually ramping down pumping over the implementation period to avoid a sudden disruption in economic activity. The ramp down schedule should include an initial period where current levels of pumping can continue as data is gathered and potential water supply projects are pursued. As with native yield allocations, ramp down schedules should be developed in a coordinated manner across the basin. Any imposed pumping restrictions should be "eased" or "flexed" during drought periods provided that overdraft during those periods can be replenished.	See Multiple Comment Subject Area Response.	Hancock Farmland Services

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Demand Management	4-41	The GSP lacks sufficient detail in defining how potential reductions will be applied, measured, enforced and responded to if not met. These are critical details that must be addressed. For example, what is the baseline pumping period that the reductions will be applied to? At a minimum, the baseline period should be multiple years to avoid unnecessary and perhaps unintended penalization of lands in redevelopment or not yet in full demand due to planting schedules. Additionally, there is no significant discussion of how use will be measured and calculated, or of the costs to perform these activities.	See Multiple Comment Subject Area Response.	Hancock Farmland Services
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	not noted	Description of Plan Area omits relevant and crucial policies from the County and City General Plans which will affect water use; should cite and consider community plans and SB 244 analysis; should supplement gaps in DAC information in existing SB 422 (e.g. La Vina)	GSP Sections 2.1.2.1 and 2.1.3 have been updated to address these specific concerns.	Leadership Counsel for Justice and Accountability
Groundwater Quality and Groundwater Levels Related to Domestic Wells	not noted	GSP's analysis of drinking water impacts is inaccurate (conclusion regarding the number of wells that could be dewatered or contaminated due to the GSAs' proposed policies and activities, including the proposed sustainable management criteria, demand reduction schedule, and projects like on-farm recharge that could threaten groundwater quality)	See Multiple Comment Subject Area Response	Leadership Counsel for Justice and Accountability

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Domestic well mitigation program is missing from the projects section, and the details that are included in Appendix 3D are missing key information regarding the program's operationalization and scope.	The domestic well mitigation program is not included in the GSP projects listed in Chapter 4 because this chapter focuses on the cost and yield of projects (or management actions) that will result in additional groundwater (or reductions in pumping) in the Subbasin. Regarding the details of the operations and scope of the domestic well mitigation program, these are currently being developed by the Madera County GSA Ad Hoc Committee in coordination with other GSAs. The GSP includes general description of how such a mitigation program could be implemented in the Subbasin, and specific details of the program will be developed through a public process as the GSAs work to implement the GSP policy directions and ensure that the Subbasin meets sustainability objectives.	Leadership Counsel for Justice and Accountability
Water Budget	not noted	The GSP's description of the water budgets lacks the necessary data, assumptions and approaches used to determine the water budgets, maps of the basins, and in some cases, there have been sections left empty	The data sources, assumptions, and approaches have been updated with further detail (Section 2.2.3.3 Water Budget Components and Uncertainties). Additional and updated maps of the basins are included in Sections 2.2.1 (HCM) and 2.2.2 (Current and Historical Groundwater Conditions). All sections have been completed in the GSP.	Leadership Counsel for Justice and Accountability
Demand Management	not noted	The Draft GSP fails to show how it will achieve its sustainability goal with the proposed policies and activities, which it is required to do under SGMA. Given that the GSAs' proposed projects will still leave 90,000 acre feet of overdraft per year, and the GSP has no clear strategy for management actions such as demand reduction, the GSAs have not shown how they will "balance long-term groundwater system inflows with outflows based on a 50-year period representative of average historical hydrologic conditions" and "ensure no undesirable results of significant and unreasonable economic, social, or environmental impacts occur"	See Multiple Comment Subject Area Response.	Leadership Counsel for Justice and Accountability

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Outreach (including DACs/SDACs)	not noted	The Madera Subbasin GSAs Are Responsible for the Disproportionate and Disparate Impacts That Its Policies and Activities Will Have on Disadvantaged Communities Belonging to Protected Groups [Residents in disadvantaged communities do not have the financial means to dig deeper wells and install drinking water treatment infrastructure...their critical drinking water needs must be considered and meaningfully protected by the GSP. The Madera Subbasin GSAs have not adequately done so...the current Draft GSP is likely to cause 63% of wells to go dry in the subbasin and puts domestic wells at risk of contamination from many unmonitored drinking water contaminations, with little funding allocated to help address drinking water impacts.]	Comment noted. See also Multiple Comment Subject Area Response	Leadership Counsel for Justice and Accountability
Outreach (including DACs/SDACs)	not noted	Inadequate Consideration of Public Input [Although staff has put forth observable effort into considering the interests of all beneficial users, some beneficial users of groundwater still have not been considered in the formation of the Draft GSP. For example, small, sustainable farms and socially disadvantaged farmers have not been incorporated into the public conversation surrounding SGMA or Plan proposals for the subbasin...the GSAs have incorporated input from large-scale agricultural interests significantly more than they have incorporated feedback from drinking water users]	See Multiple Comment Subject Area Response	Leadership Counsel for Justice and Accountability
Water Budget	not noted	The Draft GSP does not contain information on the methods, data, and assumptions used to estimate urban water use and urban pumping or what users are represented by the urban pumping totals reported	Information regarding urban pumping estimates has been added to Section 2.2.3.3 (Water Budget Components and Uncertainties).	Leadership Counsel for Justice and Accountability
Water Budget	not noted	The implementation and sustainability periods of the projected water budget use repeating periods of hydrology and water supply information, but the rationale for the periods used is not described.	Clarification of the rationale has been added to Section 2.2.3.2 (Water Budget Analysis Period).	Leadership Counsel for Justice and Accountability
Water Budget	not noted	The reported urban pumping exhibits more variability than would be expected in an urban environment, and the Draft GSP does not explain the reason for this variability	Information regarding urban pumping estimates has been added to Section 2.2.3.3 (Water Budget Components and Uncertainties).	Leadership Counsel for Justice and Accountability

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Water Budget	not noted	The water budget information presented in the draft GSP does not provide information needed to determine when sustainability is achieved and, it is not clear if the subbasin will have achieved sustainable conditions by the end of the implementation period in 2040 [Table 2-26 presents average annual values and shows an average annual decline in groundwater storage for the projected period (2040-2090) for the scenario without projects, but shows an average annual increase in storage over that time period for the scenario with projects]	Table 2-26 indicates that with the projects and management actions described in the plan completed by 2040, the subbasin will have achieved sustainable conditions. The average annual increase in storage over that period demonstrates that the subbasin is sustainable over the 2040 to 2090 sustainability period.	Leadership Counsel for Justice and Accountability
Water Budget	not noted	The Draft GSP is also missing an explanation of how the sustainable yield will be allocated to the seven GSAs in the subbasin	Specific allocation to each of the seven GSAs in the Madera Subbasin is not explicitly detailed in this GSP. The intent of this GSP, in coordination with the other GSPs in the subbasin, is to achieve sustainability for the entire subbasin. Furthermore, SGMA regulations do not require sustainable yield estimates to be represented for each GSA boundary. However, each of the seven GSA used agreed-upon methodologies and foundational data to develop information about 1) groundwater elevation; 2) groundwater extraction data; 3) surface water supply; 4) total water use; 5) changes in groundwater storage; 6) subbasin water budgets; and 7) subbasin sustainable yield. Projects and management actions identified by each of the seven GSAs, including those detailed in this GSP, collectively are expected to achieve the subbasins sustainability goals, and have been evaluated as if they were one complete set of actions for the subbasin.	Leadership Counsel for Justice and Accountability
Sustainable Management Criteria	not noted	The Draft GSP's Sustainable Management Criteria for Groundwater Levels are not Adequate: 1. The Proposed Undesirable Result for Groundwater Levels is Inadequate 2. The Proposed Measurable Objectives for Groundwater Levels are Inadequate 3. The Proposed Minimum Thresholds for Groundwater Levels are Inadequate	The SMC for groundwater levels need to be viewed in conjunction with the domestic well mitigation program. MOs are intended to represent where subbasin groundwater levels will be after sustainability is achieved, which makes GSP MOs consistent with GSP requirements. See also, Multiple Comment Subject Area responses.	Leadership Counsel for Justice and Accountability

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Quality	not noted	The Draft GSP Fails to Adequately Address Groundwater Quality: 1. The Proposed Minimum Threshold for Groundwater Quality is Inadequate 2. The Proposed Undesirable Result for Groundwater Quality is Inadequate 3. The Proposed Measurable Objectives for Groundwater Quality are Inadequate	The GSP is not intended nor required to be the primary means of addressing groundwater quality issues in the subbasin. That being said, the RMS groundwater quality monitoring program in the GSP is quite robust compared to GSP requirements. See also, Multiple Comment Subject Area response.	Leadership Counsel for Justice and Accountability
Sustainable Management Criteria	not noted	The Draft GSP does not include sustainable management criteria for subsidence, citing that, to date, subsidence has not impacted critical infrastructure	While this is true, the GSP does include procedures for adaptive management for subsidence.	Leadership Counsel for Justice and Accountability
Groundwater Levels and Groundwater Quality Related to Domestic Wells	not noted	The Monitoring Network is Inadequate With Respect to Groundwater Levels and Groundwater Quality (The GSA's monitoring network does not comply with SGMA regulations, and fails to capture drinking water impacts to disadvantaged communities and domestic wells. The GSAs have therefore not considered the interests of this beneficial user group and is likely to cause a disparate impact on protected groups who are dependent on domestic wells in the GSAs area.)	Areas designated and DACs and SDACs, along with domestic wells, are addressed in detail in the GSP (for example, see Figures 3-1 and 3-2). See also, Multiple Comment Subject Area response.	Leadership Counsel for Justice and Accountability
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Current Projects and Management Actions are Inadequate	As described in Chapter 4 and 5 of the GSP, the projects and management actions included in the GSP were developed through a public process to ensure that the Subbasin meets sustainability objectives by 2040. Groundwater modeling performed for the GSP shows the Subbasin meeting sustainability objectives with the projects and management actions specified in the GSP.	Leadership Counsel for Justice and Accountability
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Clearly Commit to a Drinking Water Protection Program for the Madera Subbasin	Drinking water protection is a goal of the domestic well mitigation program (described in Appendix 3D) that is currently being developed by the Madera County GSA Ad Hoc Committee in coordination with other GSAs. This program will be further developed through a stakeholder process as the GSP moves forward with implementation.	Leadership Counsel for Justice and Accountability

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Recharge In or Near Disadvantaged Communities and Domestic Well Clusters	The timing and location of recharge activities will be assessed based on the suitability of available lands and contributions to Subbasin sustainability objectives.	Leadership Counsel for Justice and Accountability
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Establish Pumping Buffer Zones That Protect Disadvantaged Communities and Clusters of Domestic Wells	The timing and location of recharge activities or other pumping-related projects will be assessed based on the suitability of available lands and contributions to Subbasin sustainability objectives.	Leadership Counsel for Justice and Accountability
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Warning Against a Groundwater Market	In general, as described in GSP Chapter 4, the Subbasin is considering a range of demand management program options, including but not limited to a groundwater market.	Leadership Counsel for Justice and Accountability
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Multi-benefit projects	In general, as described in GSP Chapter 4, the Subbasin is considering a range of projects that provide multiple benefits.	Leadership Counsel for Justice and Accountability
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Funding of Projects and Management Actions	In general, as described in GSP Chapter 4 and 5 of the GSP, the GSAs are evaluating a range of financing options to pay for projects and management actions.	Leadership Counsel for Justice and Accountability

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Outreach (including DACs/SDACs)	not noted	Plan Implementation Section is Incomplete Because it Does not Contain Adequate Plans for Community Engagement	See Multiple Comment Subject Area Response	Leadership Counsel for Justice and Accountability
Sustainable Management Criteria; Projects and Management Actions	not noted	The Draft GSP threatens to infringe on water rights, conflicts with the reasonable and beneficial use doctrine, and conflicts with the public trust doctrine	The clearly stated goal of this GSP is "to implement a package of projects and management actions that will, by 2040, balance long-term groundwater system inflows with outflows" (Section 3.1). This GSP specifically describes Measurable Objectives (Section 3.2) to achieve this goal, as well as Minimum Thresholds (Section 3.3) to prevent the same undesirable results that underly the concerns stated in this comment.	Leadership Counsel for Justice and Accountability
Demand Management	not noted	Measurement – Section 4.4.4.3/4.2.3.3: The Draft GSPs identify several methods for measuring groundwater use that may be used in the basins. While simply identifying these tools is appropriate for the GSP, it will be useful for tools like remote-sensing measurement and analysis of ETAW to be implemented quickly so that bugs can be worked out and groundwater users can gain confidence in these systems as soon as possible.	See Multiple Comment Subject Area Response.	Madera Agricultural Water Association

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Demand Management	not noted	Rampdown – Section 4.4.4.2/4.2.3.2: The Draft GSPs identify a target for ramping down groundwater use of 2% per year for the first five years and 6% per year thereafter. While this is an appropriate goal, there are two clarifications that would be useful to include. First, it would be helpful to further explain that the annual rampdown targets apply to the Madera County GSA area as a whole and not to individual parcels or ownerships. Although the Draft GSP already indicates this is the case, highlighting this fact in the Executive Summary and in the relevant sections may help alleviate some confusion. Second, during the first few years of implementation, information and tools may not be available to provide specificity about whether these targets are being met. This is an expected challenge as not all the information needed to demonstrate these conditions is available. However, it may be useful to indicate this fact so that an inability to conclusively demonstrate planned reductions in the first year of implementation does not suggest the plan is inadequate. While actions will be taken to reduce demand immediately upon implementation of the GSPs, whether certain targets are hit may not be demonstrable for some time.	See Multiple Comment Subject Area Response.	Madera Agricultural Water Association
Demand Management	not noted	Allocations – Section 4.4.4.2/4.2.3.2: Implementing a groundwater allocation program may not be the only way to achieve the required demand reduction goals. Another option may be carefully managing access, consistent with property rights, and limiting the total available water without individual user allocations. Amending the Draft GSP to refer to “Allocation/Access” may clarify that approaches other than allocation may also be used to meet demand reduction goals.	See Multiple Comment Subject Area Response.	Madera Agricultural Water Association
Demand Management	not noted	Trading – Section 4.4.4.2/4.2.3.2: The Draft GSPs refer to a “water trading program” as a means of trading water credits. While market systems can add important flexibility to a system where available supply is limited, the details of the market system may end up being something other than a water trading program. Consider describing a “market system” generally to ensure that other types of market systems are also anticipated in the GSP.	See Multiple Comment Subject Area Response.	Madera Agricultural Water Association

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Demand Management	not noted	Easements – Section 4.4.4.2/4.2.3.2: Because the term "easements" can be understood in different ways, it would be helpful to use a more descriptive term to refer to voluntary programs to cease irrigating lands. Whether through easements or leases, irrigation abeyance agreements are a useful tool and should remain in the GSP. Find a good term to describe the range of such alternatives will help reduce confusion.	See Multiple Comment Subject Area Response.	Madera Agricultural Water Association
Demand Management	not noted	Fallowing – Section 4.4.4.2/4.2.3.2: The Draft GSPs appear to use the term fallowing to refer to ceasing to irrigate land that is currently irrigated. To the extent this term is used in the typical agronomic context, namely referring to land that has been plowed and left unseeded or is otherwise not in use, it is unnecessarily restrictive. As the GSP is implemented and land come out of irrigated agricultural production, much of that land may find other uses that do not require irrigation. Such land, for example, may be dryland farmed, transitioned to rangeland, converted to habitat, or be used for a solar array. Each of these new uses would cease irrigation, but would not technically be fallowing. Consider amending the Draft GSPs to refer to "land transition" or a similar term that indicates cessation of irrigation but anticipates a future economic use.	See Multiple Comment Subject Area Response.	Madera Agricultural Water Association
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Planning vs. Prescribing: One of the key challenges in drafting a GSP is balancing between establishing a workable long-term strategy and providing near-term certainty through specific prescriptions. The reality is that the first step in the journey to groundwater sustainability is establishing and refining critical measurement and monitoring systems. While this means that certainty about some parameters is delayed, this is a necessary foundation to ensuring a fair and workable system is ultimately implemented. The Draft GSPs appropriately manage this balance by clearly identifying what is needed, how it will be obtained, and how it will be used to implement the management actions and projects that will achieve sustainability. The specific prescriptions and implementation of the tools is rightfully left to the implementation phase of the GSP. While this does leave some uncertainty at present, it is important that the tools and	Comment noted. No response needed.	Madera Agricultural Water Association

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		prescriptions be based on the needed information and not hurriedly placed on a flawed foundation.		
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Projects and Management Actions – Section 4: The Draft GSPs identify recharge, conveyance, and (for the Madera Subbasin) storage as projects, and demand management as a management action. These tools will be utilized to bring the basins into balance over the next twenty years. While these projects and management actions may be implemented by the GSAs, it would be useful to clarify in the Draft GSPs how these projects and management actions may be also implemented by other entities or individuals. This would allow others, in coordination with the GSAs and consistent with the GSPs, to implement projects and management actions that move us toward sustainability. In some cases, these entities may be able to implement these projects or management actions more quickly and efficiently than the GSAs.	Added text to GSP to indicate that entities or individuals can also implement projects and management actions.	Madera Agricultural Water Association
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Recharge – Section 2.2.3.3 & Section 4 (Table 4-2): In discussing groundwater recharge, the Draft GSPs appropriately focus on Flood-MAR, recharge basins, and in lieu recharge. While these surface water diversion projects should remain the priority of the GSP, it may be useful for the GSP to anticipate inclusion of other types of projects and management actions that may not divert surface water but may contribute to the groundwater replenishment portfolio. Increasing consideration and study is being given to forest management, tillage practices, stormwater management, and other management practices that may increase the amount of precipitation infiltrating into the groundwater system. While these management practices are not sufficiently developed to be included in the projected budget, it would be helpful if the GSP also referenced groundwater replenishment practices that do not rely on diverted surface water.	Added text or emphasis that other projects may be considered in the future.	Madera Agricultural Water Association

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Water Budget	not noted	ETAW vs. AW: In discussing the Draft GSPs with stakeholders there is some confusion about the difference between the Evapotranspiration of Applied Water (ETAW) and Applied Water (AW). Although the Draft GSPs are not deficient in their explanation of this distinction, additional clarification, perhaps in the Executive Summary, would help the reader understand the difference between these terms and how they are used in the Draft GSPs.	Explanation added to GSP executive summary and water budget section.	Madera Agricultural Water Association
Subsurface Inflows	not noted	The Madera Subbasin draft GSP indicates there is approximately 69,400 AF of historical and current inflow with no project actions, the amount of inflow increases to 108,200 in 2040, which the Madera Subbasin identifies as their sustainability goal. With projects implemented and completed, the inflow is reduced to approximately 21,400 AF between 2040 and 2090. The GSP demonstrates that the Madera Subbasin will not achieve the sustainable yield or groundwater sustainability within SGMA's mandatory 20-year period. [Annual overdraft deficit is miscalculated when accounting for inflows, and GSP fails to address how the Subbasin will mitigate the overdraft deficit. The Madera Subbasin GSP does mention demand management beginning in year one, but details are being finalized. This could result in demand reduction of about 2%, but not enough to cover the total boundary flow.] The GSP infers the Madera Subbasin GSAs encroach on approximately 69,000 AF of water per year within NKGSA's boundary. [NKGSA intends to capture and recapture water that the Madera Subbasin indicates is flowing into the Madera Subbasin.]	The water balance and required projects/management actions for Madera Subbasin do not rely upon net subsurface inflows to reach sustainability. The GSP describes in detail how Madera Subbasin will achieve sustainability strictly based on changes to vertical inflows and outflows (i.e., addressing net recharge or shortage). Planned refinements of the model in 2025 will likely result in more accurate absolute values of net subsurface inflow. At this time, the magnitude of current model calculated inflows is likely conservative (i.e., overestimated), and it is more useful to utilize model results to understand that significant reductions in subsurface inflow are expected under sustainable subbasin conditions after 2040. See also, Multiple Comment Subject Area response.	North Kings GSA

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Water Budget	not noted	After attending the confined animal Ad Hoc Committee on October 3, 2019, I was concerned that the calculation of Dairy water use was not well developed in the Madera and Chowchilla Basin GSPs. Provost & Pritchard Consulting Group has been working on understanding Dairy use of groundwater for several years. We would like to share our methodology with the County to demonstrate how the consumptive use of dairies has been handled in the past and in other GSPs. Dairy water budgeting parameters, calculations, and data sources have been based on field calculations, canal turnout and water well measurements, annual dairy reports and milk production. Generally, about 9 gallons per cow each day is exported from the dairy as milk and another 7 to 10 is excreted as urine, sweat and solids; equating to 0.01 to 0.02 Acre Foot (AF) per cow each year. Wash water varies by operation and is reported in dairy reports as outflow to lagoons; generally, about 72 gallons/cow each day which equates to about 0.08 AF per cow each year. The total water used in the dairy facility ranges from 80 to 90 gallons per cow each day, or 0.09 to 0.1 AF/cow each year. [See letter for detailed methodology]	Respectfully, we do not see anything in the Provost & Pritchard (P&P) memo that is different than we've discussed and considered in development of the Madera Subbasin GSP. We have used ~70 gallons/cow in other work, so their value is consistent with our expectations. Dairy water is included in the Madera Subbasin GSP "Land Use System" agricultural land water balance. Almost all of the dairy water ends up being applied to crops (89% in the P&P memo water budget). Methodologies to estimate applied water requirements based on ET analysis accommodate the source(s) of water. If water used by a dairy is pumped, then the ET method will calculate the correct groundwater pumping. See clarifications in: Section 2.1.1 and Section 2.2.3.3, under "Land Use Data".	Provost & Pritchard
GW model	not noted	The GSP relies too heavily on a numerical groundwater model that has not been calibrated and therefore does not accurately reflect boundary conditions with the Delta Mendota Subbasin. In addition, the numerical model used has projected water levels to decline significantly in the Delta-Mendota Subbasin by the year 2040. This is contradictory to SJREC GSP which will maintain historic water levels through 2040 in order to maintain sustainability.	The numerical groundwater model was extensively calibrated as described in the groundwater model documentation in Appendix 6E. The model does not indicate significant declines in groundwater levels in the Delta-Mendota Subbasin by the year 2040. We note that this comment makes reference to the SJREC GSP, which has not yet been made available for public review.	San Joaquin River Exchange Contractors GSA
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	The Madera GSP should be updated to mitigate land subsidence in the areas closest to the Delta-Mendota Subbasin. A successful mitigation program is being implemented by the Triangle T Water District in cooperation with the member agencies of the SJREC GSA. Other areas in western Madera County should be held to a similar standard and immediately reduce extractions from the lower aquifer at or below the sustainable yield.	Demand management program is planned to begin with GSP implementation, extent of the program is designed to remain within the subbasins sustainable yield, which is defined based on the sustainability goals of the Subbasin that includes land subsidence.	San Joaquin River Exchange Contractors GSA

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Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	The GSP for the Exchange Contractor GSP calls for keeping water levels in the future from declining below 2015 levels. In contrast, the GSP for the Madera Subbasin allows continuing water level declines through almost 2040. This will result in more groundwater outflow from the Delta Mendota Subbasin into the Madera Subbasin which will negatively impact our subbasin.	Review of detailed groundwater modeling results indicates that net subsurface inflows will decrease in both the Implementation Period and the following Sustainability Period due to implementation of projects and management actions in Madera Subbasin.	San Joaquin River Exchange Contractors GSA
Water Budget	not noted	For the storage change calculations in the unconfined or upper aquifer, instead of over reliance on the water budget, a better method is evaluating unconfined water-level changes and specific yields. For the confined or lower aquifer, compaction of fine-grained layers, as reflected by the amount of land subsidence, is a better approach.	The GSP includes calculations of groundwater storage change using multiple methods, including by specific yields and water level changes.	San Joaquin River Exchange Contractors GSA
Subsurface Inflows	not noted	The groundwater flow estimates were developed from the groundwater model, which is not the preferred approach. This approach relies on values for a multitude of parameters, some of which are poorly known. The preferred approach is to use suitable water-level elevation maps and transmissivity values from pump tests for both the upper and lower aquifer.	There are multiple methods of calculating groundwater flow that may be considered valid for a given subbasin. DWR has recommended that a groundwater model be used for evaluating sustainability, groundwater flows and other related parameters of interest. See also Multiple Comment Subject Area response.	San Joaquin River Exchange Contractors GSA
Subsidence	not noted	The plan asserts in Section 3.2.3 and 3.3.3.1 that "No significant impacts to infrastructure has been noted in the Plan areas…" and therefore the Land Subsidence analysis and proposed actions were minimized. However, there was no discussion of the subsidence along the Eastside Bypass which the California Department of Water Resources has determined the flood carrying capacity has been significantly decreased by about 50% in the area near the Fresno River, nor the collapsed wells due to subsidence in the vicinity due to subsidence.	It is not clear if the comment is referencing an area or impacts within Madera Subbasin. It appears that the referenced infrastructure impacts occurred outside of Madera Subbasin. See also Multiple Comment Subject Area response.	San Joaquin River Exchange Contractors GSA

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Subsurface Inflows	not noted	The "net groundwater flow" (one value) should be divided into flow at each of the three subbasin boundaries, also between the upper and lower aquifers in each case. As presented, one cannot readily check the groundwater flow value. There is also downward groundwater flow throughout most of the subbasin (from the upper aquifer to the lower aquifer). This also needs to be determined but wasn't discussed in the plan.	These values are quantified, but they are not required. Given the uncertainty in the calculation of subsurface groundwater flows (regardless of calculation method), the absolute value of groundwater flows to/from each subbasin is of limited value. Rather the relative change in groundwater flows across subbasin boundaries under future sustainable basin conditions is more useful to evaluate. See also Multiple Comment Subject Area response.	San Joaquin River Exchange Contractors GSA
Groundwater Quality	not noted	This GSP did not include a regional water quality concern of the northeasterly flow of high TDS groundwater associated with overdraft in the Madera Subbasin. Declining water levels in the upper aquifer of the Madera Subbasin has increased the migration of high TDS groundwater into the Delta-Mendota Subbasin.	The comment raises concerns about flow of high TDS groundwater into Delta-Mendota Subbasin due to historical overdraft in Madera Subbasin, but provides no evidence or analysis to support the comment. It is not clear how Madera Subbasin groundwater levels are impacting flow of high TDS groundwater into Delta-Mendota Subbasin that is occurring at a location far removed from the Madera Subbasin/Delta-Mendota Subbasin boundary. Furthermore, the natural flow of groundwater under pre-development conditions is similar to the current groundwater flow direction in the referenced high TDS area. The source of this TDS water is likely naturally occurring, and the movement of this groundwater from its origin towards the northeast is the natural flow direction towards the river independent of Madera Subbasin groundwater pumping. Additional data/analyses (such as development of a numerical groundwater flow model) would need to be developed and presented to demonstrate how/if this natural flow of groundwater is significantly influenced by groundwater pumping in the distant Madera Subbasin.	San Joaquin River Exchange Contractors GSA

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Subsurface Inflows/Groundwater quality/Subsidence	not noted	Your plan sets the minimum thresholds for Chronic Lowering of Groundwater Levels, and provides for the continued lowering of groundwater levels through almost 2040. As defined, this poses an immediate risk to the SJREC GSA and the Delta-Mendota Subbasin. Intentional decline in water levels in the Madera Subbasin will directly impact the Delta-Mendota Subbasins infrastructure, water supply, and for the following sustainability indicators: a) chronic lowering of groundwater levels, b) reduction of groundwater storage, c) land subsidence, and d) degraded water quality. a. Chronic lowering of groundwater levels: the SJREC GSP is managing groundwater levels to maintain historic levels. If the Madera Subbasin intends to lower the water levels across the subbasin boundary, inherently more groundwater will flow out of the Delta-Mendota Subbasin inducing a groundwater imbalance and overdraft in the Delta-Mendota Basin. b. Reduction of groundwater storage: As described above lowering water levels will increase the lateral groundwater outflow from the Delta-Mendota Subbasin. The results of increased outflow will result in a reduction in groundwater storage in the Delta-Mendota Subbasin. c. Land subsidence: this GSP plans to use water levels as a proxy for land subsidence. It should be noted that the proposed water level minimum thresholds will have very significant impacts to the Delta-Mendota Subbasin d. Degraded water quality: Lowering water levels in the Madera Subbasin will exacerbate the problem of migrating high TDS water into the SJREC GSA. This problem is not discussed in the GSP and should be evaluated to ensure regional sustainability.	It is not clear how Madera Subbasin groundwater level MTs pose an immediate risk to Delta-Mendota Subbasin, as the subbasin is intended to be managed in the future to avoid hitting MTs. There is no "intentional decline" in water levels within Madera Subbasin; rather, a modest temporary decline in water levels is anticipated within Madera Subbasin (given the time needed to implement projects and management actions) that is not expected to significantly impact groundwater levels in Delta-Mendota Subbasin. We anticipate only very modest impacts on net subsurface inflows during the Implementation Period, that will evolve into significantly reduced net subsurface net inflows during the sustainability period. The Delta-Mendota Subbasin water budget and sustainability will be enhanced by reduced net outflows to Madera Subbasin related to implementation of the Madera Subbasin GSP. Also see multiple comment subject area responses.	San Joaquin River Exchange Contractors GSA
Subsurface Inflows	not noted	There has consistently been groundwater flows in both the upper and lower aquifers from the Delta-Mendota Subbasin to the Madera Subbasin. Based on natural (pre-pumping) conditions, all of these flows have been induced by pumping in the Madera Subbasin.	While SGMA does not require restoration of pre-2015 groundwater conditions, analyses conducted for the Madera GSP indicate significant reductions in net subsurface inflow as the subbasin moves toward and achieves sustainability. Also see multiple comment subject area responses.	San Joaquin River Exchange Contractors GSA

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-1	The GSP states "The Madera Subbasin … contains no considerable state land or federal land" and provides a brief description of these lands as a footnote. Other than State preserves and parks, protected lands that could contain aquatic, riparian, and other potentially groundwater-dependent habitat are not identified. Please identify all state park land, wildlife preserves, wetlands, open space, mitigation areas, and local parks with potentially groundwater-connected aquatic resources and habitat.	The identification of potential GDEs is included in the GSP regardless of land ownership or management.	The Nature Conservancy
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-9 to 2-11	The GSP states (p. 2-10): "Limitations on surface water deliveries will limit operational flexibility by reducing surface water supplies available for conjunctive use programs." The limitations are not defined and warrant further description, either in this section or in Section 2.1.2.4, to more specifically identify potential effects on the flows of interconnected surface waters and potential stress to the groundwater system. Please ensure that description of the surface water monitoring system clarifies the limitations and please specify whether these limitations could affect the surface water conditions of any GDEs or instream habitat in ISWs that may be present in the area.	Comment noted.	The Nature Conservancy
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-9 to 2-11	This section describes the types of monitoring performed by federal, state and local entities of surface water inflows and outflows. The monitoring stations for flows are listed in Table 2-3 and other recording stations for flow or irrigation releases are listed in Table 2-4. Please explain the relationship of existing stream flow monitoring to the protection of ISWs and GDEs.	Added explanation to Section 2.1.2.2: "These monitoring stations are important for monitoring surface water available to interconnected surface water (ISW) habitats and groundwater dependent ecosystems (GDEs)."	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-14 to 2-15	The Madera County General Plan includes restrictions on development in "areas with sensitive environmental resources" (Policy 1.A.5). This section should include a discussion of General Plan goals and policies related to the protection and management of GDEs and aquatic resources that could be affected by groundwater withdrawals. Please include a discussion of how implementation of the GSP may affect and be coordinated with General Plan policies and procedures regarding the protection of wetlands, aquatic resources and other GDEs and ISWs.	Added description to Section 2.1.3.1	The Nature Conservancy
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-14 to 2-15	This section should identify Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the Subbasin and if they are associated with critical, GDE or ISW habitats. Please identify all relevant HCPs and NCCPs within the Subbasin and address how GSP implementation will coordinate with the goals of these HCPs or NCCPs.	Added description to Section 2.1.2.1. The PG&E San Joaquin Valley Operations & Maintenance Habitat Conservation Plan overlaps with Madera Subbasin. No NCCPs overlap with the Madera Subbasin (https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=68626&inline).	The Nature Conservancy
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-14 to 2-15	Please refer to the Critical Species Lookbook (https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/) to review and discuss the potential groundwater reliance of critical species in the basin. Please include a discussion regarding the management of critical habitat for these aquatic species and its relationship to the GSP.	See the discussion of the Potential GDE Units in Section 2.2.2.6 for information on special status species. Also see the discussion of the GDE Monitoring Program in section 3.5.2.5 and the GDE Appendix 2.B for more information on special species and management of critical habitat.	The Nature Conservancy
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-15 to 2-16	Madera County has an online well permitting system that includes agricultural wells, observation/monitoring wells, community water supply wells, and individual domestic water supply wells. Please include a discussion of how future well permitting will be coordinated with the GSP to assure achievement of the Plan's sustainability goals.	Added description to Section 2.1.3.4	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8	2-15 to 2-16	The State Third Appellate District recently found that Counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near streams with public trust uses (ELF vs. SWRCB and Siskiyou County, No. C083239). Compliance of well permitting programs with this requirement should be stated in the GSP.	Added description to Section 2.1.3.4	The Nature Conservancy
Hydrogeologic Conceptual Model (23 CCR §354.14)	2-27	In the Madera Subbasin, the base of the usable aquifer corresponds with the base of fresh water, defined as having "total dissolved solids of less than 1,000 milligrams/liter (mg/L) or conductivity of less than 1,600 µmhos/cm." The text states, "In general, the aquifer base is controlled mostly by the base of freshwater provided in Figure 2-18 except in the far eastern portions of the subbasin" where the depth of the basement complex is shallower. As noted on page 9 of DWR's Hydrogeologic Conceptual Model BMP (https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf) "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions. Thus, groundwater extraction well depth data should also be included in the determination of the basin bottom. Properly defining the bottom of the basin will prevent the possibility of extractors with wells deeper than the basin boundary from claiming exemption from SGMA due to their well residing outside the vertical extent of the basin boundary.	Additional text was added to the GSP in response to this comment.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Hydrogeologic Conceptual Model (23 CCR §354.14)	2-27	The cross sections in Chapter 2 (Figures 2-24 through 2-34) clearly show the base of freshwater and the top of the basement rocks. However, they do not include a graphical representation of the manner in which shallow groundwater may interact with ISWs or GDEs that would allow the reader to understand this topic. Please include an example near-surface cross section that depicts the conceptual understanding of shallow or perched stream, riparian and other GDE interactions at different locations.	The referenced cross sections do show recent groundwater levels for the Upper Aquifer, which demonstrate a clear lack of surface water - groundwater connection throughout the subbasin. The depth to shallow groundwater, including the perched/mounded shallow groundwater levels along the San Joaquin River, are further illustrated in Figures 2-71 and 2-72. Regional aquifer and perched groundwater levels are discussed in detail in Section 2.2.2.1 on pages 2-32 through 2-35. Surface water - groundwater interaction and GDEs are discussed in Sections 2.2.2.5 and 2.2.2.6 on pages 2-40 through 2-42. Considerable discussion and graphics have been devoted to this topic in the GSP. Potential for interconnection between surface water and groundwater will be further evaluated for the 5-year update report due in 2025 using data collected over the next five years.	The Nature Conservancy
Hydrogeologic Conceptual Model (23 CCR §354.14)	2-27	The extent and depth of the Corcoran Clay layer is shown in Figure 2-15. "Where the Corcoran Clay aquitard exists, the aquifer system is subdivided into an upper unconfined aquifer above the Corcoran Clay and a lower confined aquifer below the Corcoran Clay. In the central and eastern portions of the subbasin where the Corcoran Clay does not exist, the aquifer system is generally considered to be semiconfined with discontinuous clay layers interspersed with more permeable coarse-grained units" (p. 2-29). Please confirm that only wells with screened intervals in the unconfined aquifer are being used to compare with surface water and to identify and confirm potential GDEs.	The analysis of interconnected surface water and GDEs was based upon Upper Aquifer well data, including SJRRP monitoring well data.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems	2-42 to 2-48, and App 2.B	The GSP states (p. 2-42): "GDEs may also occur in areas where regional groundwater levels are deeper than 30 feet but shallower perched groundwater exists atop bedrock or another type of aquitard; however, these types of GDEs would generally not be impacted by pumping of groundwater supply wells." The GSP discounts the perched water zones as derived from surface water, and therefore they were not considered in evaluation of GDEs. The GSP should provide clear evidence of hydraulic disconnection where shallow groundwater is considered perched or identify hydraulic connection as a data gap. In addition, the GSP should consider perched water as a shallow aquifer, because even though it may not be pumped at present, it could be in the future. Groundwater in the perched water zones may provide water supply to GDEs and ISWs. Please explicitly enumerate the principal aquifer(s) and intervening aquitards, their relationship to each other, and their role in supplying groundwater to all beneficial uses and users of groundwater (including environmental).	Perched groundwater is discussed in the GSP, and available data clearly show the lack of hydraulic connection between perched zones and the regional aquifer where groundwater pumping occurs. It is not reasonable to conclude that perched zones will be pumped in the future for water supply, as there is insufficient aquifer thickness and pumping capacity in perched aquifers.	The Nature Conservancy
Groundwater Dependent Ecosystems	2-42 to 2-48, and App 2.B	The text states (p. 2-42): "A DTW cutoff of 30 feet was used in the initial screening of potential GDEs. The use of a 30-foot DTW criterion to identify potential GDEs is based on reported maximum rooting depths of California phreatophytes and is consistent with guidance provided by The Nature Conservancy (Rohde et al. 2018) for identifying potential GDEs." We have the following comments regarding this sentence and on the methodology for identifying GDEs in the Subbasin. [see bulleted list in next 4 entries for details]	See Multiple Comment Subject Area Response. A DTW cutoff of 30 feet was used as one of the primary criteria in the initial screening of potential GDEs. It was not used as a stand-alone criterion for exclusion of potential GDEs. Edits made in Section 2.2.2.6 to further explain and clarify.	The Nature Conservancy
Groundwater Dependent Ecosystems	2-42 to 2-48, and App 2.B	[Continued from above] o 30-ft criteria from TNC Guidance: In TNC's GDE Guidance, the depth criterion of 30 feet is presented as a criterion for inclusion, not a standalone criterion for exclusion. In other words, if groundwater is within 30 feet of the ground surface, then a GDE can be identified. If it is not, then further analysis must be conducted (see Appendix III of the GDE Guidance, Worksheet 1, for other indicators of GDEs).	See Multiple Comment Subject Area Response. Where DTW was greater than 30 feet, other criteria such as river hydrology (flow permanence and gaining vs. losing reaches) and dominant vegetation were used to determine whether potential GDEs should be considered as final GDEs. Screening of potential GDEs also included field evaluation of potential GDEs where initial uncertainty was high. Edits made in Section 2.2.2.6 to further explain and clarify.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems	2-42 to 2-48, and App 2.B	[Continued from above] o 30-ft as maximum rooting depths of California phreatophytes: Please use care when considering rooting depths of vegetation. While Valley Oak (Quercus lobata) have been observed to have a max rooting depth of ~24 feet (https://groundwaterresourcehub.org/gde-tools/gde-rooting-depths-database-for-gdes/), rooting depths are likely to spatially vary based on the local hydrologic conditions available to the plant. Also, max rooting depths do not take capillary action into consideration, which will vary with soil type and is an important consideration since woody phreatophytes generally do not like to have their roots submerged in groundwater for extended periods of time, and hence can access groundwater at deeper depths. In addition, while it is likely to be true that shallow water availability is necessary to support the recruitment of saplings, hydraulic lift of groundwater to shallow depths has been observed in Quercus spp.	Comment noted. Our analysis considered all available data on vegetation rooting depth and the importance of capillary action, as well as recent published research indicating variability in rooting depth according to local topography and groundwater conditions.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems	2-42 to 2-48, and App 2.B	[Continued from above] o Use of depth to water maps from 2014 and 2016: ▪ 2016 is after the SGMA benchmark date of January 1, 2015. Please rely on groundwater condition data prior to the SGMA benchmark date. ▪ We highly recommend using depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. Please refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network. While depth to groundwater levels within 30 feet are generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, it is highly advised that seasonal and interannual groundwater fluctuations in the groundwater regime are taken into consideration. Utilizing groundwater data from one or two points in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Based on a study we recently submitted to Frontiers in Environmental Science Journal, we've observed riparian forests along the Cosumnes River to experience a range in groundwater levels between 1.5 and 75 feet over seasonal and interannual timescales. Seasonal fluctuations in the regional water table can support perched groundwater near an intermittent river that seasonally runs dry due to large seasonal fluctuations in the regional water table. While perched groundwater itself cannot directly be managed due to its position in the vadose zone, the water table position within the regional aquifer (via pumping rate restrictions, restricted pumping at certain depths, restricted pumping around GDEs, well density rules) and its interactions with surface water (e.g., timing and duration) can be managed to prevent adverse impacts to ecosystems due to changes in groundwater quality and quantity under SGMA.	See Multiple Comment Subject Area Response. The 2014 and 2016 DTW data were the most accurate and recent DTW data available for the Madera Subbasin. While the 2016 data represent conditions after the 2015 SGMA baseline, the use of shallow groundwater data from both years was deemed appropriate because it provided a more conservative (i.e., more inclusive) indicator of potential GDEs than the use of a data from a single year. Omitting 2016 data as suggested by TNC would reduce the number and extent of potential GDEs. Edits made in Section 2.2.2.6 to justify the use of both 2014 and 2016 data.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems	2-42 to 2-48, and App 2.B	[Continued from above] Please provide more details on how depth to groundwater contour maps were developed (Figures 2-70 and 2-71): ▪ Are the wells used for interpolating depth to groundwater sufficiently close (<5km) to NC Dataset polygons to reflect local conditions relevant to ecosystems? ▪ Are the wells used for interpolating depth to groundwater screened within the surficial unconfined aquifer and capable of measuring the true water table? ▪ Is depth to groundwater contoured using groundwater elevations at monitoring wells to get groundwater elevation contours across the landscape? This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)5 to estimate depth-to-groundwater contours across the landscape. This will provide much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make. It is better to assume that water surface elevations are constant in between wells, and then calculate depth to groundwater using a DEM of the land surface to contour depth to groundwater.	See Multiple Comment Subject Area Response	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Identifying and Mapping GDEs (23 CCR §354.16)	2-42 to 2-48, and App 2.B	Please further explain how NC Dataset polygons adjacent to the San Joaquin River were retained or removed as potential GDEs. On Appendix 2.B, Figure 1 polygons are shown as removed based on depth to groundwater greater than 30 feet, but the groundwater depth contours (Figures 2-71 and 2-72) do not show enough detail to make this distinction and subsequent determination. Please refer to specific well hydrographs that were used to analyze particular reaches of the San Joaquin River.	As described in Appendix 2.B, polygons classified as GDE indicators (iGDEs) in DWR's Natural Communities Commonly Associated with Groundwater dataset (NC Dataset) were evaluated for inclusion as GDEs based on multiple factors; primarily vegetation type and maximum rooting depth, surface water hydrology, and depth to groundwater (DTW). Potential GDEs were retained for further analysis if the underlying DTW in either winter/spring 2014 or winter/spring 2016 was equal to or shallower than 30 feet, which corresponds with the maximum rooting depth of California phreatophytes. Where DTW was greater than 30 feet, other criteria, primarily river hydrology, were used to determine whether potential GDEs should be subject to further analysis. Some iGDE polygons along the San Joaquin River were removed based on evidence that the San Joaquin River in the subbasin is in a losing hydrological condition (i.e., loses water to the shallow groundwater system) and DTW greater than 30 feet. Hydrographs for wells MCE RMS-9, MID RMS-17, and MCS RMS-5 are shown in Appendix 2.B and generally provide evidence supporting the inclusion of iGDE polygons near these locations as potential GDEs, despite the conclusion that infiltration from the San Joaquin River very likely provides a substantial contribution to the shallow groundwater in these areas.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Identifying and Mapping GDEs (23 CCR §354.16)	2-42 to 2-48, and App 2.B	The GSP states (p. 2-45): "The adjacent San Joaquin River contains Essential Fish Habitat (EFH) for the endangered Chinook salmon which is partially dependent on riparian inputs to provide important salmon habitat elements including shade, overhead cover, nutrients, and woody material for instream cover and habitat complexity," and further states (p. 25 of Appendix 2.B): "the riparian vegetation community of the San Joaquin River Riparian Potential GDE Unit fulfills several essential ecosystem functions or provides important habitat elements, such as large wood and riparian shade, on which both semiaquatic species of the GDE unit and aquatic species of the San Joaquin River depend for completing essential life behaviors". Please consider retaining all NC Dataset polygons adjacent to the San Joaquin River due to the essential ecosystem function that the riparian vegetation community performs for the critical habitat of the Chinook salmon in the San Joaquin River.	We acknowledge the important role of riparian vegetation along the San Joaquin River in providing habitat elements and ecosystem functions for special-status salmonids and other aquatic and riparian species. As such, the riparian vegetation community along the San Joaquin River should be monitored, protected, and enhanced to the maximum extent possible. NC Dataset polygons (iGDE polygons) were retained if there was evidence that they are connected to groundwater. Because evidence indicates that much of the riparian vegetation is reliant on infiltration of surface water from the San Joaquin River, not all riparian vegetation iGDE polygons were retained as GDEs for further analysis. While groundwater pumping from the regional aquifer is unlikely to affect riparian vegetation along the San Joaquin River, monitoring to evaluate its ecological condition is included in the GSP. As described in GSP Section 3.5.2.5, groundwater level monitoring being conducted for the overall GSP includes three RMS wells adjacent to the San Joaquin River Riparian potential GDE Unit along the San Joaquin River in the southern Plan area, and one RMS well near the Madera Canal Equalization Reservoir in close proximity to the Fresno River Riparian GDE Unit. Reconnaissance-level biological surveys were conducted in May 2019 and additional monitoring will be conducted every five years to document ecological condition of each GDE unit, including the Sumner Hill potential GDE Unit.	The Nature Conservancy
Identifying and Mapping GDEs (23 CCR §354.16)	2-42 to 2-48, and App 2.B	As shown on Appendix 2.B, Figure 1, it appears that there is one potential GDE unit in light green on the far western border of the Subbasin. Please describe further and clarify if this is indeed a polygon from the NC Dataset that was kept as a potential GDE.	There is no potential GDE unit in light green ("kept") at that location on Appendix 2.B, Figure 1. The shading at that location is light blue, indicating DTW greater than 30 feet in either 2014 or 2016. This has been verified using the source data and GIS-derived mapping layer.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Identifying and Mapping GDEs (23 CCR §354.16)	2-42 to 2-48, and App 2.B	TNC acknowledges and appreciates the comprehensive evaluation of the four GDE Units identified in the GSP following our guidance, including analyzing hydrologic conditions, ecological conditions, providing an inventory of species and ecological value, along with concurrent field studies and reconnaissance. We also appreciate the use of TNC's GDE Pulse to examine NDVI and NDMI trend data for the GDE polygons within the GDE Units.	Comment noted.	The Nature Conservancy
Identifying and Mapping GDEs (23 CCR §354.16)	2-42 to 2-48, and App 2.B	The Sumner Hill GDE Unit is located on an unnamed tributary of the San Joaquin River and includes riparian vegetation and a freshwater wetland. The source of water to the wetland is unknown and may be an intermittent tributary to the San Joaquin River. This potential GDE was considered to have a high ecological value because it supports special status species and habitat. The GSP states (p. 2-48): "Reconnaissance level biological assessments, aerial photograph analysis, and NDVI/NDMI data indicate adverse impacts are not likely occurring in the Sumner Hill Potential GDE Unit (Appendix 2.B)." Please obtain groundwater data before concluding that there are no adverse impacts to the GDE Unit and make plans to address this data gap in the Monitoring section of the GSP.	Lack of shallow groundwater data near the Sumner Hill Potential GDE Unit is acknowledged as a data gap in the GSP. While the GSP does not include installation of a monitoring well in this GDE unit, the GSP's GDE Monitoring Program (Section 3.5.2.3) includes monitoring every five years to document the ecological condition of the unit. Surface geology maps indicates this Potential GDE Unit essentially overlies bedrock or is an area with very shallow depths to bedrock, which likely accounts for the potential presence of shallow groundwater in this drainage.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Surface Water-Groundwater Interactions	2-40	The text states (p. 2-40): "review of historical regional aquifer groundwater levels compared to stream thalweg (deepest portion of stream channel) elevations conducted for this study indicate that surface water – groundwater interactions are not a significant issue (i.e., regional groundwater levels are relatively far below creek thalweg elevations) along Berenda Creek, Dry Creek, the Fresno River, and Cottonwood Creek in Madera Subbasin." Please note that ISWs are best estimated by first determining which reaches are completely disconnected from groundwater. This approach would involve comparing groundwater elevations with a land surface Digital Elevation Model that could identify which surface waters have groundwater consistently below surface water features, such that an unsaturated zone would separate surface water from groundwater. Groundwater elevations that are always deeper than 50 feet below the land surface can be used to identify the above ground reaches as disconnected surface waters. As shown in Figures 2-71 and 2-72, depth to groundwater is greater than 100 feet in 2014 and 2016 across much of the Subbasin. However, areas in upstream reaches of the Fresno River and San Joaquin River show depths to groundwater within 20-30 feet in 2014. Please provide further evidence, such as cross-sections or corresponding hydrographs, to show the relationship between the river channel and the depth to groundwater at wells near the Fresno River and San Joaquin river to improve ISW mapping. Where data gaps exist regarding the existence of ISWs, make plans to reconcile them in the Monitoring section.	See Multiple Comment Subject Area Response	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Surface Water-Groundwater Interactions	2-40	Figures 2-71 and 2-72 present depth to shallow groundwater for 2014 and 2016. Please further describe how these figures were developed, specifically noting the following best practices for developing depth to groundwater contours presented in Attachment D. Ensure that the first step is contouring groundwater elevations, and the subtracting this layer from land surface elevations from a DEM to estimate depth to groundwater contours across the landscape. This will provide much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make.	See Multiple Comment Subject Area Response	The Nature Conservancy
Surface Water-Groundwater Interactions	2-40	The regulations [23 CCR §351(o)] define interconnected surface waters (ISW) as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted". "At any point" has both a spatial and temporal component. Even short durations of interconnections of groundwater and surface water can be crucial for surface water flow and supporting environmental users of groundwater and surface water. ISWs can be either gaining or losing. The defining feature of disconnected surface waters is that groundwater is consistently below surface water features such that an unsaturated zone always separates surface water from groundwater, not whether the reach is gaining or losing. To improve ISW mapping, please reconcile data gaps (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP.	See Multiple Comment Subject Area Response	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Surface Water-Groundwater Interactions	2-40	The GSP states (p. 2-40): "It is likely that seepage from the San Joaquin River is the source of water that combined with the presence of shallow clay layers that serves to maintain shallow groundwater levels at these locations." Please provide estimates of current and historical surface water depletions for or the San Joaquin River, quantified and described by reach, season, and water year type. Provide a discussion of the expected effect of the SJRRP on flows, GDEs and ISWs along the San Joaquin River.	See Multiple Comment Subject Area Response	The Nature Conservancy
Measurable Objectives (23 CCR §354.30)	3-5	The description of Measurable Objectives (in this section of the text, or Appendix 2.B) does not explain how GDEs were considered. Please include GDEs in this section and explain how the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.	Several RMS locations specific to identified GDE Units were assigned MO/MT and included in the overall RMS network. Thus, GDEs were specifically and directly incorporated in the RMS network being used to demonstrate subbasin sustainability.	The Nature Conservancy
Measurable Objectives (23 CCR §354.30)	3-5	The Sumner Hill and Friant Riparian GDE Units do not have nearby monitoring wells that monitor hydrologic conditions. Please specifically address the data gap with respect to these GDE Units or refer to a later section of the GSP.	There is extensive discussion in the GSP regarding groundwater levels and GDEs, and specific RMS sites were selected to represent GDEs. See response to previous comment on Sumner Hill Potential GDE Unit above. See Multiple Comment Subject Area Response Section regarding ISW.	The Nature Conservancy
Measurable Objectives (23 CCR §354.30)	3-12	The description of Measurable Objectives does not consider how water quality needs of GDEs were considered. Please include a discussion about GDEs and water quality and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.	As stated in the GSP, it is expected that drinking water standards are also protective of GDEs.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Surface Water-Groundwater Interactions	3-15	The GSP fails to establish measurable objectives or minimum thresholds for this sustainability indicator. The GSP states (p. 3-15): "Thus, the connection between regional groundwater and streams was broken prior to 2015, and the surface water depletion sustainability criteria is not applicable to the Plan area." However, the existence of riparian GDEs along the streams in the basin has been identified in Appendix 2.B, and their connection to groundwater is assumed. Their occurrence in the riparian zone means that these GDEs should be considered a beneficial user of groundwater that could be affected by chronic groundwater level decline as discussed above, as well as beneficial users of surface water that could be depleted by groundwater extraction. A more detailed discussion of the known facts regarding these surface-groundwater interactions in the riparian zone should be provided. In addition, a more detailed discussion regarding specific data gaps should also be included.	See Multiple Comment Subject Area response.	The Nature Conservancy
Measurable Objectives (23 CCR §354.30)	3-15	There is a need to evaluate and discuss potential effects on beneficial uses of surface and groundwater. This is necessary, at a minimum, so that the nature of the data gaps can be understood. In addition, the applicable state, federal and local standards for the protection of aquatic, riparian and other protected habitats should be discussed. Please refer to Attachment C for a list of freshwater species in Madera Subbasin that may be exist within ISWs. We recommend that after identifying which freshwater species exist in your basin, especially federal and state listed species, that you contact staff at the Department of Fish and Wildlife (DFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the freshwater species list. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs. Please refer to the Critical Species Lookbook to review and discuss the potential groundwater reliance of critical species in the basin.	Edits made in Section 3.2.5 referring to Appendix 2.B.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Measurable Objectives (23 CCR §354.30)	3-15	The SJRRP identifies instream flow needs for salmon in multiple reaches which form the southern border of the Subbasin (http://www.restoresjr.net/about/overviewmap/). Please include instream flow requirements in this section and set measurable objectives and interim milestones that will help achieve the sustainability goal as it pertains to the environment	The ecological basis of the SJRRP's restoration flow schedule is described in the Fisheries Management Plan (Exhibit E: Ecological Goals of the Restoration Flows, available at: http://www.restoresjr.net/?wpfb_dl=861). The Ecological Goals document describes the flow-related needs of each Chinook salmon life stage as well as riparian vegetation recruitment and maintenance and other functions. We are not aware of any quantitative instream flow needs for salmon that have been established or documented by the SJRRP. The GSP has been revised in Section 3.2.5 to include discussion of potential adverse effects on instream flow, aquatic species, and riparian vegetation that could result from depletion of surface water.	The Nature Conservancy
Minimum Thresholds (23 CCR §354.28)	3-18 to 3-26	For the discussion of GDE susceptibility to changes in groundwater conditions (p. 3-25 to 3-26), please present or refer to specific hydrologic data or figures to back up claims of low susceptibility to impacts related to groundwater management and to allow the reader to more readily follow the discussion.	References to hydrologic data, including well hydrographs where available, have been added to the GSP in Section 3.3.1 (p. 3-25 to 3-26). There are no hydrologic data for the Fresno River Riparian or Sumner Hill potential GDE units.	The Nature Conservancy
Minimum Thresholds (23 CCR §354.28)	3-18 to 3-26	The Friant Riparian and the Sumner Hill GDE Units do not have wells nearby. While the likelihood of impacts due to pumping is considered low in these areas, the groundwater levels should be monitored; thus, new wells are recommended for installation in these areas. Please include proposed monitoring wells for the Friant Riparian and the Sumner Hill GDE Units as representative monitoring sites (RMS) for minimum thresholds.	Recommendation noted. The GSP's GDE Monitoring Program (Section 3.5.2.5) includes monitoring every five years to document the ecological condition of these potential GDE units. In the Fresno River Riparian Potential GDE Unit (as well as the Friant Riparian and San Joaquin River Riparian Potential GDE units), biological data will be analyzed in conjunction with hydrological data to assess potential ecological effects related to changes in groundwater levels and the relative degree of influence on GDE conditions exerted by streamflows and groundwater levels. Installation of monitoring wells in the Friant Riparian and Sumner Hill Potential GDE Units is not currently proposed. See also response to comment above on Sumner Hill Potential GDE Unit.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Minimum Thresholds (23 CCR §354.28)	3-18 to 3-26	Until monitoring wells are available in GDE Units Friant Riparian and Sumner Hill, consideration should be given to establishing minimum thresholds based on species or ecosystem response as measured by biological monitoring or remote sensing.	Without evidence of a link between groundwater conditions and the ecological condition of these potential GDE units, establishment of minimum thresholds in the GSP based on ecological response or other factors is not appropriate or justified.	The Nature Conservancy
Minimum Thresholds (23 CCR §354.28)	3-30 to 3-33	The Minimum Thresholds do not consider water quality needs of GDEs. The GSP states (p. 3-33): "Protection of municipal and domestic beneficial uses is also protective of all other groundwater beneficial uses." Please provide evidence or basis for the statement that protection of municipal and domestic beneficial uses is also protective of all other groundwater beneficial uses including environmental uses. Include a discussion about GDEs and water quality and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.	In general, meeting municipal and domestic water quality MO/MT is expected to be protective of GDEs. It should also be noted that the GSP is not responsible for existing constituent levels or ongoing non-GSP related activities that may result in increasing constituent concentrations. As described in the GSP, there are many other agencies/programs devoted to monitoring and protection of groundwater quality, with which the GSAs plan to coordinate.	The Nature Conservancy
Surface Water-Groundwater Interactions	3-34	Minimum Thresholds for depletion of surface water were not developed for the Subbasin because the GSP determined that surface water was no longer connected to groundwater. GDEs are often adjacent to streams or associated with riparian corridors where ISWs exist, even if only seasonally or are discontinuous along a longitudinal profile. GDEs have been identified along parts of Fresno and San Joaquin Rivers. The San Joaquin River "contains Essential Fish Habitat (EFH) for Chinook salmon which is partially dependent on riparian inputs to provide important salmon habitat elements including shade, overhead cover, nutrients, and woody material for instream cover and habitat complexity" (p. 2-45). Following the discussion presented above for Checklist Item 26 (Measurable Objectives), please include a discussion of Sustainable Management Criteria for ISWs, including Minimum Thresholds, in the GSP. Please cite data gaps regarding ISWs and make plans to reconcile them in the Monitoring Section of the GSP.	See Multiple Comment Subject Area Response	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems and Surface Water-Groundwater Interactions	3-45	Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater and related surface conditions (emphasis added). For this section to provide the appropriate context and help assure integration of GSP implementation with other ongoing regulatory programs, please describe jurisdictions related to aquatic resources, interconnected surface waters (ISWs), instream flow requirements, and groundwater-dependent ecosystems (GDEs) that could be affected by groundwater withdrawals.	There is extensive discussion in the GSP regarding groundwater levels and GDEs, and specific RMS sites were selected to represent GDEs. See Multiple Comment Response Section regarding ISW.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Interconnected Surface Waters (ISWs) (23 CCR §354.16)	3-39	Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater and related surface conditions (emphasis added). Groundwater level monitoring alone may be insufficient to establish a linkage between groundwater extraction and potentially resulting impacts to environmental resources associated with GDEs and ISWs. The cause-effect relationship between groundwater levels and the biological responses that could result in significant and unreasonable impacts to ISWs and GDEs depends on a number of complicated factors, and this relationship is not characterized or discussed. The Monitoring Network section currently does not address future needs for ISW monitoring. In this section, please describe monitoring for ISWs as described below: In addition to the need for additional shallow monitoring wells in the upper aquifer to map GDEs, there is also a need to enhance monitoring of stream flow and vertical groundwater gradients by installing more stream gauges and clustered/nested wells near streams, rivers or wetlands. Ideally, co-locating stream gauges with wells that can monitor groundwater levels in both the upper and lower aquifers would enhance understanding about where ISWs exist in the basin and whether pumping is causing depletions of surface water or impacts on beneficial users of surface water and groundwater. Please provide sufficient detail for the investigation and monitoring program including stream gauges, screened intervals and frequency of monitoring, in order to describe monitoring of both the extent of ISWs and the quantity of surface water depletions from ISWs.	There is extensive discussion in the GSP regarding groundwater levels and GDEs, and specific RMS sites were selected to represent GDEs. See Multiple Comment Subject Area Response Section regarding ISW.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Monitoring Network (23 CCR §354.34)	3-41 to 3-45	The proposed wells to be used for monitoring groundwater levels are shown in Figure 3-1 and include 11 wells in the Upper Aquifer and 22 wells in the Lower Aquifer. At present the Upper Aquifer wells are located in the southwestern part of the Madera GSA. Several of the monitoring wells are missing well construction information. Four composite wells are listed in Table 3-11 (p. 3-44). Please describe how the missing well construction information will be obtained, or how data from the wells will be used if it cannot be obtained. Please indicate how the composite wells will be used and whether the proposed nested wells will replace them.	The RMS network in the GSP had to be selected based upon existing available wells. The limited number (4) of composite wells are located outside of the Corcoran Clay area to try to fill spatial data gaps. Locations outside the Corcoran Clay area do not have as well-defined Upper and Lower Aquifers as occur within the Corcoran Clay area, so use of composite wells outside the Corcoran Clay area is less problematic. Nested monitoring well data will be used to both supplement the RMS network (after sufficient water level datasets are able to be obtained), and further refine our understanding of existing RMS locations with unknown well construction.	The Nature Conservancy
Monitoring Network (23 CCR §354.34)	3-53, App 2.B. Section 5	The GSP states (p. 3-53): “Biological data will be analyzed in conjunction with hydrological data, where available, to assess potential ecological effects related to changes in groundwater levels and the relative degree of influence on GDE conditions exerted by streamflows and groundwater levels associated with each potential GDE.” Appendix 2.B refers to an adaptive management framework to facilitate improvements in the monitoring program. Please further describe how adaptive management will facilitate improvements in the monitoring program and refine projects and management actions.	The GDE appendix states the following on this topic: "Biological monitoring data should be evaluated as part of an adaptive management framework to facilitate improvements in the monitoring program and refinement of projects and management actions or implementation of new actions to avoid adverse impacts to GDEs." Adaptive management could include a variety of actions such as adjustments to demand management strategies, new or expanded recharge projects, increased frequency of biological monitoring, and installation of new wells to monitor shallow GW in the Friant, Sumner Hill, and Fresno River Potential GDE units.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Monitoring Network (23 CCR §354.34)	3-55	The Friant Riparian Potential GDE Unit does not have any wells or monitoring points nearby and the true depth to groundwater is unknown. "Part of the GSP Implementation Plan will be to further investigate existing wells in this area for verifying presence of shallow groundwater (i.e., less than or equal to 30 feet bgs) and possible inclusion of a well as a representative monitoring station (RMS), if necessary (p. 19 of Appendix 2.B). If there are no appropriate existing wells to obtain current groundwater depth data for this GDE Unit, it is recommended to install one or more shallow wells to verify the presence of shallow groundwater.	Comment noted.	The Nature Conservancy
Monitoring Network (23 CCR §354.34)	3-55	The Sumner Hill Potential GDE Unit is located on an unnamed tributary of the San Joaquin River and includes riparian vegetation and a freshwater wetland. This potential GDE has a shallow depth to bedrock and is close to the Madera Canal, but no groundwater data are available. If there are no appropriate existing wells to obtain current groundwater depth data for this GDE Unit, it is recommended to install one or more shallow wells to verify the presence of shallow groundwater.	Comment noted.	The Nature Conservancy
Notice & Communication	2-21	In Table 2-5 (p. 2-21), please expand the stakeholder list associated with the Environmental and Ecosystem Uses category to include the appropriate agencies and list of environmental groups. Although environmental agencies and environmental groups are listed as one of the beneficial users of groundwater in the Subbasin, no specific uses are given.	The Environmental and Ecosystem category of interest in Table 2-4 has been expanded with the names of specific groups.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems	2-20	The types and locations of environmental uses, species and habitats supported, instream flow requirements, and other designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin should be specified. To identify environmental users, please refer to the following: o The NC Dataset (https://gis.water.ca.gov/app/NCDatasetViewer/) which identifies the potential presence of groundwater dependent ecosystems in this basin o The list of freshwater species located in the Madera Subbasin in Attachment C of this letter. Please take particular note of the species with protected status. o Lands that are protected as open space preserves, habitat reserves, wildlife refuges, etc. or other lands protected in perpetuity and supported by groundwater or interconnected surface waters should be identified and acknowledged.	See Multiple Comment Subject Area Response	The Nature Conservancy
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	4-1 to 4-52	The Madera Subbasin includes GDEs and ISWs that are beneficial uses and users of groundwater, and may include potentially sensitive resources and protected lands. Environmental beneficial users and uses of groundwater should be considered in establishing project priorities. In addition, consideration should be given to multi-benefit projects that can address water quantity as well as providing environmental benefits or benefits to disadvantaged communities. Please include environmental benefits and multiple benefits as criteria for assessing project priorities.	Edits made in Section 4. See comment in Section 4 intro (pg. 4-1) and text on pg. 4-7 which provides an example of benefits of recharge basins.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	4-1	This section identifies many important projects; the descriptions of benefits for these projects only identifies benefits to water level and storage. Because maintenance or recovery of groundwater levels, or construction of recharge facilities, may have potential environmental benefits in many cases it would be advantageous to demonstrate multiple benefits from a funding and prioritization perspective. o For the projects already identified, please consider stating how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue. o If ISWs will not be adequately protected by those listed, please include and describe additional management actions and projects targeted for protecting ISWs. o Recharge ponds, reservoirs and facilities for managed stormwater recharge can be designed as multiple-benefit projects to include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. In some cases, such facilities have been incorporated into local Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs), more fully recognizing the value of the habitat that they provide and the species they support. For projects that construct recharge ponds, please consider identifying if there is habitat value incorporated into the design and how the recharge ponds can be managed as multiple-benefit projects that have a benefit to environmental users. o For examples of case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: https://groundwaterresourcehub.org/case-studies/recharge-case-studies/	In addition to the proposed projects/management actions in the GSP, the San Joaquin River Restoration Program will provide a major source of new water to support GDEs along the San Joaquin River and will reduce diversions available for irrigation. Edits made in Section 4.1.1.5.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	4-45	The GSP states (p. 4-45): "Based on preliminary estimates, approximately 500 acres of Arundo exists in concentrated stretches of Berenda, Cottonwood, and Dry Creeks. Details on acreage of infestation, water use, the potential for reduction, and the cost would be developed before a removal/control plan is prepared." We appreciate the citing of TNC's literature review of Arundo evapotranspiration studies and recognizing Arundo removal as a potential project for the Subbasin.	Comment noted.	The Nature Conservancy
Sustainability Goal (23 CCR §354.24)	3-3	The sustainability goal does not specifically mention beneficial uses or users of groundwater, including environmental users. It states "the six sustainability indicators, established measurable objectives, and minimum thresholds will ensure that no undesirable results of significant and unreasonable economic, social, or environmental impacts occur…" Please rephrase the Sustainability Goal to specifically call out beneficial uses and users of groundwater including environmental users. Please state how the sustainability of environmental uses will be protected. In addition, a statement about any intention to address pre-SGMA impacts should be included.	Comment noted. The sustainability goal was discussed in public meetings and incorporates feedback received by GSAs from stakeholders during public meetings.	The Nature Conservancy
Sustainability Goal (23 CCR §354.24)	3-3	Because potential GDEs have been identified along the Fresno and San Joaquin Rivers, please include these surface waters in the Sustainability Goal.	The sustainability goal and GSP primarily relate to groundwater and surface waters impacted by groundwater pumping after 2015. Fresno and San Joaquin River surface waters do not fit in these categories and are not assigned SMC or included specifically in the sustainability goal.	The Nature Conservancy
Undesirable Results (23 CCR §354.26)	3-34 to 3-35	This section only describes undesirable results relating to human beneficial uses of groundwater and neglects environmental beneficial uses that could be adversely affected by chronic groundwater level decline. Please add "potential adverse impacts to GDEs" to the list of potential undesirable results presented in Table 3-8 (p. 3-35).	This section, in particular Table 3-8, describes undesirable results in terms of physical groundwater parameters. How these groundwater parameters relate to beneficial uses of groundwater are described in other sections. The relation to environmental beneficial uses is described in the sections and appendix that describe the GDE analysis completed.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Undesirable Results (23 CCR §354.26)	3-35	The GSP states (p. 3-36): "The undesirable result for groundwater levels is defined as more than 30 percent of RMS exceeding their minimum thresholds for the same two consecutive Fall readings. The 30 percent criterion was selected to balance the interest of beneficial use with the practical aspect of groundwater management uncertainty. Given a total of 37 RMS sites, a total of 12 or more of the initial RMS would need to exceed MTs as defined above to constitute an undesirable result for chronic lowering of groundwater levels." The use of 30 percent to define an undesirable result does not allow for the occurrence of low water levels in one area, such as near a GDE, to be an Undesirable Result, which may impact an environmental beneficial use. Please consider the use of separate management areas for the GDE Units, so that Sustainable Management Criteria protective of GDEs can be established for the GDE Units. Please elaborate on how the exceedance criteria would be applied in a way that is protective of significant and unreasonable harm to GDEs.	The use of Management Areas for small areas of Potential GDEs is not appropriate. GDEs are not one of the six sustainability indicators designated under SGMA and GSP regulations. However, GDEs were considered in detail in the GSP and specific GDE RMS sites are included in the Plan.	The Nature Conservancy
Groundwater Quality	3-38	This section describes undesirable results in terms of meeting drinking water standards, including arsenic, but does not discuss degradation of water quality that may impact GDEs. Any potential undesirable results from degradation of water quality that may impact GDEs and freshwater species in the area should be discussed in this section	Arsenic is included as one of the key constituents for which MT and MO have been set. The GSP accounts for arsenic regardless of the mechanism by which the concentrations may increase, provided that increase in concentrations is caused by GSP projects/management actions.	The Nature Conservancy
Interconnected Surface Waters (ISWs) (23 CCR §354.16)	3-39	The Fresno and San Joaquin Rivers were connected historically but are not considered connected under current conditions. The GSP states (p. 3-39): "The Fresno River and the San Joaquin River are adjacent to, but not a part of, the Fresno River Riparian potential GDE Unit and the Friant Riparian and San Joaquin River Riparian potential GDE units, respectively. Both rivers are in a net-losing condition, with surface flow likely contributing directly to the shallow groundwater systems that support the vegetation in these GDE units." The analysis for potential depletion of ISWs in Section 3.4.5 should include all beneficial users of surface water that could be affected by groundwater withdrawals, including environmental users.	The GSP analysis determined there are no ISW in Madera Subbasin; thus, beneficial users of surface water would not be affected by groundwater pumping.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Undesirable Results (23 CCR §354.26)	3-39	The GSP states (p. 2-47) that for the San Joaquin River Riparian Potential GDE Unit, "the adjacent San Joaquin River contains Essential Fish Habitat (EFH) for Chinook salmon which is partially dependent on riparian inputs to provide important salmon habitat elements including shade, overhead cover, nutrients, and woody material for instream cover and habitat complexity (PFMC 2014)." Further, the GSP states (p. 3-39): "However, the shallow groundwater system underlying the portion of the San Joaquin River that supports the San Joaquin River Riparian Potential GDE Unit does have at least the potential (albeit quite muted) to be affected by regional groundwater pumping." These statements illustrate the need to develop Sustainable Management Criteria for ISWs. Following the discussion presented above for Checklist Item 26 (Measurable Objectives), please include a discussion of Sustainable Management Criteria for ISWs, including Undesirable Results, in the GSP. Please cite data gaps regarding ISWs and make plans to reconcile them in the Monitoring Section of the GSP.	The GSP analysis determined there are no ISW in Madera Subbasin; thus, beneficial users of surface water would not be affected by groundwater pumping. These GSP statements are saying that shallow perched/mounded groundwater is within 30 feet of ground surface (therefore, a potential GDE Unit is present), but groundwater is disconnected from surface water.	The Nature Conservancy
Water Budget	2-49 to 2-56	In the Land Surface System component of the water budget, ET is split into ET of applied water and ET of precipitation (Table 2-11, p. 2-54). ET of groundwater (ETg) is not included. Please include ETg in the water budget, or explain where it is included.	ET of applied groundwater is included in ETaw. For irrigators without access to surface water supplies, ETaw is equal to ETg. ET of shallow groundwater extracted by native and riparian vegetation is minimal in the Madera Subbasin. This is commented near Figure 2-89 and Table 2-24.	The Nature Conservancy
Water Budget	2-61 to 2-64	Please clarify how the Integrated Water Flow Model Demand Calculator (IDC) model of the root zone budget was used to differentiate ET among the agricultural, urban, and native vegetation land uses. Please explain how any native vegetation present in GDEs was handled in the water budget process.	Clarification of the IDC model procedures is provided in Section 2.2.3.3 (Water Budget Components and Uncertainties) and Appendix 2.F.i.	The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Water Budget	2-77	The GSP states (p. 2-84): "…for native lands, groundwater extraction by riparian vegetation was considered to be negligible because of the depth to groundwater in the subbasin." Because there are GDEs in the Madera Subbasin, please quantify the evapotranspiration from groundwater by riparian vegetation. Please revise the text and budget as necessary.	Evapotranspiration from groundwater by riparian vegetation is included in the evapotranspiration of native vegetation. Riparian vegetation is not included in the list of water use sectors requiring separate quantification by the GSP regulations. The GSP regulations require that outflow be quantified by water use sector defined as "categories of water demand based on the general land uses to which the water is applied, including urban, industrial, agricultural, managed wetlands, managed recharge, and native vegetation.	The Nature Conservancy
Language/copy edit	5-11	I would remove the word "all" in "comply with all of the requirements"	GSP revised accordingly.	Mark Hutson
Language/copy edit	not noted	Implementation of all projects. Remove "all." In short - remove the words all, shall, will, etc. These words are strong assertions and can be left out. This would apply to all chapters.	GSP revised accordingly.	Mark Hutson
Language/copy edit	not noted	I believe it is very important to strongly state in this chapter and others, that as knowledge, technology + management practices adapt and change, that the methodology of projects will adapt. This area of operation is so new, what we think is right may be wrong, and vice-versa. Please leave a wide area to maneuver within the GSP as GSAs become more knowledgeable. They need to be nimble and not constrained by a plan that may become obsolete.	Added paragraph in Section 4 and in Executive Summary on page 18.	Mark Hutson
Edits to plan	not noted	Update Fig. 1.1 & 1.6 & 1.8 & 1.14 to reflect recent annexation to Root Creek and removal from MID.	All figures with GSA boundaries are updated to reflect the changes in GSA boundaries.	Madera County Water
Edits to plan	1-8	Update 1.3, 1.3, Page 8 with new MADCO Supervisor Board meeting dates	Updated Section 1.3.1.3 to reflect the range of dates and times when the Madera County Board of Supervisors convenes as the Madera County GSA (typically the first or second Tuesday of each month, per the Madera County calendar).	Madera County Water

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Edits to plan	not noted	I'm trying to read and refer to tables and figures as I read. Can I suggest that they be placed closer to the narrative that refers to them? Where is figure 2-55? There are numerous figures that are referred to in Chapter 2 that I cannot find.	Many large maps in Chapter 2 are packaged together separately in a pdf document at the end of the GSP (due to file size constraints in hosting the GSP online). These figures are indicated in the List of Figures under the Table of Contents.	Bill Diedrich
Demand Management	not noted	CPF was pleased to see that the Draft GSP included recharge and conveyance projects. We recommend that the Madera Subbasin Coordination Committee make supply augmentation its top priority. CPF commends the Madera Irrigation District in particular for considering ways to encourage growers to participate in augmentation. Incentives such as additional extraction rights would be an excellent method of increasing landowner support for and participation in supply projects. But we are concerned that the Madera County GSA appears to be emphasizing a "substantial demand management" program that contemplates reducing irrigated acreage by 50% without explaining specifically how that would be done. Although the Draft GSP sets out principles for developing any demand management program such as minimizing economic impact, maintaining established water rights, and incentivizing investment in water supply infrastructure, it was unclear how those were applied to choose the demand management goals and how they would be applied in the future. The public will need to have meaningful opportunities to participate in the development of any demand management measures, which should include adequate time to evaluate supporting information and submit written comments. That is especially important in light of the finding (at Draft GSP page 4-45) that demand management will have direct economic costs of $53 .9 million per year and additional indirect costs that currently are unknown. And we would expect all the Subbasin GSAs to do their best to ameliorate such impacts by adopting implementation measures that are cost-effective.	See Multiple Comment Subject Area response.	California Poultry Federation

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Riparian Water Rights	1-9, 1-10	I am a landowner. My property is within both the Madera County GSA and the Madera Irrigation District GSA. Portions of my property in both of said GSAs receives riparian water-rights deliveries from the Fresno River. I noticed that riparian rights to the Fresno River for these GSAs were not mentioned in the draft of Chapter 1 of the Madera Subbasin Groundwater Sustainability Plan. The riparian water-rights holders along the Fresno River use thousands of acre-feet of riparian water rights water annually and this water is a critical part of the groundwater sustainability of the Madera Subbasin. There may even be additional riparian landowners who are not aware that they have surface water rights to riparian water. The more riparian water-rights water that is used, the better! Can these important riparian water-rights please be included in the next draft of Chapter 1 of the Madera Subbasin Groundwater Sustainability Plan? Please let me know if you have any questions, points of clarification, or if there is someone else, I need to contact with regard to the above.	GSP revised accordingly.	Anonymous
Riparian Water Rights	1-9	There are significant riparian deliveries to landowners within the Madera County GSA who hold riparian water rights to the Fresno River. For example see the attached pages documenting riparian diversions by one landowner diverting over 1,000 acre feet per year. There are many other land owners diverting riparian water from the Fresno River. Please update the attached highlighted paragraph to acknowledge the voluminous Fresno River riparian water diversions.	GSP revised accordingly.	Anonymous

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Demand Management	not noted	Road 20 Farm and Food Commons Fresno are against the potential of a land retirement policy for the implementation of demand reduction. Both Road 20 Farm and Food Commons Fresno are opposed to the potential measure because we acknowledge the potential for this measure to harm or cease our operations entirely. Additionally, are agricultural operations and management provide both a positive economic impact on the local community, as well as contribute greatly to the biological diversity and ecosystem health of Madera County. Road 20 Farm employs over 25 people, and based on the economic multiplier effect, contribute approximately 2.5-3 million to the local economy. Environmental benefits of our farm and land management include providing crucial habitat for pollinators, as well as increasing the biological diversity of Madera county based on our crop and flora diversity, and regenerative practice	See Multiple Comment Subject Area response.	Food Commons Fresno/Road 20 Farm
Minimum Thresholds (23 CCR §354.28)	xv	Comment on Chapter One of the GSP -Madera Subbasin - Section -List of Abbreviations: The list should appear with the abbreviation first, followed by the definition i.e.; ET - evapotranspiration Reason: If a person is looking up the meaning of an abbreviation, they would not look it up by the meaning -they don't know what that is. (it is currently written -definition/meaning first}	GSP revised accordingly.	Jeannie Habben
Water Budget	App. 3D, page 5	Looking at Appendix 3 page 5. Just wondering how they calculated an annual domestic well mitigation program cost of $277,000. The annual administrative cost is purported to be $150,000 plus $5,000 per well. This would leave only $127,000 for wells ($277,000 less $150,000). At $30,000 per well ($25,000 plus $5,000 admin fee) this would leave enough for only enough reimbursement for about 4 wells yet there is supposed to be enough to reimburse for 12 wells per year. (240 impacted wells divided by a 20 year implementation period) Do I have my math right? This does not look right! I think 12 wells per year is a little light! Talked to my well driller Horner and Sons and he drills 2 wells per week for 100 per year.	The database used to estimate the number of wells that would be impacted was obtained from DWR. The analysis acknowledges that this database is missing some wells, however, it was the best source found to be available. To better understand the number of wells that may need to be replaced, the GSAs are applying for a grant to complete an inventory of domestic wells.	James Paul Provenzano

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Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	How do you propose to change types of crops grown by market mechanisms?	The GSP does not propose to change crops that will be grown. Cropping decisions will continue to be made by individual growers.	Sarb Johal
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	The plan itself is heavily dependent on the purchase of available surface water and the construction of water recharge facilities. There is substantial risk of either the cost of water increases above a reasonable economic threshold or is simply not available. In recent years the amount of available surface water available for farming and recharge has been cut due to reallocations to environmental purposes. The plan also requires the construction of recharge facilities. These could quite possibly be delayed or face hurdles (environmental, economic, or governmental) that are quite literally impossible to overcome. In short there is a lot of uncertainty of the ability to implement this part of the plan.	The following text has been added to the GSP: The GSAs have prioritized implementing projects that provide additional surface water supply, thereby reducing groundwater pumping. The GSAs also are committed to adaptive management of projects and management actions. As projects are implemented and monitored, the project timelines and volume of demand management necessary will be reviewed. If adjustments are needed to meet the sustainability objective, first project timelines will be evaluated and adjusted. The key point being that demand management will be adjusted if needed due to a shortfall of purchased or project water.	James Paul Provenzano
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	ES-3	Figure ES-1 shows RCWD GSA boundaries incorrectly: This map and all other maps in the GSP should reflect the current RCWD GSP boundary.	All figures with GSA boundaries are updated to reflect the changes in GSA boundaries.	Root Creek Water District
Edits to plan	ES-7	The sustainable yield of 441,800 af doesn't match Figure ES-4	Figures has been updated to reflect sustainable yield estimates.	Root Creek Water District
Edits to plan	ES-10	Table ES-3 Lowering of groundwater levels: The MO and MT are set via the model. The model is based upon data from wells. The RCWD GSP are based upon observed water levels and extending the trends into the future recognizing the implementation of projects.	Comment noted with one correction: The Madera Subbasin MO and MT are set by a combination of observed and numerical model results. The RCWD MO and MT are set by a combination of observed and analytical model results.	Root Creek Water District

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Minimum Thresholds (23 CCR §354.28)	ES-10	The GSA's intend to mitigate for potential impacts to domestic wells caused by further decline in groundwater levels: The RCWD GSA has implemented and is operating projects and does not intend to participate in mitigating impacts to wells in adjacent GSAs.	Comment noted with this observation: the Madera Subbasin GSP has/will implement projects/management actions, but recognizes some additional groundwater level declines will occur prior to stabilization and potential rebound of groundwater levels. The domestic well mitigation program is intended to address Implementation Period declines. The RCWD GSP also shows Implementation Period groundwater level declines for the same reasons they are expected to occur in the remainder of the subbasin.	Root Creek Water District
Minimum Thresholds (23 CCR §354.28)	ES-13	Figure ES-5 – there are limited monitor wells in Southeast Madera basin bounded by State Highways 99 and 145: The RWCD GSA encourages installation of additional monitor wells at the border of the GSA's as well as in the Madera Ranchos as well as between the Madera Ranchos and State Highway 41 North of RCWD GSA.	Comment noted.	Root Creek Water District
Minimum Thresholds (23 CCR §354.28)	ES-13	Figure ES-5 – The monitor system proposed in Southeast Madera County does not propose discrete sampling by zone. The proposed monitoring program is spatially and temporally inadequate. One area of considerable interest is the level change within the Madera Ranchos. No proposed monitor well is proposed and many of the wells proposed are composite or are of unknown construction.	The RMS network in the GSP had to be selected based upon existing available wells. The limited number (4) of composite wells are located outside of the Corcoran Clay area to try to fill spatial data gaps. Locations outside the Corcoran Clay area do not have as well-defined Upper and Lower Aquifers as occur within the Corcoran Clay area, so use of composite wells outside the Corcoran Clay area is less problematic. Nested monitoring well data will be used to both supplement the RMS network (after sufficient water level datasets are able to be obtained), and further refine our understanding of existing RMS locations with unknown well construction. It is anticipated that other wells (both new and existing) may be added to the network, and GSAs would encourage well owners in data gap areas to come forward to offer their wells for inclusion in the RMS network (for wells with known construction data and preferably some water level history).	Root Creek Water District

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	ES-14	Table ES-4 RCWD tabulation of surface supplies: See the attached information taken from the RCWD GSA proposed GSP for more information. See Attachment 1 to this communication.	Table ES-4 contains the projects that RCWD provided to the joint GSP for modeling. Based on review of the RCWD GSP and this comment, it appears that RCWD added project(s) that are not included in the calibrated numerical model. A footnote has been added to Table ES-4 and the table in chapter 4 acknowledging this.	Root Creek Water District
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	ES-15	Table ES-5 RCWD tabulation of total surface water supplies	Table ES-5 contains the total surface supply of the projects that RCWD provided to the joint GSP for modeling. Based on review of the RCWD GSP and this comment, it appears that RCWD added project(s) that are not included in the calibrated numerical model. A footnote has been added to Table ES-5 and the table in chapter 4 acknowledging this.	Root Creek Water District
Edits to plan	1-4	Figure 1-1 Map incorrect – RCWD GSA boundaries	All figures with GSA boundaries are updated to reflect the changes in GSA boundaries.	Root Creek Water District
Hydrogeologic Conceptual Model (23 CCR §354.14)	not noted	Figure 2-47 Spring 1988 Contour Map: It is noted that this Figure documents a northwesterly groundwater flow direction similar to the groundwater flow direction found on Figure 3-22 in the RCWD GSP.	Comment noted.	Root Creek Water District
Hydrogeologic Conceptual Model (23 CCR §354.14)	not noted	Figure 2-48 Spring 2014 Contour Map: This map appears to have more data points than the 1988 map but much fewer than in an area of the Madera Ranchos. Compared to Figure 3-23 in the RCWD GSP, it appears that the location of the depression in the Southeast is located more to the west under the Madera Ranchos.	Comment noted.	Root Creek Water District
Hydrogeologic Conceptual Model (23 CCR §354.14)	not noted	Figure 2-49 Spring 2016 Contour Map: It appears that there is even less data when compared to other maps to prepare this map in the Southeast portion of Madera County.	Comment noted.	Root Creek Water District

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Hydrogeologic Conceptual Model (23 CCR §354.14)	not noted	Figure 2-53 Hydrograph shows level data from 2000 to present: The hydrograph for well id 11S20E31P001M is in the same proximate area as RCWD well 130 as shown on Figure 3-21 in the RCWD GSP which indicates a depth to water of approximately 275 feet in 1998 and continuing this trend to a depth of about 295 feet presently. The recovery shown in well P1M would be expected to be in a shallower well.	Upon further review of the water level spreadsheet associated with this well, notes made regarding various measurements, and additional recent data, the hydrograph for this well will be further evaluated and likely revised in upcoming annual and/or 5-year reports.	Root Creek Water District
Hydrogeologic Conceptual Model (23 CCR §354.14)	not noted	Figure 2-56 Change shows ground water level rise in southeast Madera basin: As suggested in the document the groundwater elevation rise shown in the Southeast area south of State Highway 145 is from a lack of data and interpolations on data.	Comment noted. This area will be evaluated further in upcoming annual and/or 5-year reports.	Root Creek Water District
Hydrogeologic Conceptual Model (23 CCR §354.14)	2-33	Paragraph 1 – identifies local depression in southeast: When looking at more specific data in the Southeast region it appears that the groundwater depressions are further east than noted on the maps.	Comment noted.	Root Creek Water District
Sustainable Management Criteria	3-5	Sustainable Management Criteria: As stated in the paragraph on measurable objectives (MO) the MO were developed based upon a model with average hydrology with implementation of projects. Since this is a layered model it is important to note that at varying depth or layers in the model that vary different water elevations can be realized. In the Southeastern Madera area as well, there were fewer wells to calibrate the model. Using historical data over a long period of time will provide significant insight into the realization of sustainability.	Comment noted with the following observations: the MO were developed based upon observed data and numerical model results. Additional data will be available for refinement of the model during the 5-year update.	Root Creek Water District
Monitoring Network (23 CCR §354.34)	3-55	Data Gaps – elevations – lower aquifer and extreme eastern portions of basin: The data gaps mentioned earlier are identified. No plan to fill this data gap is offered.	The GSAs will encourage existing well owners to offer their wells for inclusion in the RMS network, and seek funding opportunities for new well installations.	Root Creek Water District

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	4-3	Table 4-1: RCWD is currently purchasing water from partners outside the basin and should be added in this category.	GSP revised accordingly.	Root Creek Water District
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	4-4	Table 4-2: See Attachment 1 to this communication.	Table 4-2 contains the projects that RCWD provided to the joint GSP for modeling. Based on review of the RCWD GSP and this comment, it appears that RCWD added project(s) that are not included in the calibrated numerical model. A footnote has been added to Table ES-4 and the table in chapter 4 (4-2) acknowledging this.	Root Creek Water District
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	4-51	Section 4.7.1 Distribution of Purchased Water for In-Lieu Storage: Since completion over 16,000 af has been delivered through the system. The Madera SB GSP indicates only 8,000AF.	GSP revised accordingly.	Root Creek Water District
Minimum Thresholds (23 CCR §354.28)	not noted	Figure 3A-1 Elevation of Minimum Thresholds: Comparison with RCWD GSP shows in general range but RCWD GSP shows slightly lower levels	Comment noted.	Root Creek Water District
Measurable Objectives (23 CCR §354.30)	not noted	Figure 3A-3 Elevation of Measurable Objectives: Comparison with RCWD GSP shows in general range but RCWD GSP shows lower levels	Comment noted.	Root Creek Water District
Minimum Thresholds (23 CCR §354.28)	not noted	Appendix 3 – Hydrograph MC-RMS-5: It should be noted that this well is shallow adjacent to the SJR and should be used discretely and may not be reflective of shallow groundwater levels.	Comment noted - please provide any well construction data that may be available.	Root Creek Water District

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Subsurface Inflows	not noted	The Madera Subbasin draft GSP indicates there is approximately 69,400 AF of historical and current inflow with no project actions, the amount of inflow increases to 108,200 in 2040, which the Madera Subbasin identifies as their sustainability goal. With projects implemented and completed, the inflow is reduced to approximately 21,400 AF between 2040 and 2090. The GSP demonstrates that the Madera Subbasin will not achieve the sustainable yield or groundwater sustainability within SGMA's mandatory 20-year period. [Annual overdraft deficit is miscalculated when accounting for inflows, and GSP fails to address how the Subbasin will mitigate the overdraft deficit. The Madera Subbasin GSP does mention demand management beginning in year one, but details are being finalized. This could result in demand reduction of about 2%, but not enough to cover the total boundary flow.] The GSP infers the Madera Subbasin GSAs depends on approximately 69,000 AF of water per year within NKGSA's boundary. [NKGSA intends to capture and recapture water that the Madera Subbasin indicates is flowing into the Madera Subbasin.]	The water balance and required projects/management actions for Madera Subbasin do not rely upon net subsurface inflows to reach sustainability. The GSP describes in detail how Madera Subbasin will achieve sustainability strictly based on changes to vertical inflows and outflows (i.e., addressing net recharge or shortage). Planned refinements of the model in 2025 will likely result in more accurate absolute values of net subsurface inflow. At this time, the magnitude of current model calculated inflows is likely conservative (i.e., overestimated), and it is more useful to utilize model results to understand that significant reductions in subsurface inflow are expected under sustainable subbasin conditions after 2040. See also, Multiple Comment Subject Area response.	Fresno Irrigation District
Water Budget	not noted	An overview of the Gunner Ranch West Project (Project), a development project, is presented. The project includes a groundwater plan for long-term groundwater sustainability within portions of the subbasin that the Project overlies. The Project is referenced in other comments.	Comment noted. GSP edits in Madera County and City of Madera water budget Appendices.	McCormick, Barstow, Sheppard, Wayte & Carruth LLP, on behalf of Gunner Family
Undesirable Results (23 CCR §354.26)	not noted	The Project overlays a portion of the subbasin that the GSP identifies as a more stable area. The GSP describes the disparate and disconnected nature of the Madera County GSA territory, but makes no distinction or difference regarding the range of undesirable results or triggers for such results within the subbasin. This is inconsistent with other aspects of the GSP (e.g. separate water budgets for each of the GSAs). The separate water budgets should allow the GSP to identify more local minimum thresholds and measurable objectives for undesirable results, but that approach is not used for the GSP.	The MO/MT for each RMS site are specific to that location and well.	McCormick, Barstow, Sheppard, Wayte & Carruth LLP, on behalf of Gunner Family

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Management Areas	not noted	The GSP does not make use of separately defined management areas within the Madera County GSA territory, despite the disparate qualities of the underlying geology. The CCR and DWR's GSA BMP document describe forming these separate management areas. Failure to incorporate distinct management areas within the Madera County GSA territory creates arbitrary treatment of overlying lands that have dissimilar hydrogeology.	Formation of management areas under SGMA is optional and not required. GSA and consultant team review of Basin Setting conditions led to a determination that management areas were not necessary. Regardless of the management area decision, MO/MT for each RMS site are different for each RMS.	McCormick, Barstow, Sheppard, Wayte & Carruth LLP, on behalf of Gunner Family
Demand Management	not noted	The Project includes a reasonably established Project Sustainable Yield regarding groundwater use, which is a critical component of the Project's ultimate success. The demand management programs and strategies described do not adequately consider the Project because of failure to specify establishment of any specific "credits" that are part of the regulation, failure to adopt distinct management areas within the GSA territory, because of the limited evaluation of agricultural land classes (which does not adequately address development entitled lands), and potential conflicts with Madera County's General Plan. The demand management strategies have the potential to apply arbitrary and unnecessary regulatory impositions on land owners.	See Multiple Comment Subject Area Response and GSP edits in Madera County and City of Madera water budget Appendices.	McCormick, Barstow, Sheppard, Wayte & Carruth LLP, on behalf of Gunner Family
Minimum Thresholds (23 CCR §354.28)	References pages 3-36	Presents concern about adequacy of GSP to protect Valley Children's Hospital's Beneficial Uses of Groundwater, on which it is fully reliant. Undesirable result of "30 percent of wells below minimum threshold for two consecutive fall measurements" has potential to impact Valley Children's Hospital's water supply; the GSP should change undesirable results to prevent impacts to drinking water supply.	Comment noted.	Valley Children's Hospital
Monitoring Network (23 CCR §354.34)	References pages 53-54	Presents concern about adequacy of GSP to protect Valley Children's Hospital's Beneficial Uses of Groundwater, on which it is fully reliant. The proposed "representative monitoring sites" used to monitor sustainable management criteria in the vicinity of the Valley Children's Hospital campus (MCE-RMS-9, MCE-RMS-7, MCE-RMS-4) are not representative of the hospital's wells. Valley Children's Hospital is willing to include their wells in the representative monitoring network to address this issue.	Comment noted.	Valley Children's Hospital

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Demand Management	not noted	The draft GSP's proposed "Demand Management" and "Demand Reduction" is vague and needs to be clarified. It is unclear whether the program applies only to Madera County's GSA area or to all GSAs within the Madera Subbasin. It is also unclear on whether Demand Management will apply to agricultural users or all beneficial users. If applied to all beneficial users, it could create substantial hardship for the Hospital.	See Multiple Comment Subject Area Response	Valley Children's Hospital
Edits to plan	not noted	Valley Children's Hospital is located in between the Madera County GSA area, Root Creek Water District, and North Kings Subbasin and could be affected by GSPs and groundwater management in all three areas. The Hospital suggests that Madera County review and comment on neighboring GSPs and take a leading role in coordination within the Madera Subbasin and with neighboring GSAs to implement SGMA in a manner that protects all beneficial users.	Comment noted. Madera County is currently taking an active, leading role in coordinating SGMA-compliance and GSP implementation subbasin-wide.	Valley Children's Hospital

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Levels Related to Domestic Wells	not noted	Water Level Monitoring Network & Sustainable Mgmt. Criteria: The draft GSP does not include a thorough analysis of impacts to key beneficial users in the subbasin (domestic well users and members of DACs). The GSP should describe how the proposed approach to developing MOs/MTs is protective of the diverse drinking water users in the subbasin. The GSP should explain how the proposed monitoring network is adequate to monitor conditions for these sensitive beneficial users. The GSP should explicitly describe any future RMS wells and identify the proposed locations, and when assessing the monitoring network data gaps, the GSP should consider the locations of beneficial users, including DACs, small water systems, and domestic wells. Given that the subbasin is in critical overdraft, the GSP should explain how the projected additional water level declines of over 64 feet on average and over 100 feet (up to 130 feet at the MTs) near groundwater-dependent communities reliant on domestic wells will result in sustainable conditions for beneficial users. It is recommended that the impacts to groundwater gradients at the proposed MOs and MTs be analyzed and described in the GSP, as well as impacts to drinking water wells.	A thorough analysis of anticipated impacts is provided in the GSP, including hydrographs for RMS locations included in Appendix 3. However, the impact evaluation has to consider also the proposed domestic well mitigation program described in Appendix 3. See also the Multiple Comment Subject Area response.	Self-Help Enterprises

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Levels Related to Domestic Wells	not noted	Water Level Monitoring Network & Sustainable Mgmt. Criteria (Domestic Well Mitigation Program): The draft GSP does not include a thorough analysis of impacts to key beneficial users in the subbasin (domestic well users and members of DACs). Without more specific and clear details about the domestic well mitigation program, the public cannot assess the adequacy of this program to address the needs of the communities or provide productive and meaningful comments on such plan. The draft GSP does not present the results of the domestic well impact analysis in a clear and transparent manner, illustrating for example, 1) where the likely impacted wells are located, 2) what communities are most affected (including DACs), 3) an estimate of the size of the population that relies on these domestic wells, or 4) if the creation a new or expanded community water system could address some or all of the population affected by the loss of domestic wells. The analysis appears to significantly underrepresent the likely impacts of the proposed GSP on domestic well users. The GSP should present a thorough, robust, and transparent analysis, supported by maps, that identifies: (1) which domestic wells are likely to be impacted at the MTs and at the MOs, and (2) the location of the likely impacted wells with respect to DACs and other communities and systems dependent on groundwater. The domestic well mitigation program should assess the number of domestic wells that will be impacted under projected conditions and lay out a clear and proactive plan so that the potentially affected domestic well users do not lose access to drinking water when water levels decline, but an UR is not yet triggered. *Note: Nine key considerations for the program are detailed at the end of the comment letter.*	The results of an analysis of domestic well impacts using the current database can yield different results depending on the thresholds and assumptions used in the analysis. A primary difference in the analysis conducted for the GSP vs. the analysis conducted by SHE is that the SHE analysis includes no time factor. For example, the SHE analysis of domestic well impacts related to the MO (570 wells) does not consider that MOs at each RMS site were already exceed historically, so essentially no wells will go dry in the future at MO levels that have not already gone dry. The GSP domestic well analysis is intended to address domestic well impacts during the Implementation Period. It should also be noted that developing an accurate analysis of domestic wells is affected by limitations in the current database. The current database from DWR has missing well construction data , does not have individual well depths/screen intervals but rather just a summary of minimum, maximum, and average construction characteristics by section, provides no information on age of wells and current status (i.e., active, inactive, destroyed), and likely is biased towards older shallower wells (many of which may already have been abandoned/destroyed/replaced), and does not include many recently installed deeper wells. The County recently applied for a Prop 68 Grant to conduct a domestic well inventory to provide a better database for incorporation in the domestic well mitigation program. See also the Multiple Comment Subject Area response.	Self-Help Enterprises

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Quality	not noted	Water Quality Monitoring Network & Sustainable Mgmt. Criteria: Several clarifications or improvements are recommended for the water quality SMCs and monitoring network presented in the draft GSP. Because multiple constituents are present above MCLs and because they present a clear risk to drinking water beneficial users of the subbasin and thus do not represent sustainable conditions, the GSAs should include these constituents in its monitoring program and establish MOs and MTs for these constituents. Also, it is not clear what the GSAs intend to use as water quality MTs, and thus how sustainability for water quality is defined for the subbasin. Lastly, the draft GSP should include a description and map of the location of known groundwater contamination plumes and sites per 23 CCR § 354.16. It appears that the community water systems in the subbasin are generally well represented by this network, but that limited monitoring will be conducted in areas with high densities of domestic well users, which may constitute significant data gaps in the monitoring network. Additional sampling taps to fill this data gap are described in the GSP, but it is not clear based on the information presented in the draft GSP (1) how many additional sampling taps will be added to the network, (2) where these wells will be located, and (3) whether these wells will be included as groundwater quality RMS wells and evaluated with respect to MTs/MOs.	See Multiple Comment Subject Area response.	Self-Help Enterprises

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Water Budget	not noted	Water Budget: The description of the water budget in the draft GSP is not fully transparent, and it is not clear how drinking water users will be protected when sustainable yield allocations are implemented. The GSP should include information on the methods used to estimate urban pumping including reported data (if any), population estimates used, per capita water use estimates used, and the areas and users of the subbasin represented by the urban pumping water budget component. The GSP should include information on how the changes in urban pumping were determined for the projected water budget and how these changes may impact small community water systems and domestic well users. The reported urban pumping exhibits more variability than would be expected in an urban environment. The GSP should provide information on the cause of this variability so the public can determine if it is reasonable. The GSP should also discuss how the urban water demands presented in historical the water budget related to the historical water demands reported by the City of Madera in its Urban Water Management Plans. The GSP should include additional details on the how the hydrologic and water supply periods used for the projected water budget were selected and why the selected period are anticipated to be representative of future conditions. It is also recommended that the GSP clearly present the water budget results for the intended conditions in 2040 so that the public may evaluate whether sustainable conditions will be achieved by 2040. The GSP should include information on how the sustainable yield will be allocated to the GSAs and how it will impact the water budget in these GSAs. The GSP should also clearly identify how the allocation of sustainable yield will be protective of drinking water users, including domestic well users and small public water systems.	Information used to develop urban pumping estimates has been added to Section 2.2.3.3 (Water Budget Components and Uncertainties). Groundwater pumping records from City of Madera were used when available. Measurable Objectives and Minimum Thresholds have been established to protect domestic wells (see Table 3-8). Furthermore, the domestic well mitigation program described in Appendix 3.D provides one further plan for protecting domestic well users affected during the GSP implementation period. The projected with projects groundwater model simulation indicates that the schedule for project implementation together with the domestic well mitigation program results in Measurable Objective values (i.e., groundwater levels, groundwater storage, and water quality) that avoid Minimum Thresholds and associated undesirable results for the 2040-2090 projected period. Additional detail has been added to Section 2.2.3.2 describing the selection of the projected water budget period. The sustainable yield is specified for the basin, as required by the GSP Regulations (23 CCR Section 354.18(b)(7)).	Self-Help Enterprises

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Hydrogeologic Conceptual Model (23 CCR §354.14)	2-7	The GSP should include a more detailed description of the region's diverse groundwater users and DACs' dependence on groundwater for drinking water purposes. Besides listing DACs present within the GSAs boundaries, the GSP should provide a more comprehensive description of the domestic, irrigation, and public supply wells that includes the average well-depth for each group and the amount of groundwater that domestic and public supply wells are dependent on (we recommend this information to be included on page 2-7 of the draft GSP).	Maps of wells in the subbasin are updated to identify SDACs and DACs in the subbasin. Average well depths are included in the Ch. 3 figures, and can be cross-referenced with SDACs and DACs.	Self-Help Enterprises
Description of Plan Area	not noted	The draft GSP should include a map naming and indicating the location of public water systems serving SDACs and/or DACs as well as domestic well communities (we recommend the map to be included on subsection 2.1.1 of the draft GSP or adding that information on figures 2-5, 2-6, and 2-7).	Comment noted. GSP regulations do not require the map described.	Self-Help Enterprises
Outreach (including DACs/SDACs)	App. 2.C.c	The GSP should include and describe the methods the Agency shall follow to inform the public about the progress on implementing the Plan, including the status of projects and actions, per 23 CCR § 354.10. The GSP should update the Engagement Matrix (Appendix 2.C.c) and provide details about the implementation of each of the communication methods outlined in the GSP.	See Multiple Comment Subject Area response. The Engagement Matrix has been updated.	Self-Help Enterprises
Hydrogeologic Conceptual Model (23 CCR §354.14)	not noted	The draft GSP should include a description of the groundwater level conditions in and around S/DACs and show whether groundwater levels in these communities have led to dry wells or a decrease in water production. Specific recommendations are: Provide the locations and depths of all domestic and public supply wells in the GSA area using the best available information. Utilize our Focused Technical Review paired with the Madera Subbasin Water Budget to develop a more detailed description of the historical and currently known groundwater challenges impacting drinking water supplies. Include a description of the impacts experienced during the 2012-2016 drought. Include a discussion of the historical fall groundwater elevation contour maps and how pumping patterns may have and is currently influencing groundwater conditions.	The GSP provides this well information and DAC/SDAC locations in various figures in Sections 1 and 2 and Appendices 2 and 3. In addition to existing wells and other information; the County had met in person and held multiple conference calls with Leadership Council to receive and discuss concerns related to DAC/SDACs. One outcome of these discussions was moving locations of two nested monitoring well locations to the communities of Fairmead and La Vina per the request of LC. Information obtained from these and other new nested well locations installed specifically in SDAC areas, along with existing wells, will provide substantial additional information during GSP implementation in DAC/SDAC areas.	Self-Help Enterprises

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Recharge Projects: The draft GSP should provide more information regarding how the risks of inadvertent drinking water impacts associated with projects, in particular on-farm recharge projects, will be evaluated and monitored as a part of each identified project and management action.	In Section 4, the description of on-farm recharge projects also includes a description of how these projects will be monitored.	Self-Help Enterprises
Demand Management	not noted	Demand Management Program: The draft GSP should present in a clear and transparent manner that is sufficient for the reader to understand the scope of precautions and assumptions being considered for drinking water use and users for the development of the demand management program, in particular for the allocation framework and the groundwater market.	See Multiple Comment Subject Area Response	Self-Help Enterprises
Management Areas	not noted	Water Banking and Recharge: Where possible, GSPs should identify management areas that may benefit form additional recharge and banking and develop incentives for public or private investment to expand recharge and banking capacity.	Formation of management areas under SGMA is optional and not required. GSA and consultant team review of Basin Setting conditions led to a determination that management areas were not necessary. Regardless of the management area decision, MO/MT for each RMS site are different for each RMS.	Wonderful Citrus
Data Management System	not noted	GSAs should develop a coordinated, basin-wide data management system (DMS). The DMS should also include, or be capable of interfacing with, a groundwater market platform.	Consider adding interfacing mechanism between the DMS and a groundwater market platform. Existing plans for DMS are described in GSP Ch. 5.	Wonderful Citrus
Demand Management	not noted	If pumping restrictions are required to achieve sustainability, they should be implemented with the most gradual ramp-down possible while still avoiding undesirable results. Should allocation of native yield be a necessary management action, the GSAs should use a stakeholder-driven process to develop a methodology of allocation that is consistent with the various legal considerations drawn from case law.	Acknowledged. See also Multiple Comment Subject Area Response	Wonderful Citrus

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Edits to plan	not noted	We request that the MVWC be specifically identified in the early chapter(s) of the GSP, as a distinct entity within the County GSA's area along with the included agencies. We provide the following summary text for inclusion in the plan. "Madera Valley Water Company is located in the County of Madera north of the City of Madera and was constructed in 1956. Located north of Avenue 17 between Road 26 and Road 27. It encompasses approximately 1,600 acres. The population served is estimated at 8,900. The majority of the connections are residential. The lot sizes range from ¼ acre to 1 acre. There are approximately 50 commercial properties which consist mainly of small retail stores, restaurants, offices, and several gas stations. The water system has 5 wells ranging in depth of 543 feet to 770 feet and a 1.5-million-gallon elevated water storage tank. Each of the wells has a liquid chlorination unit for emergency chlorination. There are approximately 40 miles of pipeline in the system."	There are a number of individual agencies within the County GSA, and they do not have individual descriptions. This could be added to an update or an annual report, but needs to be done for all individual agencies at that time.	Madera Valley Water Company
Monitoring Network	not noted	Because MVWC serves 8,900 residents has been impacted in the last 3-5 years with unprecedented declines in water levels we believe that at least one SGMA-specific monitoring well should be included in or immediately adjacent to our service area.	Recommendation noted. The GSP's Monitoring Network includes monitoring wells in the vicinity of MVWC. A RMS well for water levels (MID RMS-16) is located very near to MVWC and has been historically monitored as part of the CASGEM program.	Madera Valley Water Company
Subsidence	not noted	Having already experienced infrastructure issues due to subsidence to date, and anticipating additional engineering projects may be required in response to additional subsidence, MVWC believes that subsidence is an undesired result of increased groundwater usage that needs to be specifically addressed in greater detail in the GSP.	The GSP does include procedures for adaptive management for subsidence. See also Multiple Comment Subject Area Response.	Madera Valley Water Company
Groundwater Quality	not noted	The GSP should address the impacts of the lowering groundwater levels on groundwater quality in greater detail and identify the possible mitigation of groundwater quality issues over the planning horizon of the GSP.	The GSP is not intended nor required to be the primary means of addressing groundwater quality issues in the subbasin. See also, Multiple Comment Subject Area response.	Madera Valley Water Company

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	Although it is stated in the GSP that agricultural pumping is the dominant use of groundwater in the Basin, MVWC understands that we have to do our part to reduce groundwater usage. We have recently successfully received recognition as a disadvantaged community (DAC) from the state, which will allow us to pursue additional funding sources for future projects. We are currently pursuing state funding sources to implement flow meter installation for each connection in our service area. We anticipate that once we establish water use for each residence, we can pursue potential management actions such as conservation programs and tiered rate structures that will result in a decrease in per capita groundwater consumption in our service area. We anticipate that these actions will result in a decrease of at least 30% in our annual groundwater pumping volume. This project should be included in the GSP.	Comment noted. Projects not submitted during the project submittal time period cannot be included in the GSP due to the need to review and write up the project. This project will be considered for addition during the five year update.	Madera Valley Water Company
Edits to plan	not noted	MVWC provided more than 30 years of data to the GSA consulting team for use in the GSP development, but we see no evidence in the plan that it was considered or utilized. Will there be an appendix or some acknowledgement that our data was used in the development of the plan	Data provided by MVWC during the preliminary data collection and analysis work for Madera Subbasin include annual system production values for 1996-2016 and sporadic water level measurements for their wells indicated by year (no measurement date or other time of year provided) between 1996 and 2017. Because of the lack of indication of measurement date on the provided water level data, these data were difficult to incorporate into the GSP analyses. One MVWC well is included as an identified RMS well being monitored by other programs (Division of Drinking Water) for groundwater quality (Well ID 1010010-007), and a separate RMS well for water levels (MID RMS-16) is located very near to MVWC and has been historically monitored as part of the CASGEM program.	Madera Valley Water Company
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	The GSP utilizes estimates for much of the pumping data collection. The GSP should include a policy or at least a discussion of having all non-de minimis wells metered to ensure accuracy of the pumping data and for potential use to generate revenue to pay for recharge projects based on actual use.	The GSP discusses in Chapter 5 that each GSA is responsible to develop a budget and funding mechanism. The Madera County GSA recently passed a fee structure to pay for the GSA's activities.	Madera Valley Water Company

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	The GSP should include a policy or at least a discussion on how basin-wide or multi agency projects would be planned and developed to include all stake holders, including small agencies and DAC's, to ensure that recharge or other mitigation projects are effective and economically feasible.	Stakeholder engagement in GSP development and implementation is discussed in Chapters 2, 4, and 5. The GSAs decided to implement projects by GSA. Each project implemented by an individual GSA also benefits the subbasin and the coordination and administrative effort is less when a project is implemented by a single GSA. Each GSA is responsible ensure that the recharge or other mitigation projects they are implementing are effective and economically feasible.	Madera Valley Water Company
Plan Implementation	not noted	Recommend that the implementation chapter include more detail on how the GSP would be implemented and include policy statements regarding implementation such as those discussed in these comments.	The GSP will be implemented through project implementation at the GSA level and coordination and review by all GSAs that each GSA is completing the projects they are responsible for on time.	Madera Valley Water Company
Hydrogeologic Conceptual Model (23 CCR §354.14)	not noted	The draft GSP states that the comments from representatives of DACs are considered, and examples of DACs are listed in the Table 2-5 Stakeholder Engagement Chart for GSP Development. However, the draft GSP does not provide a detailed description of how the DACs were identified, the names and locations of all of the communities, or any further details of the population in the communities or how they use groundwater. Without this information, it is not clear how the GSP can identify and consider the needs of these DAC beneficial users. It is recommended the GSP provide a map of all DAC areas.	Maps of wells in the subbasin are updated to identify SDACs and DACs in the subbasin. Average well depths are included in the Ch. 3 figures, and can be cross-referenced with SDACs and DACs.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Stakeholders	not noted	The GSP should modify the stakeholder list associated with the Environmental and Ecosystem Uses category to include the appropriate agencies and list of environmental \groups.	Comment acknowledged, stakeholder list updated	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Monitoring Network	not noted	Providing maps of the monitoring network overlaid with location of DACs, domestic wells, community water systems, GDEs, and any other sensitive beneficial users will allow the reader to evaluate the adequacy of the network to monitor conditions near these beneficial users.	Maps of wells in the subbasin are updated to identify SDACs and DACs in the subbasin. Average well depths are included in the Ch. 3 figures, and can be cross-referenced with SDACs and DACs.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Levels Related to Domestic Wells	not noted	Based on the information presented in the draft GSP, it is not clear how representative the monitoring network is for domestic well users. The GSP should therefore explain how the proposed monitoring network is adequate to monitor conditions for these sensitive beneficial users	A thorough analysis of anticipated impacts is provided in the GSP, including hydrographs for RMS locations included in Appendix 3. However, the impact evaluation has to consider also the proposed domestic well mitigation program described in Appendix 3. See also the Multiple Comment Subject Area response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Monitoring Network	3-47	The draft GSP proposes "a potential for future addition of up to 21 monitoring wells from the 2019 nested well installation program" but does not identify the location of these potential wells on maps (Section 3.5.1.1).The GSP should explicitly describe any future representative monitoring wells and identify the proposed locations and depths. When assessing the monitoring network data gaps, the GSP should consider the locations of beneficial users, including DACs, small water systems, and domestic wells.	Proposed nested monitoring well locations were shown in the GSP on various maps, including Figures 3-1 and 3-2. Two of the seven nested well site locations were changed based on recommendations from Leadership Council. The final depths and screen intervals could only be determined after results for pilot hole drilling are obtained at each site. However, the domestic well depths at each location are one of the key criteria reviewed for designing each nested well. All of the nested wells were located within or immediately adjacent to SDAC areas.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Conditions	not noted	The GSP should provide clear evidence of hydraulic disconnection where shallow groundwater is considered perched or identify hydraulic connection as a data gap. In addition, the GSP should consider perched water as a shallow aquifer, because even though it may not be pumped at present, it could be in the future.	Perched groundwater is discussed in the GSP, and available data clearly show the lack of hydraulic connection between perched zones and the regional aquifer where groundwater pumping occurs. Perched aquifers lack sufficient permeability and aquifer thickness to allow for pumping for water supply purposes.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Dependent Ecosystems	not noted	Areas with depth to groundwater greater than 30 feet can serve as a water source to some plants, e.g. oak trees, in the dry part of the year. The depth criterion of 30 feet is presented as a criterion for inclusion, not a standalone criterion for exclusion. In other words, if groundwater is within 30 feet of the ground surface, then a GDE can be identified. If it is not, then further analysis must be conducted.	See Multiple Comment Subject Area Response. Comment noted. Where DTW was greater than 30 feet, other criteria such as river hydrology (flow permanence and gaining vs. losing reaches) and dominant vegetation were used to determine whether potential GDEs should be considered as final GDEs. Screening of potential GDEs also included field evaluation of potential GDEs where initial uncertainty was high. Edits made in Section 2.2.2.6 to further explain and clarify.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Conditions	2-43	Figures 2-71 and 2-72: the GSP should provide more details on how depth to groundwater contour maps were developed.	GSP revised to describe contouring process.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems	not noted	The GSP uses depth to water maps from 2014 and 2016; 2016 is after the SGMA benchmark date of January 1, 2015. It should focus on groundwater condition data prior to the SGMA benchmark date instead. The GSP should use depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. It should refer to TNC's guidance on Identifying GDEs Under SGMA (https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf) for best practices for developing depth to groundwater contours. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network.	The GSP was revised to describe contouring process. Additional description and rationale for using groundwater levels for 2014 and 2016 was added to the GSP. The depth to groundwater contouring presented in the draft GSP was conducted as requested in this comment. Also see Multiple Comment Subject Area Response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Dependent Ecosystems	not noted	The GSP should further explain how NC Dataset polygons adjacent to the San Joaquin River were retained or removed as potential GDEs. On Appendix 2.B, Figure 1 polygons are shown as removed based on depth to groundwater greater than 30 feet, but the groundwater depth contours (Figures 2-71 and 2-72) do not show enough detail to make this distinction. The GSP should also consider retaining all NC Dataset polygons adjacent to the San Joaquin River due to the essential ecosystem function that the riparian vegetation community performs for the critical habitat of the Chinook salmon. As shown on Appendix 2.B, Figure 1, it appears that there is one potential GDE unit in light green on the far western border of the Subbasin. The GSP should describe further and clarify if this is indeed a polygon from the NC Dataset that was kept as a potential GDE. It is recommended that the GSP should obtain groundwater data before concluding that there are no adverse impacts to the GDE Unit and make plans to address this data gap in the Monitoring section of the GSP.	Comment acknowledged. There is no potential GDE unit in light green ("kept") at that location on Appendix 2.B, Figure 1. The shading at that location is light blue, indicating DTW less than or equal to 30 feet in either 2014 or 2016. This has been verified using the source data and GIS-derived mapping layer. Also see Multiple Comment Subject Area Response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Surface Water – Groundwater Interaction	not noted	ISWs are best estimated by first determining which reaches are completely disconnected from groundwater. This approach would involve comparing groundwater elevations with a land surface DEM that could identify which surface waters have groundwater consistently below surface water features, such that an unsaturated zone would separate surface water from groundwater. Groundwater elevations that are always deeper than 50 feet below the land surface can be used to identify the above ground reaches as disconnected surface waters. The GSP should provide further evidence, such as a cross-sections or corresponding hydrographs, to show the relationship between the river channel and the depth to groundwater at wells near the Fresno River and San Joaquin river to improve ISW mapping. Where data gaps exist regarding the existence of ISWs, make plans to reconcile them in the Monitoring section. It should also provide estimates of current and historical surface water depletions for the San Joaquin River, quantified and described by reach, season, and water year type. Provide a discussion of the expected effect of the San Joaquin River Restoration Program (SJRRP) on flows, GDEs and ISWs along the San Joaquin River. To improve ISW mapping, it should reconcile data gaps (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP to address the temporal connectedness of ISWs with groundwater.	See Multiple Comment Subject Area Response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Water Budget	not noted	Given the uncertainties of climate change, it is appropriate to analyze the impacts of climate change for a range of scenarios (e.g., a mild effects scenario and a high (worst case) effects scenario). Therefore, it is recommended the GSP also includes the DWR-provided 2070 climate change factors to represent a high climate change scenario.	The GSP considers climate change as a sensitivity model run and analysis, and uses a specific set of climate change parameters specified by DWR. The intent is to show the magnitude of effects on groundwater due to a given reasonably foreseeable scenario of potential climate change impacts on precipitation, evapotranspiration, and surface water supply. The GSP does not evaluate multiple potential climate change scenarios because there are an endless number of possibilities for future climate change. Ultimately, the GSAs will have to do adaptive management and adjust the projects and the amount of demand management to address the climate change that actually occurs. This is now reinforced in the Executive Summary (ES-2, Water Budget section).	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Water Budget	not noted	The GSP also does not provide specifics on drinking water demands separated by large urban water systems, domestic well users, or community water systems in the historical, current or future water budgets. This information should be provided for full transparency of the assumptions, data, and results of the water budgets.	Information used to develop urban pumping estimates has been added to Section 2.2.3.3 (Water Budget Components and Uncertainties). This includes information on drinking water demands.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Water Budget	not noted	The GSP should include information on the methods used to estimate urban pumping including reported data (if any), population estimates used, per capita water use estimates used, and the areas and users of the subbasin represented by the urban pumping water budget component. The GSP should include information on how the changes in urban pumping were determined for the projected water budget and how these changes may impact small community water systems and domestic well users. The GSP should also discuss how the urban water demands presented in historical the water budget related to the historical water demands reported by the City of Madera in its Urban Water Management Plans.	Information used to develop urban pumping estimates has been added to Section 2.2.3.3 (Water Budget Components and Uncertainties). Groundwater pumping records from City of Madera were used when available. Information regarding projected water budget development is also described in Chapter 2.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Identifying and Mapping GDEs (23 CCR §354.16)	not noted	Due to the presence of GDEs in the Madera Subbasin, the GSP should quantify the evapotranspiration from groundwater by riparian vegetation. It should also include ET of groundwater in the water budget or explain where it is included	Water use for native vegetation is included. SGMA does not require riparian vegetation to be accounted for separately from native vegetation. ET of groundwater is included in ET of applied water.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Management Areas	not noted	Tables 1-1 and 1-6 identify that management areas are discussed in Section 2.2.4. However, Section 2.2.4 does not appear to be included in the GSP and there is no other section discussing management areas. Therefore, it is assumed that the GSAs have not identified any management areas.	Section 2.2.4 Management Areas had been added to the GSP. Formation of management areas under SGMA is optional and not required. GSA and consultant team review of Basin Setting conditions led to a determination that management areas were not necessary. Regardless of the management area decision, MO/MT for each RMS site are different for each RMS.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Management Areas	not noted	If management areas are defined in the future, care should be taken so that they and the associated monitoring network are designed to adequately assess and protect against impacts to all beneficial users, including GDEs and DACs.	Comment acknowledged.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Levels Related to Domestic Wells	not noted	There are no upper aquifer or composite RMS wells located in the northern, central or southeastern portions of the subbasin, indicating that current monitoring network lacks adequate coverage for domestic wells in those areas, including those in the communities of Fairmead and Chowchilla (both DACs), Storey, Lake Madera Country Estates, and the area north of Madera. Therefore, based on the information presented in the draft GSP, it is not clear how representative the monitoring network is for domestic well users. The GSP should therefore explain how the proposed monitoring network is adequate to monitor conditions for these sensitive beneficial users.	A thorough analysis of anticipated impacts is provided in the GSP, including hydrographs for RMS locations included in Appendix 3. However, the impact evaluation has to consider also the proposed domestic well mitigation program described in Appendix 3. The RMS network will be expanded in the future with new nested monitoring wells and other potential well locations. See also the Multiple Comment Subject Area response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Monitoring Network	not noted	The GSP should discuss whether there are data gaps in the monitoring networks for DACs and provide maps showing the monitoring network in relation to locations of the DACs and GDEs, so that the public may review the adequacy of the monitoring network to monitor for impacts to these beneficial users.	Maps of wells in the subbasin are updated to identify SDACs and DACs in the subbasin. Average well depths are included in the Ch. 3 figures, and can be cross-referenced with SDACs and DACs.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Undesirable Results (23 CCR §354.26)	not noted	Based on the presented information, domestic well uses are considered under URs and for the development of water level MOS and MTs, but DAC members are not explicitly considered. More detail and specifics regarding DAC members, including those that rely on smaller community drinking water systems, not only domestic wells, is necessary to demonstrate that these beneficial users were adequately considered	Nested monitoring wells are being installed and are anticipated to be added to the RMS network in the future. See also other responses to similar comments above.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Levels Related to Domestic Wells	not noted	If water levels reach the MOs, water levels would increase by an average of approximately 22 feet across all RMS wells in the subbasin compared to current conditions (2016), with localized water decreases as much as 72 feet below current conditions. At the MTs, water levels at the RMS wells would decrease by an average of approximately 64 feet from current conditions. In several communities, this decline is estimated to be over 100 feet from current conditions (COM RMS-2, MCE RMS-2, MWD RMS-1, COM RMS-1). Given that the subbasin is in critical overdraft, the GSP should explain how the projected additional water level declines of over 64 feet on average and over 100 feet near groundwater-dependent communities will result in sustainable conditions for beneficial users.	See Multiple Comment Subject Area Response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Quality	not noted	The draft GSP sets the MTs for water quality constituents as the MCLs or the recent concentration plus 20 percent when existing or historical concentrations already exceed the MCL. However, Table 3-7 shows the MT values for all wells as MCLs, and includes a note that "Values will be confirmed and/or adjusted as needed based on results from initial sampling for constituents. If existing levels exceed the MCL, then the MT is set at the existing concentration plus 20 percent" even for the existing RMS wells. This appears to be inconsistent with the MT methodology described in Section 3.3. Therefore, it is not clear what the GSAs intend to use as water quality MTs, and thus how sustainability for water quality is defined for the subbasin.	The GSP is not intended nor required to be the primary means of addressing groundwater quality issues in the subbasin. That being said, the RMS groundwater quality monitoring program in the GSP is quite robust compared to GSP requirements. See also, Multiple Comment Subject Area response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Dependent Ecosystems	not noted	The draft GSP defines the undesirable result for groundwater levels is defined as more than 30 percent of RMS exceeding their minimum thresholds for the same two consecutive Fall readings. The use of 30 percent to define an undesirable result does not allow for the occurrence of low water levels in one area, such as near a GDE, to be an Undesirable Result, which may impact an environmental beneficial use.	See Multiple Comment Subject Area Response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Levels Related to Domestic Wells	not noted	The GSP should present a thorough, robust, and transparent analysis, supported by maps, that identifies: (1) which domestic wells are likely to be impacted at the MTs and at the MOs, and (2) the location of the likely impacted wells with respect to DACs and other communities and systems dependent on groundwater; (3) how small water system production wells will be affected by MOs and MTs; and (4) clearly identify the increased well operation costs for domestic well users and public water systems associated with water level MOs and MTs.	See Multiple Comment Subject Area Response and updates to: Ch. 3 maps, Appendix 3.D.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Quality	not noted	The GSP should similarly analyze the potential impacts of setting minimum thresholds that exceed water quality objectives on domestic wells and community water systems.	See Multiple Comment Subject Area response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Levels Related to Domestic Wells	not noted	The draft GSP should include more detailed information about the potential impacts on sensitive drinking water users, such as 1) where the likely impacted wells are located, 2) what communities are most affected (including DACs), 3) an estimate of the size of the population that relies on these domestic wells, or 4) if the creation a new or expanded community water system could address some or all of the population affected by the loss of domestic wells.	See Multiple Comment Subject Area Response and updates to: Ch. 3 maps, Appendix 3.D.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Dependent Ecosystems	3-37	The GSP should add "potential adverse impacts to GDEs" to the list of potential undesirable results presented in Table 3-8 and consider the use of separate management areas for the GDE Units, so that Sustainable Management Criteria protective of GDEs can be established for the GDE Units. It should also elaborate on how the exceedance criteria (30% of RMSs) for chronic lowering of groundwater levels would be applied in a way that is protective of significant and unreasonable harm to GDEs.	See Multiple Comment Subject Area Response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Groundwater Dependent Ecosystems	not noted	The GSP should also discuss any potential undesirable results from degradation of water quality that may impact GDEs and freshwater species in the area.	See Multiple Comment Subject Area Response.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Groundwater Levels Related to Domestic Wells	App. 3.D.	The draft GSP states that a temporary domestic well mitigation program is under consideration to address groundwater level declines that are expected to occur during the GSP implementation period. Appendix 3D of the draft GSP presents an economic analysis of the effects of implementing the GSP, including estimated costs to replace domestic wells that will be dewatered "with [Sustainable Groundwater Management Act] SGMA" and "without SGMA." According to the draft GSP, 87 domestic wells will be impacted prior to 2020, 43 more will be impacted under GSP implementation, and an additional 185 domestic wells would be impacted if the GSP was not implemented (i.e., if there were no changes as a result of SGMA). The draft GSP does not, however, present the results of this impact analysis in a clear and transparent manner, illustrating for example, 1) where the likely impacted wells are located, 2) what communities are most affected (including DACs), 3) an estimate of the size of the population that relies on these domestic wells, or 4) if the creation a new or expanded community water system could address some or all of the population affected by the loss of domestic wells. Several of these aspects are listed as potential mitigation measures under Section 3.2.4 of Appendix 3D and thus are important not only for the public to understand and review, but for the GSAs to understand in the development of their domestic well mitigation program.	See Multiple Comment Subject Area Response and updates to Appendix 3.D.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	The likely benefits and impacts to DAC members by the proposed projects and management actions are not clearly identified in the GSP. A discussion should be added for each project or management action to clearly identify the benefits to DAC drinking water users and potential impacts to the water supply. For all potential impacts, the project/management action should include a clear plan to monitor for, prevent, and/or mitigate against such impacts.	This information is generally provided in the GSP by comparison of data in Appendix 3 to maps showing DAC areas.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

Comment Category/ General Topic	GSP Page	Comment	Response	Organization or Commenter
Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)	not noted	The GSP should evaluate any potential impacts of projects and management actions on groundwater levels near surface water bodies.	The hydrographs in Appendix 3 provide the requested information.	Clean Water Action/Clean Water Fund, Local Government Commission, Audubon California, American Rivers, The Nature Conservancy

4 DOCUMENTATION OF COMMENTS RECEIVED

All comments received are included in this section exactly as they were received.

Stephanie Anagnoson

From: Madera County Water <website@maderacountywater.com>
Sent: Tuesday, April 2, 2019 1:40 PM
To: MCwater
Subject: New submission from Contact Us

Follow Up Flag: Follow up
Flag Status: Flagged

Name

Al Solis

Email

al@soldevelopment.com

Phone

(559) 709-0805

Message

Chapter 1 suggestions

Update Fig. 1.1 & 1.6 & 1.8 & 1.14 to reflect recent annexation to Root Creek and removal from MID.

Update 1.3,1.3, Page 8 with new MADCO Supervisor Board meeting dates

Meta

http://www.maderacountywater.com/maps/madera-subbasin/ 96.67.196.153 Mozilla/5.0 (Windows NT 6.1; Win64; x64) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/73.0.3683.86 Safari/537.36

7/23/19

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637

93637-354800

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: 7/16/2019

Submitted By: Anonymous

Address: NA

Phone Number / Email: NA

APNs: NA

Located in Groundwater Sustainability Agency (GSA):
☐ Madera County ☐ MID ☐ City of Madera ☐ MWD ☒ Other NA

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☒ Other NA

Chapter No. / Page No. of GSP: 1/8

Comments: There are significant riparian deliveries to landowners within the Madera County GSA who hold riparian water rights to the Fresno River. For example see the attached pages documenting riparian diversions by one landowner diverting over 1,000 acre feet per year. There are many other landowners diverting riparian water from the Fresno River.

Please update the attached highlighted paragraph to acknowledge the voluminous Fresno River riparian water diversions.

Chapter No. / Page No. of GSP: _____

Comments: _____

Chapter No. / Page No. of GSP: _____

Comments: _____

Chapter No. / Page No. of GSP: _____

Comments: _____

1.3.1.3 Madera County GSA

Madera County (MC) GSA was formed on January 27, 2017 and manages approximately 177,800 acres of the Madera Subbasin, representing the largest jurisdictional area within the subbasin (Figure 1-6). As of 2015, the majority of this area is comprised of agricultural land (48%) or native vegetation (39%). The remaining area is primarily developed land (includes urban, semi-agricultural, and industrial land) (12%), though some water surface exists (1%).

In 2015, irrigated agricultural land represented over 82,000 acres in MC GSA. Much of this area is used for cultivating orchard crops (primarily almonds and pistachios) and grapes (Figure 1-7). Surface water supplies available for agriculture in MC GSA is limited to riparian deliveries to individual water rights users along the San Joaquin River and a small volume of Central Valley Project (CVP) supply received under contract with the U.S. Bureau of Reclamation (Reclamation). Thus, agricultural water demand in MC GSA is primarily fulfilled by groundwater.

The Board of Directors for MC GSA is the Madera County Board of Supervisors. As the Board of Directors, the Board of Supervisors meets on the first Tuesday of each month at the end of the 10 a.m. Board of Supervisors Meeting. These meetings are open to the public (200 West Fourth Street, Madera, CA, 93637) and are recorded and available for public viewing on the Madera County website (maderacounty.com). Madera County GSA also has an Advisory Committee that meets bimonthly and provides feedback to the Board of Supervisors on SGMA-related matters. Members of the committee also serve as ambassadors in their communities regarding water issues.

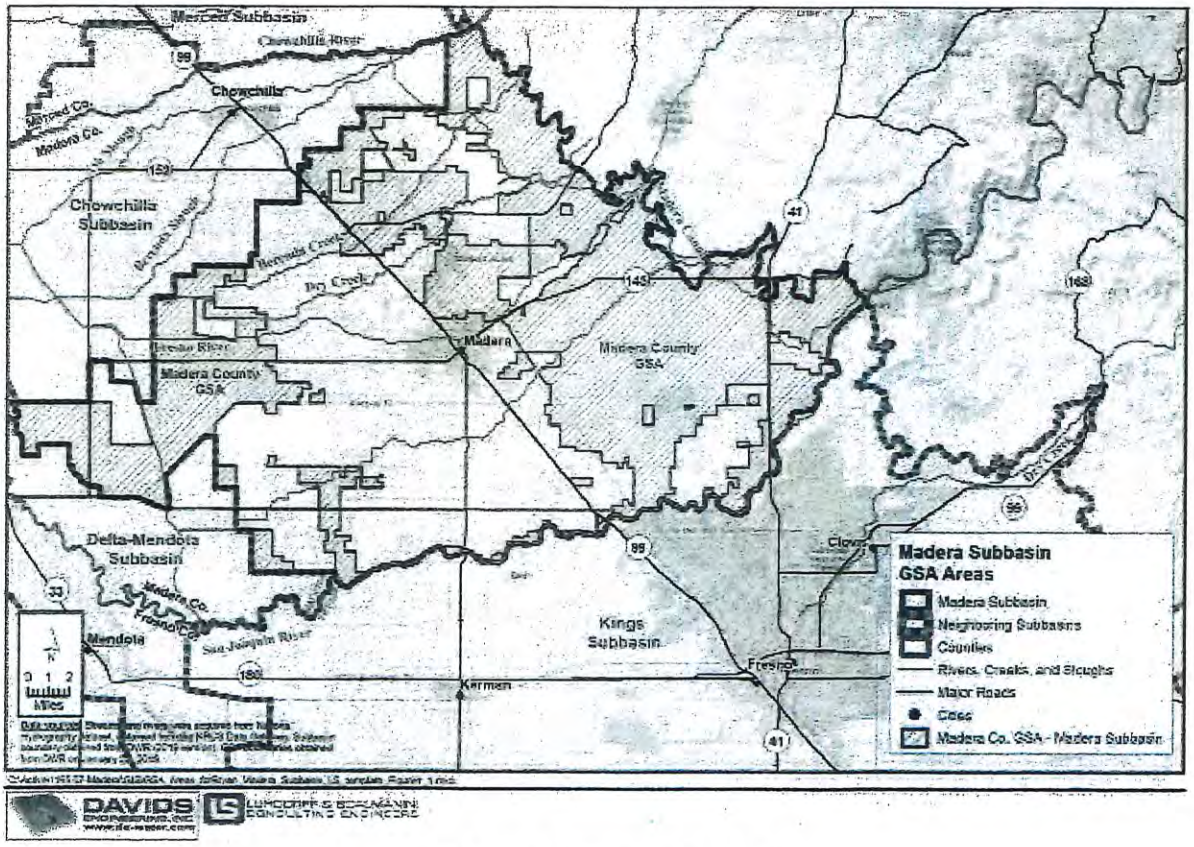
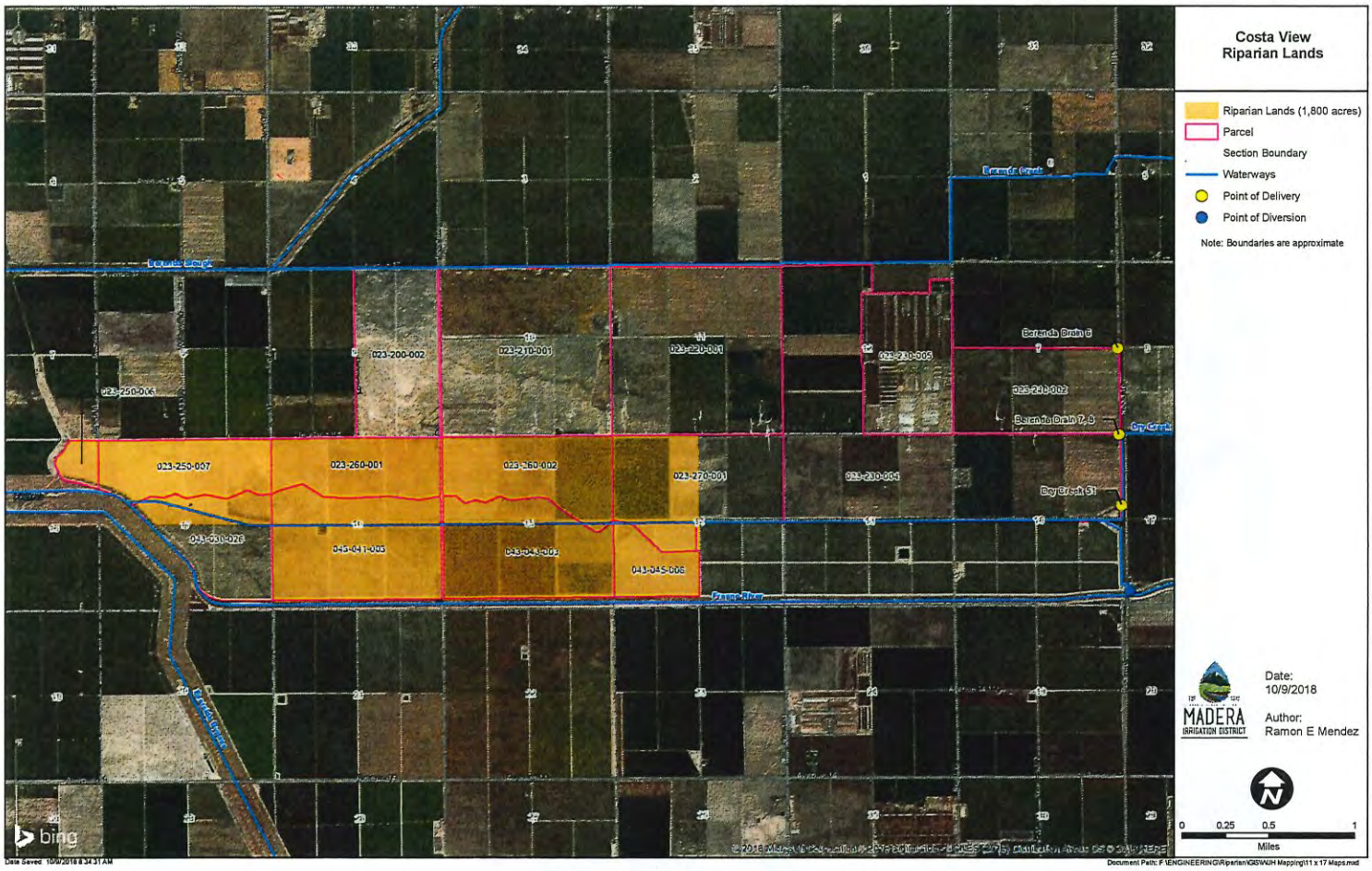


Figure 1-6. Madera County GSA Map.


Costa View
Riparian Lands
Riparian Lands (1,800 acres)
Parcel
Section Boundary
Waterways
Point of Delivery
Point of Diversion
Note: Boundaries are approximate
Berenda Creek
Berenda Slough
Berenda Drain 6
Berenda Drain 7-8
Dry Creek
Dry Creek 51
Fresno River
Dry Creek
023-200-002
023-210-001
023-220-001
023-230-005
023-240-002
023-250-006
023-250-007
023-260-001
023-260-002
023-270-001
023-230-004
043-031-026
043-041-003
043-041-002
043-045-006
Date:
10/9/2018
Author:
Ramon E Mendez
MADERA IRRIGATION DISTRICT
0 0.25 0.5 1
Miles
bing
Date Saved: 10/9/2018 8:34:31 AM
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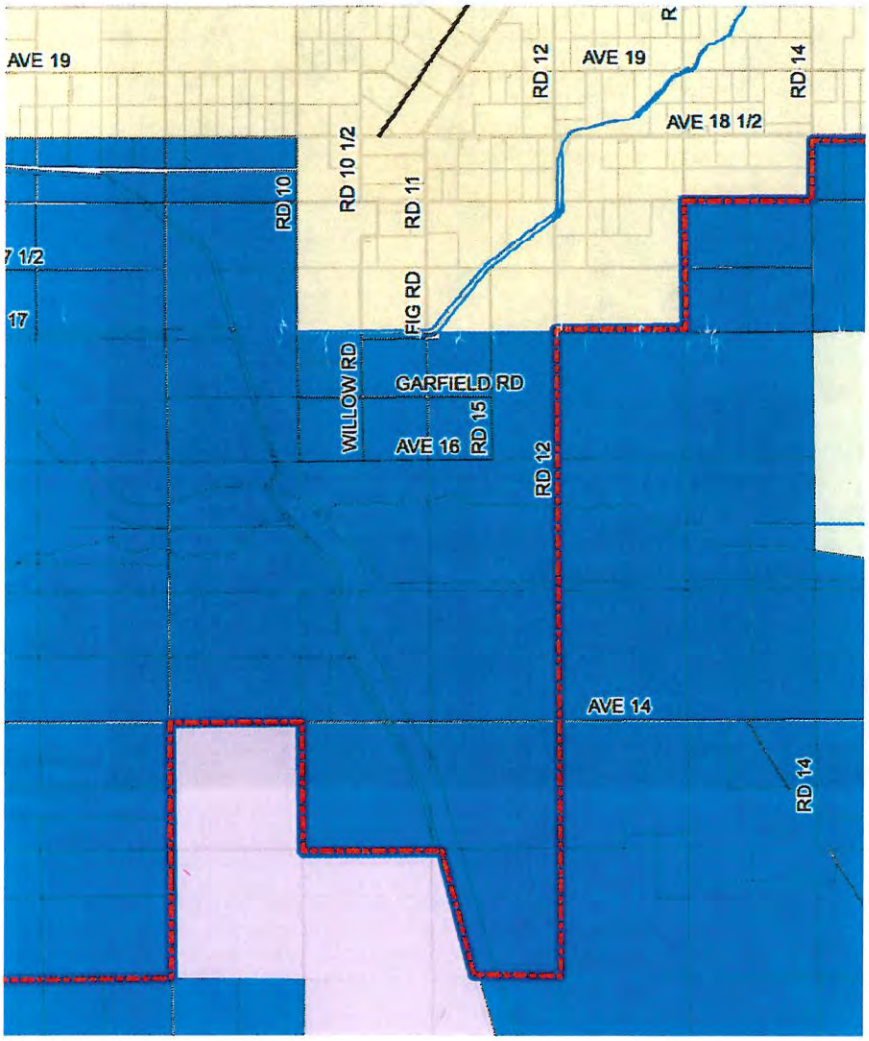
MADERA COUNTY

Groundwater Sustainability Agencies



[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2018

Primary Owner: COSTA VIEW FARMS #2, A CA GEN PARTNERSHIP
Statement Number: S005005
Date Submitted: 06/27/2019

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1903

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	Area Irrigated (Acres)	Primary Irrigation Method
Alfalfa	No	961	Surface (example: flood)
Almonds and Other Nuts	No	948.20	Low-volume (example: micro-sprinkler, drip)
Corn	Yes	1666	
Grains (wheat, oat)	No	2994	Surface (example: flood)
Pasture	No	160	Surface (example: flood)

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5. Maximum Rate of Diversion	
Month	Rate of Diversion
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

6. Amount of Water Diverted and Used			
Month	Amount directly diverted (Acre-Feet)	Amount diverted or collected to storage (Acre-Feet)	Amount beneficially used (Acre-Feet)
January	0	0	0
February	0	0	0

March	0	0	0
April	438.64	0	438.64
May	1065.09	0	1065.09
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0
Total	1503.73	0	1503.73
Type of Diversion	Direct Diversion Only		
Comments			

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2018	
6p. Amount (Acre-Feet) projected for 2019	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M014140
This Device/Method was used to measure water during the current reporting period	Yes
M1. Briefly describe the measurement device or method	lift pump
M2. Nickname	Pump 11-5R
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	18-05565
M6. Model number	M0312
M7. Approximate date of installation	11/01/2018

M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	05/22/2018
M10. Estimated accuracy of measurement	100.3%
M11. Description of calibration method	Volumetric
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	Robert Galusha
M14. Phone number	(951) 652-6811
M15. Email	customerservice@mccrometer.com
M16. Qualifications of the individual	
M17. License number and type for the qualified individual above and/or any other relevant explanation	ID #176785
M18. Type of data recorder device / method	Analog register (flow meter)
M19. Data recorder device make	McCrometer
M20. Data recorder serial number	18-05565
M21. Data recorder model number	M0312
M22. Data recorder units of measurement	Acre-Feet
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	No
M26. I report my diversion or storage date by telemetry to the following website	

Measurement Attachments			
Measurement ID Number	**File Name**	**Description**	**Size**
No attachments			

Measurement Data Files			
Measurement ID Number	**File Name**	**Description**	**Size**
No data files			

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Costa View Farms implements land leveling of the fields so that the water can be used more efficiently across acres of crops. Costa View Farms also puts return drains in the fields and moves the water to re-use it on different fields within the riparian place of use. Additionally, Costa View Farms uses drip and tape line irrigation to conserve water.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	No

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility,	No

	desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Please note that the surface water was measured by a combination of the measurement device identified in this report and through measurements by Madera Irrigation District's (MID's) watermaster. There was a new meter installed in November 2018, and that and MID's measurements are being used for 2019 diversions. However, MID is controlling how much water Costa View Farms receives and we do not agree with their numbers. We believe we should be receiving more riparian water for the 4,005 irrigated riparian acres.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Lauren
Last Name	Layne
Relation to Water Right	Other: Legal Counsel
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017

Primary Owner: COSTA VIEW FARMS #2, A CA GEN PARTNERSHIP
Statement Number: S005005
Date Submitted: 06/15/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1903

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Alfalfa	No	548	Surface (example: flood)
Almonds and Other Nuts	Yes	950	Low-volume (example: micro-sprinkler, drip)
Corn	Yes	1432	Surface (example: flood)
Grains (wheat, oat)	Yes	1592	Surface (example: flood)
Pasture	Yes	160	Surface (example: flood)

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion (CFS)**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		77.02	0	77.02
February		109.84	0	109.84
March		197.26	0	197.26
April		382.17	0	382.17
May		205.14	0	205.14
June		641.04	0	641.04
July		0	0	0
August		0	0	0
September		0	0	0
October		0	0	0
November		0	0	0
December		0	0	0
Total		1612.47	0	1612.47
Type of Diversion	Direct Diversion Only			

Comments	

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2017	
6p. Amount (Acre-Feet) projected for 2018	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	My diversion is measured by a watermaster assigned to the following service area: Madera Irrigation District
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Costa View Farms implements land leveling of the fields so that the water can be used more efficiently across acres of crops. Costa View Farms also put return drains in the fields and moves the water to re-use it on different fields within the place of use. Additionally, Costa View Farms uses drip and tape line irrigation to conserve water.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No

b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Please note in Section 4 that since there is not a category for Sudan Grass, that crop is listed as "pasture." Statement of Diversion and Use S021430 is no longer necessary as that information is included in this Statement of Diversion and Use S005005.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Lauren
Last Name	Layne
Relation to Water Right	Other: Legal Counsel
The information in the report is true to the best of his/her knowledge and belief	Yes

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: _____

Submitted By: _____

Address: _____

Phone Number / Email: _____

APNs: _____

Located in Groundwater Sustainability Agency (GSA):
☐ Madera County ☐ MID ☐ City of Madera ☐ MWD ☐ Other _____

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☐ Other _____

Chapter No. / Page No. of GSP: _____

Comments: _____

_____

_____

FRESNO CA 937
WED 07 AUG 2019 PM

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637

RECEIVED
AUG 14 2019
BY:_____

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Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: 7/16/2019

Submitted By: Anonymous

Address: NA

Phone Number / Email: NA

APNs: NA

Located in Groundwater Sustainability Agency (GSA):
☐ Madera County ☐ MID ☐ City of Madera ☐ MWD ☒ Other NA

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☒ Other NA

Chapter No. / Page No. of GSP: 1/8

Comments: There are significant riparian deliveries to landowners within the Madera County GSA who hold riparian water rights to the Fresno River. For example see the attached pages documenting riparian diversions by one landowner diverting over 1,000 acre feet per year. There are many other landowners diverting riparian water from the Fresno River.

Please update the attached highlighted paragraph to acknowledge the voluminous Fresno River riparian water diversions.

Chapter No. / Page No. of GSP: _____

Comments: _____

Chapter No. / Page No. of GSP: _____

Comments: _____

Chapter No. / Page No. of GSP: _____

Comments: _____

1.3.1.3 Madera County GSA

Madera County (MC) GSA was formed on January 27, 2017 and manages approximately 177,800 acres of the Madera Subbasin, representing the largest jurisdictional area within the subbasin (Figure 1-6). As of 2015, the majority of this area is comprised of agricultural land (48%) or native vegetation (39%). The remaining area is primarily developed land (includes urban, semi-agricultural, and industrial land) (12%), though some water surface exists (1%).

In 2015, irrigated agricultural land represented over 82,000 acres in MC GSA. Much of this area is used for cultivating orchard crops (primarily almonds and pistachios) and grapes (Figure 1-7). Surface water supplies available for agriculture in MC GSA is limited to riparian deliveries to individual water rights users along the San Joaquin River and a small volume of Central Valley Project (CVP) supply received under contract with the U.S. Bureau of Reclamation (Reclamation). Thus, agricultural water demand in MC GSA is primarily fulfilled by groundwater.

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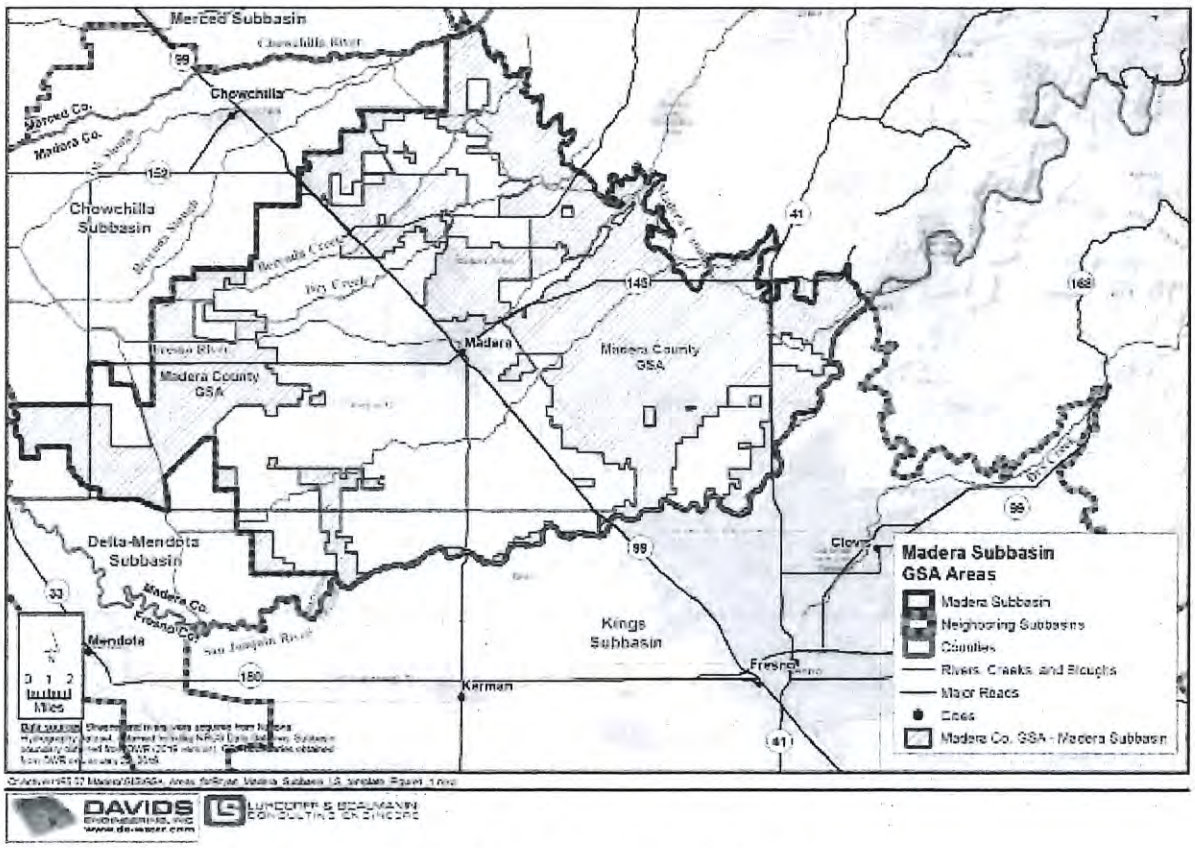
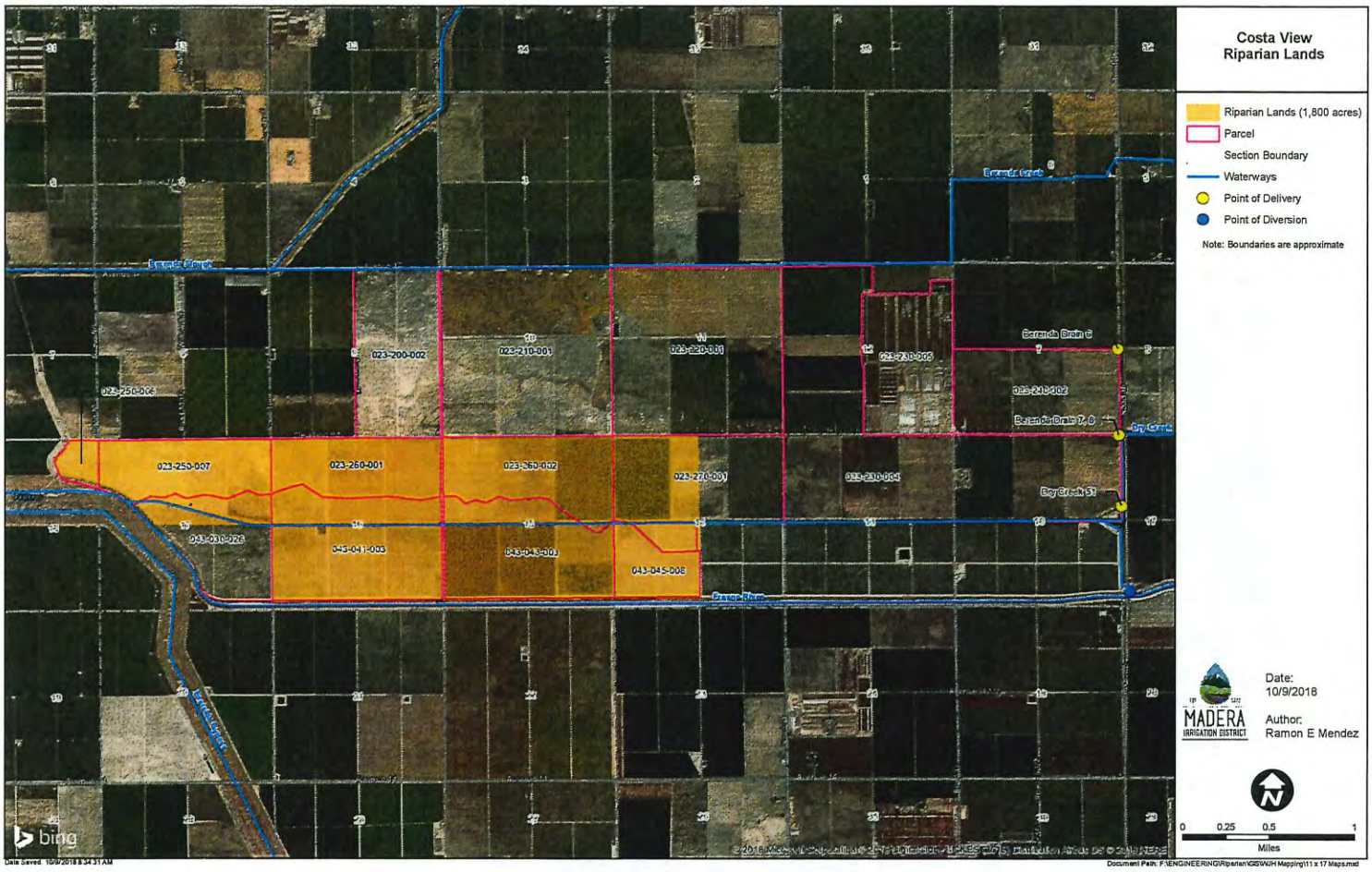


Figure 1-6. Madera County GSA Map.



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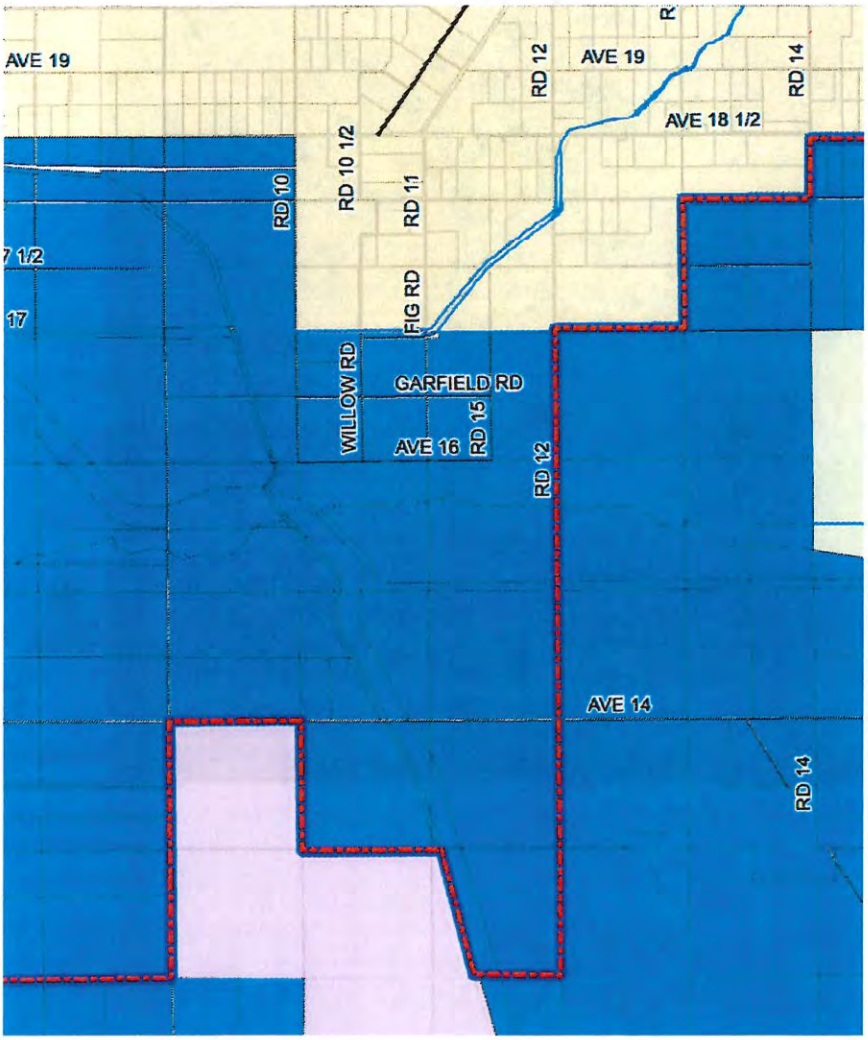
MADERA COUNTY

Groundwater Sustainability Agencies



[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2018

Primary Owner: COSTA VIEW FARMS #2, A CA GEN PARTNERSHIP
Statement Number: S005005
Date Submitted: 06/27/2019

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1903

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	Area Irrigated (Acres)	Primary Irrigation Method
Alfalfa	No	961	Surface (example: flood)
Almonds and Other Nuts	No	948.20	Low-volume (example: micro-sprinkler, drip)
Corn	Yes	1666	
Grains (wheat, oat)	No	2994	Surface (example: flood)
Pasture	No	160	Surface (example: flood)

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5. Maximum Rate of Diversion	
Month	Rate of Diversion
January	
February	
March	
April	
May	
June	
July	
August	
September	
October	
November	
December	

6. Amount of Water Diverted and Used			
Month	Amount directly diverted (Acre-Feet)	Amount diverted or collected to storage (Acre-Feet)	Amount beneficially used (Acre-Feet)
January	0	0	0
February	0	0	0

March	0	0	0
April	438.64	0	438.64
May	1065.09	0	1065.09
June	0	0	0
July	0	0	0
August	0	0	0
September	0	0	0
October	0	0	0
November	0	0	0
December	0	0	0
Total	1503.73	0	1503.73
Type of Diversion	Direct Diversion Only		
Comments			

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2018	
6p. Amount (Acre-Feet) projected for 2019	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M014140
This Device/Method was used to measure water during the current reporting period	Yes
M1. Briefly describe the measurement device or method	lift pump
M2. Nickname	Pump 11-5R
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	18-05565
M6. Model number	M0312
M7. Approximate date of installation	11/01/2018

M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	05/22/2018
M10. Estimated accuracy of measurement	100.3%
M11. Description of calibration method	Volumetric
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	Robert Galusha
M14. Phone number	(951) 652-6811
M15. Email	customerservice@mccrometer.com
M16. Qualifications of the individual	
M17. License number and type for the qualified individual above and/or any other relevant explanation	ID #176785
M18. Type of data recorder device / method	Analog register (flow meter)
M19. Data recorder device make	McCrometer
M20. Data recorder serial number	18-05565
M21. Data recorder model number	M0312
M22. Data recorder units of measurement	Acre-Feet
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	No
M26. I report my diversion or storage date by telemetry to the following website	

Measurement Attachments			
Measurement ID Number	**File Name**	**Description**	**Size**
No attachments			

Measurement Data Files			
Measurement ID Number	**File Name**	**Description**	**Size**
No data files			

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Costa View Farms implements land leveling of the fields so that the water can be used more efficiently across acres of crops. Costa View Farms also puts return drains in the fields and moves the water to re-use it on different fields within the riparian place of use. Additionally, Costa View Farms uses drip and tape line irrigation to conserve water.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	No

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility,	No

	desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Please note that the surface water was measured by a combination of the measurement device identified in this report and through measurements by Madera Irrigation District's (MID's) watermaster. There was a new meter installed in November 2018, and that and MID's measurements are being used for 2019 diversions. However, MID is controlling how much water Costa View Farms receives and we do not agree with their numbers. We believe we should be receiving more riparian water for the 4,005 irrigated riparian acres.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Lauren
Last Name	Layne
Relation to Water Right	Other: Legal Counsel
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017

Primary Owner: COSTA VIEW FARMS #2, A CA GEN PARTNERSHIP
Statement Number: S005005
Date Submitted: 06/15/2018

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	Multiple Crops	Area Irrigated (Acres)	Primary Irrigation Method
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Almonds and Other Nuts	Yes	950	Low-volume (example: micro-sprinkler, drip)
Corn	Yes	1432	Surface (example: flood)
Grains (wheat, oat)	Yes	1592	Surface (example: flood)
Pasture	Yes	160	Surface (example: flood)

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	Rate of diversion (CFS)	Amount directly diverted (Acre-Feet)	Amount diverted or collected to storage (Acre-Feet)	Amount beneficially used (Acre-Feet)
January		77.02	0	77.02
February		109.84	0	109.84
March		197.26	0	197.26
April		382.17	0	382.17
May		205.14	0	205.14
June		641.04	0	641.04
July		0	0	0
August		0	0	0
September		0	0	0
October		0	0	0
November		0	0	0
December		0	0	0
Total		1612.47	0	1612.47
Type of Diversion	Direct Diversion Only			

Comments	

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2017	
6p. Amount (Acre-Feet) projected for 2018	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	My diversion is measured by a watermaster assigned to the following service area: Madera Irrigation District
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Costa View Farms implements land leveling of the fields so that the water can be used more efficiently across acres of crops. Costa View Farms also put return drains in the fields and moves the water to re-use it on different fields within the place of use. Additionally, Costa View Farms uses drip and tape line irrigation to conserve water.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No

b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Please note in Section 4 that since there is not a category for Sudan Grass, that crop is listed as "pasture." Statement of Diversion and Use S021430 is no longer necessary as that information is included in this Statement of Diversion and Use S005005.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Lauren
Last Name	Layne
Relation to Water Right	Other: Legal Counsel
The information in the report is true to the best of his/her knowledge and belief	Yes

Stephanie Anagnoson

From:	Bill Diedrich <agspray@sbcglobal.net>
Sent:	Sunday, May 19, 2019 8:56 AM
To:	MaderaGSPComments
Subject:	Figures
Follow Up Flag:	Follow up
Flag Status:	Flagged

Stephanie,

I'm trying to read and refer to tables and figures as I read. Can I suggest that they be placed closer to the narrative that refers to them. Where is figure 2-55? There are numerous figures that are referred to in Chapter 2 that I cannot find.

Best,

Bill D

California Poultry FEDERATION
4640 Spyres Way, Suite 4 | Modesto, CA 95356 | Phone: (209) 576-6355 | Fax: (209) 576-6119 | www.cpif.org

VIA E-MAIL
(MaderaGSPComments@maderacounty.com)

November 8, 2019

Members of the Madera Subbasin
Coordination Committee
c/o Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, California 93637

Re: Madera Subbasin GSP

Dear Members of the Madera Subbasin Coordination Committee:

The California Poultry Federation ("CPF") appreciates the opportunity to comment on the draft Madera Subbasin Groundwater Sustainability Plan (the "Draft GSP"). CPF is the trade association for California's diverse and dynamic poultry industry. Our members include growers, hatchers, breeders, and processors that work with chickens, turkeys, ducks, game birds, and squab. Water is essential for all of them—both for nutrition and for maintaining sanitary conditions. CPF therefore supports effective measures to assure reliable water supplies.

In this regard, CPF was pleased to see that the Draft GSP included recharge and conveyance projects. We recommend that the Madera Subbasin Coordination Committee make supply augmentation its top priority. CPF commends the Madera Irrigation District in particular for considering ways to encourage growers to participate in augmentation. Incentives such as additional extraction rights would be an excellent method of increasing landowner support for and participation in supply projects.

But we are concerned that the Madera County GSA appears to be emphasizing a "substantial demand management" program that contemplates reducing irrigated acreage by 50% without explaining specifically how that would be done. Although the Draft GSP sets out principles for developing any demand management program such as minimizing economic impact, maintaining established water rights, and incentivizing investment in water supply infrastructure, it was unclear how those were applied to choose the demand management goals and how they would be applied in the future. The public will need to have meaningful opportunities to participate in the development of any demand management measures, which should include adequate time to

evaluate supporting information and submit written comments. That is especially important in light of the finding (at Draft GSP page 4-45) that demand management will have direct economic costs of $53.9 million per year and additional indirect costs that currently are unknown. And we would expect all the Subbasin GSAs to do their best to ameliorate such impacts by adopting implementation measures that are cost-effective.

Please contact me if you need any further information about these comments.

Very truly yours,

Bill Mattos

Bill Mattos
President

Erik Smith's Mark-up 4/3/2019 Page 1 of 2

1.3.1.3 Madera County GSA

Madera County (MC) GSA was formed on January 27, 2017 and manages approximately 177,800 acres of the Madera Subbasin, representing the largest jurisdictional area within the subbasin (Figure 1-6). As of 2015, the majority of this area is comprised of agricultural land (48%) or native vegetation (39%). The remaining area is primarily developed land (includes urban, semi-agricultural, and industrial land) (12%), though some water surface exists (1%).

In 2015, irrigated agricultural land represented over 82,000 acres in MC GSA. Much of this area is used for cultivating orchard crops (primarily almonds and pistachios) and grapes (Figure 1-7). Surface water supplies available for agriculture in MC GSA is limited to riparian deliveries to individual water rights users along the San Joaquin River and a small volume of Central Valley Project (CVP) supply received under contract with the U.S. Bureau of Reclamation (Reclamation).* Thus, agricultural water demand in MC GSA is primarily fulfilled by groundwater.

The Board of Directors for MC GSA is the Madera County Board of Supervisors. As the Board of Directors, the Board of Supervisors meets on the first Tuesday of each month at the end of the 10 a.m. Board of Supervisors Meeting. These meetings are open to the public (200 West Fourth Street, Madera, CA, 93637) and are recorded and available for public viewing on the Madera County website (maderacounty.com). Madera County GSA also has an Advisory Committee that meets bimonthly and provides feedback to the Board of Supervisors on SGMA-related matters. Members of the committee also serve as ambassadors in their communities regarding water issues.

*Also, some landowners within the Madera County GSA hold riparian water rights to the Fresno River and receive deliveries of riparian water to satisfy their demands.

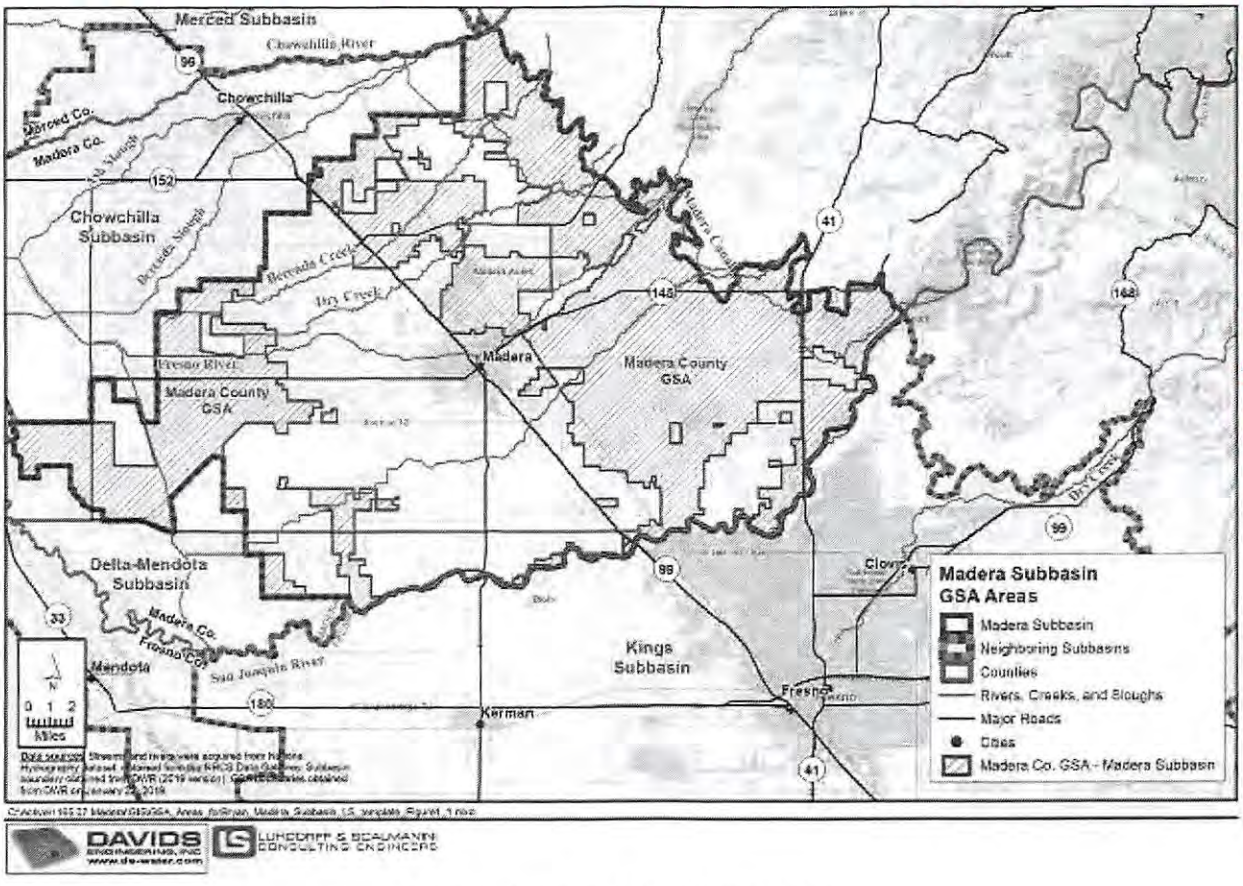

Figure 1-6. Madera County GSA Map.

Erik Smith's Mark-up 4/3/2019 Page 2 of 2

Figure 1-7. Almond Orchard in the Madera Subbasin.

1.3.1.4 Madera Irrigation District GSA

Madera Irrigation District (MID) GSA was formed on March 31, 2016 and manages approximately 133,850 acres of the Madera Subbasin (Figure 1-8). As of 2015, the majority of this area is comprised of agricultural land (80%). Much of the remaining area consists of native vegetation (12%) or developed land (7%), including urban, semi-agricultural, and industrial land. A small portion of the GSA is also covered by water surfaces (1%).

In 2015, irrigated agricultural land represented over 106,600 acres in MID GSA. This area is used primarily for cultivating almonds, grapes, and pistachios. MID GSA receives substantial surface water supplies to support agriculture. These include CVP supplies received under contract with Reclamation from the Madera Canal and local supplies received from Hidden Dam releases along the Fresno River (Figure 1-9), along with the MID's Pre 1914 water rights. Remaining agricultural water demand in MID GSA is fulfilled by privately owned groundwater wells, as well as riparian water-rights water delivered to landowners ~~along~~ riparian to the Fresno River.

The Board of Directors for MID GSA is the MID Board of Directors. The MID GSA Board of Directors meetings are held concurrently with the regular MID Board of Directors meetings on the third Tuesday of every month at 2:00 p.m. These meetings are open to the public at the Madera Irrigation District offices (12152 Road 28 1/4, Madera, CA, 93637).

From: Erik Smith [smith415@gmail.com]
Sent: Wednesday, April 03, 2019 7:37 AM
To: Stephanie Anagnoson
Subject: Re: Madera Subbasin Joint GSP: Chapter 1 IS NOW AVAILABLE

Hi Stephanie,

I am a landowner. My property is within both the Madera County GSA and the Madera Irrigation District GSA. Portions of my property in both of said GSAs receives riparian water-rights deliveries from the Fresno River. I noticed that riparian rights to the Fresno River for these GSAs were not mentioned in the draft of Chapter 1 of the Madera Subbasin Groundwater Sustainability Plan.

The riparain water-rights holders along the Fresno River use thousands of acre-feet of riparian water-rights water annually and this water is a critical part of the groundwater sustainability of the Madera Subbasin. There may even be additional riparian landowners who are not aware that they have surface water rights to riparian water. The more riparian water-rights water that is used, the better! Please see the attached information.

The names of the attached files are:
<2019_04_03_erik_smiths_markup_of_gsp_plan_ch_1.pdf>
<Riparian Initial Letter_10-25-18_for_email.pdf>

Can these important riparian water-rights please be included in the next draft of Chapter 1 of the Madera Subbasin Groundwater Sustainability Plan?

Please let me know if you have any questions, points of clarification, or if there is someone else I need to contact with regard to the above.

Thank you!

Erik Smith
Smith Adobe, LLC
(559) 840-7985 cell

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

EST 1920
MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Clarkson Smith
Adobe Ranch
1547 34th Ave
San Francisco, CA 94122

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
997.03 AF	117.36 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

ANNUAL CROPPING SUBMITTAL

Madera Irrigation District, in compliance with the Fresno River Operations Protocols, calls on Fresno River Riparian and Appropriative Right Holders to annually submit their current crop pattern for the Riparian water year (October 2018-September 2019), acreage map, and diversion capacity to the District.

A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

The attached form and any other requested information must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions. If the data requested is not provided by the deadline, the District will assume that the Riparian and Appropriative Right Holders will not be diverting Fresno River flows for this coming year.

ADDITIONAL REQUIRED DOCUMENTS

District records indicate the required documents checked below have not been provided to the District. These documents must also be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions.

☐ 1. Independent pump test or diversion capacity flow test documenting your diversion capacity. ***NOTE: If your diversion capacity has changed since your last submittal, it is your responsibility to notify MID.***

☒ 2. A copy of your latest "Statement of Diversion and Use" as required by the State Water Resources Control Board. For more information, please refer to State website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/

☒ 3. 2019 Riparian and Appropriative Right Holders cropping information sheet (enclosed). ***By signing the attached form, the landowner is certifying that only the riparian and/or appropriate acreage is being provided to the District for entitlement calculations.***

   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions

Name: Adobe

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 2,341.04

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

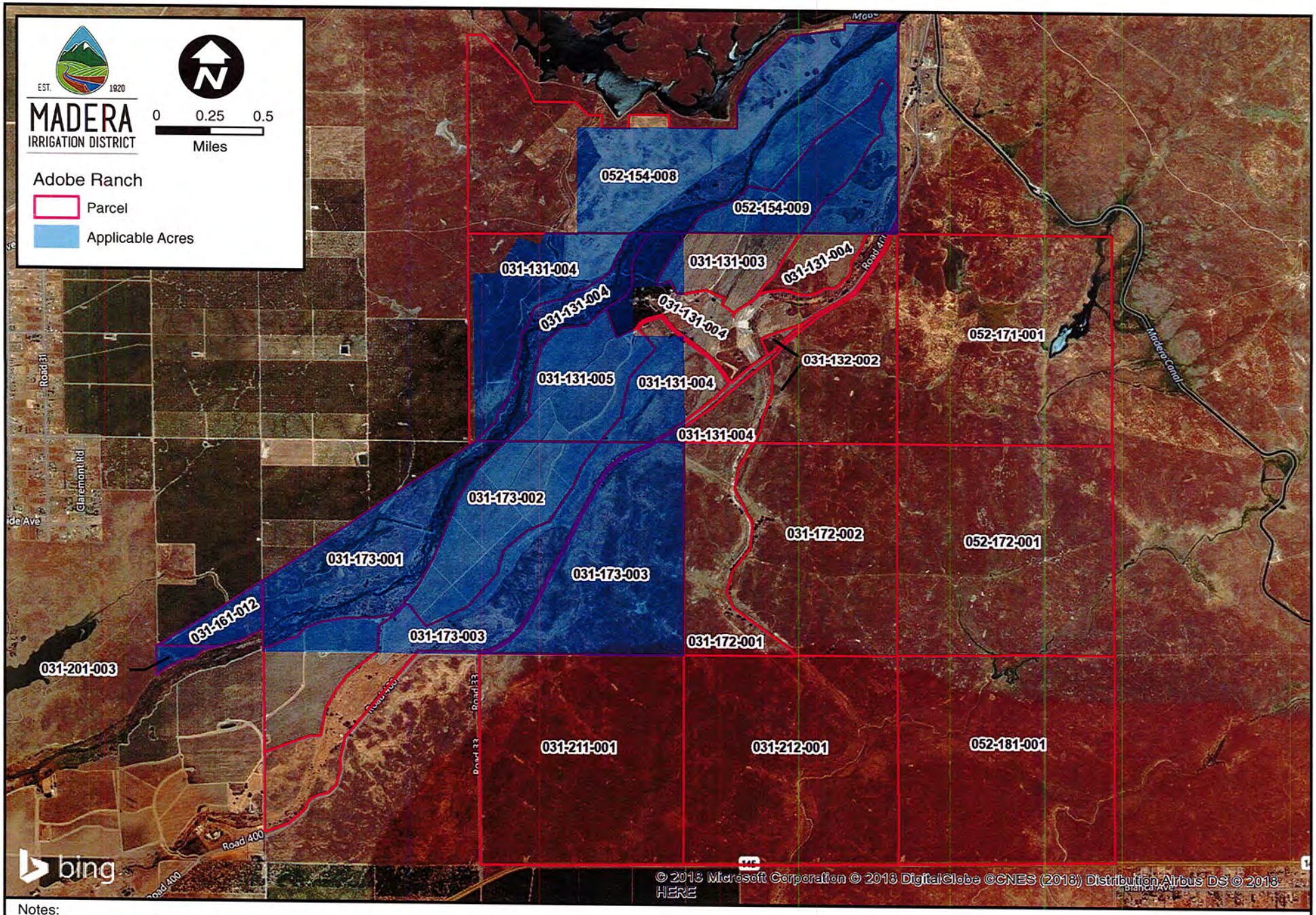
Total Diversion Capacity: _____

Name (Print): Date:

Signature:

By signing this form, the landowner is certifying that only the riparian and/or appropriative acreage is being provided to MID for allocation calculations.

The landowner is also certifying that they have the authority to sign this form and that the numbers are accurate.



Notes:
1. Boundaries are approximate.
2. Applicable acres is the total riparian and/or appropriative parcel acreage, less the overlap between riparian and appropriative acres.

A2.C.e-127

MID Special Board Meeting – Fresno River Workshop

November 5, 2018 from 10:00 a.m. - 12:00 p.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

Pursuant to the request of several stakeholders in attendance at the Madera Irrigation District (the "District") Board of Directors meeting on October 16, 2018, the District will be holding a workshop to receive input from stakeholders on potential comprehensive solutions to resolve the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018 (the "Petition").

This workshop is being held to allow landowners and the public to present ***comprehensive solutions to address all concerns*** related to current Fresno River operations including, but not limited to, the following:

- Riparian and appropriate acreage disputes
- Diversion capacity disputes
- Unexercised riparian water rights
- Priority of water rights
- Operational constraints

District representatives will attend the workshop to hear proposed solutions from stakeholders, including riparian landowners. This will be a "Discussion Only" agenda item.

This is a public meeting and the public is welcome to attend. See attached agenda for further information.

Riparian Landowner Workshop

November 5, 2018 from 8:00 a.m. - 10:00 a.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

Madera Irrigation District is providing the opportunity for Fresno River riparian and appropriative rights holders to discuss amongst each other proposed comprehensive solutions to address all concerns raised by the Petition between 8:00 a.m. - 10:00 a.m. This workshop is being offered to allow Fresno River riparian and appropriative rights holders to discuss and develop potential comprehensive solutions to be presented at the 10:00 a.m. MID Special Board Meeting.

Representatives of the District will not be in attendance during this portion of the workshop. However, to help further the discussions, a neutral facilitator will be available to those in attendance.

MADERA IRRIGATION DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

AGENDA

MISSION STATEMENT

To obtain and manage affordable surface water and groundwater supplies in a manner which will ensure the long-term viability of irrigated agriculture in the District.

Special Meeting Date:
Monday, November 5, 2018
10:00 a.m.-12:00 p.m.

Madera County Office of Education
Conference Center Rooms 3 & 4
1105 S. Madera Avenue
Madera, CA 93637

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Administration Office at 559-673-3514, ext. 215. Notification in advance of the meeting will enable MID to make reasonable arrangements to ensure accessibility to this meeting.

In compliance with the California Government Code, members of the public may inspect the agenda and any associated writings, including documents delivered after the 72-hour advance posting of the agenda during regular business hours at the Madera Irrigation District Office, located at 12152 Road 28 1/4, Madera, California 93637.

WELCOME

1. INFORMATIONAL ITEMS

a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. ADJOURNMENT

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

EST 1920

MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Kevin Herman
2985 Airport Dr
Madera, CA 93637

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
53.63 AF	45.70 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

ANNUAL CROPPING SUBMITTAL

Madera Irrigation District, in compliance with the Fresno River Operations Protocols, calls on Fresno River Riparian and Appropriative Right Holders to annually submit their current crop pattern for the Riparian water year (October 2018-September 2019), acreage map, and diversion capacity to the District.

A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

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ADDITIONAL REQUIRED DOCUMENTS

District records indicate the required documents checked below have not been provided to the District. These documents must also be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions.

☐ 1. Independent pump test or diversion capacity flow test documenting your diversion capacity. ***NOTE: If your diversion capacity has changed since your last submittal, it is your responsibility to notify MID.***

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   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

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must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions

Name: Kevin Herman

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 171

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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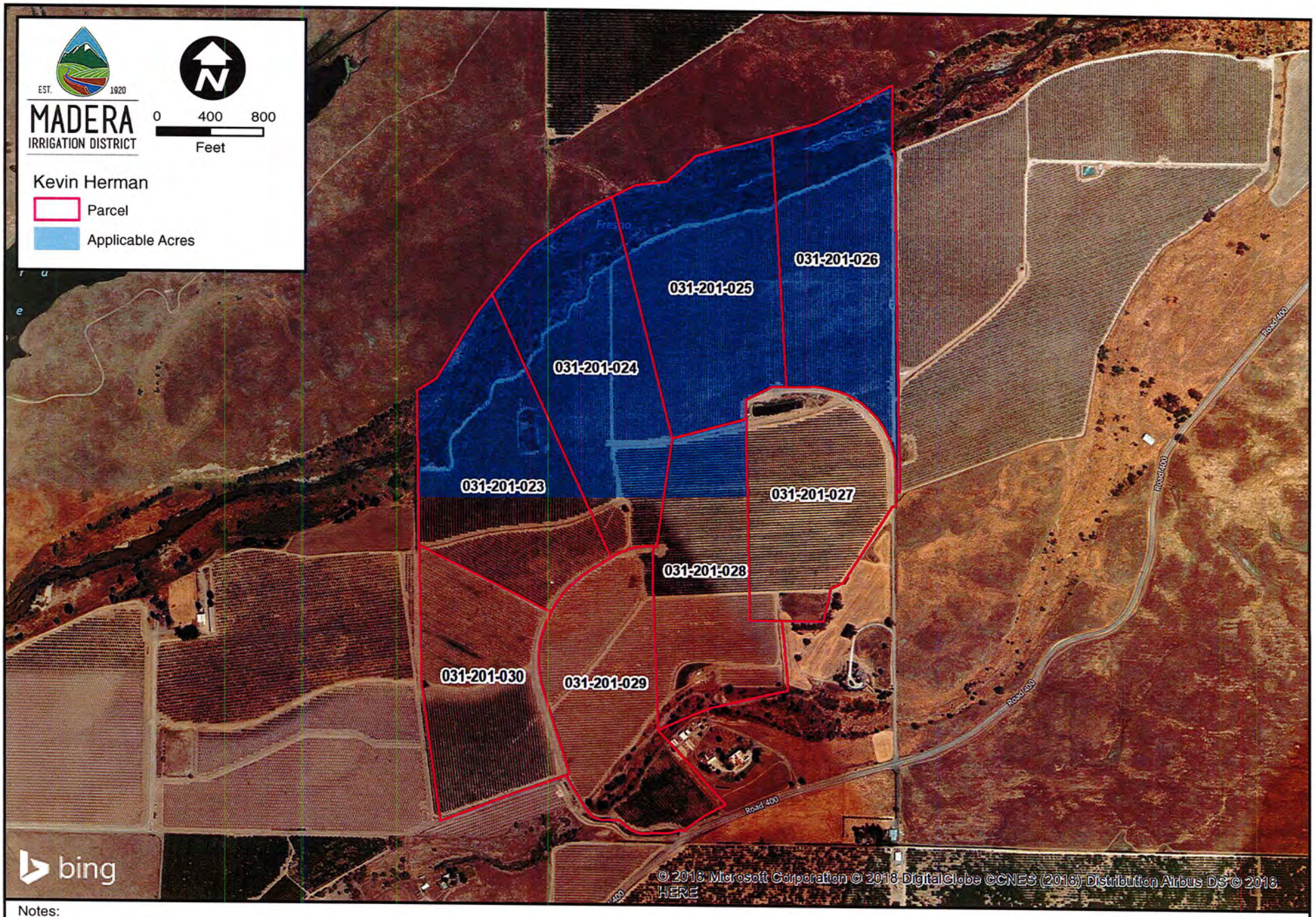

Notes:
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MID Special Board Meeting – Fresno River Workshop

November 5, 2018 from 10:00 a.m. - 12:00 p.m.

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This workshop is being held to allow landowners and the public to present ***comprehensive solutions to address all concerns*** related to current Fresno River operations including, but not limited to, the following:

- Riparian and appropriate acreage disputes
- Diversion capacity disputes
- Unexercised riparian water rights
- Priority of water rights
- Operational constraints

District representatives will attend the workshop to hear proposed solutions from stakeholders, including riparian landowners. This will be a "Discussion Only" agenda item.

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MADERA IRRIGATION DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

AGENDA

MISSION STATEMENT

To obtain and manage affordable surface water and groundwater supplies in a manner which will ensure the long-term viability of irrigated agriculture in the District.

Special Meeting Date:
Monday, November 5, 2018
10:00 a.m.-12:00 p.m.

Madera County Office of Education
Conference Center Rooms 3 & 4
1105 S. Madera Avenue
Madera, CA 93637

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WELCOME

1. **INFORMATIONAL ITEMS**

   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

EST. 1920
MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Kirk Parrish
Famous Software
8080 N Palm Suite 210
Fresno, CA 93711

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
163.00 AF	0 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

ANNUAL CROPPING SUBMITTAL

Madera Irrigation District, in compliance with the Fresno River Operations Protocols, calls on Fresno River Riparian and Appropriative Right Holders to annually submit their current crop pattern for the Riparian water year (October 2018-September 2019), acreage map, and diversion capacity to the District.

A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

The attached form and any other requested information must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions. If the data requested is not provided by the deadline, the District will assume that the Riparian and Appropriative Right Holders will not be diverting Fresno River flows for this coming year.

ADDITIONAL REQUIRED DOCUMENTS

District records indicate the required documents checked below have not been provided to the District. These documents must also be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions.

☐ 1. Independent pump test or diversion capacity flow test documenting your diversion capacity. ***NOTE: If your diversion capacity has changed since your last submittal, it is your responsibility to notify MID.***

☒ 2. A copy of your latest "Statement of Diversion and Use" as required by the State Water Resources Control Board. For more information, please refer to State website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/

☒ 3. 2019 Riparian and Appropriative Right Holders cropping information sheet (enclosed). ***By signing the attached form, the landowner is certifying that only the riparian and/or appropriate acreage is being provided to the District for entitlement calculations.***

   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions

Name: Kirk Parrish

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 309.50

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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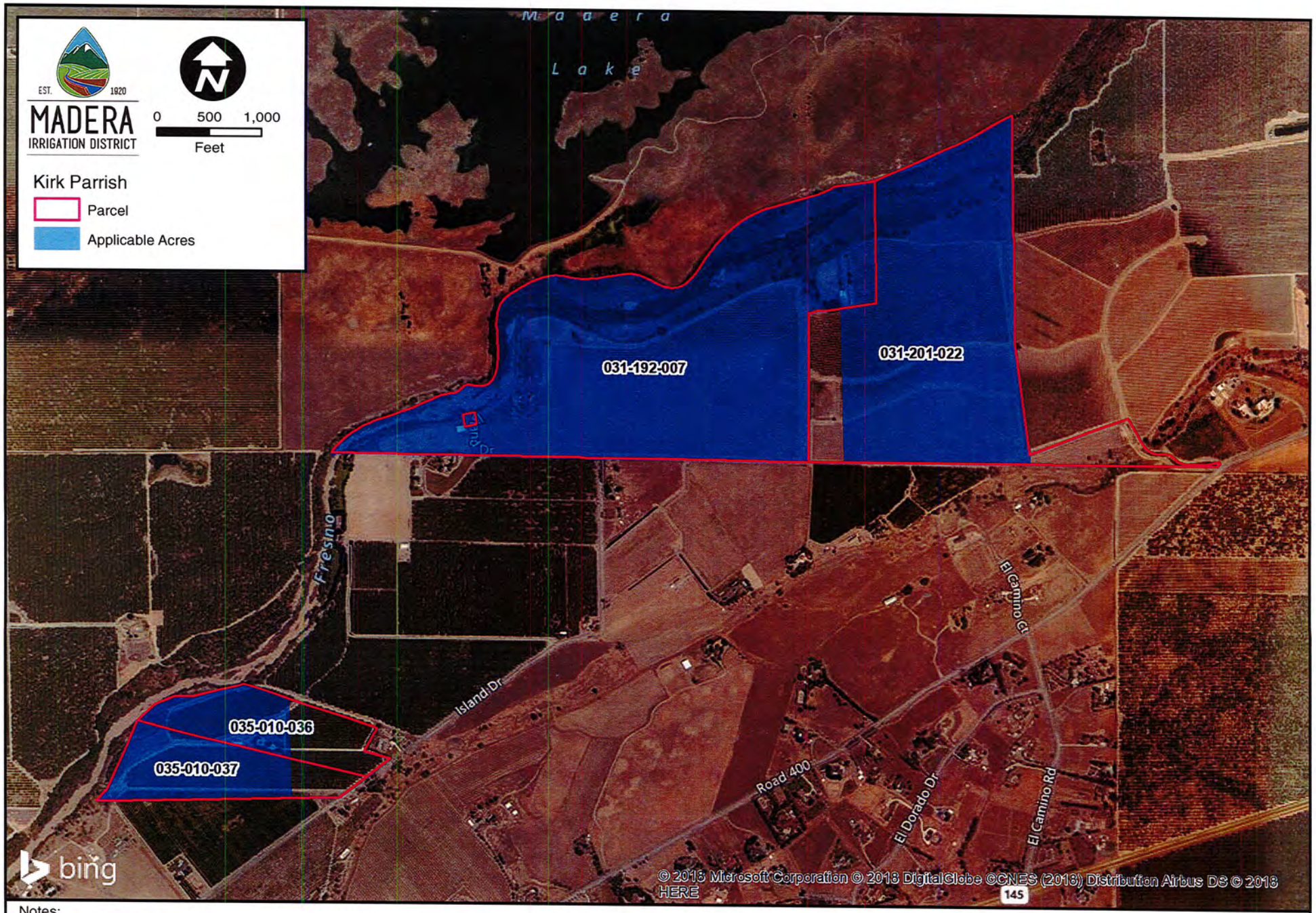

Notes:
1. Boundaries are approximate.
2. Applicable acres is the total riparian and/or appropriative parcel acreage, less the overlap between riparian and appropriative acres.

MID Special Board Meeting – Fresno River Workshop

November 5, 2018 from 10:00 a.m. - 12:00 p.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

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This workshop is being held to allow landowners and the public to present ***comprehensive solutions to address all concerns*** related to current Fresno River operations including, but not limited to, the following:

- Riparian and appropriate acreage disputes
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District representatives will attend the workshop to hear proposed solutions from stakeholders, including riparian landowners. This will be a "Discussion Only" agenda item.

This is a public meeting and the public is welcome to attend. See attached agenda for further information.

Riparian Landowner Workshop

November 5, 2018 from 8:00 a.m. - 10:00 a.m.

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MADERA IRRIGATION DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

AGENDA

MISSION STATEMENT

To obtain and manage affordable surface water and groundwater supplies in a manner which will ensure the long-term viability of irrigated agriculture in the District.

Special Meeting Date:
Monday, November 5, 2018
10:00 a.m.-12:00 p.m.

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1. **INFORMATIONAL ITEMS**

   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

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IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Kevin Herman
DaSilva
2985 Airport Dr
Madera, CA 93637

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
12.36 AF	0 AF

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Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

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Name: DaSilva

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 36.8

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

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Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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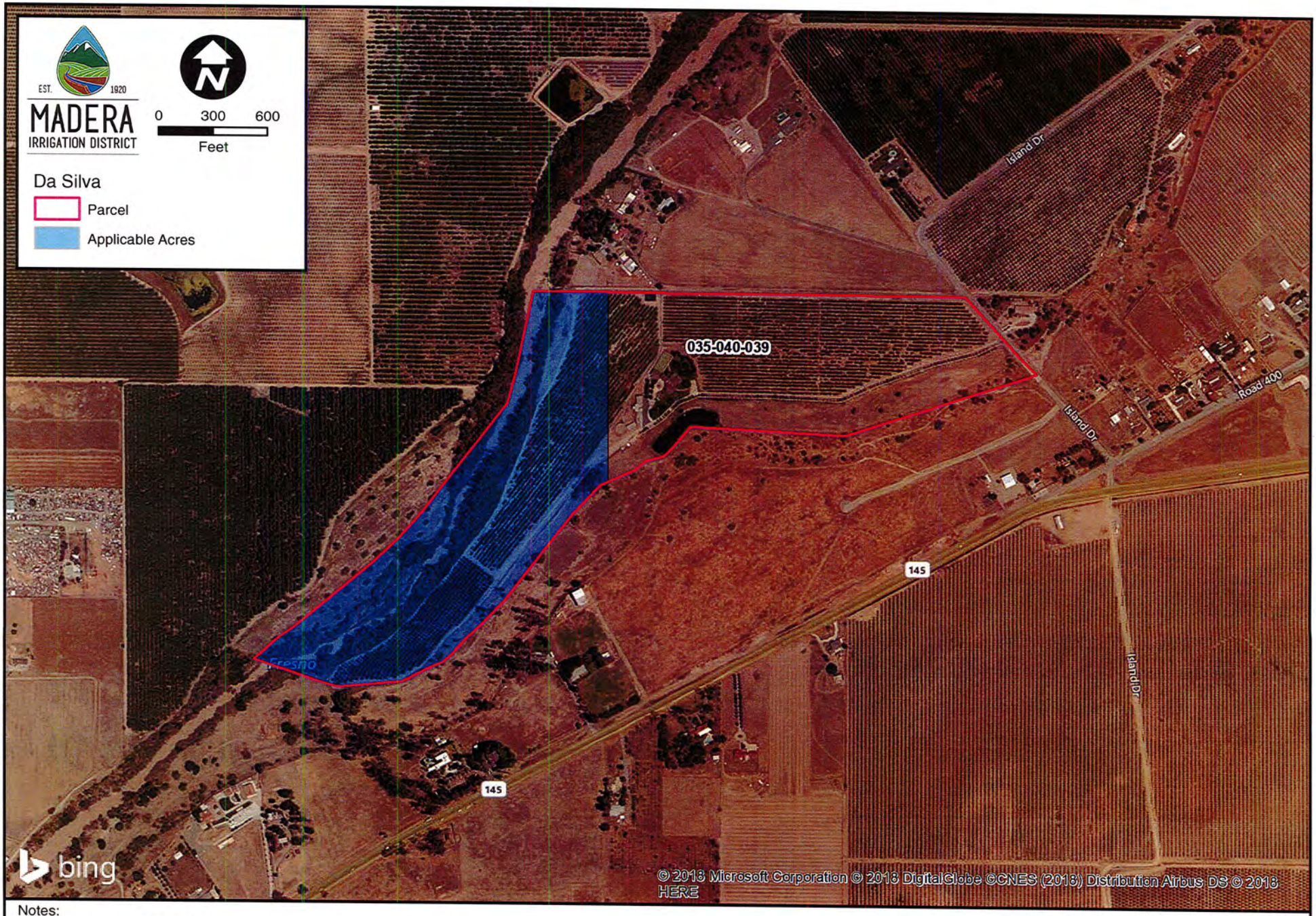

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Legal Counsel
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MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Richard DeBenedetto
DeBennedetto/Mesple
26393 Road 22 1/2
Chowchilla, CA 93610

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted[1]:

2018 Entitlement	Riparian Water Diverted
332.83 AF	165.36 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

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A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

1. These are totals for DeBenedetto and Mesple, as the point of diversion is shared.

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

The attached form and any other requested information must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions. If the data requested is not provided by the deadline, the District will assume that the Riparian and Appropriative Right Holders will not be diverting Fresno River flows for this coming year.

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Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

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Name: DeBenedetto

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 219.56

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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Total		(Total must add up to Riparian Acres above)	

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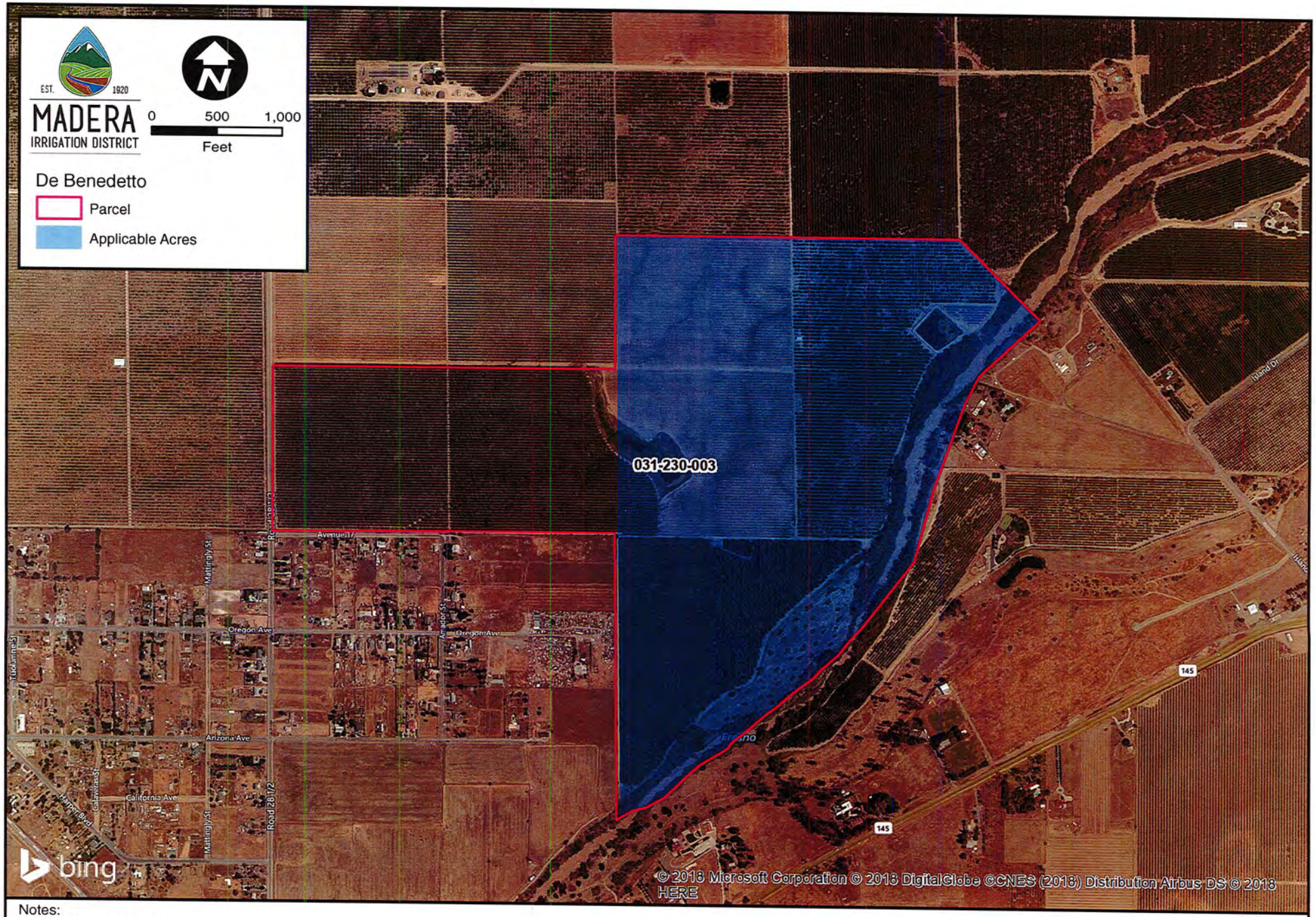

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October 25, 2018

GSO Priority Mail

Paul Mesple
DeBennedetto/Mesple
7443 N Millbrook
Fresno, CA 93720

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Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions

Name: Mesple

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 198.52

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

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Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

By signing this form, the landowner is certifying that only the riparian and/or appropriative acreage is being provided to MID for allocation calculations.

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Notes:
1. Boundaries are approximate.
2. Applicable acres is the total riparian and/or appropriative parcel acreage, less the overlap between riparian and appropriative acres.

MID Special Board Meeting – Fresno River Workshop

November 5, 2018 from 10:00 a.m. - 12:00 p.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

Pursuant to the request of several stakeholders in attendance at the Madera Irrigation District (the "District") Board of Directors meeting on October 16, 2018, the District will be holding a workshop to receive input from stakeholders on potential comprehensive solutions to resolve the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018 (the "Petition").

This workshop is being held to allow landowners and the public to present ***comprehensive solutions to address all concerns*** related to current Fresno River operations including, but not limited to, the following:

- Riparian and appropriate acreage disputes
- Diversion capacity disputes
- Unexercised riparian water rights
- Priority of water rights
- Operational constraints

District representatives will attend the workshop to hear proposed solutions from stakeholders, including riparian landowners. This will be a "Discussion Only" agenda item.

This is a public meeting and the public is welcome to attend. See attached agenda for further information.

Riparian Landowner Workshop

November 5, 2018 from 8:00 a.m. - 10:00 a.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

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MADERA IRRIGATION DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

AGENDA

MISSION STATEMENT

To obtain and manage affordable surface water and groundwater supplies in a manner which will ensure the long-term viability of irrigated agriculture in the District.

Special Meeting Date:
Monday, November 5, 2018
10:00 a.m.-12:00 p.m.

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Conference Center Rooms 3 & 4
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Madera, CA 93637

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WELCOME

1. **INFORMATIONAL ITEMS**

   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

MADERA
IRRIGATION DISTRICT
EST. 1920

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Jeff Schmiederer
Rancho Bella Vista
2578 S. Lyon Avenue
Mendota, CA 93640

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
11.70 AF	4.91 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

ANNUAL CROPPING SUBMITTAL

Madera Irrigation District, in compliance with the Fresno River Operations Protocols, calls on Fresno River Riparian and Appropriative Right Holders to annually submit their current crop pattern for the Riparian water year (October 2018-September 2019), acreage map, and diversion capacity to the District.

A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

The attached form and any other requested information must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions. If the data requested is not provided by the deadline, the District will assume that the Riparian and Appropriative Right Holders will not be diverting Fresno River flows for this coming year.

ADDITIONAL REQUIRED DOCUMENTS

District records indicate the required documents checked below have not been provided to the District. These documents must also be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions.

☐ 1. Independent pump test or diversion capacity flow test documenting your diversion capacity. ***NOTE: If your diversion capacity has changed since your last submittal, it is your responsibility to notify MID.***

☒ 2. A copy of your latest "Statement of Diversion and Use" as required by the State Water Resources Control Board. For more information, please refer to State website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/

☒ 3. 2019 Riparian and Appropriative Right Holders cropping information sheet (enclosed). ***By signing the attached form, the landowner is certifying that only the riparian and/or appropriate acreage is being provided to the District for entitlement calculations.***

   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions

Name: Rancho Bella Vista

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 21.24

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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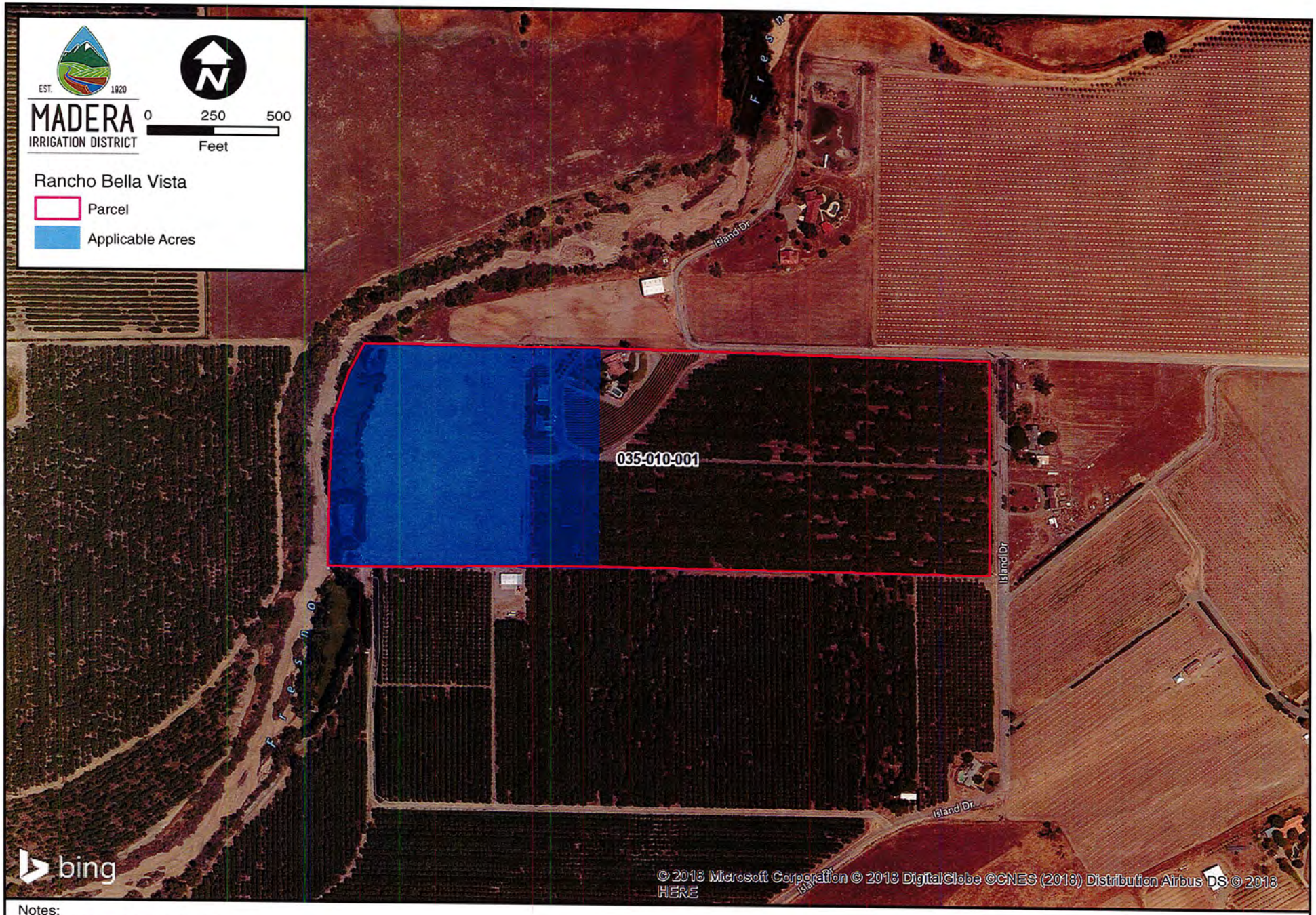

Notes:
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Riparian Landowner Workshop

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BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

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   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

EST. 1920
MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Frank Roque
Isla Vista Farms
3611 W Beechwood #101
Fresno, CA 93711

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
73.60 AF	17.87 AF

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ANNUAL CROPPING SUBMITTAL

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A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
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   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

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Name: Isla Vista Farms

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 93.39

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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Total		(Total must add up to Riparian Acres above)	

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Point of Diversion Location:_____; Diversion Capacity:_____

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Name (Print): Date:

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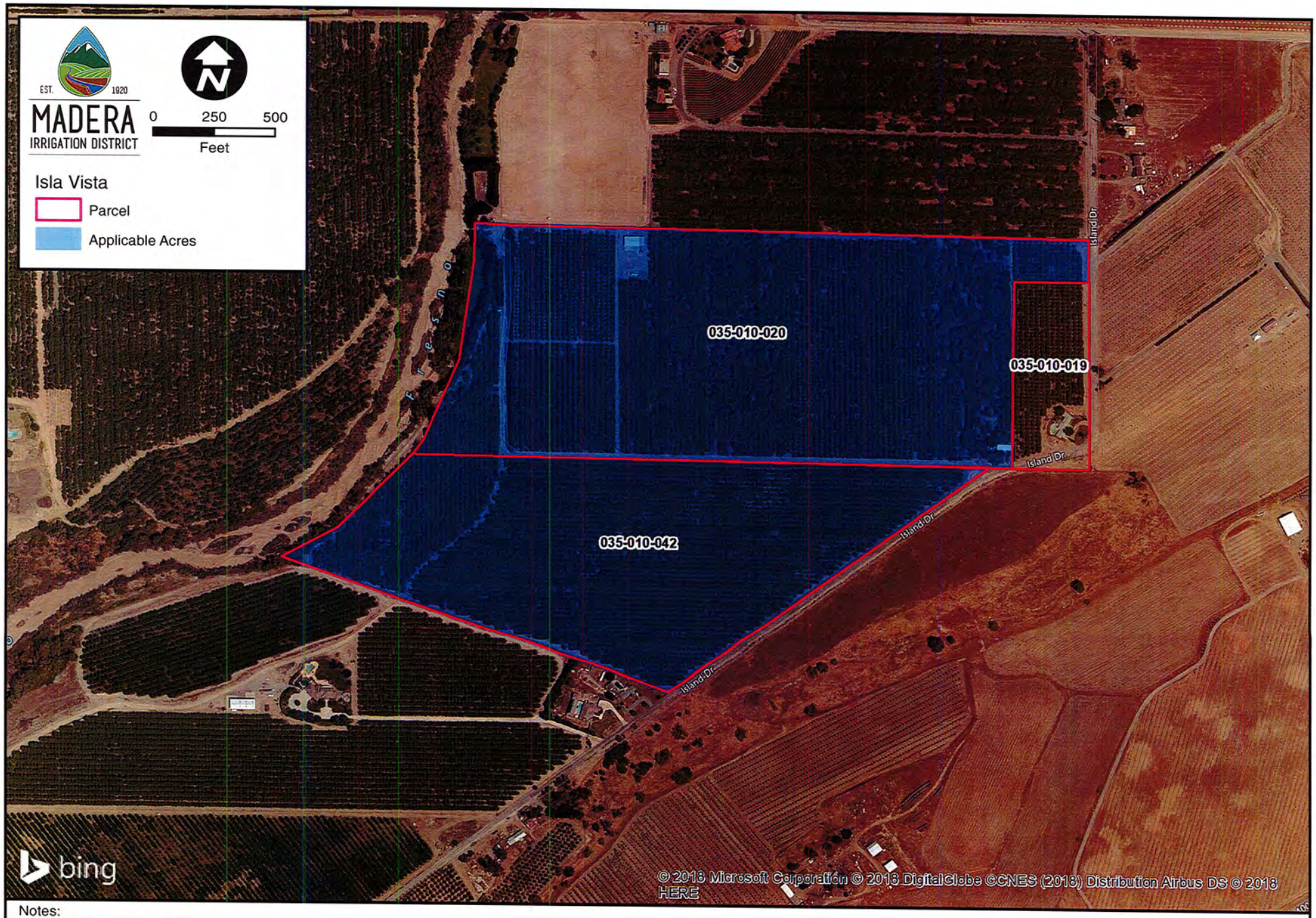

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Legal Counsel
John P. Kinsey

EST. 1920
MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Cal Fischer
Madera Throughbreds
28799 Hwy 145
Madera, CA 93638

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
132.16 AF	41.45 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

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   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

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Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

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Name: Cal Fisher

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 149

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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Total		(Total must add up to Riparian Acres above)	

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Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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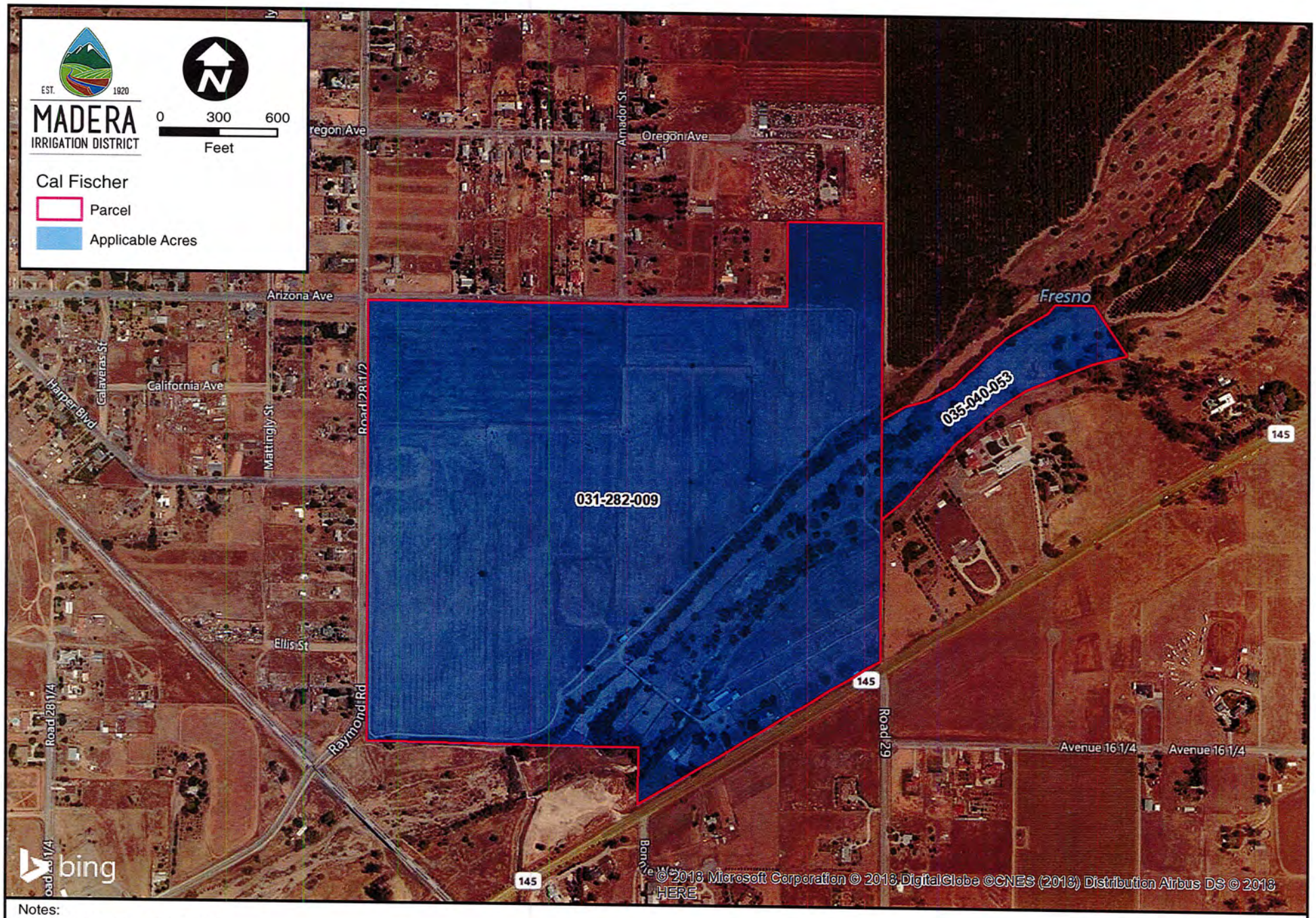

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Pursuant to the request of several stakeholders in attendance at the Madera Irrigation District (the "District") Board of Directors meeting on October 16, 2018, the District will be holding a workshop to receive input from stakeholders on potential comprehensive solutions to resolve the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018 (the "Petition").

This workshop is being held to allow landowners and the public to present ***comprehensive solutions to address all concerns*** related to current Fresno River operations including, but not limited to, the following:

- Riparian and appropriate acreage disputes
- Diversion capacity disputes
- Unexercised riparian water rights
- Priority of water rights
- Operational constraints

District representatives will attend the workshop to hear proposed solutions from stakeholders, including riparian landowners. This will be a "Discussion Only" agenda item.

This is a public meeting and the public is welcome to attend. See attached agenda for further information.

Riparian Landowner Workshop

November 5, 2018 from 8:00 a.m. - 10:00 a.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

Madera Irrigation District is providing the opportunity for Fresno River riparian and appropriative rights holders to discuss amongst each other proposed comprehensive solutions to address all concerns raised by the Petition between 8:00 a.m. - 10:00 a.m. This workshop is being offered to allow Fresno River riparian and appropriative rights holders to discuss and develop potential comprehensive solutions to be presented at the 10:00 a.m. MID Special Board Meeting.

Representatives of the District will not be in attendance during this portion of the workshop. However, to help further the discussions, a neutral facilitator will be available to those in attendance.

MADERA IRRIGATION DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

AGENDA

MISSION STATEMENT

To obtain and manage affordable surface water and groundwater supplies in a manner which will ensure the long-term viability of irrigated agriculture in the District.

Special Meeting Date:
Monday, November 5, 2018
10:00 a.m.-12:00 p.m.

Madera County Office of Education
Conference Center Rooms 3 & 4
1105 S. Madera Avenue
Madera, CA 93637

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Administration Office at 559-673-3514, ext. 215. Notification in advance of the meeting will enable MID to make reasonable arrangements to ensure accessibility to this meeting.

In compliance with the California Government Code, members of the public may inspect the agenda and any associated writings, including documents delivered after the 72-hour advance posting of the agenda during regular business hours at the Madera Irrigation District Office, located at 12152 Road 28 1/4, Madera, California 93637.

WELCOME

1. **INFORMATIONAL ITEMS**

   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

EST. 1920
MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Costa View Farms
16800 Road 15
Madera, CA 93637

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
2,630.87 AF	1,366.15 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

ANNUAL CROPPING SUBMITTAL

Madera Irrigation District, in compliance with the Fresno River Operations Protocols, calls on Fresno River Riparian and Appropriative Right Holders to annually submit their current crop pattern for the Riparian water year (October 2018-September 2019), acreage map, and diversion capacity to the District.

A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

The attached form and any other requested information must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions. If the data requested is not provided by the deadline, the District will assume that the Riparian and Appropriative Right Holders will not be diverting Fresno River flows for this coming year.

ADDITIONAL REQUIRED DOCUMENTS

District records indicate the required documents checked below have not been provided to the District. These documents must also be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions.

☐ 1. Independent pump test or diversion capacity flow test documenting your diversion capacity. ***NOTE: If your diversion capacity has changed since your last submittal, it is your responsibility to notify MID.***

☒ 2. A copy of your latest "Statement of Diversion and Use" as required by the State Water Resources Control Board. For more information, please refer to State website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/

☒ 3. 2019 Riparian and Appropriative Right Holders cropping information sheet (enclosed). ***By signing the attached form, the landowner is certifying that only the riparian and/or appropriate acreage is being provided to the District for entitlement calculations.***

   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions

Name: Costa View

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 1,800

Crop	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Appropriative Acres 1,565

Crop	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Approprative Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

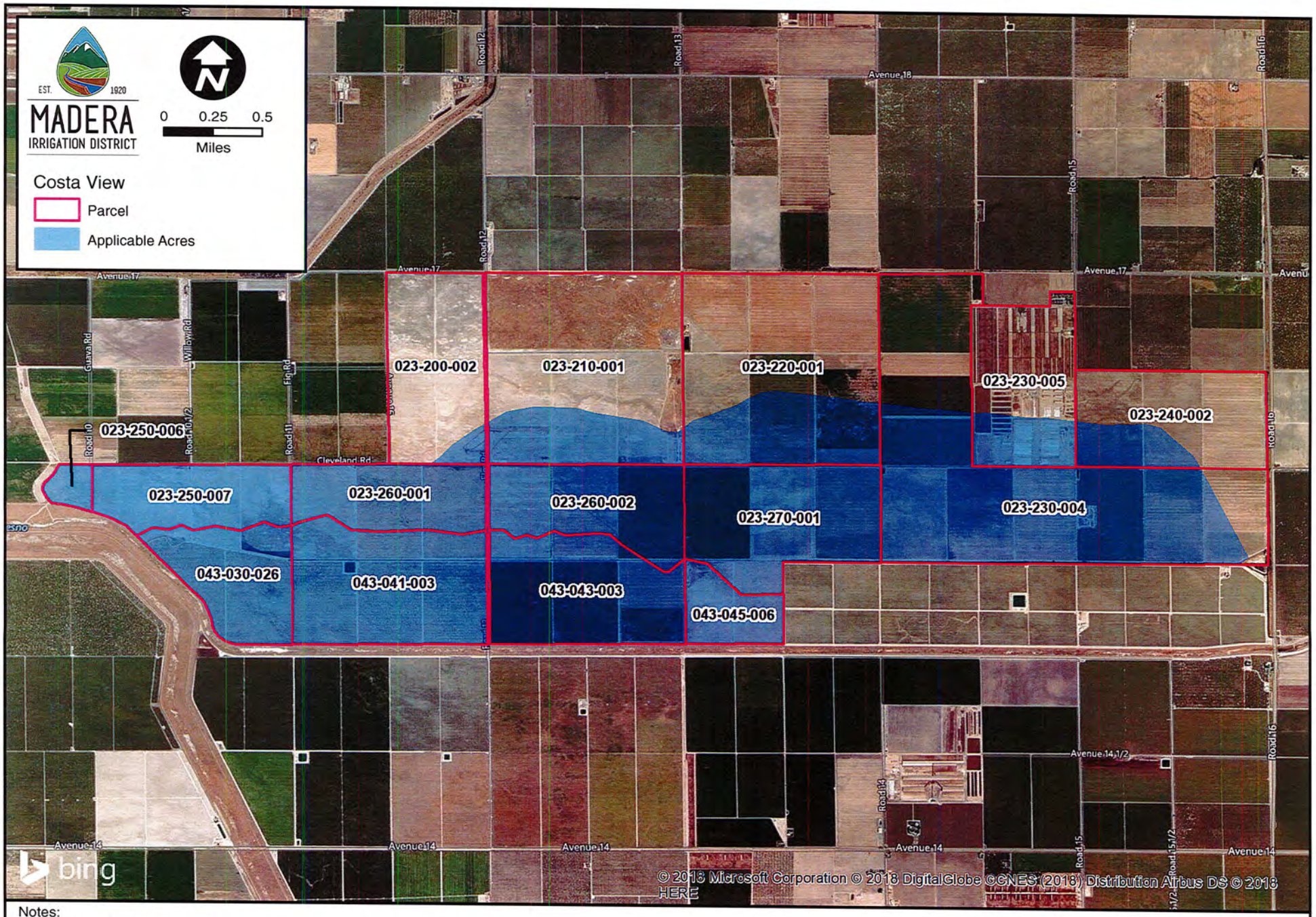
Total Diversion Capacity: _____

Name (Print): Date:

Signature:

By signing this form, the landowner is certifying that only the riparian and/or appropriative acreage is being provided to MID for allocation calculations.

The landowner is also certifying that they have the authority to sign this form and that the numbers are accurate.



Notes:
1. Boundaries are approximate.
2. Applicable acres is the total riparian and/or appropriative parcel acreage, less the overlap between riparian and appropriative acres.

MID Special Board Meeting – Fresno River Workshop

November 5, 2018 from 10:00 a.m. - 12:00 p.m.

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BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

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   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Phone (559) 673-3514
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General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

EST. 1920
MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Cosyns Farms
15310 Road 19
Madera, CA 93637

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of your 2018 entitlement and water diverted:

2018 Entitlement	Riparian Water Diverted
191.77 AF	178.83 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

ANNUAL CROPPING SUBMITTAL

Madera Irrigation District, in compliance with the Fresno River Operations Protocols, calls on Fresno River Riparian and Appropriative Right Holders to annually submit their current crop pattern for the Riparian water year (October 2018-September 2019), acreage map, and diversion capacity to the District.

A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

The attached form and any other requested information must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions. If the data requested is not provided by the deadline, the District will assume that the Riparian and Appropriative Right Holders will not be diverting Fresno River flows for this coming year.

ADDITIONAL REQUIRED DOCUMENTS

District records indicate the required documents checked below have not been provided to the District. These documents must also be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions.

☐ 1. Independent pump test or diversion capacity flow test documenting your diversion capacity. ***NOTE: If your diversion capacity has changed since your last submittal, it is your responsibility to notify MID.***

☒ 2. A copy of your latest "Statement of Diversion and Use" as required by the State Water Resources Control Board. For more information, please refer to State website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/

☒ 3. 2019 Riparian and Appropriative Right Holders cropping information sheet (enclosed). ***By signing the attached form, the landowner is certifying that only the riparian and/or appropriate acreage is being provided to the District for entitlement calculations.***

   a. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions

Name: Cosyns

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 686.06

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

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Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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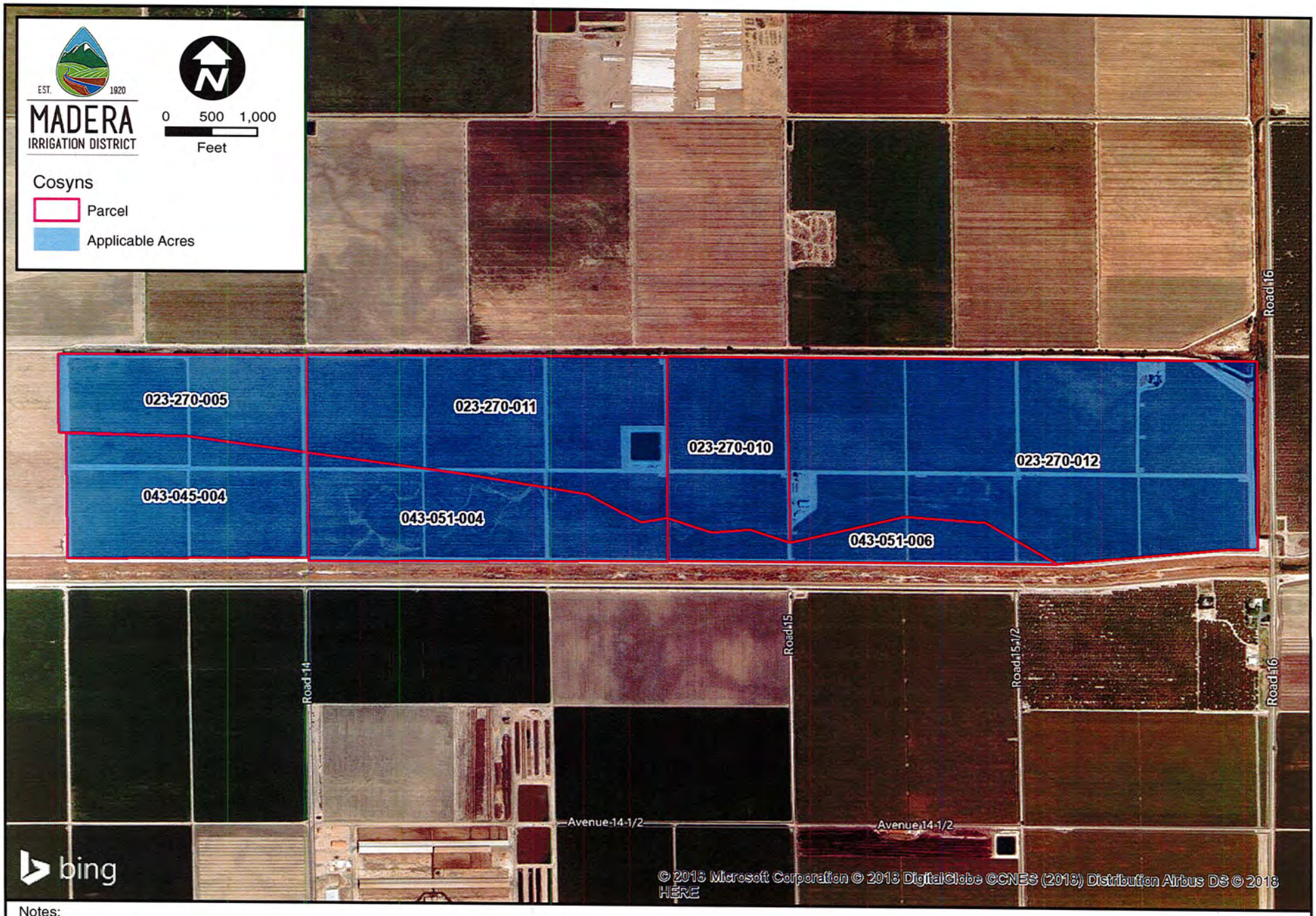

Notes:
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BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

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General Manager
Thomas Greci

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General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

MADERA
IRRIGATION DISTRICT
EST 1920

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Harman Ranch

Case Vlot
20633 Road 4
Chowchilla, CA 93610

Richard & Dale Harman
Harman Brothers
16001 Flangan Rd
Dos Palos, CA 93620

Mark Hutson
Triangle T
Farmland Management Services
301 E. Main St
Turlock, CA 95380

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

Below is the summary of the 2018 Road 9 entitlement and water diverted[1]:

Total 2018 Entitlement at Road 9	Total Water Diverted at Road 9
964.93 AF	1850 AF

For 2019, in accordance with the Fresno River Operations Protocols, Madera Irrigation District (MID or District) is required to request the following documents from Fresno River Riparian and Appropriative Right Holders annually for the purpose of allocating Fresno River flows to each Riparian and Appropriative Right Holder for the upcoming year:

ANNUAL CROPPING SUBMITTAL

Madera Irrigation District, in compliance with the Fresno River Operations Protocols, calls on Fresno River Riparian and Appropriative Right Holders to annually submit their current crop pattern for the Riparian water year (October 2018-September 2019), acreage map, and diversion capacity to the District.

A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
- Irrigation type
- Cover crop (if applicable)
- Diversion capacity

1. Totals include all Road 9 entitlements and diversions for all riparian and appropriative right holders downstream of the Road 9 diversion.

The District reserves the right to visually inspect the subject property, either on the ground or via satellite imagery, and to compare each parcel's cropping pattern that is submitted.

The attached form and any other requested information must be received by the District no later than 4:00 PM on Monday, December 31, 2018 with no exceptions. If the data requested is not provided by the deadline, the District will assume that the Riparian and Appropriative Right Holders will not be diverting Fresno River flows for this coming year.

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☐ 1. Independent pump test or diversion capacity flow test documenting your diversion capacity. ***NOTE: If your diversion capacity has changed since your last submittal, it is your responsibility to notify MID.***

☒ 2. A copy of your latest "Statement of Diversion and Use" as required by the State Water Resources Control Board. For more information, please refer to State website: http://www.waterboards.ca.gov/waterrights/water_issues/programs/diversion_use/

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   c. 2019 crop map for Riparian and Appropriative Right acreage only (enclosed map for reference).

Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
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Name: Harman Ranch (Harman, Vlot, Triangle T)

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 1,497

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
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		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

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Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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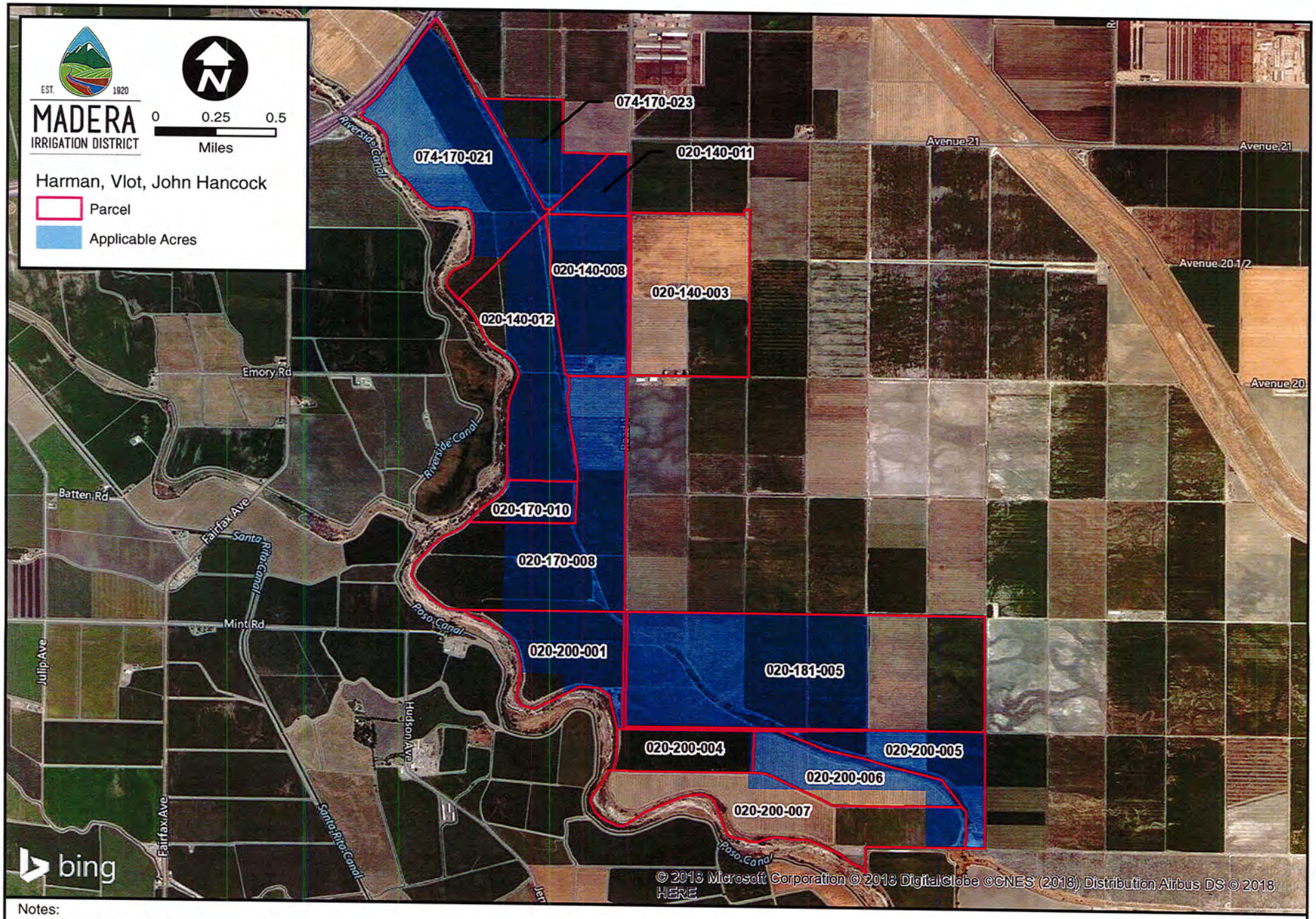

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WELCOME

1. **INFORMATIONAL ITEMS**

   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Phone (559) 673-3514
www.madera-id.org

General Manager
Thomas Greci

Assistant
General Manager
Dina Cadenazzi Nolan

Legal Counsel
John P. Kinsey

EST 1920
MADERA
IRRIGATION DISTRICT

12152 Road 28 1/4
Madera, CA 93637

October 25, 2018

GSO Priority Mail

Harman Ranch

Case Vlot
20633 Road 4
Chowchilla, CA 93610

Richard & Dale Harman
Harman Brothers
16001 Flangan Rd
Dos Palos, CA 93620

Mark Hutson
Triangle T
Farmland Management Services
301 E. Main St
Turlock, CA 95380

Re: Fresno River Riparian and Appropriative Right Holders Land Crop Report and Map

Dear Riparian and Appropriative Right Holders:

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Total 2018 Entitlement at Road 9	Total Water Diverted at Road 9
964.93 AF	1850 AF

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ANNUAL CROPPING SUBMITTAL

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A map and form(s) have been included with this letter, for the following information:

- Acreage
- Crop pattern
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- Cover crop (if applicable)
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Thank you in advance for your cooperation.

Sincerely,

Ramon E Mendez

Ramon E Mendez, PE
Project Engineer

Enclosure

2019 RIPARIAN AND SENIOR APPROPRIATIVE RIGHT HOLDERS CROPPING INFORMATION
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Name: Harman Ranch (Harman, Vlot, Triangle T)

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 1,497

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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Total		(Total must add up to Riparian Acres above)	

Riparian / Appropriative Only Points of Diversion

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Point of Diversion Location:_____; Diversion Capacity:_____

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Total Diversion Capacity: _____

Name (Print): Date:

Signature:

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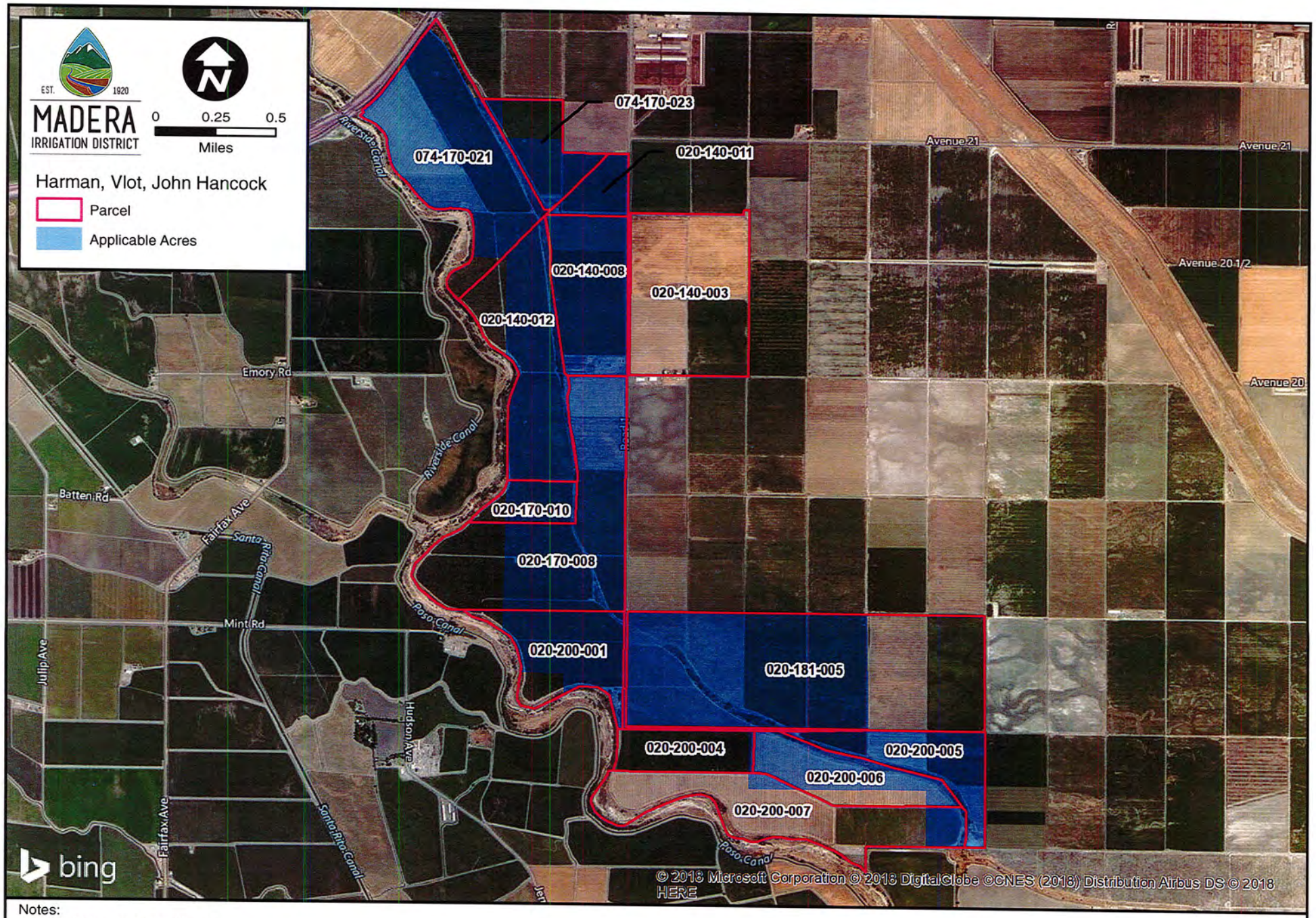

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MID Special Board Meeting – Fresno River Workshop

November 5, 2018 from 10:00 a.m. - 12:00 p.m.

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District representatives will attend the workshop to hear proposed solutions from stakeholders, including riparian landowners. This will be a "Discussion Only" agenda item.

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MADERA IRRIGATION DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

AGENDA

MISSION STATEMENT

To obtain and manage affordable surface water and groundwater supplies in a manner which will ensure the long-term viability of irrigated agriculture in the District.

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10:00 a.m.-12:00 p.m.

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Conference Center Rooms 3 & 4
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October 25, 2018

GSO Priority Mail

Mark Hutson
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301 E Main St
Turlock, CA 95380

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Project Engineer

Enclosure

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Name: Triangle T

This form must be filled out completely and accurately and all numbers must sum to be included in the 2019 Fresno River Allocation Model runs. Include below acreage of river bottom, fallow land, residences, etc., if riparian land.

Riparian Acres 2,676

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian Acres above)	

Appropriative Acres 1,550 (excludes overlapping acreage)

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
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Total		(Total must add up to Approprative Acres above)	

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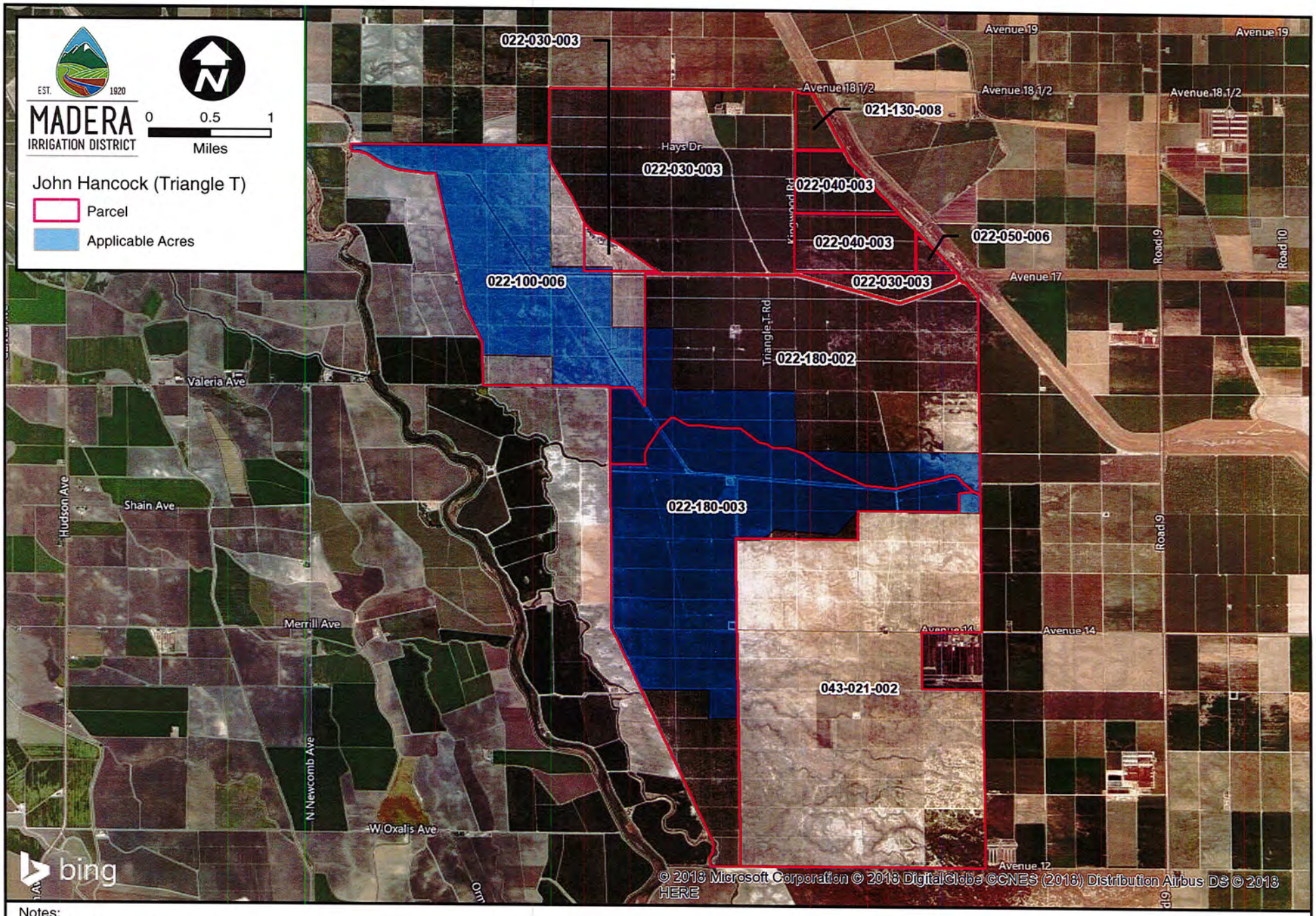

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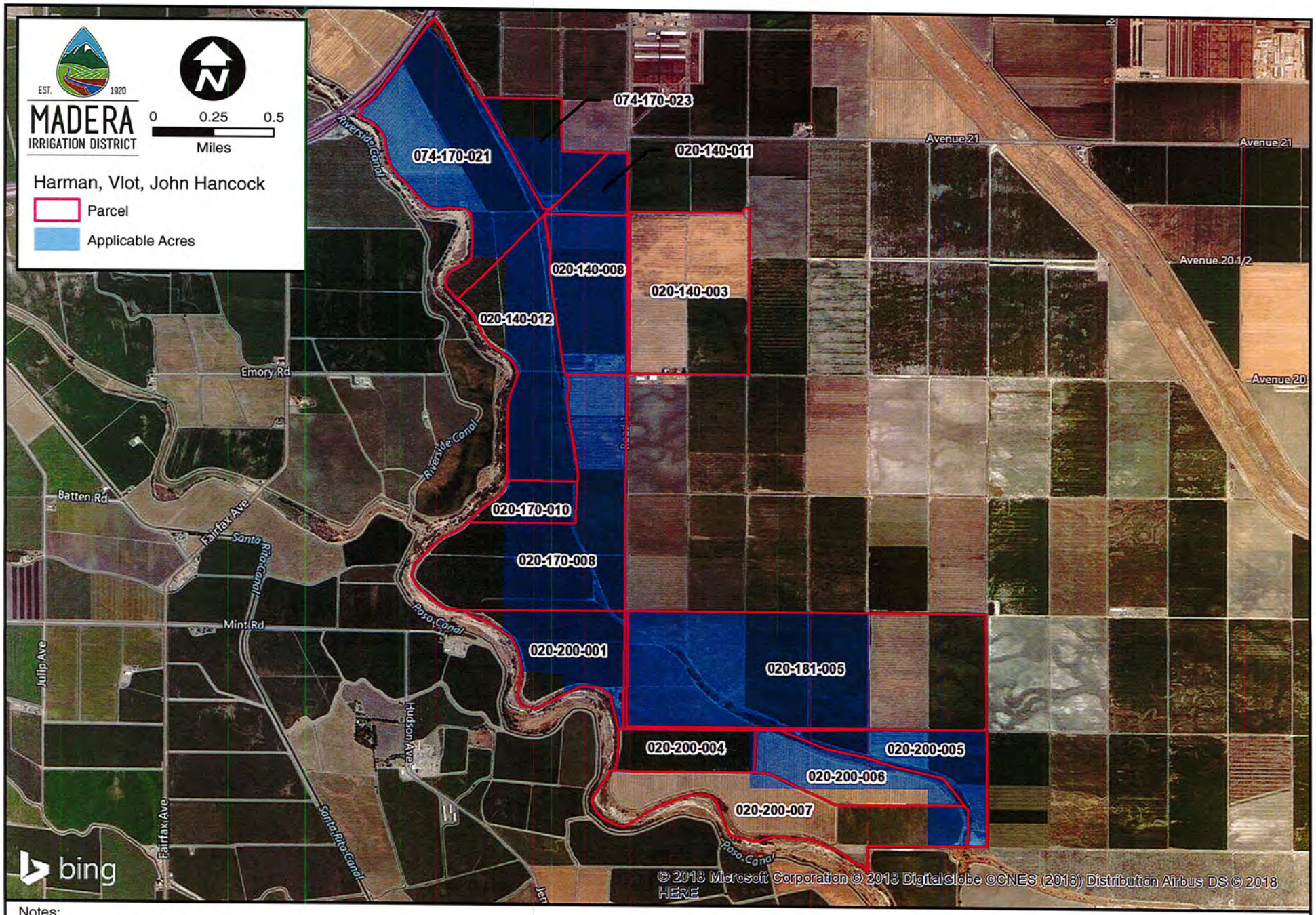

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October 25, 2018

GSO Priority Mail

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1624 East Pacheco Blvd
Los Banos, CA 93635

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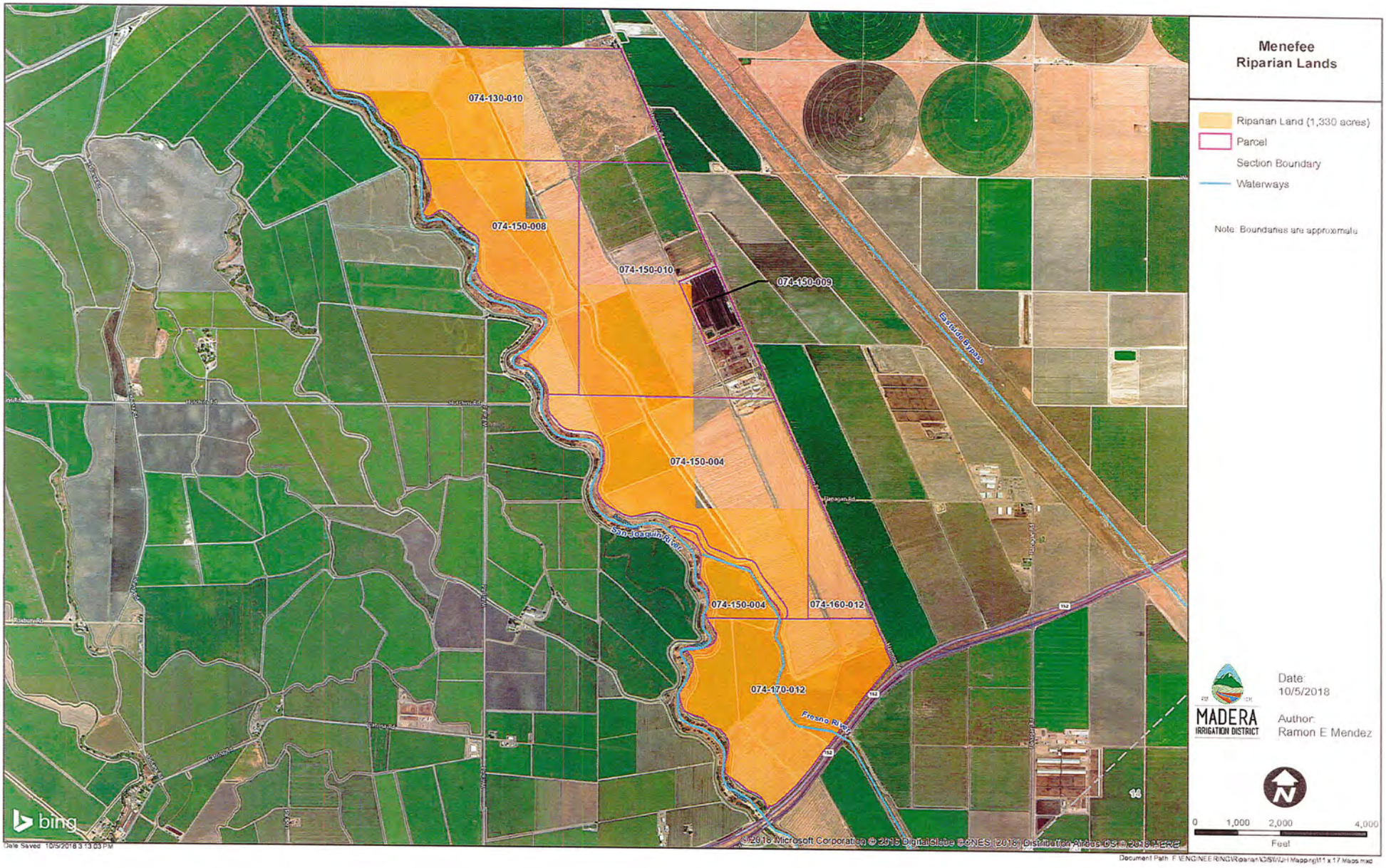

Menefee Riparian Lands

Note: Boundaries are approximate

Date: 10/5/2018

Author: Ramon E Mendez

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Date Saved: 10/5/2018 3:13:03 PM

Document Path: F:\ENGINEERING\Riparian\GIS\WJH Mapping\11 x 17 Maps.mxd

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Riparian / Appropriative Acres 1,330

Crop / Land Use	Acres	Cover Crop	Irrigation Type
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
		Yes / No	Drip / Sprinkler / Surface / Other
Total		(Total must add up to Riparian / Appropriative Acres above)	

Riparian / Appropriative Only Points of Diversion

MID reserves the right to inspect points of diversion, capacity, and request proof of permitting.

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Point of Diversion Location:_____; Diversion Capacity:_____

Total Diversion Capacity: _____

Name (Print): Date:

Signature:

By signing this form, the landowner is certifying that only the riparian and/or appropriative acreage is being provided to MID for allocation calculations.

The landowner is also certifying that they have the authority to sign this form and that the numbers are accurate.

MID Special Board Meeting – Fresno River Workshop

November 5, 2018 from 10:00 a.m. - 12:00 p.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

Pursuant to the request of several stakeholders in attendance at the Madera Irrigation District (the "District") Board of Directors meeting on October 16, 2018, the District will be holding a workshop to receive input from stakeholders on potential comprehensive solutions to resolve the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018 (the "Petition").

This workshop is being held to allow landowners and the public to present ***comprehensive solutions to address all concerns*** related to current Fresno River operations including, but not limited to, the following:

- Riparian and appropriate acreage disputes
- Diversion capacity disputes
- Unexercised riparian water rights
- Priority of water rights
- Operational constraints

District representatives will attend the workshop to hear proposed solutions from stakeholders, including riparian landowners. This will be a "Discussion Only" agenda item.

This is a public meeting and the public is welcome to attend. See attached agenda for further information.

Riparian Landowner Workshop

November 5, 2018 from 8:00 a.m. - 10:00 a.m.

Madera County Office of Education, Conference Center Rooms 3 & 4

1105 South Madera Ave., Madera, CA 93637

Madera Irrigation District is providing the opportunity for Fresno River riparian and appropriative rights holders to discuss amongst each other proposed comprehensive solutions to address all concerns raised by the Petition between 8:00 a.m. - 10:00 a.m. This workshop is being offered to allow Fresno River riparian and appropriative rights holders to discuss and develop potential comprehensive solutions to be presented at the 10:00 a.m. MID Special Board Meeting.

Representatives of the District will not be in attendance during this portion of the workshop. However, to help further the discussions, a neutral facilitator will be available to those in attendance.

MADERA IRRIGATION DISTRICT
BOARD OF DIRECTORS SPECIAL MEETING
FRESNO RIVER WORKSHOP

AGENDA

MISSION STATEMENT

To obtain and manage affordable surface water and groundwater supplies in a manner which will ensure the long-term viability of irrigated agriculture in the District.

Special Meeting Date:
Monday, November 5, 2018
10:00 a.m.-12:00 p.m.

Madera County Office of Education
Conference Center Rooms 3 & 4
1105 S. Madera Avenue
Madera, CA 93637

In compliance with the Americans with Disabilities Act, if you need special assistance to participate in this meeting, please contact the Administration Office at 559-673-3514, ext. 215. Notification in advance of the meeting will enable MID to make reasonable arrangements to ensure accessibility to this meeting.

In compliance with the California Government Code, members of the public may inspect the agenda and any associated writings, including documents delivered after the 72-hour advance posting of the agenda during regular business hours at the Madera Irrigation District Office, located at 12152 Road 28 1/4, Madera, California 93637.

WELCOME

1. **INFORMATIONAL ITEMS**

   a. Discussion only – presentation of proposals by Fresno River stakeholders to discuss a potential for resolution of the issues raised in the Petition for the Adjudication of Rights to the Fresno River, filed on October 18, 2018.

2. **ADJOURNMENT**

Date Submitted: 11/8/2019

Submitted By: Trent Ebaugh, Community Outreach Coordinator, Food Commons Fresno/Road 20 Farm

Address: Food Commons Fresno Office; 202 Van Ness Ave, Fresno, CA 93721
Road 20 Farm; 13886 Road 20, Madera, CA 93637

Phone Number/Email: (559) 674-2642 ext. 711
trent@foodcommonsfresno.org

Located in Groundwater Sustainability Agency (GSA) : MID

Affiliation: Irrigated Ag, Other: 501(c) 3

Chapter No./ Page No. of GSP: Chapter 4, page 8.

Comments: Road 20 Farm and Food Commons Fresno are against the potential of a land retirement policy for the implementation of demand reduction. Both Road 20 Farm and Food Commons Fresno are opposed to the potential measure because we acknowledge the potential for this measure to harm or cease our operations entirely. Additionally, are agricultural operations and management provide both a positive economic impact on the local community, as well as contribute greatly to the biological diversity and ecosystem health of Madera County. Road 20 Farm employs over 25 people, and based on the economic multiplier effect, contribute approximately 2.5-3 million to the local economy. Environmental benefits of our farm and land management include providing crucial habitat for pollinators, as well as increasing the biological diversity of madera county based on our crop and flora diversity, and regenerative practices.

YOUR MOST VALUABLE RESOURCE - WATER

OFFICE OF
FRESNO IRRIGATION DISTRICT

TELEPHONE (559) 233-7161
FAX (559) 233-8227
2907 S. MAPLE AVENUE
FRESNO, CALIFORNIA 93725-2208

November 8, 2019

Via U.S. Mail and E-Mail (E-Mail Address)

Ms. Stephanie Anagnoson, Director
Water and Natural Resources Department
Madera Subbasin GSA
C/O Madera County
200 W. 4th Street, Third Floor
Madera, CA 93637

Re: <u>Madera Subbasin Joint Draft Groundwater Sustainability Plan</u>

Dear Ms. Anagnoson:

The Fresno Irrigation District (FID) submits this letter to the County of Madera regarding the draft Joint Groundwater Sustainability Plan (GSP) prepared for purposes of the Sustainable Groundwater Management Act (SGMA).

Leading our region in water resources management, FID is a founding member of the North Kings Groundwater Sustainability Agency (NKGSA), which is adjacent to the Madera Subbasin. The NKGSA is one of the seven groundwater sustainability agencies (GSAs) within the Kings Subbasin. Other NKGSA members include the cities of Fresno, Clovis, and Kerman, Fresno County, Bakman Water Company, Biola Community Services District, International Water District, Garfield Water District, and the Fresno Metropolitan Flood Control District. FID makes up a significant portion of the NKGSA and consists of disadvantaged communities, private well owners, and other landowners. Since 1920, FID has proudly delivered water to agricultural and urban communities within Fresno County. Today, FID encompasses over 245,000 acres of prime farmland and municipal areas, including the cities of Fresno and Clovis. As one of the premier irrigation districts in the Central Valley, FID is extensively involved in a host of local, state and federal water issues.

FID appreciates the opportunity to comment on the Madera Subbasin Joint GSP. FID is concerned about the Madera Subbasin governing board adopting the draft GSP. Due to significant deficiencies as described below, FID urges the Madera Subbasin to delay adoption of the GSP and address the issues described below, and summarized as follows:

- The Madera Subbasin draft GSP indicates there is approximately 69,400 AF of historical and current inflow and with no project actions, the amount of inflow increases to 108,200 AF at 2040, which the GSP defines as the Subbasin's sustainability goal. With projects implemented and completed, the inflow is reduced to approximately 21,400 AF between 2040 and 2090.
- The GSP demonstrates the Madera Subbasin will not achieve the sustainable yield or groundwater sustainability within SGMA's mandatory 20-year period, primarily due to the Madera Subbasin miscalculating the annual overdraft deficit when accounting for the inflow and failing to address how the Subbasin will mitigate the overdraft deficit including starting mitigation during the first year of GSP implementation. The Madera County GSA does indicate they will initiate their demand management program in year one but the details are being finalized. This could result in a reduction in demand of about 2%, which does not account for the total boundary flow of approximately 69,400 AF.
- The Madera Subbasin GSP infers that the Madera Subbasin encroaches on approximately 69,400 AF of water per year within the NKGSA's boundary which drains into the Madera Subbasin.
- FID, including the other NKGSA member agencies and stakeholders, intends to capture and recapture water (as has been historically and currently occurring), whether surface water, groundwater, or recharge water, which the Madera Subbasin's draft GSP indicates is flowing into the Madera Subbasin and is a benefit to the Madera Subbasin through 2040. This practice is unlawful, inequitable and inappropriate by the Madera Subbasin.
- Time still remains to correct these deficiencies prior to the January 31, 2020, deadline for submitting the GSP to the California Department of Water Resources (DWR).

Ultimately, the Madera Subbasin GSP contains deficiencies arising to a definition of sustainability in the Madera Subbasin that is improperly reliant on boundary flows from FID and the NKGSA, which may vary but more importantly, that are not abandoned by FID nor the NKGSA nor its other member agencies or stakeholders. Accordingly, the Madera Subbasin GSAs must not make claim to that water.

FID and the NKGSA looks forward to continuing to collaborate with the Madera Subbasin GSAs on the correction of the concerns contained in this letter. Please contact me at (559) 233-7161 should you have any questions.

Sincerely,

William R. Stretch

Bill Stretch
General Manager

cc: Madera Irrigation District GSA
Root Creek Water District GSA
Madera County GSA
Gravelly Ford Water District GSA
City of Fresno - Michael Carbajal
County of Fresno – Bernard Jimenez

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: November 8, 2019

Submitted By: Molly Thurman

Address: 301 East Main Street, Turlock, CA 95380

Phone Number / Email: (661) 204-0568 / mthurman@hnrg.com

APNs: _____

Located in Groundwater Sustainability Agency (GSA):
☒ Madera County ☐ MID ☐ City of Madera ☐ MWD ☐ Other _____

Affiliation: ☒ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☐ Other _____

Chapter No. / Page No. of GSP: General

Comments:
Hancock Farmland Services (HFS) would like to thank you for the momentous amount of work that has been put into the Draft Madera Subbasin Groundwater Sustainability Plan (GSP). We especially appreciate the acknowledgement of the vitality of the agriculture industry in the local economy. In an effort to bolster the Draft GSP we provide the following comments:

Chapter No. / Page No. of GSP: Section 4.4 & 4.4.4, Pages 4-30 & 4-40

Comments:
HFS applauds Madera County's efforts to work with stakeholders in developing specific details of a demand management policy. We encourage the GSAs in the basin to initiate a stakeholder-driven process to develop a methodology for establishing landowner-level allocations of native yield that are coordinated across the basin. The allocation methodology should be consistent with various legal considerations drawn from applicable case law and attempt to be consistent with groundwater rights, recognizing that GSAs do not have statutory authority to make a final determination of water rights. An equal-per-gross acre approach to allocations is not likely to be consistent with established water rights doctrine, which must recognize many equitable considerations, in addition to acreage owned, to determine a legally defensible allocation. Further information regarding allocation methodology can be found in Groundwater Pumping Allocations Under California's Sustainable Groundwater Management Act – EDF and NCWL, dated July, 2018.

Chapter No. / Page No. of GSP: Section 4.4.4.2, Page 4-41

Comments:
HFS encourages the development of a coordinated basin-wide data management system (DMS) that is capable of tracking groundwater and surface water use at the landowner, field, or parcel level, and a coordinated methodology for measuring landowner-level use of groundwater. The DMS should also include, or be capable of interfacing with, a groundwater market platform that allows for individual users to conduct transactions. Markets are essential in facilitating the highest and best use of a limited resource and will be most effective if there is trust in the accuracy of measurements and consistency in data sources, and flexibility available to allow for transactions across the basin.

Chapter No. / Page No. of GSP: Section 4.4.4.2, Page 4-41

Comments:
While HFS encourages the use of remote sensing to calculate crop evapotranspiration (ET) as a measurement of consumptive use, we also request the development of methodologies and quality assurance elements to allow for grower provided information to be included into the ET calculation and calibration. These methodologies should be developed in consultation with the vendor providing ET data to ensure it is applicable and useful in creating the best available data set. Additionally, GSAs should establish criteria and procedures to address apparent inaccuracies in the ET calculations. An obvious use of the procedure would be in instances where the grower can demonstrate that applied water, plus precipitation, is less than the calculated ET. In these instances, and subject to any requirements established by the GSA, the grower's use of groundwater should be reduced to the applied water total as the ET calculation should not be greater than applied water.

Chapter No. / Page No. of GSP: Section 4.4.4.2, Page 4-41

Comments:

The GSA should implement pumping restrictions only if necessary to achieve sustainability when supported by the best available data and appropriate analytical tools and implement such reductions by gradually ramping down pumping over the implementation period to avoid a sudden disruption in economic activity. The ramp down schedule should include an initial period where current levels of pumping can continue as data is gathered and potential water supply projects are pursued. As with native yield allocations, ramp down schedules should be developed in a coordinated manner across the basin. Any imposed pumping restrictions should be "eased" or "flexed" during drought periods provided that overdraft during those periods can be replenished.

Chapter No. / Page No. of GSP: Section 4.4.4.2, Page 4-41

Comments:

The GSP lacks sufficient detail in defining how potential reductions will be applied, measured, enforced and responded to if not met. These are critical details that must be addressed. For example, what is the baseline pumping period that the reductions will be applied to? At a minimum, the baseline period should be multiple years to avoid unnecessary and perhaps unintended penalization of lands in redevelopment or not yet in full demand due to planting schedules. Additionally, there is no significant discussion of how use will be measured and calculated, or of the costs to perform these activities.

Chapter No. / Page No. of GSP:

Comments:

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: 10/22/19

Submitted By: James "Paul" Provenzano

Address: 30898 Donald Ave Madera, CA 93636

Phone Number / Email: 559-232-9249 provenzanopc@aol.com

APNs: 035-431-008

Located in Groundwater Sustainability Agency (GSA):
☒ Madera County ☐ MID ☐ City of Madera ☐ MWD ☐ Other _____

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☒ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☐ Other _____

Chapter No. / Page No. of GSP: 5-27 3D (Appendix)

Comments: -See attached-

Comments regarding the Madera County Groundwater Sustainability Plan

1. Section 2-57 The plan as drafted deletes all of the 2015 data from the San Joaquin Valley Water Year Index. The reason given is that the 1989 through 2014 data is more representative of the long term average as compared to the 1989 through 2015 data analysis of precipitation, unimpaired flows and CVP supplies. The problem with deleting the data is that the data actually occurred not once but twice in the data set (also in 1997) and there is near certainty that the event actually occurred. Generally deletion of data is reserved for cases where there is questionable data or a low degree of certainty that the event occurred. This deletion increases the amount of water thought to be available when in fact it is not really there.
2. The plan itself is heavily dependent on the purchase of available surface water and the construction of water recharge facilities. There is substantial risk of either the cost of water increases above a reasonable economic threshold or is simply not available. In recent years the amount of available surface water available for farming and recharge has been cut due to reallocations to environmental purposes. The plan also requires the construction of recharge facilities. These could quite possibly be delayed or face hurdles (environmental, economic, or governmental) that are quite literally impossible to overcome. In short there is a lot of uncertainty of the ability to implement this part of the plan.
3. The domestic well mitigation program is wholly inadequate it currently stands. In appendix 3D the cost of the domestic well program is slated to cost only $277,000 per year. The assumptions are an administrative cost of $150,000, a cost per well of $30,000 and an additional contingency of 30%. A total of 240 impacted wells (over the 20 year implementation period?) That would equal 12 per year on average (240 divided by 20). Upon query I was told that not all the wells would be reimbursed. This does not make sense. It would seem that all impacted wells would have to be replaced. In any case by my calculations there is only a budget for about 4 wells. The total available is $277,000 less $150,000 equals $127,000. Take the $127,000 divide it by $30,000 per well and you come up with 4.23 wells. I felt this might be a little low so I spoke with my own personal well driller who drilled 108 wells per year in the Ranchos area. While not all of these wells are replacements the vast majority are. In addition there are several other well drillers so the real number is substantially over 100 wells not 4.

   The data used to determine the number of wells impacted is faulty. Between 2012 and 2015 I drilled a new well along with two neighbors. We all used different licensed contractors. I attempted to locate these wells in the Department of Water Resources database and they could not be found. Alternate data needs to be used to determine the number of impacted wells such as the Madera County Environmental Health Department and even the well drillers themselves. When I built my own residence in 2000 the well was drilled to a depth of 300 feet with a water level of 120 feet. In November of 2014 I drilled a new well that was 600 feet deep because the original well was dry. The water level was recently measured by DWR and found to be 330 feet deep. This would indicate a groundwater level drop of 11 feet per year. I believe the actual number of impacted wells is far greater than the GSP analysis indicates and a budget of $277,000 will be inadequate to reimburse the impacted wells. In conclusion the data showing the well depths, water level and decline in water levels is inadequate and needs to be revised.

Sincerely Submitted,

J Paul Provenzano

30898 Donald Avenue

Madera CA 93636

Stephanie Anagnoson

From: Jeannie Habben
Sent: Wednesday, April 17, 2019 1:10 PM
To: MaderaGSPComments
Subject: Comment - Suggestion for the Madera Subbasin GSP - Chapter one

Follow Up Flag: Follow up
Flag Status: Flagged

Comment on Chapter One of the GSP – Madera Subbasin –
Section – List of Abbreviations:

- The list should appear with the abbreviation first, followed by the definition
- i.e.; ET – evapotranspiration

Reason: If a person is looking up the meaning of an abbreviation, they would not look it up by the meaning – they don't know what that is.

(it is currently written – definition/meaning first)

Jeannie Habben | Deputy Director of Water & Natural Resources
WATER AND NATURAL RESOURCES DEPARTMENT
200 W. 4th Street, Suite 4200, Madera, CA 93637
Office: 559-675-7703 Ext. 2358 | Cell: (559) 598-0421

November 8, 2019

Sent via email to MaderaGSPComments@maderacounty.com

Re: Comments on Draft Groundwater Sustainability Plan for Madera Groundwater Basin

To Whom It May Concern,

On behalf of the above-listed organizations, we would like to offer the attached comments on the draft Groundwater Sustainability Plan for the Madera Groundwater Basin. Our organizations are deeply engaged in and committed to the successful implementation of the Sustainable Groundwater Management Act (SGMA) because we understand that groundwater is a critical piece of a resilient California water portfolio, particularly in light of our changing climate. Because California's water and economy are interconnected, the sustainable management of each basin is of interest to both local communities and the state as a whole.

Our organizations have significant expertise in the environmental needs of groundwater and the needs of disadvantaged communities.

- The Nature Conservancy, in collaboration with state agencies, has developed several tools[1] for identifying groundwater dependent ecosystems in every SGMA groundwater basin and has made that tool available to each Groundwater Sustainability Agency.
- Local Government Commission supports leadership development, performs community engagement, and provides technical assistance dealing with groundwater management and other resilience-related topics at the local and regional scales; we provide guidance and resources for statewide applicability to the communities and GSAs we are working with directly in multiple groundwater basins.
- Audubon California is an expert in understanding wetlands and their role in groundwater recharge and applying conservation science to develop multiple-benefit solutions for sustainable groundwater management.
- American Rivers is committed to restoring damaged rivers and conserving clean water for people and nature.

[1] https://groundwaterresourcehub.org/

- Clean Water Action and Clean Water Fund are sister organizations that have deep expertise in the provision of safe drinking water, particularly in California's small disadvantaged communities, and co-authored a report on public and stakeholder engagement in SGMA[2].

Because of the number of draft plans being released and our interest in reviewing every plan, we have identified key plan elements that are necessary to ensure that each plan adequately addresses essential requirements of SGMA. A summary review of your plan using our evaluation framework is attached to this letter as Appendix A. Our hope is that you can use our feedback to improve your plan before it is submitted in January 2020.

This review does not look at data quality but instead looks at how data was presented and used to identify and address the needs of disadvantaged communities (DACs), drinking water and the environment. In addition to informing individual groundwater sustainability agencies of our analysis, we plan to aggregate the results of our reviews to identify trends in GSP development, compare plans and determine which basins may require greater attention from our organizations.

Key Indicators

Appendix A provides a list of the questions we posed, how the draft plan responds to those questions and an evaluation by element of major issues with the plan. Below is a summary by element of the questions used to evaluate the plan.

1. Identification of Beneficial Users. This element is meant to ascertain whether and how DACs and groundwater-dependent ecosystems (GDEs) were identified, what standards and guidance were used to determine groundwater quality conditions and establish minimum thresholds for groundwater quality, and how environmental beneficial users and stakeholders were engaged through the development of the draft plan.
2. Communications plan. This element looks at the sufficiency of the communications plan in identifying ongoing stakeholder engagement during plan implementation, explicit information about how DACs were engaged in the planning process and how stakeholder input was incorporated into the GSP process and decision-making.
3. Maps related to Key Beneficial Uses. This element looks for maps related to drinking water users, including the density, location and depths of public supply and domestic wells; maps of GDE and interconnected surface waters with gaining and losing reaches; and monitoring networks.
4. Water Budgets. This element looks at how climate change is explicitly incorporated into current and future water budgets; how demands from urban and domestic water users were incorporated; and whether the historic, current and future water demands of native vegetation and wetlands are included in the budget.
5. Management areas and Monitoring Network. This element looks at where, why and how management areas are established, as well what data gaps have been identified and how the plan addresses those gaps.
6. Measurable Objectives and Undesirable Results. This element evaluates whether the plan explicitly considers the impacts on DACs, GDEs and environmental beneficial users in the development of Undesirable Results and Measurable Objectives. In addition, it examines

[2] https://www.cleanwater.org/publications/collaborating-success-stakeholder-engagement-sustainable-groundwater-management-act

whether stakeholder input was solicited from these beneficial users during the development of those metrics.

7. Management Actions and Costs. This element looks at how identified management actions impact DACs, GDEs and interconnected surface water bodies; whether mitigation for impacts to DACs is discussed or funded; and what efforts will be made to fill identified data gaps in the first five years of the plan. Additionally, this element asks whether any changes to local ordinances or land use plans are included as management actions.

Conclusion

We know that SGMA plan development and implementation is a major undertaking, and we want every basin to be successful. We would be happy to meet with you to discuss our evaluation as you finalize your Plan for submittal to DWR. Feel free to contact Suzannah Sosman at suzannah@aginnovations.org for more information or to schedule a conversation.

Sincerely,

Jennifer Clary
Water Program Manager
Clean Water Action/Clean Water Fund

Samantha Arthur
Working Lands Program Director
Audubon California

Sandi Matsumoto
Associate Director, California Water Program
The Nature Conservancy

Danielle V. Dolan
Water Program Director
Local Government Commission

Lisa Hunt, Ph.D.
Director of California River Restoration Science
American Rivers

Groundwater Basin/Subbasin: Madera Subbasin (DWR 5-22.06)
GSA: City of Madera GSA, Madera County GSA, Madera Irrigation District GSA, and Madera Water District GSA
GSP Date: August 2019 Public Review Draft

1. Identification of Beneficial Users

Were key beneficial users identified and engaged?

Selected relevant requirements and guidance:
GSP Element 2.1.5, "Notice & Communication" (§354.10):
(a) A description of the beneficial uses and users of groundwater in the basin, including the land uses and property interests potentially affected by the use of groundwater in the basin, the types of parties representing those interests, and the nature of consultation with those parties.
GSP Element 2.2.2, "Groundwater Conditions" (§354.16):
(d) Groundwater quality issues that may affect the supply and beneficial uses of groundwater, including a description and map of the location of known groundwater contamination sites and plumes.
(f) Identification of interconnected surface water systems within the basin and an estimate of the quantity and timing of depletions of those systems, utilizing data available from the Department, as specified in Section 353.2, or the best available information.
(g) Identification of groundwater dependent ecosystems within the basin, utilizing data available from the Department, as specified in Section 353.2, or the best available information.
GSP Element 3.3, "Minimum Thresholds" (§354.28):
(4) How minimum thresholds may affect the interests of beneficial uses and users of groundwater or land uses and property interests.

Review Criteria		Yes	No	N/A	Relevant Info per GSP	Location (Section, Page[1])
1. Do beneficial users (BUs) identified within the GSP area include:	a. Disadvantaged Communities (DACs)	X			"Disadvantaged communities: Fairmead Community and Friends, La Vina Residents, Líderes Campesinas, etc."	Table 2-5, page 79 - 80
	b. Tribes	X			"Federally Recognized Tribes and non-Federally Recognized Tribes with lands or potential interests in Madera Subbasin: • North Fork Rancheria of Mono Indians of California • Picayune Rancheria of Chukchansi Indians • North Fork Band of Mono Indians"	
	c. Small community public water systems (<3,300 connections)	X			"Small water systems" is listed in Table 2-5 Stakeholder Engagement Chart for GSP Development, but it is not clear what water systems are included, and how many connections they have.	
2. What data were used to identify presence or absence of DACs?	a. DWR DAC Mapping Tool[2]		X		The data source of identifying DACs is not specified.	
	i. Census Places			X		
	ii. Census Block Groups			X		
	iii. Census Tracts			X		
	b. Other data source	X			The draft GSP does not clearly show all the DACs within the GSP area. The data source of identifying DACs is not specified. The draft GSP states that	3.3.1.1, page 183

[1] Page numbers refer to the page of the PDF.
[2] DWR DAC Mapping Tool: https://gis.water.ca.gov/app/dacs/

					"Communications received from representatives of disadvantaged communities included a letter dated June 27, 2019 from the Leadership Council."	
3. Groundwater Conditions section includes discussion of:	a. Drinking Water Quality	X			"Maps of available groundwater quality data for a variety of constituents were prepared to characterize groundwater quality in the Subbasin. Key groundwater quality constituents discussed below include nitrate, total dissolved solids (TDS), and arsenic. … Nitrate presents health concerns at high concentrations and is regulated in public drinking water systems. The U.S. Environmental Protection Agency (USEPA) has established a maximum contaminant level (MCL) for nitrate (as nitrogen) of 10 mg/L under its National Primary Drinking Water Regulations; this MCL standard is established for public health reasons and is a requirement of all public drinking water systems…Arsenic is a naturally occurring chemical found in groundwater and has a primary MCL of 10 µg/L. … Most notably, maps of DBCP, EDB, 1,2,3-TCP, perchlorate, PCE, and BTEX concentrations all indicate areas with wells exceeding the respective drinking water MCLs."	2.2.2.3, page 96
	b. California Maximum Contaminant Levels (CA MCLs)[3] (or Public Health Goals where MCL does not exist, e.g. Chromium VI)	X				
4. What local, state, and federal standards or plans were used to assess drinking water BUs in the development of Minimum Thresholds (MTs)?	a. Office of Environmental Health Hazard Assessment Public Health Goal (OEHHA PHGs)[4]		X			
	b. CA MCLs[3]	X			"The cause of basin groundwater conditions that would result in significant and unreasonable degraded water quality is implementation of a GSP project or management action that causes concentrations of key groundwater quality constituents to increase to concentrations exceeding the minimum thresholds, which are set at the MCLs for drinking water for identified key constituents (10 mg/L for nitrate as nitrogen; 500 mg/L for TDS; 10 ug/L for arsenic) or when existing or historical concentrations for the key constituents already exceed the MCL, the minimum threshold is set at the recent concentration plus 20 percent. … Significant and unreasonable degradation of water quality occurs when beneficial uses for groundwater are adversely impacted by constituent concentrations increasing to levels above the drinking water MCLs for one of the key constituents (nitrate, arsenic, TDS) previously identified in Chapter 2 (Plan Area and Basin Setting) of the GSP at indicator wells in the representative groundwater quality monitoring network due to implementation of a GSP project or management action. When existing or historical concentrations for the key constituents already exceed the MCL, the minimum threshold is set at the recent concentration plus 20 percent." "The cause of basin groundwater conditions that would result in significant and unreasonable degraded water quality is implementation of a GSP project	3.3.4, page 191; 3.3.4, page 199

[3] CA MCLs: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html
[4] OEHHA PHGs: https://www.waterboards.ca.gov/drinking_water/certlic/drinkingwater/MCLsandPHGs.html

					or management action that causes levels of key groundwater quality constituents to increase to concentrations exceeding the MCLs for drinking water. Municipal and domestic supply (MUN) is a designated beneficial use for groundwater in the Plan area; therefore, groundwater quality degradation is considered significant and unreasonable based on adverse impacts to this beneficial use. Locally defined significant and unreasonable conditions were determined based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, and through individual stakeholder input to various GSA representatives."	
	c. Water Quality Objectives (WQOs) in Regional Water Quality Control Plans		X			
	d. Sustainable Communities Strategies/ Regional Transportation Plans[5]		X			
	e. County and/or City General Plans, Zoning Codes and Ordinances[6]		X			
5. Does the GSP identify how environmental BUs and environmental stakeholders were engaged throughout the development of the GSP?		X			"The SMC presented in this chapter were developed using information from stakeholder and public input and correspondence with the GSAs, public meetings, hydrogeologic analysis, groundwater dependent ecosystem analysis, and meetings with GSA technical representatives. The general process for establishing SMC included: • GSA public meetings that outlined the GSP development process and introduced stakeholders to the SMC • Conducting GSP public meetings to present proposed methodologies to establish minimum thresholds and measurable objectives and receive additional public input. Two public meetings on SMC were held in the Plan area • Reviewing public input on preliminary SMC methodologies with GSA staff/technical representatives. • Providing a Draft GSP for public review and comment Establishing and modifying minimum thresholds, measurable objectives, and definition of undesirable results based on feedback from public meetings, public/stakeholder review of the Draft GSP, and input from GSA staff/technical representatives." "The methodology to develop minimum thresholds for groundwater levels was based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, individual public/stakeholder input to various GSA representatives, and a meeting with DWR54."	3, page 163 3.3.1.1, page 183
Summary/ Comments						

[5] CARB: https://ww2.arb.ca.gov/resources/documents/scs-evaluation-resources
[6] OPR General Plan Guidelines: http://www.opr.ca.gov/planning/general-plan/

The draft GSP states that the comments from representatives of DACs are considered, and examples of DACs are listed in the Table 2-5 Stakeholder Engagement Chart for GSP Development. However, the draft GSP does not provide a detailed description of how the DACs were identified, the names and locations of all of the communities, or any further details of the population in the communities or how they use groundwater. Without this information, it is not clear how the GSP can identify and consider the needs of these DAC beneficial users. It is recommended the GSP provide a map of all DAC areas; the DWR DAC Mapping Tool can be used to help identify the locations of these communities and their populations: https://gis.water.ca.gov/app/dacs/ . The GSP should also identify what community water systems are present in the subbasin, and describe the users and population that rely on these systems for drinking water supply.

The GSP should modify the stakeholder list associated with the Environmental and Ecosystem Uses category to include the appropriate agencies and list of environmental groups. To identify environmental users, the GSP should refer to the following:
- Natural Communities Commonly Associated with Groundwater dataset (NC Dataset) - https://gis.water.ca.gov/app/NCDatasetViewer/
- The list of freshwater species in the subbasin can be found here: https://groundwaterresourcehub.org/sgma-tools/environmental-surface-water-beneficiaries/. The GSP should take particular note of the species with protected status.

2. Communications Plan

How were key beneficial users engaged and how was their input incorporated into the GSP process and decisions?

Selected relevant requirements and guidance:
GSP Element 2.1.5, "Notice & Communication" (§354.10):
Each Plan shall include a summary of information relating to notification and communication by the Agency with other agencies and interested parties including the following:
(c) Comments regarding the Plan received by the Agency and a summary of any responses by the Agency.
(d) A communication section of the Plan that includes the following:
(1) An explanation of the Agency's decision-making process.
(2) Identification of opportunities for public engagement and a discussion of how public input and response will be used.
(3) A description of how the Agency encourages the active involvement of diverse social, cultural, and economic elements of the population within the basin.
(4) The method the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions.

DWR Guidance Document for GSP Stakeholder Communication and Engagement[7]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Is a Stakeholder Communication and Engagement Plan (SCEP) included?	X			"To facilitate stakeholder involvement in the GSA process, a Stakeholder Communication and Engagement Plan (Appendix 2) was created for the GSAs in the Madera Subbasin … This plan was originally developed in June 2018 and has been updated several times since then." "Stakeholder Communication and Engagement Plan June 2018 (updated October 2018)"	2.1.5.1, page 78; Appendix 2.C
2. Does the SCEP or GSP identify that ongoing engagement will be conducted during GSP implementation?	X			"3.Management elements include GSP decision-making, funding, implementation and enforcement." "It is critical that stakeholders and beneficial users are provided regular opportunities for their input to be incorporated into GSA governance and decision-making processes, and that they understand exactly how they are able to contribute to the GSP planning and implementation processes. Stakeholder engagement opportunities include but are not limited to: … iii. Public workshop or roundtable content includes but is not limited to: … d) Opportunities for interested parties to participate in the development and implementation of the GSP (i.e., technical workshops on specific GSP components)"	Appendix 2.C;

[7] DWR Guidance Document for GSP Stakeholder Communication and Engagement
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Guidance-Document-for-Groundwater-Sustainability-Plan---Stakeholder-Communication-and-Engagement.pdf

				"Madera Subbasin GSAs recognize that stakeholder input into the development and implementation of a GSP is critical for GSP acceptance and successful implementation, as well as a SGMA requirement. As such, Stakeholder Roundtables have been identified as the best method to incorporate Madera Subbasin stakeholder/beneficial user input into the GSP development and implementation process." "Administrative costs generally include coordination meetings, reporting, record keeping, bookkeeping, legal advice, continued outreach to stakeholders, and government relations. GSAs will also need to continue to monitor projects and management actions to assess their benefit, economic feasibility, and coordinate with stakeholders and other GSAs if modification of projects and management actions is necessary to ensure the Subbasin meets sustainability objectives." "However, GSAs expect to evaluate other project ideas proposed by stakeholders, assess cost-effectiveness of proposed projects, and evaluate the joint implementation of multiple projects to ensure the GSP continues to meet sustainability objectives."	5.1.1, page 273; 5.1.4, page 275
3. Does the SCEP or GSP specifically identify how DAC beneficial users were engaged in the planning process?	X			"There were a number of different meetings at which the public had the opportunity to engage during the GSP development process: ● **GSA meetings**: Each of the seven GSAs in the Madera Subbasin held regular public meetings, generally on a monthly schedule and in many cases in conjunction with standing board meetings. ● **Coordination Committee meetings:** The intent of the Coordination Committee was to provide a forum to GSAs to share perspectives and participate in review and discussion of elements for GSP development. The Coordination Committee membership included representatives from each of the coordinating GSAs and meetings were often attended by representatives from the other GSAs in the subbasin. ● **Subbasin-wide technical workshops:** Subbasin-wide public workshops were held throughout the GSP development process to provide opportunities for the public to learn about the SGMA process and GSP components, receive updates about GSP planning activities, and provide input on GSP development. These "technical workshops" often included presentations by the GSP preparation consultants about technical aspects of GSP preparation, on topics such as basin setting, water budgets, and undesirable results. ● **County Advisory Committee**: The Madera County GSA was supported by an advisory committee which consisted of members from different demographic groups and communities. The Advisory Committee provided feedback on GSP development to the board of the Madera County GSA as well as relaying information back to the communities to which the committee members belong. The County Advisory Committee met quarterly in 2018 and bi-monthly in 2019. ● **MID Groundwater Committee**: MID GSA was supported by a groundwater committee comprised of two MID Board Members. The MID Groundwater	Section 2.1.5.3, page 80

				Committee was utilized to provide input and recommendations to the MID Board of Directors and the MID GSA on matters pertaining to the GSA and GSP planning process. The MID Groundwater Committee meetings were scheduled as needed in 2017-2019. **Figure 2-8** describes the GSP process steps, including topic development, technical review, and public meetings both at the Subbasin and individual level:" "There were also activities related to encouraging involvement and building capacity for engagement, including the following activities organized in coordination with Self-Help Enterprises and the Leadership Counsel for Justice and Accountability: ● **Capacity-building workshops**: Workshops encouraged and prepared community members to participate in GSP development by providing technical information as well as information about opportunities for engagement. ● **Pop-ups**: Information about SGMA and opportunities for engagement in Madera Subbasin GSP preparation were provided through pop-up information stations in locations such as the Madera County Library to invite people to attend workshops and meetings. ● **Educational tours**: Tours provided members of the public with additional opportunities to hear about the concerns of people with differing perspectives. Tours included stops in the community of Fairmead, La Vina, a farm, and at a groundwater recharge basin. **Presentations in communities**: Self-Help Enterprises and the Leadership Counsel for Justice and Accountability both encouraged participation in GSP preparation through presentations held in communities around the Subbasin."	Section 2.1.5.3, page 81
4. Does the SCEP or GSP explicitly describe how stakeholder input was incorporated into the GSP process and decisions?	X			"The Madera Subbasin Coordinating GSAs shall be the primary decision-making bodies for the Madera Subbasin. These GSAs shall coordinate and develop recommendations for GSA decision-making through a Coordination Committee. GSAs and their staff representatives will engage with Subbasin stakeholders through the strategies outlined in this plan to help inform the GSAs' decisions, including public participation stakeholder roundtables, GSP workshops, and public comment during Coordination Committee meetings and GSA Board meetings. While the Coordination Committee provides recommendations on GSP development, the GSA Boards shall serve as the final decisionmakers for the Madera Subbasin. The following schematic (Figure 1) demonstrates the processes and opportunities for input that are intended to guide decision-making and stakeholder engagement in the Madera Subbasin." "The Engagement Matrix, in Appendix 2, provides details about the implementation of each of the communication methods outlined above. The matrix presents each communication strategy, as required by statute or laid out in the Madera Subbasin Communication and Engagement Plan, along with details about specific instances of that strategy. For example, each public GSP-related meeting is listed with information about the date, topic, and	Appendix 2.C; 2.1.5.4, page 83;

				location of the meeting as well as how it was publicized, to whom it was targeted, what opportunities for feedback were provided, and who participated. "The methodology to develop minimum thresholds for groundwater levels was based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, individual public/stakeholder input to various GSA representatives, and a meeting with DWR54. Stakeholder input has included substantial verbal and written comments from representatives of disadvantaged communities, which has been meaningfully considered in development of this GSP."	3.3.1.1, page 183

Summary/ Comments

The GSP describes the methods used to disseminate information and how stakeholder input was incorporated.

3. Maps Related to Key Beneficial Uses

Were best available data sources used for information related to key beneficial users?

Selected relevant requirements and guidance:
GSP Element 2.1.4 "Additional GSP Elements" (§354.8):
Each Plan shall include a description of the geographic areas covered, including the following information:
(a) One or more maps of the basin that depict the following, as applicable:
(5) The density of wells per square mile, by dasymetric or similar mapping techniques, showing the general distribution of agricultural, industrial, and domestic water supply wells in the basin, including de minimis extractors, and the location and extent of communities dependent upon groundwater, utilizing data provided by the Department, as specified in Section 353.2, or the best available information.

GSP Element 3.5 Monitoring Network (§354.34)
(b) Each Plan shall include a description of the monitoring network objectives for the basin, including an explanation of how the network will be developed and implemented to monitor groundwater and related surface conditions, and the interconnection of surface water and groundwater, with sufficient temporal frequency and spatial density to evaluate the affects and effectiveness of Plan implementation. The monitoring network objectives shall be implemented to accomplish the following:
(c) Each monitoring network shall be designed to accomplish the following for each sustainability indicator:
(1) Chronic Lowering of Groundwater Levels. Demonstrate groundwater occurrence, flow directions, and hydraulic gradients between principal aquifers and surface water features by the following methods:
(A) A sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.
(4) Degraded Water Quality. Collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues.
(6) Depletions of Interconnected Surface Water. Monitor surface water and groundwater, where interconnected surface water conditions exist, to characterize the spatial and temporal exchanges between surface water and groundwater, and to calibrate and apply the tools and methods necessary to calculate depletions of surface water caused by groundwater extractions. The monitoring network shall be able to characterize the following:
(A) Flow conditions including surface water discharge, surface water head, and baseflow contribution.
(B) Identifying the approximate date and location where ephemeral or intermittent flowing streams and rivers cease to flow, if applicable.
(C) Temporal change in conditions due to variations in stream discharge and regional groundwater extraction.
(D) Other factors that may be necessary to identify adverse impacts on beneficial uses of the surface water.
(f) The Agency shall determine the density of monitoring sites and frequency of measurements required to demonstrate short-term, seasonal, and long-term trends based upon the following factors:
(3) Impacts to beneficial uses and users of groundwater and land uses and property interests affected by groundwater production, and adjacent basins that could affect the ability of that basin to meet the sustainability goal.

Review Criteria		Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP Include Maps Related to Drinking Water Users?	a. Well Density	X			"The densities of domestic, irrigation, and public supply wells per section within the Madera Subbasin are shown in Figures 2-520,2-621, and 2-722 respectively."	2.1.1, page 66
	b. Domestic and Public Supply Well Locations & Depths	X			"Maps of the average depths of domestic, agricultural, and public supply wells by section are provided in Figures 2-44, 2-45, and 2-46."	2.2.1.5, page 88

	i. Based on DWR Well Completion Report Map Application[8]?	X			"Notably, the number of wells reported by section were determined from Well Completion Report (WCR) data provided by DWR. These numbers include only reported wells and may not reflect the total number of existing or active wells in the subbasin."	2.1.1, page 66
	ii. Based on Other Source(s)?		X			
2. Does the GSP include maps related to Groundwater Dependent Ecosystem (GDE) locations?	a. Map of GDE Locations	X			Figure 2-73a. GDE units and depth to groundwater in the Madera Subbasin Figure 2-73b. Fresno River Riparian GDE Unit Figure 2-73c. Sumner Hill potential GDE Unit, Friant Riparian GDE Unit, and upstream portion of San Joaquin River Riparian GDE Unit Figure 2-73d. San Joaquin River Riparian GDE Unit, downstream portion "GDEs may also occur in areas where regional groundwater levels are deeper than 30 feet but shallower perched groundwater exists atop bedrock or another type of aquitard; however, these types of GDEs would generally not be impacted by pumping of groundwater supply wells." The GSP discounts the perched water zones as derived from surface water, and therefore they were not considered in evaluation of GDEs. "A DTW cutoff of 30 feet was used in the initial screening of potential GDEs. The use of a 30-foot DTW criterion to identify potential GDEs is based on reported maximum rooting depths of California phreatophytes and is consistent with guidance provided by The Nature Conservancy (Rohde et al. 2018) for identifying potential GDEs."	Figures 2-73a-2-73d, page 68-71 in the Chpt 2 Figure package 2.2.2.6, page 100 2.2.2.6, page 100
	b. Map of Interconnected Surface Waters (ISWs)		X		The GSP provides maps of depth to groundwater contours (Figures 2-71 and 2071), but does not specify where the ISWs are located. As shown in Figures 2-71 and 2-72, depth to groundwater is greater than 100 feet in 2014 and 2016 across much of the Subbasin. However, areas in upstream reaches of the Fresno River and San Joaquin River show depths to groundwater within 20-30 feet in 2014. "A review of historical regional aquifer groundwater levels compared to stream thalweg (deepest portion of stream channel) elevations conducted for this study indicate that surface water – groundwater interactions are not a significant issue (i.e., regional groundwater levels are relatively far below creek thalweg elevations) along Berenda Creek, Dry Creek, the Fresno River, and Cottonwood Creek in Madera Subbasin." "It is likely that seepage from the San Joaquin River is the source of water combined with the presence of shallow clay layers, which serves to maintain shallow groundwater levels at these locations."	Figures 2-71-2-72, page 66-67 in the Chpt 2 Figure package 2.2.2.5, page 98 2.2.2.5, page 99
	i. Does it identify which reaches are gaining and which are losing?		X		See above. The GSP does not clearly describe the ISWs by stream segments or seasonality.	See above.
	ii. Depletions to ISWs are quantified by stream segments.		X			

[8] DWR Well Completion Report Map Application: https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37

	iii. Depletions to ISWs are quantified seasonally.		X			
3. Does the GSP include maps of monitoring networks?	a. Existing Monitoring Wells	X			Figure 3.F-1 shows the Supplemental Groundwater Level Monitoring Network, which includes wells from CASGEM, DWR voluntary, and USBR. "The overall proposed monitoring network for groundwater levels, comprised of wells monitored for CASGEM, by GSAs, and by USBR is provided in Appendices 3.A and 3.F. … A map of the Plan area showing the overall groundwater level monitoring network is provided in Appendix 3.F, along with a table listing each well."	Figure 3.F-1, Appendix 3, Page 88 3.5.1.1, page 202
	b. Existing Monitoring Well Data sources: i. California Statewide Groundwater Elevation Monitoring (CASGEM)	X				
	ii. Water Board Regulated monitoring sites	X				
	iii. Department of Pesticide Regulation (DPR) monitoring wells		X			
	c. SGMA-Compliance Monitoring Network	X			"Figures 3-5 and 3-6 illustrate the locations of the wells selected as representative monitoring sites for monitoring of groundwater levels in the Upper and Lower aquifers, respectively (composite wells are included in Figure 3-1)." "The selected RMS for groundwater quality are listed in Table 3-7 and shown on Figure 3-2."	3.5.1.1, page 202; 3.5.1.4, page 207
	i. SGMA Monitoring Network map includes identified DACs?		X			
	ii. SGMA Monitoring Network map includes identified GDEs?		X			

Summary/ Comments

Providing maps of the monitoring network overlaid with location of DACs, domestic wells, community water systems, GDEs, and any other sensitive beneficial users will allow the reader to evaluate the adequacy of the network to monitor conditions near these beneficial users.

Based on the information presented in the draft GSP, it is not clear how representative the monitoring network is for domestic well users. The GSP should therefore explain how the proposed monitoring network is adequate to monitor conditions for these sensitive beneficial users.

The draft GSP proposes "a potential for future addition of up to 27 monitoring wells from the 2019 nested well installation program" but does not identify the location of these potential wells on maps (Section 3.5.1.1).The GSP should explicitly describe any future representative monitoring wells and identify the proposed locations and depths. When assessing the monitoring network data gaps, the GSP should consider the locations of beneficial users, including DACs, small water systems, and domestic wells.

The GSP should provide clear evidence of hydraulic disconnection where shallow groundwater is considered perched or identify hydraulic connection as a data gap. In addition, the GSP should consider perched water as a shallow aquifer, because even though it may not be pumped at present, it could be in the future.

Areas with depth to groundwater greater than 30 feet can serve as a water source to some plants, e.g. oak trees, in the dry part of the year. The depth criterion of 30 feet is presented as a criterion for inclusion, not a standalone criterion for exclusion. In other words, if groundwater is within 30 feet of the ground surface, then a GDE can be identified. If it is not, then further analysis must be conducted.

Figures 2-71 and 2-72: the GSP should provide more details on how depth to groundwater contour maps were developed.

- Are the wells used for interpolating depth to groundwater sufficiently close (<5km) to NC Dataset polygons to reflect local conditions relevant to ecosystems?

- Are the wells used for interpolating depth to groundwater screened within the surficial unconfined aquifer and capable of measuring the true water table?
- Is depth to groundwater contoured using groundwater elevations at monitoring wells to get groundwater elevation contours across the landscape? This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM) to estimate depth-to-groundwater contours across the landscape. This will provide much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make. It is better to assume that water surface elevations are constant in between wells, and then calculate depth to groundwater using a DEM of the land surface to contour depth to groundwater.

The GSP uses depth to water maps from 2014 and 2016; 2016 is after the SGMA benchmark date of January 1, 2015. It should focus on groundwater condition data prior to the SGMA benchmark date instead. The GSP should use depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. It should refer to TNC's guidance on Identifying GDEs Under SGMA (https://groundwaterresourcehub.org/public/uploads/pdfs/TNC_NCdataset_BestPracticesGuide_2019.pdf) for best practices for developing depth to groundwater contours. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network.

The GSP should further explain how NC Dataset polygons adjacent to the San Joaquin River were retained or removed as potential GDEs. On Appendix 2.B, Figure 1 polygons are shown as removed based on depth to groundwater greater than 30 feet, but the groundwater depth contours (Figures 2-71 and 2-72) do not show enough detail to make this distinction. The GSP should also consider retaining all NC Dataset polygons adjacent to the San Joaquin River due to the essential ecosystem function that the riparian vegetation community performs for the critical habitat of the Chinook salmon. As shown on Appendix 2.B, Figure 1, it appears that there is one potential GDE unit in light green on the far western border of the Subbasin. The GSP should describe further and clarify if this is indeed a polygon from the NC Dataset that was kept as a potential GDE.
It is recommended that the GSP should obtain groundwater data before concluding that there are no adverse impacts to the GDE Unit and make plans to address this data gap in the Monitoring section of the GSP.

ISWs are best estimated by first determining which reaches are completely disconnected from groundwater. This approach would involve comparing groundwater elevations with a land surface DEM that could identify which surface waters have groundwater consistently below surface water features, such that an unsaturated zone would separate surface water from groundwater. Groundwater elevations that are always deeper than 50 feet below the land surface can be used to identify the above ground reaches as disconnected surface waters. The GSP should provide further evidence, such as a cross-sections or corresponding hydrographs, to show the relationship between the river channel and the depth to groundwater at wells near the Fresno River and San Joaquin river to improve ISW mapping. Where data gaps exist regarding the existence of ISWs, make plans to reconcile them in the Monitoring section. It should also provide estimates of current and historical surface water depletions for the San Joaquin River, quantified and described by reach, season, and water year type. Provide a discussion of the expected effect of the San Joaquin River Restoration Program (SJRRP) on flows, GDEs and ISWs along the San Joaquin River. To improve ISW mapping, it should reconcile data gaps (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP to address the temporal connectedness of ISWs with groundwater.

4. Water Budgets

How were climate change projections incorporated into projected/future water budget and how were key beneficial users addressed?

Selected relevant requirements and guidance:
GSP Element 2.2.3 "Water Budget Information" (Reg. § 354.18)
Each Plan shall include a water budget for the basin that provides an accounting and assessment of 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. Water budget information shall be reported in tabular and graphical form.

*Projected water budgets shall be used to estimate future baseline conditions of supply, **demand**, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:*
(b) The water budget shall quantify the following, either through direct measurements or estimates based on data:
(5) If overdraft conditions occur, as defined in Bulletin 118, the water budget shall include a quantification of overdraft over a period of years during which water year and water supply conditions approximate average conditions.
(6) The water year type associated with the annual supply, demand, and change in groundwater stored.
(c) Each Plan shall quantify the current, historical, and projected water budget for the basin as follows:
*(1) Current water budget information shall quantify current inflows and outflows for the basin using the most recent hydrology, water supply, **water demand**, and land use information.*

DWR Water Budget BMP[9]
DWR Guidance for Climate Change Data Use During GSP Development and Resource Guide[10]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Are climate change projections explicitly incorporated in future/ projected water budget scenario(s)?	X			"Two primary projected water budget scenarios were considered: a projected without projects (no action) scenario, and a projected with projects scenario. Both these projected scenarios were also considered in the context of potential climate change effects on surface water supply and weather parameters."	2.2.3.2, page 150
2. Is there a description of the methodology used to include climate change?	X			"To evaluate sensitivity to climate change, projected water budgets were also developed using: 1. Historical hydrologic data from water years 1965-2015 adjusted by DWR-provided 2030 mean climate change factors 2. Historical water supply data from 1989-2015 adjusted similarly by climate change factors, with additional adjustment of CVP supply based on projected alteration of available Friant Releases by the	2.2.3.2, page 118

[9] DWR BMP for the Sustainable <management of Groundwater Water Budget:
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-4-Water-Budget.pdf
[10] DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development:
https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf

					San Joaquin River Restoration Program 3. 2017 land use adjusted for urban area projected growth from 2017 through 2070 (areas were held constant from 2071 through 2090)"	
3. What is used as the basis for climate change assumptions?	a. DWR-Provided Climate Change Data and Guidance[11]	X			See above	2.2.3.2, page 118
	b. Other	X			See above	2.2.3.2, page 118
4. Does the GSP use multiple climate scenarios?			X			
5. Does the GSP quantitatively incorporate climate change projections?		X			"Water budgets were projected into the future to estimate future water demands under different future scenarios and to evaluate the potential effects of different management actions and implementation of different projects. Two primary projected water budget scenarios were considered: a projected without projects (no action) scenario, and a projected with projects scenario. Both these projected scenarios were also considered in the context of potential climate change effects on surface water supply and weather parameters …. The development of projected timeseries for precipitation, evapotranspiration, and surface water flows are briefly summarized in Tables 2-27 and 2-28 below." Table 2-33. Comparative Summary of Annual Supply, Demand, and Change in Storage by Water Year Type (Acre-Feet per Year) (23 CCR §354.18(b)(6)).	2.2.3.4, page 151 Table 2-33, page 157
6. Does the GSP explicitly account for climate change in the following elements of the future/projected water budget?	a. Inflows: i. Precipitation	X			Table 2-26. Comparative Summary of all Water Budget Scenarios, Annual Average Volumes by Flow Path (Acre-Feet). Table 2-27 Development of Projected Future Precipitation and Evapotranspiration Timeseries includes the climate change adjustments for precipitation.	Table 2-26, page 148 Table 2-27, page 152
	ii. Surface Water	X			Table 2-26. Comparative Summary of all Water Budget Scenarios, Annual Average Volumes by Flow Path (Acre-Feet). Table 2-28. Development of Projected Future Surface Water Supply Timeseries includes the climate change adjustments for surface water inflows.	Table 2-26, page 148 Table 2-28, page 152
	iii. Imported Water	X			Table 2-26. Comparative Summary of all Water Budget Scenarios, Annual	Table 2-26, page 148

[11] DWR Guidance Document for the Sustainable Management of Groundwater Guidance for Climate Change Data Use During GSP Development: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Climate-Change-Guidance_Final.pdf
DWR Resource Guide DWR-Provided Climate Change Data and Guidance for Use During GSP Development: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/Resource-Guide-Climate-Change-Guidance_v8.pdf

						Average Volumes by Flow Path (Acre-Feet).	
		iv. Subsurface Inflow	X			Table 2-26. Comparative Summary of all Water Budget Scenarios, Annual Average Volumes by Flow Path (Acre-Feet).	Table 2-26, page 148
	b. Outflows:	i. Evapotranspiration	X			Table 2-26. Comparative Summary of all Water Budget Scenarios, Annual Average Volumes by Flow Path (Acre-Feet). Table 2-27 Development of Projected Future Precipitation and Evapotranspiration Timeseries includes the climate change adjustments for evaporation. Table 2-28. Development of Projected Future Surface Water Supply Timeseries includes the climate change adjustments for surface water diversions and bypasses.	Table 2-26, page 148 Table 2-27, page 152 Table 2-28, page 152
		ii. Surface Water Outflows (incl. Exports)	X				
		iii. Groundwater Outflows (incl. Exports)		X			
7. Are demands by these sectors (drinking water users) explicitly included in the future/projected water budget?	a. Domestic Well users (<5 connections)			X		The draft GSP does not specifically identify the amount of water demand associated with drinking water users separate from other groundwater pumping in the future water budget.	
	b. State Small Water systems (5-14 connections)			X			
	c. Small community water systems (<3,300 connections)			X			
	d. Medium and Large community water systems (> 3,300 connections)			X			
	e. Non-community water systems			X			
8. Are water uses for native vegetation and/or wetlands explicitly included in the current and historical water budgets?				X		Groundwater Extraction by Water Use Sector "Estimates of groundwater extraction by water use sector are provided in Figure 2-88 and Table 2-23. For agricultural and urban (urban, industrial, and semi-agricultural) lands, groundwater extraction represents pumping, while for native lands, groundwater extraction by riparian vegetation was considered to be negligible because of the depth to groundwater in the subbasin. Groundwater extraction is dominated by irrigated agriculture, varying substantially from year to year based on variability in surface water supplies and crop water demands. In the Land Surface System component of the water budget, ET is split into ET of applied water and ET of precipitation (Table 2-11). ET of groundwater is not included.	2.2.3.4, page 142 Table 2-11, page 112
9. Are water uses for native vegetation and/or wetlands explicitly included in the projected/future water budget?				X		"Estimates of groundwater extraction by water use sector are provided in Figure 2-88 and Table 2-23. For agricultural and urban (urban, industrial, and semi-agricultural) lands, groundwater extraction represents pumping, while for native lands, groundwater extraction by riparian vegetation was considered to be negligible because of the depth to groundwater in the subbasin."	2.2.3.2, page 142

Summary/ Comments

Given the uncertainties of climate change, it is appropriate to analyze the impacts of climate change for a range of scenarios (e.g., a mild effects scenario and a high (worst case) effects scenario). Therefore, it is recommended the GSP also includes the DWR-provided 2070 climate change factors to represent a high climate change scenario.

The GSP also does not provide specifics on drinking water demands separated by large urban water systems, domestic well users, or community water systems in the historical, current or future water budgets. This information should be provided for full transparency of the assumptions, data, and results of the water budgets. The GSP should include information on the methods used to estimate urban pumping including reported data (if any), population estimates used, per capita water use estimates used, and the areas and users of the subbasin represented by the urban pumping water budget component. The GSP should include information on how the changes in urban pumping were determined for the projected water budget and how these changes may impact small community water systems and domestic well users. The GSP should also discuss how the urban water demands presented in historical the water budget related to the historical water demands reported by the City of Madera in its Urban Water Management Plans. Due to the presence of GDEs in the Madera Subbasin, the GSP should quantify the evapotranspiration from groundwater by riparian vegetation. It should also include ET of groundwater in the water budget or explain where it is included.

5. Management Areas and Monitoring Network

How were key beneficial users considered in the selection and monitoring of Management Areas and was the monitoring network designed appropriately to identify impacts on DACs and GDEs?

Selected relevant requirements and guidance:
GSP Element 3.3, "Management Areas" (§354.20):

(b) A basin that includes one or more management areas shall describe the following in the Plan:
(2) The minimum thresholds and measurable objectives established for each management area, and an explanation of the rationale for selecting those values, if different from the basin at large.
(3) The level of monitoring and analysis appropriate for each management area.
(4) An explanation of how the management area can operate under different minimum thresholds and measurable objectives without causing undesirable results outside the management area, if applicable.
(c) If a Plan includes one or more management areas, the Plan shall include descriptions, maps, and other information required by this Subarticle sufficient to describe conditions in those areas.

CWC Guide to Protecting Drinking Water Quality under the SGMA[12]
TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs[13]

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP define one or more Management Area?		X		The draft GSP identifies that Management Areas would be discussed in Section 2.2.4 (Table 1-6), but there is no Section 2.2.4 in the GSP. It is assumed there is no Management Area defined explicitly in the draft GSP.	
2. Were the management areas defined specifically to manage GDEs?			X		
3. Were the management areas defined specifically to manage DACs?			X		
a. If yes, are the Measurable Objectives (MOs) and MTs for GDE/DAC management areas more restrictive than for the basin as a whole?			X		
b. If yes, are the proposed management actions for GDE/DAC management areas more restrictive/ aggressive than for the basin as a whole?			X		
4. Does the GSP include maps or descriptions indicating what DACs are located in each Management Area(s)?			X		
5. Does the GSP include maps or descriptions indicating what GDEs are located in each Management Area(s)?			X		
6. Does the plan identify gaps in the monitoring network for DACs and GDEs?		X		Data gaps are not discussed in regards to DAC locations. "Data gaps relative to GDEs can be characterized as incomplete information	3.5.4.2, page 216

[12] CWC Guide to Protecting Drinking Water Quality under the SGMA: https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858
[13] TNC's Groundwater Dependent Ecosystems under the SGMA, Guidance for Preparing GSPs: https://www.scienceforconservation.org/assets/downloads/GDEsUnderSGMA.pdf

				on the extent to which the vegetation composing the Fresno River Riparian and San Joaquin River Riparian GDE units may be impacted by occurrence of temporary short-term declines in shallow groundwater levels below historical lows. Additionally, uncertainty exists with respect to the source of shallow groundwater supporting the wetlands and vegetation composing the Sumner Hill potential GDE Unit and its potential to be affected by changes in future groundwater conditions. Biological monitoring, recommended every five years, will be used to evaluate potential beneficial or adverse effects on GDEs that may be related to changes in future groundwater conditions during the Implementation and Sustainability Periods."	
a. If yes, are plans included to address the identified deficiencies?	**X**			"Temporal data gaps will begin to be filled by more regular collection of data as part of the GSP, and installation of transducers in new nested monitoring wells." "Biological monitoring, recommended every five years, will be used to evaluate potential beneficial or adverse effects on GDEs that may be related to changes in future groundwater conditions during the Implementation and Sustainability Periods.	3.5.4.2, page 216

Summary/ Comments

Tables 1-1 and 1-6 identify that management areas are discussed in Section 2.2.4. However, Section 2.2.4 does not appear to be included in the GSP and there is no other section discussing management areas. Therefore, it is assumed that the GSAs have not identified any management areas.

If management areas are defined in the future, care should be taken so that they and the associated monitoring network are designed to adequately assess and protect against impacts to all beneficial users, including GDEs and DACs.

There are no upper aquifer or composite RMS wells located in the northern, central or southeastern portions of the subbasin, indicating that current monitoring network lacks adequate coverage for domestic wells in those areas, including those in the communities of Fairmead and Chowchilla (both DACs), Storey, Lake Madera Country Estates, and the area north of Madera. Therefore, based on the information presented in the draft GSP, it is not clear how representative the monitoring network is for domestic well users. The GSP should therefore explain how the proposed monitoring network is adequate to monitor conditions for these sensitive beneficial users.

The GSP should discuss whether there are data gaps in the monitoring networks for DACs and provide maps showing the monitoring network in relation to locations of the DACs and GDEs, so that the public may review the adequacy of the monitoring network to monitor for impacts to these beneficial users.

6. Measurable Objectives, Minimum Thresholds, and Undesirable Results

How were DAC and GDE beneficial uses and users considered in the establishment of Sustainable Management Criteria?

Selected relevant requirements and guidance:
GSP Element 3.4 "Undesirable Results" (§ 354.26):
(b) The description of undesirable results shall include the following:
(3) Potential effects on the beneficial uses and users of groundwater, on land uses and property interests, and other potential effects that may occur or are occurring from undesirable results

GSP Element 3.2 "Measurable Objectives" (§ 354.30)
(a) Each Agency shall establish measurable objectives, including interim milestones in increments of five years, to achieve the sustainability goal for the basin within 20 years of Plan implementation and to continue to sustainably manage the groundwater basin over the planning and implementation horizon.

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Are DAC impacts considered in the development of Undesirable Results (URs), MOs, and MTs for groundwater levels and groundwater quality?		X		WL MO "Measurable objectives for groundwater levels were calculated as the model-derived average groundwater levels over the Sustainability Period from 2040 to 2090, modified if necessary, to account for occasional offsets between historically observed and modeled groundwater levels." WQ MO "Measurable objectives for groundwater quality are established to not exacerbate adverse impacts on all beneficial uses of groundwater resulting from implementation of GSP projects or management actions. Measurable objectives for the groundwater quality sustainability indicator are intended to assure that GSP projects and management actions do not cause groundwater quality conditions to become unsuitable for any beneficial use, especially municipal and domestic supply uses since these are the most restrictive from a water quality standpoint. The groundwater quality measurable objectives are defined for individual representative groundwater quality indicator wells (RMS) for the key water quality constituents arsenic, nitrate, and TDS based on consideration of existing or historical groundwater quality conditions and the drinking water MCLs for each of the key constituents. … The measurable objective concentrations for wells with existing or historical water quality results are the average of the recent concentrations for each of the key constituents rounded up to the nearest full integer of concentration for arsenic (in units of µg/L) and nitrate (in units of mg/L as nitrogen) and rounded up to the nearest interval of 50 mg/L for TDS." WL MT "The development of minimum thresholds for chronic lowering of groundwater levels included review of the hydrogeologic conceptual	3.2.1.1, page 166; 3.2.4.1, page 173; 3.3.1, page 180; 3.3.4, page 191;

				model, climate, current and historical groundwater conditions including groundwater level trends and groundwater quality, land subsidence, and the water budget discussed in previous sections of this GSP." WL UR "The chronic lowering of groundwater levels undesirable result is a quantitative combination of groundwater elevation minimum threshold exceedances. A minimum threshold exceedance for a given RMS is two consecutive Fall measurements (assumed to be collected in October) that are both below the minimum threshold level. For the Plan GSAs, a groundwater elevation undesirable result is defined to occur when greater than 30% of the representative monitoring sites each exceed the groundwater level minimum thresholds for the same two consecutive Fall readings." WQ UR "The cause of basin groundwater conditions that would result in significant and unreasonable degraded water quality is implementation of a GSP project or management action that causes concentrations of key groundwater quality constituents to increase to concentrations exceeding the minimum thresholds, which are set at the MCLs for drinking water for identified key constituents (10 mg/L for nitrate as nitrogen; 500 mg/L for TDS; 10 ug/L for arsenic) or when existing or historical concentrations for the key constituents already exceed the MCL, the minimum threshold is set at the recent concentration plus 20 percent." "Therefore, an undesirable result for degraded groundwater quality occurs when groundwater quality exceeds an established MCL and minimum threshold for arsenic, nitrate, or TDS for a significant duration of time and at a significant number of representative monitoring sites and is the direct result of projects or management actions undertaken as part of the GSP implementation. An exceedance of a minimum threshold at a given representative monitoring site is defined based on the average concentration for a given key constituent over a three-year monitoring period. An undesirable result for degraded groundwater quality is greater than 10 percent of representative groundwater quality monitoring wells exceeding a minimum threshold for a given constituent related to GSP actions."	3.4.1, page 197; 3.4.4, page 199
2. Does the GSP explicitly discuss how stakeholder input from DAC community members was considered in the development of URs, MOs, and MTs?	**X**			"The methodology to develop minimum thresholds for groundwater levels was based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, individual public/stakeholder input to various GSA representatives, and a meeting with DWR. Stakeholder input has included substantial verbal and written comments from representatives of disadvantaged communities, which has been meaningfully considered in development of this GSP."	3.3.1.1, page 183;

				"Municipal and domestic supply (MUN) is a designated beneficial use for groundwater in the Plan area; therefore, groundwater quality degradation resulting from a GSP project or management action is considered significant and unreasonable based on adverse impacts to this beneficial use. Locally defined significant and unreasonable conditions were determined based on discussion with GSA staff and technical representatives, and input received from interested stakeholders and the public through public meetings and through individual stakeholder input to various GSA representatives." "Locally defined significant and unreasonable conditions were determined based on discussion with GSA staff and technical representatives, input received from interested stakeholders and the public through public meetings, and through individual stakeholder input to various GSA representatives."	3.3.4, page 191; 3.4.1, page 196; 3.4.4, page 199
3. Does the GSP explicitly consider impacts to GDEs and environmental BUs of surface water in the development of MOs and MTs for groundwater levels and depletions of ISWs?		X		The GSP does not explain how GDEs were considered in the development of MOs and MTs.	3.2.1.1, page 166-171 3.2.5, page 176-179
4. Does the GSP explicitly consider impacts GDEs and environmental BUs of surface water and recreational lands in the discussion and development of Undesirable Results?		X		Section 3.4 Undesirable Results This section only describes undesirable results relating to human beneficial uses of groundwater and neglects environmental beneficial uses that could be adversely affected by chronic groundwater level decline. Table 3-8 Summary of MTs, MOs, and Undesirable Results "The undesirable result for groundwater levels is defined as more than 30 percent of RMS exceeding their minimum thresholds for the same two consecutive Fall readings. The 30 percent criterion was selected to balance the interest of beneficial use with the practical aspect of groundwater management uncertainty. Given a total of 37 RMS sites, a total of 12 or more the initial RMS would need to exceed MTs as defined above to constitute an undesirable result for chronic lowering of groundwater levels."	3.4, page 195-196 Table 3-8, page 196 3.4.1, page 197
5. Does the GSP clearly identify and detail the anticipated degree of water level decline from current elevations to the water level MOs and MTs?	X			There are more than forty separate hydrograph figures in Appendix 3 showing the MTs/MOs compared to measured water levels. This could be presented more clearly in an overview figure, instead of over forty hydrograph figures. Table 3-6. Summary of Groundwater Level Minimum Thresholds for Representative Monitoring Sites Although Table 3-6 presents Groundwater Level Minimum Threshold values, it does not tabulate the current groundwater level or the anticipated water level decline if MTs are reached.	Figures, Appendix 3, page 5-45 Table 3-6, page 181
6. If yes, does it include: b. Is this information presented in table(s)?		X			
c. Is this information presented on map(s)?		X			
d. Is this information presented relative to the locations of DACs and domestic well users?		X			
e. Is this information presented relative to the		X			

	locations of ISW and GDEs?					
2. Does the GSP include an analysis of the anticipated impacts of water level MOs and MTs on drinking water users?			X		A limited analysis is performed and identified in Appendix 3, but little detail on the methodology or results of the analysis is provided. No maps identifying the location of impacted wells are included. "Overall agricultural land use and users will be significantly impacted in terms of increased costs to design and construct recharge projects and in terms of reduced crop yields from required reductions in consumptive use for irrigation. While conversion of current agricultural lands to urban areas that may occur in the future will tend to reduce per acre water demands, it is likely that urban water users will need to continue water conservation efforts due to limited water supplies. Domestic well owners can generally expect declining groundwater levels during the initial 10 to 15 years of the Implementation Period, followed by stabilization of water levels during the latter portion of the Implementation Period and some potential recovery in groundwater levels after 2040. However, significant adverse impacts to domestic wells from declining groundwater levels are expected to be addressed through a temporary domestic well mitigation program currently under consideration by the GSAs (Appendix 3.D)." Appendix 3.D provides the cost benefits of two scenarios, one is the baseline without SGMA (meaning no projects or management actions) and baseline with SGMA ("assuming that the GSP already implements water supply and recharge projects as soon as practical, the analysis focuses on demand management implementation as a possible means to speed the trajectory toward sustainable yield."). It is not clear how MTs and MOs will play a role in either of the scenarios.	3.3.1.4, page 186 Appendix 3.D, page 77-84
3. If yes: a. On domestic well users?			X		"315 domestic wells are impacted in the without-SGMA analysis, but 87 of those appear to be impacted prior to the 2020 implementation start (DTW is greater than minimum depth to top perforation)." The GSP does not clearly assess the well impacts associated with MOs and MTs. The GSP does not describe how MTs and MOs affect domestic well users.	Appendix 3, page 78;
b. On small water system production wells?			X		Impacts of the MOs and MTs on small water system production wells are not discussed.	
c. Was an analysis conducted and clearly illustrated (with maps) to identify what wells would be expected to be partially and fully dewatered at the MOs?			X		No maps or descriptions are provided.	
d. Was an analysis conducted and clearly illustrated (with maps) to identify what wells would be expected to be partially and fully dewatered at the MTs?			X		No maps or descriptions are provided.	
e. Was an economic analysis performed to assess	X				"The conclusions of the economic impact analysis of an accelerated	Appendix 3.C,

	the increased operation costs associated with increased lift as a result of water level decline?				demand reduction program are as follows: • Immediate implementation of demand reduction to avoid further lowering of groundwater levels would cause direct farm revenue losses of $182 million per year and require fallowing an average of 40,000 acres per year." "For purposes of this analysis, a replacement cost of $25,000 per well is used. This cost is triggered when the groundwater level in the section the well is located in falls below the minimum depth to top perforation of the domestic wells in that cell." … Most (218) of the replacements are estimated to occur between 2021 and 2067, and the present value (at 2020) of replacement costs for wells is $3.39 million. In the with-SGMA analysis, the number of impacted wells drops from 228 to 43, at a present value cost of $0.77 million. Many of those 43 wells would stay in production longer than in the without-SGMA scenario, so the replacement cost is delayed, further reducing the present value of replacement. Most (185 out of 228) of the wells impacted in the without- SGMA scenario would not require replacement in the draft GSP implementation plan, and the present value of avoided replacement cost is $2.62 million ($3.39 minus $0.77)	Section 6, page 73 Appendix 3.D, section 2.1.1, page 78

Summary/ Comments

Based on the presented information, domestic well uses are considered under URs and for the development of water level MOS and MTs, but DAC members are not explicitly considered. More detail and specifics regarding DAC members, including those that rely on smaller community drinking water systems, not only domestic wells, is necessary to demonstrate that these beneficial users were adequately considered.[14]

If water levels reach the MOs, water levels would *increase* by an average of approximately 22 feet across all RMS wells in the subbasin compared to current conditions (2016), with localized water decreases as much as 72 feet *below* current conditions. At the MTs, water levels at the RMS wells would *decrease* by an average of approximately 64 feet from current conditions. In several communities, this decline is estimated to be over 100 feet from current conditions (COM RMS-2, MCE RMS-2, MWD RMS-1, COM RMS-1). Given that the subbasin is in critical overdraft, the GSP should explain how the projected additional water level declines of over 64 feet on average and over 100 feet near groundwater-dependent communities will result in sustainable conditions for beneficial users.

The draft GSP sets the MTs for water quality constituents as the MCLs or the recent concentration plus 20 percent when existing or historical concentrations already exceed the MCL. However, Table 3-7 shows the MT values for all wells as MCLs, and includes a note that "Values will be confirmed and/or adjusted as needed based on results from initial sampling for constituents. If existing levels exceed the MCL, then the MT is set at the existing concentration plus 20 percent" even for the existing RMS wells. This appears to be

[14] Community Water Center and Stanford School of Earth, Energy, and the Environmental Sciences, *Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium,* https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1560371896/CWC_FS_GrndwtrQual_06.03.19a.pdf?1560371896; Community Water Center, *Guide to Protecting Drinking Water Quality Under the Sustainable Groundwater Management Act,* https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328858/Guide_to_Protecting_Drinking_Water_Quality_Under_the_Sustainable_Groundwater_Management_Act.pdf?1559328858.

inconsistent with the MT methodology described in Section 3.3. Therefore, it is not clear what the GSAs intend to use as water quality MTs, and thus how sustainability for water quality is defined for the subbasin.

The draft GSP defines the undesirable result for groundwater levels is defined as more than 30 percent of RMS exceeding their minimum thresholds for the same two consecutive Fall readings. The use of 30 percent to define an undesirable result does not allow for the occurrence of low water levels in one area, such as near a GDE, to be an Undesirable Result, which may impact an environmental beneficial use.
The GSP should present a thorough, robust, and transparent analysis, supported by maps, that identifies: (1) which domestic wells are likely to be impacted at the MTs and at the MOs, and (2) the location of the likely impacted wells with respect to DACs and other communities and systems dependent on groundwater; (3) how small water system production wells will be affected by MOs and MTs; and (4) clearly identify the increased well operation costs for domestic well users and public water systems associated with water level MOs and MTs..

The GSP should similarly analyze the potential impacts of setting minimum thresholds that exceed water quality objectives on domestic wells and community water systems.

The draft GSP should include more detailed information about the potential impacts on sensitive drinking water users, such as 1) where the likely impacted wells are located, 2) what communities are most affected (including DACs), 3) an estimate of the size of the population that relies on these domestic wells, or 4) if the creation a new or expanded community water system could address some or all of the population affected by the loss of domestic wells.

The GSP should add “potential adverse impacts to GDEs” to the list of potential undesirable results presented in Table 3-8 and consider the use of separate management areas for the GDE Units, so that Sustainable Management Criteria protective of GDEs can be established for the GDE Units. It should also elaborate on how the exceedance criteria (30% of RMSs) for chronic lowering of groundwater levels would be applied in a way that is protective of significant and unreasonable harm to GDEs.

The GSP should also discuss any potential undesirable results from degradation of water quality that may impact GDEs and freshwater species in the area.

7. Management Actions and Costs

What does the GSP identify as specific actions to achieve the MOs, particularly those that affect the key BUs, including actions triggered by failure to meet MOs? What funding mechanisms and processes are identified that will ensure that the proposed projects and management actions are achievable and implementable?

Selected relevant requirements and guidance
GSP Element 4.0 Projects and Management Actions to Achieve Sustainability Goal (§ 354.44)
(a) Each Plan shall include a description of the projects and management actions the Agency has determined will achieve the sustainability goal for the basin, including projects and management actions to respond to changing conditions in the basin.
(b) Each Plan shall include a description of the projects and management actions that include the following:
(1) A list of projects and management actions proposed in the Plan with a description of the measurable objective that is expected to benefit from the project or management action.

Review Criteria	Yes	No	N/A	Relevant Info per GSP	Location (Section, Page)
1. Does the GSP identify benefits or impacts to DACs as a result of identified management actions?		X			
2. If yes: f. Is a plan to mitigate impacts on DAC drinking water users included in the proposed Projects and Management Actions?	X			Appendix 3D is identified as an Economic Analysis and Framework for Potential Domestic Well Mitigation Program. However, the economic analysis does not clearly explain what the "with SGMA" scenario analyzed actually includes (e.g., water levels at MOs, water levels at MTs, or some other assumptions) and the "Draft Outline for Madera Well Mitigation Program" lacks details and specificity. The draft GSP identifies this as a possible program, but does not clearly say that one will be implemented. "This section provides a general outline of a domestic well mitigation program for Madera County (Madera Subbasin). 3.2.1 Well mitigation program policy/purpose statement Define the mission of the program. For example, the purpose of the Madera County Well Mitigation program is to address any unreasonable adverse effects of groundwater pumping on domestic wells in the county. 3.2.2 Definition of unreasonable adverse effects Program should clearly define the types of impacts to domestic wells that will, and will not, be mitigated. 3.2.3 Register domestic wells Develop a database and registration system and allow domestic well owners to sign up (if not already permitted/in the system) 3.2.4 Mitigation measures Define mitigation measures. Other well mitigation programs suggest the following examples: • Domestic wells where municipal water service is not expected to exist in the near future (deepen or replace well) • Domestic wells near existing municipal water service (correct to municipal service)	Appendix 3D Section 3.2
g. Does the GSP identify costs to fund a mitigation program?	X				
h. Does the GSP include a funding mechanism to support the mitigation program?	X				

					• Domestic wells impacted within a small geographic area (develop municipal system to serve the impacted community 3.2.5 Define mitigation costs Define how mitigation fund will pay for each type of impacted domestic well. Other well programs suggest the following examples: • Establish payment of $xx/ft to deepen wells. If well cannot be deepened, establish standard cost to replace well $xx/well • Decide how to compensate well owners that can connect to municipal system • Establish "rapid response" approach for situations when wells go dry 3.2.6 Establish review process Develop a board to review and approve well mitigation claims consistent with the guidelines specified under (1 – 4). Establish process for expedient review. 3.2.7 Financing Program financing through groundwater extraction fees (see above for estimated costs)."	
4. Does the GSP identify any demand management measures in its projects and management actions?		X			"A demand management (water use reduction) program is described for the Madera County GSA, though the other GSAs within the Subbasin may implement similar programs if needed to attain sustainability. The Madera County GSA's demand management program provides groundwater users a flexible way to meet any future pumping restrictions. … The gross yield across all projects at full implementation (2040) is estimated to generate an average annual yield of over 200,000 AF. This includes the Madera County demand management program (management action) implemented by the Madera County GSA that reduces net groundwater pumping by about 90,000 acre-feet per year by 2040 from current pumping estimates."	4, page 219
5. If yes, does it include:	a. Irrigation efficiency program		X			
	b. Ag land fallowing (voluntary or mandatory)	X			"Madera County would identify potential easement programs and other sources of funding to incentivize fallowing of irrigated lands." It is not clear whether the land fallowing will be voluntary or mandatory.	4.4.4.2, page 258
	c. Pumping allocation/restriction	X			"Madera County would implement a groundwater allocation program that would directly relate to the overall demand reduction goals necessary to achieve anticipated reductions by 2040. Allocations could be tied to a crop-type or historic use, or could be evenly distributed among existing irrigators or over all lands. Various approaches have differing effects on grower flexibility, County management and administration, and perceptions of equality."	4.4.4.2, page 258
	d. Pumping fees/fines		X			
	e. Development of a water market/credit system	X			"Madera County would establish a local groundwater credit system and allow trading of those credits among groundwater users. The program would establish a full accounting of available groundwater supply, allocation of that water supply to local stakeholders, and a record-keeping system that facilitates and records all trades. Additional conditions on location and timing of the use of traded credits may be needed, and in fact, are likely to be required in many areas."	4.4.4.2, page 258
	f. Prohibition on new well construction		X			

	g. Limits on municipal pumping		X			
	h. Limits on domestic well pumping		X			
	i. Other	X			"Madera County has identified areas within Madera Subbasin where an invasive plant called Arundo donax (Arundo) could be controlled or removed, potentially saving a significant amount of consumptive water use. Arundo is a non-native, fast growing, and dense reed that purportedly has high water consumption. It currently grows primarily in stream channels."	4.4.5.1, page 262;
6. Does the GSP identify water supply augmentation projects in its projects and management actions?		X				
7. If yes, does it include:	a. Increasing existing water supplies	X			"The MWD surface water purchase program provides in-lieu recharge benefits by providing growers with additional surface water supplies imported from inside or outside of the Subbasin. The program is an extension of current MWD practices of purchasing surface water when it is available, but access to surface water has been limited by the diversion facilities currently available to MWD. As part of the GSP development process, MWD has been investigating the ability to access additional surface water supplies." "NSWD GSA has an appropriative water right along the Chowchilla Bypass (referred to as Eastside Bypass/Chowchilla Canal in its water rights permit number 19615) of 15,700 acre-feet/year. Currently, NSWD does not use this water right. With the implementation of SGMA, NSWD intends to fully use the water right and bring 15,700 AF of surface water into NSWD. The water is expected to be available during times of flood flows in the Chowchilla Bypass, about one year out of three. The water may be recharged directly or used for irrigation, thereby providing in-lieu groundwater recharge." "The fourth source of water available for projects is water acquired from willing sellers. This supply is constrained by the capacity to move it from its source to a location of use in Madera County, via existing natural channels or the Madera Canal. Imported water could be purchased from any willing seller anywhere in the Central Valley provided the water can be delivered to Madera County using existing or proposed conveyance facilities, including via exchanges involving three or more parties"	4.1.1, page 222; 4.6.1, page 266; 4.8.4, page 272
	b. Obtaining new water supplies	X			"Madera County would directly acquire or facilitate the acquisition of new surface water supplies that would be available for diversion from Millerton Lake or other sources during the irrigation season. Madera County estimates that 3,500 to 9,000 acre-feet could be acquired in one year, but on average the project would provide about 3,600 acre-feet per year in in-lieu recharge."	
	c. Increasing surface water storage		X			
	d. Groundwater recharge projects – District or Regional level	X			"MID has identified five (5) individual groundwater recharge projects that it has already developed or will develop under the GSP. This includes one rehabilitation project where MID refurbished existing recharge basins that have been underutilized and were in a state of disrepair. MID developed three new recharge basins, including the Ellis Basin, Berry Basin, and Allende Basin. Finally, MID will acquire land and develop approximately 90 acres of new recharge basins by 2030 and another 260 acres by 2040, if needed. Locations	4.2.1.1, page 228;

					and sizes of these new basins will be selected based on land uses, access to delivery facilities, and soils having appropriate percolation rates. Recharge basins are generally distributed throughout the MID service area." "Through modifications to its existing CVP contract, Madera County would request CVP Section 215 flood water when available, either on its own or partnered with another contractor (Reclamation has previously indicated 215 water would be available in 10,000 acre-foot blocks). Between 2,000 and 10,000 acre-feet per month would be targeted for acquisition when available in wet and above normal years. A total of 20,000 acre-feet would be targeted during wet years, and the expected benefit, averaged over all year types, is about 7,000 acre-feet per year." "GFWD will develop recharge basins. Water will be diverted from Cottonwood Creek into basins where it will percolate into the deep aquifer. The size, location, and performance of the recharge basins depends on site-specific characteristics that are currently being assessed by GFWD."	4.4.2.1, page 251; 4.5.1, page 264
	e. On-farm recharge	X			"MID is developing an On-Farm Recharge Program (referred to as Flood Managed Aquifer Recharge, Flood-MAR, by DWR). This program diverts flows that would have otherwise left the basin onto farms and fields of willing participants (growers) to percolate into the aquifer and provide recharge benefits for the Subbasin. It requires that the GSA has capacity to capture and divert water to growers and requires willing growers to participate in the program. The MID On-Farm Recharge project assumes that growers would operate existing irrigation systems on their fields when MID is able to provide water."	4.2.2, page 233
	f. Conjunctive use of surface water	X			"The MWD surface water purchase program provides in-lieu recharge benefits by providing growers with additional surface water supplies imported from inside or outside of the Subbasin. The program is an extension of current MWD practices of purchasing surface water when it is available, but access to surface water has been limited by the diversion facilities currently available to MWD. As part of the GSP development process, MWD has been investigating the ability to access additional surface water supplies." "MID will evaluate programs to encourage more MID growers to utilize surface water supplies instead of groundwater. MID will be conducting studies to identify potential incentive structures and assess the relative costs and benefits of different alternatives. The project benefits MID by reducing groundwater pumping."	4.1.1, page 222 4.2.3.1, page 240
	g. Developing/utilizing recycled water		X			
	h. Stormwater capture and reuse		X			
	i. Increasing operational flexibility (e.g., new interties and conveyance)	X			MID Pipeline Project and WaterSMART Pipeline Project	
	j. Other	X			"Drywells have been installed in various areas of Madera County. Located on private residential property, dry wells are typically constructed 2 feet in diameter and 50 feet in depth and have served to recharge areas with running	4.4.5.3, page 262

				and standing water. In recent tests, the drywell size was increased to 3 feet in diameter by 75 feet deep in order to increase the recharge capacity and potentially reduce the unit cost of recharge."	
8. Does the GSP identify specific management actions and funding mechanisms to meet the identified MOs for groundwater quality and groundwater levels?	X			Table 4-1. Projects/Management Actions and Water Sources Considered in the Madera Subbasin. Table 4-2. Madera Subbasin Projects and Management Actions. Tables 4-1 and 4-2 lists many projects and management actions to meet the MOs for groundwater levels and their costs. "MWD will finance capital costs of the projects using cash reserves and, as needed, borrowing. Debt service on any borrowed funds plus ongoing O&M will be paid by MWD landowners. MWD imposes an annual assessment and charges its growers volumetrically for water. MWD holds a public hearing each year to set the annual water rate. MWD has also been building its cash reserves to pay for the cost of physical improvements to MWD facilities. If needed, MWD will also go through the Proposition 218 process to request an increase in land-based assessments." "Pursuant to GSP Regulations § 354.44 and § 354.6, MID has evaluated and described the ability to cover project costs. Some projects are complete and other projects are still being assessed, and feasibility studies are being refined or developed, a general description of how MID will cover project costs is presented. MID will conduct economic and fiscal feasibility studies as part of its ongoing planning efforts to better understand willingness and ability to pay for the projects included in the GSP." "MID will pursue available state and federal grants or loans to help construct projects. This may include grant funding for planning studies to support the development of proposed management actions, including its On-Farm Recharge program and incentives to increase surface water deliveries within the district. Operation and maintenance costs will be paid using revenues raised through water rates and/or fees and assessments. MID will conduct the necessary studies and decision processes (including Proposition 218 elections if necessary) to approve rates, fees, or assessments to provide the required funding. MID water users have, in the past, approved assessments to fund projects." Section 4.4.5.3 "Because drinking water quality is of critical importance, Madera County is working with the Regional Water Quality Control Board to develop a process for evaluating the potential of deeper injection wells." "To be useful in meeting sustainability goals, any dry well project would need to demonstrate a right to the water source and that the source is new to the subbasin (e.g. not just recharging water already present that would otherwise recharge through other means)." It is not clear whether the proposed projects and management actions will meet the MOs for water quality.	Table 4-1, page 220 Table 4-2, page 221 4.1.2, page 227 4.2.4, page 244 4.4.5.3, page 263
9. Does the GSP include plans to fill identified data gaps by the first	X			"Some of the spatial data gaps will be filled with installation of the nested	3.5.4.2, page

five-year report?				monitoring wells by 2020 -particularly for the Upper Aquifer and extreme western portion of the Lower Aquifer. Temporal data gaps will begin to be filled by more regular collection of data as part of the GSP, and installation of transducers in new nested monitoring wells. …Biological monitoring, recommended every five years, will be used to evaluate potential beneficial or adverse effects on GDEs that may be related to changes in future groundwater conditions during the Implementation and Sustainability Periods." "Data gaps have been presented in the groundwater level, groundwater storage, land subsidence, and groundwater quality monitoring networks. The following steps will be taken to address these data gaps: ● Madera County is in process of adding seven new nested monitoring well sites with up to three well completions at each site (total of up to 27 new monitoring wells) within the subbasin. These new wells will address many of the data gaps described in the Upper and Lower Aquifers for groundwater level and quality data (Figures 3-1 and 3-2). ● The GSAs will install sampling taps (as needed) on groundwater level wells designated for groundwater quality monitoring. These wells will then be sampled for both groundwater elevation data and groundwater quality data. ● Sampling events will be coordinated with well owners to prevent pumping and access issues. In addition to these steps, the monitoring networks will be evaluated on a yearly and five-year basis. If additional data gaps arise, the GSA will consider the implications of these gaps, associated costs, and importance to the continued implementation of the GSP and take appropriate actions to address the gaps."	216; 3.5.4.3, page 217
10. Do proposed management actions include any changes to local ordinances or land use planning?		**X**			
11. Does the GSP identify additional/contingent actions and funding mechanisms in the event that MOs are not met by the identified actions?		**X**			
12. Does the GSP provide a plan to study the interconnectedness of surface water bodies?		**X**		"The assessment of surface water flows and groundwater levels indicate that there are not interconnected surface waters in the Plan area."	3.3.1.2, page 184
13. If yes: a. Does the GSP identify costs to study the interconnectedness of surface water bodies?			**X**		
b. Does the GSP include a funding mechanism to support the study of interconnectedness surface water bodies?			**X**		

14. Does the GSP explicitly evaluate potential impacts of projects and management actions on groundwater levels near surface water bodies?		**X**		"MID will implement a series of projects to improve operations and better manage ground and surface water supply within its service area. This includes capital projects, some of which are partially funded through grants and many of are completed or are currently under development, as well as new programs to evaluate incentives and other changes to better manage surface water within MID." MID is planning to utilize surface water more efficiently and therefore reduce groundwater pumping, but it is not clear that how these projects will affect the groundwater level near surface water bodies.	4.2.3, page 238

Summary/ Comments

The draft GSP states that a temporary domestic well mitigation program is under consideration to address groundwater level declines that are expected to occur during the GSP implementation period. Appendix 3D of the draft GSP presents an economic analysis of the effects of implementing the GSP, including estimated costs to replace domestic wells that will be dewatered "with [Sustainable Groundwater Management Act] SGMA" and "without SGMA." According to the draft GSP, 87 domestic wells will be impacted prior to 2020, 43 more will be impacted under GSP implementation, and an additional 185 domestic wells would be impacted if the GSP was not implemented (i.e., if there were no changes as a result of SGMA). The draft GSP does not, however, present the results of this impact analysis in a clear and transparent manner, illustrating for example, 1) where the likely impacted wells are located, 2) what communities are most affected (including DACs), 3) an estimate of the size of the population that relies on these domestic wells, or 4) if the creation a new or expanded community water system could address some or all of the population affected by the loss of domestic wells. Several of these aspects are listed as potential mitigation measures under Section 3.2.4 of Appendix 3D and thus are important not only for the public to understand and review, but for the GSAs to understand in the development of their domestic well mitigation program.

The likely benefits and impacts to DAC members by the proposed projects and management actions are not clearly identified in the GSP. A discussion should be added for each project or management action to clearly identify the benefits to DAC drinking water users and potential impacts to the water supply. For all potential impacts, the project/management action should include a clear plan to monitor for, prevent, and/or mitigate against such impacts.

The GSP should evaluate any potential impacts of projects and management actions on groundwater levels near surface water bodies.

[Sent via email]

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Richard Cosyns
Brian Davis
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Madera Water District GSA
Eric Abrahamsen

November 8th, 2019

Re: Comments on Madera Joint Draft Groundwater Sustainability Plan

Dear Board Members of the Madera Subbasin GSAs,

Leadership Counsel for Justice and Accountability works with low-income communities of color in the San Joaquin Valley and the Eastern Coachella Valley. As is most relevant here, we work in partnership with community leaders in the communities of La Viña and Fairmead to advocate for local, regional and state government entities to address their communities' needs for the basic elements that make up a safe and healthy community, including safe and affordable drinking water, affordable housing, effective and safe transportation, efficient and affordable energy, green spaces, and clean air.

We have been engaged in the Sustainable Groundwater Management Act (SGMA) implementation process because most of the communities with which we work are wholly dependent on groundwater for their drinking water supplies, and many have already experienced groundwater quality and supply issues. The communities where we work have not been included in decision-making about their precious water resources, and their needs are not prioritized in such decisions. In 2012, California recognized the Human Right to Water for domestic purposes, and required that state agencies consider this human right in their activities. State law also requires that GSAs avoid disparate impacts on protected classes.[1] SGMA's requirements for a transparent and inclusive process present an opportunity in the context of groundwater management to meaningfully include disadvantaged communities in decision-making, and to create groundwater management plans that understand their unique vulnerabilities, are sensitive to their drinking water needs, and avoid causing disparate negative impacts on low-income communities of color.

We submit these comments to elevate our concerns that the Madera Subbasin Draft Joint Groundwater Sustainability Plan (Draft GSP) is incomplete, does not adequately analyze drinking water impacts, does not consider drinking water impacts in its policy decisions about groundwater management, lacks basic elements required under SGMA, and does not include projects and management actions to prevent protected groups from suffering severe and widespread drinking water impacts. Our review shows that the Draft GSP neither adequately analyzes nor incorporates input from disadvantaged communities and domestic well users, and will create a disparate impact on protected classes unless significantly modified to protect drinking water resources for disadvantaged communities. We include herein our comments with respect to deficiencies in the Draft GSP as well as recommendations for improvements.

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[1] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).

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The Draft GSP is Incomplete, and Must Include Additional Information For the Public to Evaluate the GSP

The Draft GSP omits critical data regarding the description of the plan area, assumptions and data necessary to accurately calculate the water budget, an accurate evaluation of the drinking water impacts of the proposed plan, and a clear plan for avoiding significant and unreasonable impacts to the GSP area's most vulnerable drinking water users. The Draft GSP also fails to

demonstrate how its proposed policies and activities will achieve its sustainability goal, which SGMA requires.[2]

First, the description of the plan area, which is required to describe "the consideration given to the applicable county and city general plans" and all "relevant county plans"[3] omits relevant and crucial policies from the County and City General Plans which will affect water use.[4] Furthermore, the GSP should cite to and consider community plans and SB 244 analysis that outlines the known, existing groundwater vulnerabilities of communities in the Subbasin.[5] The GSAs should also supplement gaps in information on disadvantaged communities omitted in existing SB 244 analyses. For example, Madera County's SB 244 analysis omits the community of La Vina and its water needs.[6]

Second, as described below in our section on groundwater levels, the GSP's analysis of drinking water impacts is inaccurate, and must be redone. The GSAs must redo this analysis to reach an accurate conclusion regarding the number of wells that could be dewatered or contaminated due to the GSAs' proposed policies and activities, including the proposed sustainable management criteria, demand reduction schedule, and projects like on-farm recharge that could threaten groundwater quality.

Third, as detailed further in our comments regarding Projects and Management Actions, the domestic well mitigation program is missing from the projects section, and the details that are included in Appendix 3D are missing key information regarding the program's operationalization and scope.

Fourth, as explored below, the GSP's description of the water budgets lacks the necessary data, assumptions and approaches used to determine the water budgets, maps of the basins, and in some cases there have been sections left empty.

Last, the Draft GSP fails to show how it will achieve its sustainability goal with the proposed policies and activities, which it is required to do under SGMA.[7] Given that the GSAs' proposed projects will still leave 90,000 acre feet of overdraft per year, and the GSP has no clear strategy for management actions such as demand reduction, the GSAs have not shown how they will "balance long-term groundwater system inflows with outflows based on a 50-year period representative of average historical hydrologic conditions" and "ensure no undesirable results of significant and unreasonable economic, social, or environmental impacts occur."[8]

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[2] Water Code sec. 10727.2(b)(2)

[3] Water Code sec. 10727.2 (g)

[4] The Draft GSP fails to mention policy 3.C.11 of the Madera County General Plan to "encourage water conservation by farmers." Madera County General Plan Pg. 50

[5] "Domestic water supply reliability has been an issue in the past, particularly if one or multiple components of the system has failed. This last occurred in the summer of 2007, prompting the County to transport water to the community by truck for an extended period of time." Fairmead Neighborhood Mobility and Revitalization; Strategy Opticos Design, Inc. January 2011. Pg. 2-5.

[6] Madera County General Plan Background Report, p. 1-36.

[7] Water Code sec. 10727.2(b)(2)

[8] Madera Subbasin Draft GSP, p. 3-3.

The Draft GSP cannot be adopted until all of the above information is made available to the public for public review during a new review period.

The Madera Subbasin GSAs Are Responsible for the Disproportionate and Disparate Impacts That Its Policies and Activities Will Have on Disadvantaged Communities Belonging to Protected Groups

The Madera Subbasin GSAs must prioritize drinking water as an essential pillar of the proposed groundwater sustainability plan. Under SGMA, the GSAs are tasked with managing groundwater in a way that does not cause "significant and unreasonable impacts" to the beneficial uses and users of groundwater in the subbasin. The GSAs' activities cannot avoid impacts only on certain types of beneficial users; under SGMA they must "consider the interests of" an enumerated list of all types of beneficial users, including disadvantaged communities on domestic wells and community water systems.[9] Furthermore, state law provides that no person shall, on the basis of race, national origin, ethnic group identification, and other protected classes, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state.[10] In addition, the state's Fair Employment and Housing Act guarantees all Californians the right to hold and enjoy housing without discrimination based on race, color, or national origin.[11] Lastly, the Department of Water Resources is required to consider the Human Right to Water in its evaluation of the GSAs' proposed Groundwater Sustainability Plan, so the drinking water impacts of the GSP are of utmost importance in its approval.[12]

Disadvantaged communities in the Madera Subbasin have the most to gain and the most to lose from SGMA implementation in the region. Communities like Fairmead[13] and La Vina[14] are majority Latino and depend on small community water systems and domestic wells for their drinking water supply. Because residents in disadvantaged communities do not have the financial means to dig deeper wells and install drinking water treatment infrastructure, they are more likely to be severely impacted by lowering groundwater levels and groundwater contamination. As a particularly vulnerable group, their critical drinking water needs must be considered and meaningfully protected by the GSP. The Madera Subbasin GSAs have not adequately done so in

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[9] Water Code § 10723.2.

[10] Gov. Code § 11135 ["No person in the State of California shall, on the basis of sex, race, color, religion, ancestry, national origin, ethnic group identification, age, mental disability, physical disability, medical condition, genetic information, marital status, or sexual orientation, be unlawfully denied full and equal access to the benefits of, or be unlawfully subjected to discrimination under, any program or activity that is conducted, operated, or administered by the state or by any state agency, is funded directly by the state, or receives any financial assistance from the state."]; Gov. Code § 65008 [Any discriminatory action taken "pursuant to this title by any city, county, city and county, or other local governmental agency in this state is null and void if it denies to any individual or group of individuals the enjoyment of residence, land ownership, tenancy, or any other land use in this state…"]; Government Code §§ 12955, subd. (l) [unlawful to discriminate through public or private land use practices, decisions or authorizations].

[11] Gov. Code § 12900 et seq.

[12] Water Code § 106.3.

[13] U.S. Census Bureau (2017). *American Community Survey 5-year estimates.* Retrieved from *Census Reporter Profile page for Fairmead, CA*<http://censusreporter.org/profiles/16000US0623210-fairmead-ca/>

[14] U.S. Census Bureau (2017). *American Community Survey 5-year estimates.* Retrieved from *Census Reporter Profile page for La Vina, CA*<http://censusreporter.org/profiles/16000US0640872-la-vina-ca/>

this Draft GSP; as described below, the current Draft GSP is likely to cause 63% of wells to go dry in the subbasin and puts domestic wells at risk of contamination from many unmonitored drinking water contaminations, with little funding allocated to help address drinking water impacts. Our recommendations below show how the GSA could improve its GSP to avoid disparate impacts on protected groups and ensure that it is treating all beneficial users equitably.

Inadequate Consideration of Public Input Undermines the Value and Efficacy of the Draft GSP

SGMA requires that a GSA "shall consider the interests of all beneficial uses and users of groundwater," which expressly includes "[h]olders of overlying rights" and "[d]isadvantaged communities, including, but not limited to, those served by private domestic wells or small community water systems."[15] The emergency regulations similarly require that a Draft GSP summarize and identify "opportunities for public engagement and a discussion of how public input and response will be used."[16] The GSA thus must engage "diverse social, cultural, and economic elements of the population within the basin."[17]

Our organization and community partners have been grateful to work in collaboration with staff and consultants for the Subbasin by connecting them with residents in communities where clean drinking water access is threatened by the overuse of water surrounding their communities. Where staff has not been able to meet with residents directly, our organization has continually acted as a liaison by providing feedback to staff, GSAs, the advisory committee, and the coordination committee via public comment on residents' behalf. While we commend staff's good faith efforts at coordinating with Self Help Enterprises and our organization to conduct outreach to some of the disadvantaged communities in the Subbasin, we acknowledge that significant gaps in outreach continue to exist and some stakeholders have still not been reached or considered, and what feedback staff and consultants have received has not been integrated into the plan with equal consideration. Additionally, the Advisory Committee to the GSA boards has not adequately represented the needs of beneficial users in the subbasin, and Coordination Committee meetings have not been properly transparent in accordance with the Brown Act.

First, although staff has put forth observable effort into considering the interests of all beneficial users, some beneficial users of groundwater still have not been considered in the formation of the Draft GSP. For example, small, sustainable farms and socially disadvantaged farmers have not been incorporated into the public conversation surrounding SGMA or Plan proposals for the subbasin. In fact, advocates and outreach workers at organizations who specialize in partnering with small, sustainable farmers report recent encounters with farmers in the Subbasin who had never heard of SGMA. Instead, the agricultural interests most involved in the GSP formation process through outreach and representation at advisory committee meetings have been those of powerful, large-scale cultivators who use the most groundwater. Small-scale farmers must also be meaningfully incorporated into the GSP formation process as stakeholders due to SGMA's requirements to consider the interests of all beneficial users. Furthermore, the GSA should

[15] Water Code § 10723.2.
[16] 23 CCR 354.10(d).
[17] Guidance Document for Groundwater Sustainability Plan; Stakeholder Communication and Engagement, p. 1.

include these farmers in policymaking because their practices are often less water-intensive and, if supported, could lead to more sustainable water use across the region, and help comply with SGMA and achieve the sustainability goal of the subbasin.

Second, the GSAs have incorporated input from large-scale agricultural interests significantly more than they have incorporated feedback from drinking water users. One example of this unequal consideration arises from the GSAs' decisions regarding sustainable management criteria for groundwater quality. Our organization and community partners have repeatedly voiced in public comment at the County GSA and MID GSA meetings, at technical workshops, advisory committee meetings, in writing via our comment letter dated June 27, 2019, and directly in conversation with staff and consultants that groundwater quality criteria must take all primary drinking water contaminants into account, as well as constituents that could increase due to GSA actions such as uranium and manganese that are currently present in parts of the aquifer and which could migrate with concentrated overpumping. However, upon review of the Administrative Draft GSP, we noted that the only constituent added to the sustainability management criteria since the date of our comments was TDS, a constituent which would only have severe impacts on the use of water for irrigation. The decision to incorporate TDS while continuing to disregard feedback that would protect drinking water users from drinking water contamination serves as a prime example of how the Draft GSP prioritizes the interests of irrigators over those of drinking water users, given that many primary drinking water contaminants are still not being considered by the draft plan.

Additionally, our organization has consistently asked for the GSP groundwater levels minimum thresholds to protect against severe drinking water impacts to disadvantaged communities, but the GSA refused to do so, citing the economic impact that such a policy would have on agriculture. In fact, Appendix 3D, the initial draft for a well mitigation program, explicitly states that the GSA considers the economic impact of a more robust demand reduction schedule to the agricultural industry to be "greater" than the human right to water of the Subbasin's residents.[18] Furthermore, the plan's overall prioritization of protection of the agricultural industry over protection of the human right to drinking water puts the GSP at risk of scrutiny from State agencies responsible for implementation of the Human Right to Water.[19]

Third, the Advisory Committee has not been equally representative of all beneficial users present in the subbasin. The Advisory Committee has contained far more representation from large-scale farming interests than it does from disadvantaged communities, socially disadvantaged farmers, or from stakeholders from areas in the Subbasin with significant threats to drinking water access who rely on groundwater solely for residential use. The Madera County GSA has recently voted to restructure this committee, which is a step in the right direction. However, the past structure of the Advisory Committee created a significant power imbalance which biased the policies,

[18] "Considering the cost of replacement relative to the cost of agricultural demand management (Table 1), it is fairly clear to conclude that accelerating the demand management (and so approaching sustainable management faster between now and 2040) would not avoid enough well replacement cost to be cost-effective from a subbasin-wide perspective" (Appendix 3.D. pages 2 and 3).
[19] Water Code § 106.3.

demand reduction schedules, and management actions that the committee recommended to the GSA.

Fourth, the Subbasin Coordination Committee must make all Coordination Committee meetings (including ad hoc meetings) fully accessible and transparent to the public, since "each GSA's governing body members consider the Committee's recommendations when making policy decisions for their individual GSAs" (1-15). Given the procedural weight of the Coordination Committee's decisions and recommendations in the GSP formation process, meetings of the Coordination Committee should follow all of the requirements of the Brown Act.[20] Members of the public must be notified via email to the interested parties list, online at the Madera Subbasin web page, and through other forms of affirmative outreach when these meetings are to take place, and these meetings must be made open to the general public and recorded like any other SGMA-related meeting in the Subbasin. Interpretation and translated materials must also be provided as needed, and meeting minutes and agendas must be published and meeting materials must be made available to the public upon request.[21] These changes must be made immediately to ensure that the Coordination Committee is a transparent, public meeting.

To address concerns over public engagement, transparency, and inclusivity, the GSAs must:

- Ensure inclusion of all stakeholder groups in GSP development and implementation, including small-scale farmers.
- Ensure that feedback from drinking water users and disadvantaged communities is reflected in GSP policies and activities.
- Ensure that drinking water beneficial use is prioritized over economic beneficial use, in compliance with state law.
- Immediately ensure that Coordination Committee meetings comply with the requirements of the Brown Act.

The Water Budget is Inadequate

Under SGMA, the water budget must contain an accounting and assessment of 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.[22] Based on our technical analysis, the Draft GSP does not conform to this regulation. The description of the water budget in the draft GSP is not fully transparent, and it is not clear how drinking water users will be protected when sustainable yield allocations are implemented.

The Draft GSP does not contain information on the methods, data, and assumptions used to estimate urban water use and urban pumping or what users are represented by the urban pumping totals reported (e.g., cities, small community water districts, disadvantaged communities, domestic well users, etc.). The draft GSP states that groundwater pumping was calculated as the water budget "closure" term, meaning it is the difference between all other inflows and outflows

[20] Gov Code § 54952.
[21] Gov Code §§ 54954.1- 54954.3.
[22] 23 CCR § 354.18.

for each water use category.[23] This method is common for agricultural pumping, but may not be appropriate for urban pumping. Annual urban pumping is reported in Table 2-23, but this table does not show what methods, data and assumptions were used to create these numbers.[24] Annual average historical urban pumping is reported to be 5% of the agricultural pumping.[25] The GSP must include information on the methods used to estimate urban pumping including reported data, population estimates used, per capita water use estimates used, and the areas and users of the subbasin represented by the urban pumping water budget component. The GSP must include information on how the changes in urban pumping were determined for the projected water budget and how these changes may impact small community water systems and domestic well users.

The implementation and sustainability periods of the projected water budget use repeating periods of hydrology and water supply information, but the rationale for the periods used is not described. The projected future water budget was developed using the Groundwater Flow Model that incorporated planned projects and management actions and the effects of climate change.[26] The projected future water budget is comprised of an implementation period (2020-2039)[27] and a sustainability period (2040- 2090).[28] The precipitation, evapotranspiration timeseries, and water supply hydrologic periods used for the projected water budget are reported in Tables 2-27 and 2-28.[29] The GSP must include additional details on how the hydrologic and water supply periods used for the projected water budget were selected and why the selected period are anticipated to be representative of future conditions.

The reported urban pumping exhibits more variability than would be expected in an urban environment, and the Draft GSP does explain the reason for this variability. This variability does not necessarily coincide with climatic conditions. For example, the years 1995—1998 were all considered wet years based on the San Joaquin River Basin water year type.[30] However, urban water use during this period ranges from 11,123 AF (1995) to 27,067 (1997).[31] The GSP must provide information on the cause of this variability so the public can determine if it is reasonable. The GSP must also discuss how the urban water demands presented in historical water budget are related to the historical water demands reported by all Urban Water Management Plans within the subbasin.

The water budget information presented in the draft GSP does not provide information needed to determine when sustainability is achieved and, it is not clear if the subbasin will have achieved sustainable conditions by the end of the implementation period in 2040. Table 2-26 presents a summary comparison of water budget components for the historical, current, and projected (without and with projects) water budgets.[32] The table presents average annual values and shows

[23] Madera Subbasin Joint GSP Public Review Draft p.2-65, dated August 2019
[24] Madera Subbasin Joint GSP Public Review Draft p.2-85, dated August 2019
[25] Madera Subbasin Joint GSP Public Review Draft p.2-99, dated August 2019
[26] Madera Subbasin Joint GSP Public Review Draft Appendix 6E p.33, dated August 2019
[27] Madera Subbasin Joint GSP Public Review Draft Appendix 6E p.33-35, dated August 2019
[28] Madera Subbasin Joint GSP Public Review Draft Appendix 6E p.35-38, dated August 2019
[29] Madera Subbasin Joint GSP Public Review Draft p.2-94, dated August 2019
[30] Madera Subbasin Joint GSP Public Review Draft p.2-57, dated August 2019
[31] Madera Subbasin Joint GSP Public Review Draft p.2-85, dated August 2019
[32] Madera Subbasin Joint GSP Public Review Draft p.2-90 to 2-91, dated August 2019

an average annual decline in groundwater storage for the projected period (2040-2090) for the scenario without projects, but shows an average annual increase in storage over that time period for the scenario with projects.[33] The GSP must clearly present the water budget results for the intended conditions in 2040 so that the public can evaluate whether sustainable conditions will be achieved by 2040.

The Draft GSP is also missing an explanation of how the sustainable yield will be allocated to the seven GSAs in the subbasin. Preliminary sustainable yield was estimated using three methods based on both the historical and projected water budgets including an estimate of the uncertainty in the sustainable yield estimates, and the magnitude of the various sustainable yield estimates is very similar, but the GSP does not contain any information on how this yield is allocated between the GSAs. The GSP should include information on how the sustainable yield will be allocated to the GSAs and how it will impact the water budget in these GSAs. The GSP should also clearly identify how the allocation of sustainable yield will be protective of drinking water users, including domestic well users and small public water systems.

The water budget is central to establishing effective policies for sustainable groundwater management in the GSAs area. Before it can submit a valid GSP, the Madera Subbasin GSAs must redo its water budget calculations to correct the above issues.

The Draft GSP's Sustainable Management Criteria for Groundwater Levels are not Adequate

The sustainable management criteria for groundwater levels must be made after considering the interests of all beneficial user groups, including disadvantaged communities on domestic wells and community water systems.[34] These policy decisions must also avoid disparate impacts on protected groups pursuant to state and federal law.[35]

The GSA has not shown how is has considered the interests of beneficial users including domestic well owners and disadvantaged communities. The resulting impact from the proposed sustainable management criteria will likely lead to disparate impacts on protected groups pursuant to state and federal law.

Furthermore, the Draft GSP does not show how the sustainable management criteria for groundwater levels will comply with the sustainability goal of assuring that "balanc[ing] long-term groundwater system inflows with outflows based on a 50-year period representative of average historical hydrologic conditions" and ensuring that "no undesirable results of significant and unreasonable economic, social, or environmental impacts occur as a result of GSP activities."[36]

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[33] Madera Subbasin Joint GSP Public Review Draft p.2-90 to 2-91, dated August 2019
[34] Water Code § 10723.2.
[35] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).
[36] Water Code sec. 10727.2(b)(2) requiring GSPs to contain a description of how proposed policies and objectives will obtain the sustainability goal; Madera Subbasin Draft GSP, p.3-3.

The Proposed Undesirable Result for Groundwater Levels is Inadequate

Undesirable results are the point at which "significant and unreasonable" impacts on beneficial users caused by declining groundwater levels. The SGMA regulations require GSAs to justify their undesirable results by including the "[p]otential effects on the beneficial uses and users of groundwater."[37] GSAs must also describe the "processes and criteria relied upon to define undesirable results."[38]

The undesirable results for groundwater levels is defined as 30% of wells falling below minimum thresholds for two consecutive Fall measurements. It is not clear how this will avoid significant and unreasonable impacts on domestic well users, and the GSAs have not included an analysis of how many wells could go dry from those undesirable results, or what constitutes a significant and unreasonable amount of dry wells. Therefore it is evident that the GSAs have not considered the interests of this beneficial user group, or provided an adequate description of the potential effects on beneficial users, or described the process or criteria relied upon to define these undesirable results.

To comply with its legal obligations regarding undesirable results under SGMA, the GSA should do the following:

- The GSA must conduct an analysis of the effects of reaching the undesirable result on disadvantaged communities, and include this analysis in the GSP.
- Establish a public process to allow all beneficial users to provide feedback on the undesirable result. The undesirable result should be taken out to all beneficial user groups for feedback, and shaped using their input about what is a significant and unreasonable impact to their groundwater needs. The GSA must collaborate with local community-based organizations to reach disadvantaged community beneficial users. The GSA must include this process in the GSP.
- To protect drinking water resources for disadvantaged communities, the undesirable result must be set at when any drinking water wells is at risk of being dewatered

The Proposed Measurable Objectives for Groundwater Levels are Inadequate

The SGMA regulations require the GSA to set measurable objectives that "achieve the sustainability goal for the basin within 20 years of Plan implementation and...continue to sustainably manage the groundwater basin over the planning and implementation horizon."[39] In determining the measurable objectives, the GSA must consider the interests of all beneficial user groups and avoid disparate impacts on groups protected under state civil rights law.[40]

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[37] 23 CCR § 354.26.
[38] 23 CCR § 354.26.
[39] 23 CCR § 354.30(a)
[40] Water Code § 10723.2; Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).

According to our Focused Technical Review, 24% of domestic wells (or approximately 570 wells) within a 1.5-mile radius of the representative monitoring wells will go fully dry, and another 18% would be partially dewatered. This projected impact is significantly different than the drinking water impact analysis in Appendix 3D, which estimates that only 130 domestic wells will be impacted by implementation of the proposed GSP. This impact is likely to be felt most by disadvantaged communities, which contain a higher number of individuals identifying as Latino and having Mexican nationality. Therefore the proposed policy will likely cause a disparate impact based on nationality, and has not considered the impact on beneficial users living in disadvantaged communities. The GSA must redo its drinking water impacts analysis in light of these results, and change its measurable objective to avoid this disparate impact and significant and reasonable impacts on disadvantaged communities in the subbasin.

Additionally, the GSP's measurable objectives were not created to avoid significant and unreasonable impacts on beneficial users in the subbasin. Instead, the GSA based its measurable objectives on what could be achieved by the proposed projects and management actions. The GSAs state that the measurable objectives for each representative monitoring site are the average groundwater levels for each site between 2040 and 2090 based on the implementation of the projects and management actions in the GSP.[41] Since this target is based on what the GSAs are willing to do in its projects and management actions, and not on what will avoid a significant and unreasonable impact on beneficial users, these measurable objectives not comply with the spirit or the letter of the law.

It is also unclear how the measurable objectives will achieve the sustainability goal, which is required under the GSP regulations.[42] The GSAs must clarify how achieving the measurable objectives at all representative monitoring wells will cumulatively result in attaining the sustainability goal for the GSP area.

The GSA must include the following in its Draft GSP to bring its measurable objectives into compliance with law:

- The GSA must show how its measurable objectives will achieve the sustainability goal.
- The GSA must redo its analysis of how many wells will be fully or partially dewatered at the groundwater elevation of the proposed measurable objectives.
- Consult directly with disadvantaged communities to obtain feedback on whether this would create a significant and unreasonable impact on their drinking water needs, and if so, what level of impact is not significant and unreasonable.
- Consider drinking water impacts in shaping measurable objectives, and ensure that protected groups are protected from disparate and disproportionately negative impact.
- The GSA must show how it has considered the needs of all beneficial users, including drinking water users, in setting its measurable objectives, by publishing the above analysis in the GSP and showing how it consulted with domestic well users and

[41] Madera Subbasin Joint GSP Public Review Draft p.3-5, dated August 2019
[42] 23 CCR § 354.30(a).

disadvantaged communities to set measurable objectives that avoid significant and unreasonable impacts to their beneficial user groups.

- Provide a robust drinking water warning system and drinking water protection program to prevent impacts to drinking water users and mitigate drinking water impacts that occur (see section below on Projects and Management Actions for more recommendations regarding these programs).

The Proposed Minimum Thresholds for Groundwater Levels are Inadequate

The groundwater levels sustainable management criteria set by a GSA must be the point that, "if exceeded, may cause undesirable results."[43] Therefore it must have the purpose of avoiding "significant and unreasonable" impacts on beneficial users caused by declining groundwater levels.[44] The GSA's determination of what is "significant and unreasonable" must consider the impacts on all types of beneficial users, including disadvantaged communities.[45] For groundwater levels specifically, GSAs must place minimum thresholds for each monitoring site at the level "that may lead to undesirable results."[46] Under the SGMA regulations, the GSA should provide a description of "the information and criteria relied upon to establish minimum thresholds," an explanation of how the proposed minimum thresholds will "avoid undesirable results," and "how minimum thresholds may affect the interests of beneficial uses and users of groundwater."[47] The GSA must also consider that drinking water use has been recognized as the "highest use of water" by the California legislature, and should consult with stakeholders to ensure that the minimum threshold is set is such a way as to guarantee the human right to drinking water to all individuals in the subbasin.[48]

The Draft GSP does not avoid significant and unreasonable impacts on disadvantaged communities on domestic wells, is likely to cause a disparate impact on protected groups from its minimum thresholds, and has not meaningfully considered these impacts in crafting its minimum thresholds. The Madera Subbasin Draft GSP proposes to set minimum thresholds based on water levels at the end of a projected 10-year drought, the lowest water level between 2019-2090 projected by the model, and adjustments for other sustainability indicators. As the attached Focused Technical Report shows, approximately 63% of the domestic wells within 1.5 miles of representative monitoring wells in the GSA area (or approximately 1,600 wells) will be dewatered at the minimum thresholds proposed in the Draft GSP, with 13% more that could be partially dewatered.[49] Since domestic well users are de minimis pumpers and are not part of this aquifer-depleting pumping, this will cause a disproportionately negative impact on domestic users, the majority of whom belong to a group protected by state civil rights law. This therefore will cause a disparate impact in violation of state civil rights law.

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[43] 23 CCR § 354.28.
[44] 23 CCR § 354.26.
[45] Water Code § 10723.2.
[46] 23 CCR § 354.28.
[47] 23 CCR § 354.28.
[48] Water Code § 106.
[49] Madera Subbasin Draft GSP Focused Technical Review

The Madera Subbasin GSAs must set minimum thresholds that consider the interests of drinking water beneficial users and do not create a disparate impact on protected groups by doing the following:

- Redo its analysis of how many wells will be fully or partially dewatered at the groundwater elevation of the proposed measurable objectives. Use publicly available OSWCR and local data and take into account well screen depth, and the increased pumping costs associated with the increased lift at the projected water levels.
- Consider drinking water impacts in shaping minimum thresholds, and ensure that protected groups are protected from disparate and disproportionately negative impact.
- Consult directly with disadvantaged communities to obtain feedback on whether this would create a significant and unreasonable impact on their drinking water needs, and if so, what level of impact is not significant and unreasonable.
- The GSA must show how it has considered the needs of all beneficial users, including drinking water users, in setting its minimum thresholds, by publishing the above analysis in the GSP and showing how it consulted with domestic well users and disadvantaged communities to set thresholds that avoid significant and unreasonable impacts to their beneficial user groups.
- In order to protect drinking water users, the GSAs should place the minimum threshold at a level above where the shallowest domestic well is *screened* in each Threshold Area.
- Provide a robust drinking water warning system and drinking water protection program to prevent impacts to drinking water users and mitigate drinking water impacts that occur (see section below on Projects and Management Actions for more recommendations regarding these programs).

The Draft GSP Fails to Adequately Address Groundwater Quality

SGMA charged GSAs with the responsibility to protect water quality from further degradation due to groundwater management practices, and requires GSAs to establish sustainable management criteria to prevent degraded groundwater quality.[50] SGMA charged GSAs with the responsibility to protect water quality through groundwater management,[51] and requires that the GSA consider the interests of all beneficial users including domestic well users and disadvantaged communities.[52] This Draft GSP fails to clearly define its undesirable results, minimum thresholds or measurable objectives for groundwater quality, so the public and DWR cannot evaluate their impact on beneficial users in the GSA area.

GSA activities and policies could cause increased contamination in many ways. For example, the proposed timeline for implementation of demand reduction may allow for continued pumping which may create an increase in naturally occurring contaminants and/or migration of

[50] Water Code § 10721(w)(4); 23 CCR § 354.28(c)(4).
[51] Water Code § 10721(w)(4); 23 CCR § 354.28(c)(4).
[52] Water Code §§ 10727.2(d)(2); 10721(x)(4)

contaminant plumes. The proposed on-farm recharge projects across the basin could also have severe impacts on groundwater quality by facilitating water percolation on land contaminated with years of pesticide, herbicide, fungicide, and fertilizer application. A groundwater market is likely to cause geographic concentrations of pumping that increase the likelihood of contaminant plume migration, putting drinking water resources at risk. The GSA's sustainable management criteria should ensure that such increased contamination does not occur.

The Proposed Minimum Threshold for Groundwater Quality is Inadequate

GSAs must place groundwater quality minimum thresholds for each monitoring site at the level "that may lead to undesirable results."[53] Under the SGMA regulations, the GSA should provide a description of "the information and criteria relied upon to establish minimum thresholds," an explanation of how the proposed minimum thresholds will "avoid undesirable results," and "how minimum thresholds may affect the interests of beneficial uses and users of groundwater."[54] The GSA must also consider that drinking water use has been recognized as the "highest use of water" by the California legislature,[55] and should consult with stakeholders to ensure that the minimum threshold is set is such a way as to guarantee the human right to drinking water to all individuals in the subbasin.

The Draft GSP states that the GSA will only monitor for arsenic, nitrate and total dissolved solids.[56] As written, the groundwater quality minimum threshold puts all drinking water at risk of contamination from drinking water contaminants that are not included in this list of contaminants of concern. The impacts of this contamination will be particularly felt by domestic wells, which are most vulnerable to drinking water contamination, and are not going to be monitored for compliance with any drinking water contamination that may result from the GSA's groundwater management activities. The GSA should monitor for compliance with all established primary drinking water standards, hexavalent chromium, and PFOSs/PFOAs, at *all* representative monitoring wells, as well as contaminants that are known to increase with groundwater management activities, such as uranium.[57] The GSA must monitor for compliance with these contaminants in all areas where drinking water wells are present, including domestic wells.

The minimum threshold is not sufficiently protective of groundwater quality for drinking water users, particularly disadvantaged communities which are less able to pay for expensive drinking water treatment infrastructure. The Draft GSP states that the minimum threshold for nitrates and arsenic will be the Maximum Contaminant Level "or existing level plus 20% (whichever is greater)."[58] Allowing the contamination of either of these contaminants to increase by 20% could have severe health impacts on drinking water users. The GSA must do an analysis of the health

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[53] 23 CCR § 354.28.
[54] 23 CCR § 354.28.
[55] Water Code § 106.
[56] Madera Subbasin Joint GSP Public Review Draft p.3-12, dated August 2019.
[57] Smith et al., "Overpumping Leads to California Arsenic Threat," Nature Communications (June 2018) [arsenic discharge from clay correlated with overpumping]; Jurgens et al., "Effects of Groundwater Development on Uranium" (November 2010) [strong correlation between high bicarbonate irrigation and recharge water and leaching of uranium from shallow sediments to groundwater].
[58]pages ES-10 and 3-35.

impact of letting arsenic and nitrates increased by 20% in all of the wells where this will be there minimum threshold, and consult with disadvantaged community residents to determine whether this contamination will be significant and unreasonable.

Furthermore, setting some minimum thresholds at the MCLs could cause violations of the MCLs by allowing contamination to increase until that point. Where levels have not reached the public health goals for contaminants, the GSAs should consider using the public health goals for these constituents in lieu of the MCLs. Using the public health goals as the MCL will effectively protect the health of Subbasin residents reliant on groundwater for drinking water, and will prevent MCLs from being violated for drinking water users.

To bring the groundwater quality minimum thresholds into compliance with SGMA and state civil rights law, the GSA must:

- Monitor for compliance with all established primary drinking water standards, hexavalent chromium, and PFOSs/PFOAs, at *all* representative monitoring wells, as well as contaminants that are known to increase with groundwater management activities, such as uranium.
- Ensure that all representative monitoring wells are measuring for concentrations of the contaminants of concern, including all drinking water contaminants, every month.
- Ensure that minimum thresholds will be triggered after one test shows a violation of the MCL, and clarify this trigger process in the GSP.
- Immediately plan for, fund and construct new representative monitoring wells or evaluate existing wells to ensure that representative monitoring wells are monitoring for impacts to domestic well users outside of the cities of Tulare and Visalia.
- Implement a Drinking Water Observation Plan to trigger GSA action when contamination spikes occur. Please see more information about the types of projects that could be implemented when a Drinking Water Observation Plan is triggered in our comments about Projects and Management Actions.
- Implement a Drinking Water Protection Program that would be implemented when the Drinking Water Observation Plan is triggered, to prevent and mitigate drinking water impacts from the GSA's policy decisions and groundwater management activities. Please see our comments on the Projects and Management Actions for more description of what this program could look like.

The Proposed Undesirable Result for Groundwater Quality is Inadequate

Undesirable results are the point at which "significant and unreasonable" impacts on beneficial users caused by degraded groundwater quality. The SGMA regulations require GSAs to justify their undesirable results by including the "[p]otential effects on the beneficial uses and users of groundwater."[59] GSAs must also describe the "processes and criteria relied upon to define

[59] 23 CCR § 354.26.

undesirable results."[60] The undesirable result cannot have a disparate impact on protected groups pursuant to state civil rights law.

The Draft GSP proposes to define undesirable results for groundwater quality as 10 percent of wells being above the minimum threshold for the same constituent, based on an average of the most recent three year period. This undesirable results definition would allow communities across the subbasin to ensure multiple years of drinking water contamination before the GSP has failed. This is a significant and unreasonable impact on drinking water users, particularly those communities of color living in disadvantaged communities who cannot afford expensive drinking water treatment infrastructure. This could therefore lead to a disparate impact on protected groups.

In order to comply with SGMA and state civil rights law, the GSA must:

- Consider the impact of its undesirable impact on all types of beneficial users in the GSA area by evaluating the potential groundwater quality impact to beneficial users.
- Consult with drinking water users, particularly disadvantaged communities, to determine what is a significant and unreasonable impact on their drinking water resources.
- Publish this analysis in the GSP, and show how it was used to define the undesirable results.
- Ensure that this undesirable result does not cause a disparate impact on protected groups under state civil rights law.

The Proposed Measurable Objectives for Groundwater Quality are Inadequate

The Draft GSP proposes to define the measurable objectives for groundwater quality as the current level of constituents. The GSP states that "[m]easurable objectives for the groundwater quality sustainability indicator are intended to assure that GSP projects and management actions do not cause groundwater quality conditions to become unsuitable for any beneficial use, especially municipal and domestic supply uses since these are the most restrictive from a water quality standpoint."[61]

In the SGMA context, it is key to prevent further degradation of groundwater quality to protect drinking water. An appropriate standard in the context of groundwater protection is the state's anti-degradation policy, which is used by the SWRCB and regional water boards, and does not allow for further contamination of groundwater based on the best quality of the water since 1968 [62] the year the anti-degradation policy became effective. Another rule commonly used in environmental law is the *precautionary principle*, which prohibits activities that could cause harm when the amount of potential harm is unknown. Given that SGMA became law in 2015,

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[60] 23 CCR § 354.26.
[61] Pg. 3-12 of Madera Subbasin Draft GSP
[62] *Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd.* (2012) 210 Cal.App.4th 1255, 1268.

the GSA should, at a minimum ensure the better of highest quality of water achieved since 2015, or the MCL, whichever reflects a lower level of water contamination. Additionally, the GSA should state in the GSP that it will strive to achieve the public health goals for all drinking water contaminants, wherever possible.

Land Subsidence Sustainable Management Criteria

As per Water code sec. 10721.(x)(5), the state defines significant and unreasonable land subsidence as land subsidence that substantially interferes with surface land uses. The GSA must consider the interests of all beneficial user groups, including domestic well users and disadvantaged communities, in determining its undesirable result for land subsidence.

The Draft GSP does not include sustainable management criteria for subsidence, citing that, to date, subsidence has not impacted critical infrastructure. However, the plan acknowledges "the potential for future subsidence related to continued decreases in groundwater levels during the early to middle portions of the Implementation Period."[63] For this reason, the GSAs should incorporate criteria regarding the impacts and undesirable results that should be avoided by GSA actions over the course of the implementation period.

The decision to wait until avoidable and potentially irreversible impacts have occurred in order to set sustainability management criteria is not compliant with the spirit of SGMA or with the definitions therein of undesirable results and measurable objectives.

In order to avoid significant and unreasonable land subsidence that substantially interferes with surface land uses, the GSAs must establish clear undesirable results, measurable objectives, and minimum thresholds now for subsidence, rather than waiting until the GSAs implementation timelines cause those impacts.

The Monitoring Network is Inadequate With Respect to Groundwater Levels and Groundwater Quality

GSAs must monitor impacts to groundwater for drinking water beneficial users,[64] including disadvantaged communities on domestic wells,[65] and must avoid disparate impacts on protected groups pursuant to state law.[66] The GSA's monitoring network does not comply with SGMA regulations, and fails to capture drinking water impacts to disadvantaged communities and domestic wells. The GSAs have therefore not considered the interests of this beneficial user group and is likely to cause a disparate impact on protected groups who are dependent on domestic wells in the GSAs area.

Groundwater Level Monitoring

The SGMA regulations state that monitoring networks must include a sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated

[63] Madera Subbasin Joint GSP Public Review Draft p.3-29, dated August 2019.
[64] 23 CCR § 354.34
[65] Water Code § 10723.2.
[66] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).

intervals to characterize the groundwater table or potentiometric surface for each principal aquifer.[67] The GSA must also make decisions about the monitoring network in a way that considers the interests of all beneficial users..[68] The representative monitoring network for groundwater levels does not show how it will be monitoring impacts to disadvantaged communities and domestic well users. Therefore, the monitoring network for groundwater levels is not in compliance with SGMA regulations.

First, it is not clear how the groundwater levels monitoring network will detect representative impacts to domestic well users. The majority of domestic wells in the subbasin are less than 400 feet deep,[69] and therefore are in the upper aquifer. However, there are no upper aquifer or composite representative monitoring wells located in the northern, central or southeastern portions of the subbasin.[70] As reflected in our Focused Technical Review, the current monitoring network therefore lacks adequate coverage for roughly 2,700 domestic wells, including those in the communities of Fairmead and Chowchilla, Storey, Lake Madera Country Estates, and the area north of Madera.

If monitoring networks contains data gaps, draft GSPs must describe the steps that will be taken to fill data gaps before the next five-year assessment, including the location and purpose of newly added or installed monitoring sites.[71] In regards to data gaps in the monitoring network, the Draft GSP is unclear as to when and where additional monitoring wells will be installed. Without this information, the Draft GSP is not complying with SGMA regulations.

The draft GSP identifies 37 representative monitoring wells to monitor water levels.[72] The draft GSP then proposes "a potential for future addition of up to 27 monitoring wells from the 2019 nested well installation program"[73] but does not identify the location of these potential wells on maps.[74] The draft GSP further identifies the general areas lacking in monitoring wells are "the Upper Aquifer in the northern portion of the Plan area, and the Lower Aquifer in the south central and extreme eastern and western portions of the Plan area," and that "some of the spatial data gaps will be filled with installation of the nested monitoring wells by 2020 -particularly for the Upper Aquifer and extreme western portion of the Lower Aquifer."[75] However, it is not clear whether these future nested wells would be additional representative monitoring wells for which minimum thresholds and measurable objectives will be established.

To ensure the monitoring network is monitors groundwater levels of all beneficial users the GSAs must make the following changes:

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[67] 23 CCR § 354.34(c)(1)(A)
[68] 23 CCR § 354.34(b)(2)
[69] Madera Subbasin Joint GSP Public Review Draft Figure 2-5., dated August 2019
[70] Tables 3-9 through Table 3-11 give the location of key drinking water users as indicated above, along with the proposed water level representative monitoring wells, and which aquifers the representative monitoring wells are monitoring. Madera Subbasin Joint GSP Public Review Draft pg. 3-42, 3-43, 3-44, dated August 2019
[71] 23 CCR § 354.38(d)
[72] Madera Subbasin Joint GSP Public Review Draft pg. 3-40, dated August 2019
[73] Madera Subbasin Joint GSP Public Review Draft pg. 3-45, dated August 2019
[74] Madera Subbasin Joint GSP Public Review Draft Section 3.5.1.1, dated August 2019
[75] Madera Subbasin Joint GSP Public Review Draft Section 3.5.4.2, dated August 2019

- Ensure the proposed monitoring network is adequate to monitor conditions for disadvantaged communities and domestic well users.
- Explicitly describe any future representative monitoring wells and identify the proposed locations. When assessing the monitoring network data gaps, the GSP must prioritize installing new monitoring wells in locations where disadvantaged communities, small water systems, and domestic well users reside.
- All new monitoring wells must then be added to the representative monitoring network.

Groundwater Quality Monitoring

SGMA regulations require that GSPs create a groundwater quality monitoring network that will "collect sufficient spatial and temporal data from each applicable principal aquifer to determine groundwater quality trends for water quality indicators, as determined by the Agency, to address known water quality issues."[76] As the GSP is currently written, there are issues with the contaminants selected for monitoring, as well as incomplete information about the monitoring network. Without addressing these concerns, the GSAs are at risk of submitting a plan that is not in compliance with SGMA regulations.

The GSAs have a responsibility to monitor for all known water quality issues. In the draft GSP nitrate, TDS, and arsenic are identified as contaminants of concern because they "have greater potential for presenting broader regional groundwater quality concerns extending beyond localized or site-specific contamination cases and are likely to reflect a range of potential contamination sources".[77] However, as the groundwater quality maps in Appendix 2E show, there are other groundwater contaminants within the subbasin present at concentrations exceeding MCLs, including DBCP, EDB, 1,2,3-TCP, PCE, perchlorate, BTEX, and pesticides.[78] Without at minimum monitoring for all the other contaminants present in the basin, the GSAs are not complying with SGMA requirements.

Based on our Technical Analysis, it appears that there will be limited monitoring conducted in areas with high densities of domestic well users, which may constitute significant data gaps in the monitoring network. In Table 3-7[79] and Table 3-12,[80] the draft GSP identifies the water quality monitoring network and the monitoring frequency. The draft GSP identifies methods to fill data gaps, and one is that "The GSAs will install sampling taps (as needed) on groundwater level wells designated for groundwater quality monitoring. These wells will then be sampled for both groundwater elevation data and groundwater quality data".[81] However, it is not clear based on the information presented in the draft GSP how many additional sampling taps will be added to the network, where these wells will be located, and whether these wells will be included as groundwater quality representative monitoring network and evaluated with respect to minimum thresholds and measurable objective. This is critical information considering the GSAs will

[76] 23 CCR § 354.34(c)(4)
[77] Madera Subbasin Joint GSP Public Review Draft Section 2.2.2.3, dated August 2019
[78] Madera Subbasin Joint GSP Public Review Draft Appendix 2.E.c. Groundwater Quality Maps, dated August 2019
[79] Madera Subbasin Joint GSP Public Review Draft p. 3-31 to 3-32, dated August 2019
[80] Madera Subbasin Joint GSP Public Review Draft p.3-50 to 3-51, dated August 2019
[81] Madera Subbasin Joint GSP Public Review Draft p. 3-56, dated August 2019

already be relying on a very small representative monitoring network for groundwater quality, it being composed of only 12 wells out which only 2 domestic wells,[82] and these additionally wells will be necessary to fill data gaps and insure that the groundwater quality of all beneficial users is being monitored.

To ensure that the representative wells within the monitoring network accurately monitor impacts to groundwater management for drinking water beneficial users, we make the following recommendations:

- The GSAs must monitor for compliance with all of the following constituents of concern: all established primary drinking water standards, hexavalent chromium, and PFOSs/PFOAs, as well as contaminants that are known to increase with groundwater management activities, such as uranium.[83]

- Ensure that the groundwater quality monitoring network adequately captures increases in the extent and concentration of all known contaminants in the GSA area that are harmful to human health.

- Ensure that the groundwater quality monitoring network will detect impacts from groundwater quality on all types of beneficial users, most importantly drinking water users who have limited financial ability to treat their drinking water sources. To this end, the GSA should ensure that existing representative wells are in or near such communities or domestic wells, or that it has a concrete plan for installing new monitoring wells that will detect these impacts or working with domestic well users to regularly test their wells and incorporate that data into its monitoring network.

- Explicitly describe future representative monitoring wells and identify the proposed locations. When assessing the monitoring network data gaps, the GSP `must prioritize installing new monitoring wells in locations where disadvantaged communities, small water systems, and domestic well users reside.

Projects and Management Actions

The GSA must consider the interests of all beneficial users including domestic well owners and disadvantaged communities[84] and avoid disparate impacts on protected groups.[85] The GSP must also concretely outline how each objective and the overall sustainability goal will be achieved.[86] The projects and management actions set forth in the Draft GSP do not demonstrate a path

[82] Madera Subbasin Joint GSP Public Review Draft p. 3-46, dated August 2019
[83] Smith et al., "Overpumping Leads to California Arsenic Threat," Nature Communications (June 2018) [arsenic discharge from clay correlated with overpumping]; Jurgens et al., "Effects of Groundwater Development on Uranium" (November 2010) [strong correlation between high bicarbonate irrigation and recharge water and leaching of uranium from shallow sediments to groundwater].
[84] Water Code § 10723.2.
[85] Gov. Code § 11135; Gov. Code § 65008; Government Code §§ 12955, subd. (l).
[86] Water Code § 10727.2(b)(2).

towards achieving sustainability goals in the plan, and do not adequately account for the needs of disadvantaged communities pertaining to protected groups under state law.

Current Projects and Management Actions are Inadequate

The Madera Subbasin joint GSP is incomplete with regards to management actions, given that the GSAs have not decided which demand management strategy(ies) or enforcement mechanism(s) they will utilize in order to achieve the demand reduction targets outlined in the Draft GSP.[87] The remaining indecision regarding the mechanisms and structures that will be used to achieve and/or enforce these demand reduction targets leave residents with very little confidence that the targets will be met. As a result, until GSAs formalize and operationalize concrete enforcement mechanisms for demand reduction, vulnerable, de minimis groundwater users in the Subbasin can only assume that the targets will not be met and that the impacts will be greater than what the Draft GSP predicts. Furthermore, the Subbasin risks submitting a Plan that cannot be approved by the Department of Water Resources due to incompleteness.

The Draft GSP is also incomplete with regards to projects, since (a) it is unclear how the Subbasin will achieve acquisition of additional surface water for irrigation and recharge projects, (b) the well mitigation program, as drafted in Appendix 3D, is not yet complete and does not appear in the projects section of the Draft GSP, and (c) the GSAs have not yet decided how demand reduction will be achieved.

First, the GSAs propose that bringing in additional surface water from sources like CVP contracts will provide a source of water for projects like recharge basins. However, given that this action— acquiring more CVP water— is cited in nearly every Subbasin GSP in the Central Valley, it remains unclear how the GSAs can depend on a water supply that is (a) already fully allocated to its purchasers, (b) finite, and (c) dependent year-to-year on weather patterns (e.g. snowpack and rainfall).

Second, as highlighted previously in this letter, the Domestic Well Mitigation Program must swiftly be fully planned and operationalized, especially considering the severe drinking water impacts of this plan as drafted. The project is one of the only projects that the Madera County GSA has considered to date to specifically protect the drinking water resources of its constituents, and is currently listed as part of an appendix and given very general parameters. The program should be moved to the Projects and Management Actions section and expanded to include a concrete structure, funding plan, and implementation timeline.

Third, the Projects and Management Actions component of the Plan is incomplete given that the GSAs have not decided how the demand reduction schedule to which they purport to adhere will be enforced or achieved. The Draft GSP provides no commitments or decisions regarding the

[87] "Starting in 2020 and continuing through 2025, average annual groundwater pumping will be reduced by 2% (of the total demand reduction amount) per year, for a total cumulative reduction of 10% by 2025. Groundwater pumping will be reduced by 6% per year starting in 2026 and continuing through 2040" (4-41).

mechanisms that will be used to operationalize and enforce demand reduction in the Subbasin. Rather, it highlights a few options (allocations, a water market, and a land fallowing program) that are still under consideration and not yet planned. As a result, the management actions of the subbasin remain unplanned, giving residents, DWR, and other stakeholders no assurance that the proposed demand reduction goals will be met.

In order to prevent disparate impacts on protected groups, and show that it has considered the interests of all beneficial users including domestic well users and disadvantaged communities, the GSA should consider the following projects and management actions:

The GSA Must Clearly Commit to a Drinking Water Protection Program for the Madera Subbasin

The GSP contains a potential program to assist domestic well owners and small water systems obtain solutions to drinking water issues in the GSA area. This is a step in the right direction, but needs a more solid commitment and a defined scope and proposed activities. However, this plan remains incomplete, leaving the most vulnerable beneficial users of groundwater in the subbasin at continued risk of losing their human right to water. For example, the draft well mitigation plan estimates that the annual program cost will be $277,000, to be funded by an acre foot-based fee to "all pumpers." However, the draft plan does not sufficiently clarify how the fee will be assessed and charged to pumpers without metering. The plan also fails to specify how the total annual cost of $277,000 was determined, given that-- after considering administrative costs for operating the program-- this amount leaves only enough funding for 3 or 4 well replacements, according to the $25,000 estimate per well used in the draft. The draft also fails to concretely explain how residents in the Madera Subbasin will access these funds, and how the Madera County GSA will make determinations surrounding priority for well mitigation.

Appendix 3D also does not present a concrete plan for the scope of the program, or how such a program will be implemented. The draft well mitigation program plan also fails to consider the need for assistance for drinking water contamination when domestic wells or small community water systems become contaminated due to GSA-related activities.

We recommend the following parameters for a potential program, and are glad to work with the GSA on shaping an effective program for preventing drinking water impacts from declining groundwater levels, increased groundwater contamination, and subsidence.

We recommend that the GSA consider the following factors in approving such a program:

- Eligible activities: Assistance in connecting to larger water systems; drilling of new wells or deepening wells if homes' wells go dry due to declining groundwater levels; lowering of well pumps; short term and long term treatment of drinking water; provision of all permitting, planning and labor needs and all other costs associated with the mitigation; increased energy costs from pumping from deeper depths;[88] and emergency

[88] Recent research has concluded that "in the Tulare Lake area, with an average well depth of 120 feet, pumping would require 175 kWh per acre-foot of water. In the San Joaquin River and Central Coast areas, with average well depths of 200 feet, pumping would require 292 kWh per acre-foot of water." Wilkinson and Kost, *An Analysis of the*

bottled water or alternate water sources while mitigation measures are being implemented. Wherever possible, and whenever it is the community's preference, the GSA should strive to assist residents on domestic wells and small community water systems with connecting to larger drinking water systems. If consolidation is not possible, the GSAs should support the deepening of wells, installation of treatment facilities or POE/POU treatment in homes and offset the increased energy costs for pumping water from a lower level. In the interim, the GSA should collaborate with local and state agencies to provide emergency bottled water for consumption and sanitary purposes.

- Leadership by program beneficiaries: Any project funded by the program must be guided by the residents or communities that are recipients of program benefits. Community input into a project will ensure project success, by learning from resident experience and knowledge to shape a project that will best suit their drinking water needs.

- Access to the program: The GSA must ensure that the program is accessible for all residents who may need its assistance. The program should work with local agencies and organizations to spread information about the program, should not require residents to opt in to the program, and the GSA must provide translated materials regarding the program. [89]

- Such a program must be proactive, rather than reactive: We recommend that the Madera Subbasin GSAs implement a ***Drinking Water Observation Plan (DWOP)*** that will serve as a warning system so that the GSA is aware of when wells are going dry, or when wells are going to become contaminated from groundwater management activities, so it can take action to prevent drinking water impacts before they occur. This DWOP should trigger proactive measures wherein the GSA should act before wells lose production capacity or before wells become contaminated, to ensure that community members are not left without access to safe and reliable drinking water.

Recharge In or Near Disadvantaged Communities and Domestic Well Clusters

The Madera Subbasin GSAs should implement or incentivize recharge basins or other recharge activities throughout the subbasin wherever DACs and clusters of domestic wells exist. The GSAs should encourage these kinds of recharge projects with health co-benefits over on-farm recharge, which is likely lead to accelerate groundwater contamination.

Establish Pumping Buffer Zones That Protect Disadvantaged Communities and Clusters of Domestic Wells

For areas vulnerable to declining water levels and loss of production capacity, the Madera Subbasin GSAs should adopt management actions that establish geographical protection areas (buffer zones) by establishing bans, pumping limitations or community-specific management areas around disadvantaged communities and domestic well clusters. This buffer must be

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Energy Intensity of Water in California: Providing a Basis for Quantification of Energy Savings from Water System Improvements, 2006, ACEEE Summer Study on Energy Efficiency in Buildings, p. 12-123.

[89] Gov. Code, §§ 7293, 7295

protective enough to ensure that disadvantaged communities and residents reliant on domestic wells do not experience localized impacts from nearby pumping activities. This action should not be used to allow more pumping elsewhere in the subbasin, and needs to be coupled with a strong demand reduction policy across the basin.

Warning Against a Groundwater Market

We also strongly recommend against a groundwater market in the Madera Subbasin. Groundwater markets raise concerns from the perspective of domestic well users and disadvantaged communities, and residents of Fairmead and La Vina. Such a scheme will likely negatively impact critical drinking water resources, as more financially powerful groundwater users are able to purchase more groundwater resources and diminish the drinking water supplies of nearby community water systems and domestic well users.

Multi-benefit projects

The GSAs should implement and incentivize multi-benefit projects such as wetlands restoration or stormwater drainage ponds that would eliminate flooding and increase groundwater recharge in disadvantaged communities.

Funding of Projects and Management Actions

Although there are multiple short-term funding sources to leverage for SGMA-related projects, the Madera GSAs' operating budgets must be a reliable source of funding over the long-term of GSP implementation, and the GSAs cannot rely on grant funding for long-term projects and programs that benefit disadvantaged communities. The GSAs themselves must be responsible for addressing the drinking water issues caused by the GSAs' policy decisions and activities. Furthermore, any proposed assessments that will pay for projects may not place a disproportionate financial burden on disadvantaged communities. Small disadvantaged communities like Fairmead and La Vina should not be required to pay fees for GSP implementation.

Plan Implementation Section is Incomplete Because it Does not Contain Adequate Plans for Community Engagement,

GSPs must include a planning and implementation horizon,[90] and GSP implementation must continue to consider the interests of all beneficial user groups and engage a diversity of stakeholders. The proposed plan implementation is insufficient in regards to public engagement/outreach and does not contain adequate information regarding annual reporting or the potential to make amendments to the GSP.

The Draft GSP does not show how it will include the public in its sections on its five-year updates or its annual updates. It mentions that both will require substantial stakeholder engagement,[91] but does not specify how stakeholders will weigh in on the process. While the

[90] Water Code § 10727.2.(c)
[91] Madera Subbasin Joint GSP Public Review Draft p. 5-2, dated August 2019.

GSA has published its extensive communications and engagement guidelines,[92] it is unclear how stakeholders will be engaged moving forward as critical decisions are made about projects, management actions, and adaptive management through modified sustainable management criteria. Specifically, the summary of engagement milestones beginning on page 25 does not have any plans for engaging the public in such decisions. Furthermore, the GSP cost breakdowns do not contain a line item for stakeholder engagement or outreach, so it is unclear how much funding will be allocated for public engagement.[93]

To ensure that the GSP is implemented properly, the Madera Subbasin GSAs must do the following:

- Include details about how public outreach will be conducted as part of their annual reporting and five-year updates. Establish a clear processes by which GSAs will seek and incorporate feedback from the public on an ongoing basis through direct outreach to disadvantaged communities and public workshops that are held at convenient locations and times and accessible in multiple languages. Proposed policy changes and decisions about projects and management actions must be publicly noticed and circulated for public review and comment prior to final adoption.

- Clarify in the GSP that the plan may be modified as data becomes available, and that the GSAs will seek and accept feedback from the public on an ongoing basis throughout plan implementation.

- Clarify that any modification to the GSP must be in writing, noticed and provide sufficient time for public review and feedback.

Other Legal Considerations

The Draft GSP Threatens to Infringe on Water Rights

In enacting SGMA, the legislature found and declared that "[f]ailure to manage groundwater to prevent long-term overdraft infringes on groundwater rights."[94] The test of SGMA further notes that "[n]othing in this part, or in any groundwater management plan adopted pursuant to this part, determines or alters surface water rights or groundwater rights under common law or any provision of law that determines or grants surface water rights."[95] As discussed in detail above, the Draft GSP allows continued overdraft above the safe yield of the basin, such that drinking water wells (especially domestic wells) will continue to go dry, infringing on the rights of overlying users of groundwater. The GSP must be revised to protect the rights of residents of disadvantaged communities and/or low-income households who hold water rights to groundwater.

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[92] Madera Subbasin Joint GSP Public Review Draft Appendix 2.C.b., dated August 2019.
[93] Madera Subbasin Joint GSP Public Review Draft p. 5-4, dated August 2019.
[94] AB 1739 (2014).
[95] Water Code § 10720.5(b).

The Draft GSP Conflicts with the Reasonable And Beneficial Use Doctrine

The "reasonable and beneficial use" doctrine, to which SGMA expressly must comply,[96] is codified in the California Constitution. It requires that "the water resources of the State be put to beneficial use to the fullest extent of which they are capable, and that the waste or unreasonable use or unreasonable method of use of water be prevented, and that the conservation of such waters is to be exercised with a view to the reasonable and beneficial use thereof in the interest of the people and for the public welfare." (Cal Const, Art. X § 2; *see also United States v. State Water Resources Control Bd.* (1986) 182 Cal.App.3d 82, 105 ["…superimposed on those basic principles defining water rights is the overriding constitutional limitation that the water be used as reasonably required for the beneficial use to be served."].)

The reasonable and beneficial use doctrine applies here given the negative impacts of the Draft GSP on groundwater supply and quality, which are likely to unreasonably interfere with the use of groundwater for drinking water and other domestic uses. As the Draft GSP authorizes waste and unreasonable use, it conflicts with the reasonable and beneficial use doctrine and the California Constitution.

The Draft GSP Conflicts with the Public Trust Doctrine

The "public trust" doctrine applies to the waters of the State, and establishes that "the state, as trustee, has a duty to preserve this trust property from harmful diversions by water rights holders" and that thus "no one has a vested right to use water in a manner harmful to the state's waters."[97]

The "public trust" doctrine has recently been applied to groundwater where there is a hydrological connection between the groundwater and a navigable surface water body.[98] In *Environmental Law Foundation*, the court held that the public trust doctrine applies to "the extraction of groundwater that adversely impacts a navigable waterway" and that the government has an affirmative duty to take the public trust into account in the planning and allocation of water resources.[99] The court also specifically held that SGMA does not supplant the requirements of the common law public trust doctrine.[100] In contrast to these requirements, the Draft GSP does not consider impacts on public trust resources, or attempt to avoid insofar as feasible harm to the public's interest in those resources.

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The Madera Subbasin GSP must protect the most vulnerable drinking water users in the GSA area. We welcome the opportunity to discuss our recommendations with the Madera Subbasin

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[96] Water Code § 10720.1(a).

[97] *United States v. State Water Resources Control Bd.* (1986) 182 Cal.App.3d 82, 106; *see also Nat'l Audubon Soc'y v. Superior Court* (1983) 33 Cal.3d 419, 426 ["before state courts and agencies approve water diversions they should consider the effect of such diversions upon interests protected by the public trust, and attempt, so far as feasible, to avoid or minimize any harm to those interests."].

[98] *Environmental Law Foundation v. State Water Resources Control Bd.* (2018) 26 Cal.App.5th 844, 844.

[99] *Id.* at 856-62.

[100] *Id.* at 862-870.

GSA boards, staff and consultants to ensure compliance with state law. We are also in communication with the Department of Water Resources about current GSP development activities in the San Joaquin Valley, and hope to successfully work with GSAs, communities and DWR to ensure that groundwater management is equitable and sufficiently protective of vital drinking water resources.

Sincerely,

/s/

Madeline Harris, Nataly Escobedo Garcia and Amanda Monaco

Leadership Counsel for Justice and Accountability

CC:

Amanda Peisch-Derby

Senior Engineer

Department of Water Resources

Encl:

Technical Review, October 2019 Madera Subbasin Groundwater Sustainability Agencies Draft Groundwater Sustainability Plan (GSP)

LEADERSHIP COUNSEL FOR JUSTICE & ACCOUNTABILITY

[Sent via email]

Madera Irrigation District Groundwater Sustainability Agency Members
David Loquaci
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June 27, 2019

Re: Concerns and Recommendations to Ensure that the Madera Subbasin Joint GSP Protects Vulnerable Drinking Water Users

Dear Madera Irrigation District and Madera County GSA members,

Our organization works alongside low income communities of color in the San Joaquin Valley and the Eastern Coachella Valley to advocate for local, regional and state government entities to address their communities' needs for the basic elements that make up a safe and healthy community, including clean, safe, reliable and affordable drinking water, affordable housing, effective and safe transportation, efficient and affordable energy, green spaces, clean air, and more. We have been engaged in the Sustainable Groundwater Management Act (SGMA) implementation process because many of the communities with whom we work are dependent on groundwater for their drinking water supplies, and often have already experienced groundwater quality and supply issues. Historically, the communities we work with have not been included in decision-making affecting their access to water, and their needs have not been at the forefront of such decisions. In 2012, California recognized the Human Right to Drinking Water as a statewide goal. Now, because of SGMA's requirements for a transparent and inclusive process, groundwater management under the new law has the opportunity to include disadvantaged communities in decision-making and create groundwater management plans that understand their unique vulnerabilities and are sensitive to their drinking water needs.

We are concerned that drinking water impacts and disadvantaged community input have not been adequately analyzed and incorporated into the draft joint GSP for the Maddera Subbasin, and recommend the following actions to ensure that drinking water is protected, especially for the communities whose

drinking water is severely at risk from groundwater management activities, and who are the least able to pay for solutions for clean and reliable drinking water.

Development of Sustainable Management Criteria

As you are aware, SGMA requires Groundwater Sustainability Agencies ("GSAs" herein) to "*consider the interests of*"[1] disadvantaged communities and to prioritize drinking water access in developing sustainable management criteria. GSAs must also "*encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin prior to and during the development and implementation of the groundwater sustainability plan.*"[2] In order to effectively do so, GSAs must engage residents of disadvantaged communities to understand their groundwater issues and needs, meaningfully seek their input on how to shape sustainable management criteria, analyze the impact of preliminary minimum thresholds on drinking water access, and address the impacts of the six sustainability indicators before establishing minimum thresholds.

Under SGMA, ***all sustainable management criteria must be based on the GSA's determination of what will cause a "significant and unreasonable" impact on each of the six sustainability indicators.*** [3] This determination of what is "significant and unreasonable" must be based on the needs of all beneficial users.[4] Without first consulting beneficial users, including disadvantaged communities, to understand what groundwater impacts those individuals and communities want to avoid, the GSAs cannot make a valid determination of what is "significant and unreasonable", and thus cannot set valid sustainable management criteria.

In the Madera subbasin, the GSAs' Consultants have sought out preliminary feedback from disadvantaged communities through direct outreach and collaboration with organizations such as Self Help Enterprises and Leadership Counsel in order to make initial assessments regarding the needs of disadvantaged communities. As a result, the GSAs and Consultants are aware of the unique vulnerabilities of low-income domestic well users and communities that rely on small water systems for drinking water.

On behalf of the communities with whom our organization partners, we are grateful for these outreach and engagement efforts aimed at obtaining substantive feedback from disadvantaged communities. That said, the GSAs must not merely seek out this feedback for the sake of practicing community engagement in and of itself; rather, the GSAs must meaningfully *implement* the feedback they obtain from disadvantaged communities when establishing sustainable management criteria. In other words, the SGMA requirement to "consider the interests" of disadvantaged communities and prioritize access to drinking water is not sufficiently fulfilled merely through stand-alone outreach, but rather through substantive consideration for their needs when establishing the sustainability management criteria of the Madera Subbasin joint plan. Unfortunately, the proposed minimum thresholds for groundwater levels and groundwater quality do not demonstrate that the GSAs have meaningfully considered input

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[1] Water Code sec. 10723.2

[2] Water Code sec. 10727.8

[3] CCR sec. 352.28(a), 354.30(b), 354.26(a)

[4] CCR sec. 352.28(b)(4)

from disadvantaged communities nor are there adequate measures in place to ensure that GSAs consider input from disadvantaged communities throughout the process.

The current minimum threshold proposal for groundwater levels falls far below the depths of most domestic wells. Rather than protect communities who rely on shallow wells for drinking water from losing access to this vital resource in the first place, the Madera County and MID GSAs have instead proposed an inaccessible mitigation plan that may allow communities to endure long periods of time without access to water. Additionally, the proposed groundwater quality minimum threshold only considers two contaminants. While common, they do not represent the full scope of groundwater quality hazards present in the subbasin.

In order to "consider the interests of" all beneficial users effectively, the advisory committee and GSA board must analyze how preliminary sustainable management criteria will affect drinking water users before reaching proposed final sustainable management criteria.[5] Before making decisions on sustainable management criteria, committees and GSA boards must be equipped with information about how potential minimum thresholds will impact access to drinking water for domestic well owners and communities on small community water systems. To date and to the best of our knowledge, there has been no analysis conducted to demonstrate how drinking water will be impacted by the groundwater quality and groundwater levels minimum thresholds proposed by consultants. Specifically, we request that the GSAs ensure that an analysis be done of the impact to domestic well users and small community water systems from the proposed minimum thresholds for groundwater quality and groundwater levels. With this drinking water impact analysis, the advisory committee can be better equipped with the necessary information to determine whether impacts from these proposed minimum thresholds will be "significant and unreasonable."

As previously mentioned, the joint GSP development process must be representative of the interests of all beneficial users named in the Act. When board members do not come from disadvantaged communities or understand the unique groundwater needs of such communities, as is the case more often than not, ***it is imperative for the agency to reach out to disadvantaged community members for input*** before making key decisions such as recommending or proposing draft sustainable management criteria. The Madera Subbasin consultants have worked with Leadership Counsel and Self-Help to do outreach to disadvantaged communities for workshops. We are grateful that the consultants actively reach out to us for suggestions on how to do such outreach, and hope that our organizations have been able to help the GSAs and consultants learn how to do more effective outreach to disadvantaged communities in the area. However, the advisory committee meetings where decisions about sustainable management criteria are being made must be fully accessible to all beneficial users, including to low-income and working people. It is our understanding that the Madera Subbasin Advisory Committee meetings were recently rescheduled to 2:30pm, and our organization has heard from community members that they are unable to

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[5] California Department of Water Resources, Sustainable Management Criteria Best Management Practices, p. 9. The GSP must discuss how groundwater conditions at a selected minimum threshold could affect beneficial uses and users. This information should be supported by a description of the beneficial uses [of] groundwater and identification of beneficial uses, which should be developed through communication, outreach, and/or engagement with parties representing those beneficial uses and users, along with any additional information the GSA used when developing the minimum threshold.

attend these meetings to share their input due to work schedule, yet stated that they would attend such meetings were they held in the evenings. Since most community residents' schedules prevent them from coming to Advisory Committee meetings, Leadership Counsel and Self-Help Enterprises help provide feedback on GSP development on behalf of community residents based on our conversations with them. As the GSAs develop their sustainable management criteria and projects and management actions, the agencies must ***show that they are meaningfully implementing the input*** that they are receiving from disadvantaged communities and disadvantaged community advocates regarding their drinking water needs.

Groundwater Quality Minimum Threshold Recommendation

Groundwater quality has been a particularly complex issue for GSAs throughout the state. In determining how GSAs statewide will set their sustainable management criteria for groundwater quality, they have considered many factors, including the state Maximum Contaminant Levels (MCLs), the presence of other agencies monitoring and regulating groundwater contaminants in the region, areas where MCLs are already exceeded, and ways that groundwater management could impact the concentration and movement of groundwater contaminants.

We understand the complexity of setting groundwater quality sustainability management criteria that are accurate, attainable and measurable, and we are eager to work with the Madera subbasin GSAs to ensure that groundwater management does not increase groundwater contamination, especially where groundwater is being used as a drinking water source. As mentioned, consultants for the Madera subbasin have stated they would only be monitoring for nitrates and arsenic. Given the need for a concrete minimum threshold that strongly protects the human right to drinking water, we recommend that the Madera County GSA instead implement the following minimum thresholds:

- Minimum thresholds for water quality should be set at the best water quality since 2015 for each constituent, or at the Maximum Contaminant Level (MCL), whichever of the two reflects the better quality of water (lower contamination level).
- Where the minimum threshold exceeds the public health goal for any constituent, the GSP should, at a minimum, include a policy to strive for improvements to water quality to the point of meeting the relevant public health goal(s).
- The scope of minimum thresholds for water quality should include all potential water contaminants in order to prioritize ensuring access to safe drinking water.

The reasoning behind these minimum thresholds is that the GSAs are tasked with avoiding any undesirable results, and contamination of groundwater and other drinking water sources is a "significant and unreasonable" impact to the resource that we all need to drink, cook, bathe, grow food, and more. Accordingly, minimum thresholds must ensure protection from and prevention of contamination of groundwater and other drinking water sources. DWR instructs GSAs to look to existing groundwater

regulatory programs and water quality standards.[6] Many GSAs have proposed incorporating the existing MCLs into their minimum thresholds, however reliance on an MCL is not sufficiently protective of drinking water sources, and does not prevent contamination of our critical resources.

An appropriate standard in the context of groundwater protections is the state's anti-degradation policy, which is used by the SWRCB and regional water boards, and does not allow for further contamination of groundwater based on the best quality of the water since 1968[7] the year the anti-degradation policy became effective. Given that SGMA became law in 2015, the GSA should, at a minimum ensure the better of highest quality of water achieved since 2015, or the MCL, whichever reflects a lower level of water contamination. Additionally, GSAs must ensure that the project and management actions they are proposing do not cause or exacerbate groundwater contamination, and in fact improve drinking water quality for the near and long term. For example, it is our understanding that GSAs within the Madera Subbasin Joint GSP plan to rely on on-farm recharge. Our organization has expressed concern that recharge on current or retired farmland where toxic pesticides and fertilizers have been applied threaten to significantly contaminate groundwater.

Another rule commonly used in environmental law is the precautionary principle, which prohibits activities that could cause harm when the amount of potential harm is unknown. We urge the GSAs to use these two rules, combined with seeking to remediate groundwater to the public health goal, as laid out above, to ensure that groundwater management does not cause degradation of groundwater quality.

Thirdly, GSAs should monitor all primary drinking water contaminants, as well as chrome-6[8], which is known has significant health effects but is undergoing a new process to set the MCL because of procedural flaws. It is widely known that the San Joaquin Valley experiences widespread water quality issues from nitrates[9], DBCP[10] [11], 123-TCP[12] and other contaminants, and the GSA's groundwater management activities could impact the concentration and location of those contaminants. Where relevant, GSAs should also consider monitoring for PFOA and PFOS as the EPA has established a Lifetime Health Advisory for them due to their potential impacts on drinking water systems.[13] GSAs

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[6]California Department of Water Resources, Sustainable Management Criteria Best Management Practices, p. 15.

[7] *Asociacion de Gente Unida por el Agua v. Central Valley Regional Water Quality Control Bd.* (2012) 210 Cal.App.4th 1255, 1268.

[8] Hausladen, Debra M., et al. "Hexavalent chromium sources and distribution in California groundwater." *Environmental science & technology* 52.15 (2018): 8242-8251.

[9] *Addressing Nitrate in California's Drinking Water: With a Focus on Tulare Lake Basin and Salinas Valley Groundwater: Report for the State Water Resources Control Board Report to the Legislature.* Center for Watershed Sciences, University of California, Davis, 2012.

[10] Peoples, S. A., et al. "A study of samples of well water collected from selected areas in California to determine the presence of DBCP and certain other pesticide residues." *Bulletin of environmental contamination and toxicology* 24.1 (1980): 611-618.

[11] Loague, Keith, et al. "A case study simulation of DBCP groundwater contamination in Fresno County, California 2. Transport in the saturated subsurface." *Journal of Contaminant Hydrology* 29.2 (1998): 137-163.

[12] Burow, Karen R., Walter D. Floyd, and Matthew K. Landon. "Factors affecting 1, 2, 3-trichloropropane contamination in groundwater in California." *Science of The Total Environment* 672 (2019): 324-334.

[13] "Drinking Water Health Advisories for PFOA and PFOS." *EPA*, Environmental Protection Agency, www.epa.gov/ground-water-and-drinking-water/drinking-water-health-advisories-pfoa-and-pfos.

should also monitor contaminants that are proven to increase from groundwater management, such as arsenic and uranium,[14] increased contamination from recharge,[15] movement of contaminant plumes from groundwater pumping, and other groundwater management activities.[16]

Current Madera Subbasin Groundwater Levels Minimum Threshold

The GSAs' proposed groundwater quality minimum threshold does not fully protect the human right to water because it only considers arsenic and nitrates. Madera County's most recent SB244 analysis of drinking water deficiencies in disadvantaged communities throughout the Subbasin, however, has identified the presence of other harmful contaminants in communities' drinking water, (including, though not limited to, uranium, manganese, iron, and gross alpha, for instance) in communities' drinking water.[17] GSAs should also consider potential contaminants such as hexavalent chromium, TCP and other pesticides, (both those used in the region historically and those still in use). Our organization and Self-Help Enterprises have voiced concerns with these minimum thresholds, both substantively and methodologically. Substantively, these minimum thresholds do not protect communities relying on shallow wells from losing drinking water access or from drinking contaminated water due to the projects and management actions to be implemented by the GSAs. Rather, GSAs should consider all existing and potential groundwater contaminants in order to effectively plan groundwater management and prevent further degradation of groundwater quality as the result of those management actions. Methodologically, the proposed minimum threshold was not based on feedback from vulnerable beneficial users in the subbasin about what constitutes "significant and unreasonable" impacts to drinking water. Despite this feedback provided to the Madera County GSA from our organization and from Self-Help Enterprises, the GSAs have not altered these proposed minimum thresholds to more meaningfully consider and prioritize the human right to water.

Water Quality Considerations for Groundwater Management Actions

To establish causality between groundwater management activities and groundwater contamination, GSAs should look to (1) whether there has been a correlation in groundwater management activities and an increase in contamination that could result from groundwater management activities, (2) relevant scientific studies that show proven mechanisms by which causation can be established between groundwater management activities and groundwater contamination, and (3) data and samples collected showing a causal nexus in the case at hand.

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[14] Jurgens, Bryant C., et al. "Effects of groundwater development on uranium: Central Valley, California, USA." Groundwater48.6 (2010): 913-928.; *also see* "Groundwater Quality in the Sustainable Groundwater Management Act (SGMA): Scientific Factsheet on Arsenic, Uranium, and Chromium," found at https://d3n8a8pro7vhmx.cloudfront.net/communitywatercenter/pages/293/attachments/original/1559328800/Groundwater_Quality_in_SGMA_Scientific_factsheet_on_arsenic__uranium__and_chromium.pdf?1559328800

[15] Ground Water Recharge Using Waters of Impaired Quality (1994) https://www.nap.edu/read/4780/chapter/3

[16] Moran, T., & Belin, A. (2019). *A GUIDE TO WATER QUALITY REQUIREMENTS UNDER THE SUSTAINABLE GROUNDWATER MANAGEMENT ACT.* Retrieved from https://purl.stanford.edu/dw122nb4780.

[17] Madera County. SB 244 Disadvantaged Unincorporated Communities Amendments, Madera County General Plan. 2015. Found at: https://www.maderacounty.com/home/showdocument?id=10798

Finally, in order to effectively protect drinking water resources, GSAs should establish Management Areas in areas that are more vulnerable to groundwater contamination, such as communities with many shallow wells and communities that cannot afford to install drinking water filters or treatment facilities.

Groundwater Levels Minimum Threshold Recommendation

GSAs must protect drinking water, and must consider the needs of disadvantaged communities and domestic well users in creating their GSPs. The California legislature has stated that the use of water for domestic purposes is the highest use of water,"[18] and passed the Human Right to Drinking Water in 2012.[19] After the passage of SGMA, GSAs now have the responsibility to protect drinking water through groundwater management. If they choose to allow individuals to keep pumping at the expense of severe drinking water impacts, that is a groundwater management decision that violates their obligation to protect drinking water resources. GSAs must therefore have strong minimum thresholds that protect all drinking water wells from dewatering.

Minimum thresholds are the most pivotal measure for how a GSA will prevent impacts from a sustainability indicator. This is the point that GSAs must avoid, and could necessitate state intervention. There is some flexibility, however; for groundwater levels, DWR shows in its Sustainable Management Criteria Best Management Practices guide that it will allow GSAs to dip below its minimum threshold for groundwater levels in some cases, as long as its GSP will ensure that it comes back up and towards its measurable objective. Therefore, GSAs should strive to set minimum thresholds at levels that they seek to avoid.

GSAs should set minimum thresholds for groundwater levels at the level of the shallowest existing wells in use, with a buffer above the depth depth of the top of the screen. If GSAs choose not to do so, they must take on the responsibility for the wells that do go dry from this policy choice. If proposed minimum thresholds allow wells to go dry, a GSA must conduct a drinking water impact analysis to evaluate how many drinking water wells will go dry, set management areas for shallower minimum thresholds where there are more concentrated shallow domestic wells, and ensure that drinking water is protected by implementing preventive actions such as digging deeper wells and assisting with consolidation projects. It is important to note that prevention, not mitigation, is the only way to effectively protect drinking water resources.

Currently, the Madera County GSA and Madera Irrigation District GSA are not equitably considering domestic well users' needs or prioritizing the human right to water in setting the sustainable yield for the subbasin. It is our understanding that the proposed minimum threshold for groundwater levels in the subbasin is far below the depths of most domestic wells, severely jeopardizing drinking water access for the most vulnerable beneficial users. Rather than establish minimum thresholds that protect

[18] Water Code sec. 106.
[19] Water Code sec. 106.3

shallow wells from running dry, we understand that the GSA has suggested relying entirely on mitigation efforts. We also understand that Staff, Consultants, and the County GSA have proposed total reliance on the Safe and Affordable Drinking Water Fund as the sole funding mechanism for these mitigation efforts, and have noted that potential beneficiaries would need to opt in to such a mitigation fund far before they may ever need to access it.

Furthermore, it is our understanding that the modeling used to provide baseline assumptions about groundwater conditions in the Madera Subbasin did not take climate change into account. SGMA requires groundwater modeling that fully considers the effects of climate change.[20] As a result, the preliminary assumptions used in determining this minimum threshold do not fulfill the requirements of SGMA. This faulty basis for the groundwater levels minimum threshold therefore calls into question the validity and compliance of the minimum threshold itself.

Our organization has voiced concerns to the Madera County and MID GSAs over this proposed minimum threshold and mitigation plan. Given the requirements to consider disadvantaged communities and prioritize the human right to water, it is unacceptable to establish a minimum threshold that will allow domestic wells to go dry-- especially considering the devastating effects that dry wells have has on communities and individuals without the means to deepen or replace their wells. Our organization works in collaboration with communities like Fairmead, where drinking water users suffered long periods of time without access to water due to domestic well dewatering. We also believe that reliance on the Safe and Affordable Drinking Water Fund is an insufficient and unacceptable response to the current problem of critical overdraft in the Subbasin, and that the responsible groundwater management solution lies in establishing sustainability management criteria that prevent well dewatering among other threats to the human right to water.

Rather than allow for domestic wells to run dry and rely solely on an external mitigation fund, we request that the GSAs set all minimum thresholds at a level to provide a buffer above the depth of the top of the screen of the shallowest well. The buffer must be adequate to ensure that the shallowest well does not go dry due to a short or medium-term exceedance of the minimum threshold. The GSAs should only disregard wells that they can prove are not in use.

In setting groundwater levels minimum thresholds, GSAs should also set minimum thresholds high enough as to avoid groundwater contamination from overpumping. They should also set minimum thresholds that ensure that rural communities have equitable access to drinking water resources, and have enough for current needs and future growth. GSAs must also factor in the increased costs of pumping and installing new wells if groundwater levels decrease, and avoid additional costs in groundwater access for low-income communities dependent on groundwater for drinking water resources. GSAs should also set minimum thresholds for groundwater levels that will prevent subsidence from occurring and disrupting infrastructure that is critical to the health and safety of vulnerable communities, such as private wells, roads, and homes.

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[20] 23 CCR §354.18(e): Each Plan shall rely on the best available information and best available science to quantify the water budget for the basin in order to provide an understanding of historical and projected hydrology, water demand, water supply, land use, population, climate change, sea level rise, groundwater and surface water interaction, and subsurface groundwater flow.

Monitoring Network

Broadly, the GSAs must develop actionable steps to fill data gaps and monitor groundwater levels and groundwater quality. We are pleased that the Madera Subbasin is working to bolster its existing network of monitoring wells, and that GSA consultants are working to uniquely consider severely disadvantaged communities in doing so. Monitoring networks should provide close vigilance of the impacts on drinking water during the implementation period and beyond. Particularly, regarding water quality, GSAs should monitor for contaminant concentrations quarterly, and increase monitoring to every month if a water quality test detects higher contamination concentration than the previous water quality test. Testing should also robustly monitor plume migration especially given the high number of water users in the Madera subbasin.

As a result, the GSP should fund a water quality testing program for strategically identified domestic wells to complement data from small water systems and disadvantaged communities in order to fill existing data gaps as well as begin to identify contaminant plumes. To track these concerns the GSAs should place monitoring wells near DACs and clusters of domestic wells.

We look forward to providing further recommendations on the monitoring network in the future.

Transparency and Inclusivity

As public agencies, GSAs are subject to the requirements of the Ralph M. Brown Act, which requires transparency of public agencies through notice of meetings and prior posting of agendas, posting of meeting minutes after meetings, and public access to meeting materials upon request by a member of the public. In addition to Brown Act requirements, GSAs must also adhere to the specific public participation and inclusivity requirements for GSP development laid out in SGMA. SGMA expands the public participation requirements of GSAs to also "*encourage the active involvement of diverse social, cultural, and economic elements of the population within the groundwater basin prior to and during the development and implementation of the groundwater sustainability plan.*"[21] To assist in GSAs complying with this requirement, DWR has published guidance on public notice and engagement, highlighting good practices for effective engagement. Both the letter and spirit of SGMA communicate that GSAs must conduct GSP development in an open and inclusive way.

A best practice to ensure authentic, meaningful input as required by SGMA is to post meeting materials before the meeting, so that these materials are available to the public for feedback and engagement. The Brown Act requires these materials to be made available after the meeting upon written request of the public. Paired with SGMA's requirements for robust community engagement, the most effective way to ensure that the public is aware of what will be talked about at meetings, and to access critical GSP development information despite not being able to attend one meeting, is to post all meeting materials online before the meeting. The Madera Subbasin GSAs send out meeting notices with an agenda, and have an easily navigable website that contains meeting agendas, presentations and minutes for each meeting. However, the GSAs would facilitate more effective public engagement at the meetings

[21] Water Code sec. 10727.8

if they were to post meeting presentations ahead of time, so that attendees could view the discussion items and data before the meeting. Additionally, we recommend that the GSAs separately agendize each SGMA-related discussion question and potential policy decision, so as to allow for public comment before each decision. We would also like to remind the GSAs of their responsibility to meaningfully consider the public comment provided at GSA meetings, rather than immediately vote without consideration for the feedback provided from the public.

GSAs should also ***dedicate sufficient funding to ensure meaningful, effective, and accessible engagement of the public***. We, along with Self-Help Enterprises, have worked with the Madera subbasin GSAs' consultants to improve outreach to disadvantaged communities. We have helped provide input on several workshops, and have helped conduct outreach for those workshops. We have also kept community residents informed about GSP developments at community meetings. Providing food at evening meetings is key to ensuring that residents who have worked all day are able to attend meetings, so we recommend that GSAs allocate funding for food at public workshops. Given the type of outreach that is necessary in order to engage disadvantaged communities, the GSAs should also hire bilingual staff or consultants who can help conduct door-to-door outreach, attend community meetings, translate materials, and interpret at all GSA meetings. In creating annual operating budgets, GSAs should prioritize funding for these necessary outreach activities.

Projects and Management Actions

Projects and Management Actions are a crucial part of the GSP, since they demonstrate how the GSA plans on attaining the sustainability goals that they have set out. Therefore, GSAs should set specific timelines and triggers for projects. They should also propose projects that will not threaten the human right to water, as highlighted by the concerns we have raised over potentially hazardous projects like on-farm recharge. GSAs should also include projects specifically to benefit drinking water for disadvantaged communities.

We look forward to commenting further on recommendations for projects and management actions that will protect drinking water for the most vulnerable groundwater users.

Groundwater Markets

We have engaged in many discussions around the state about groundwater markets, and continue to warn against them. Commoditizing precious drinking water resources is dangerous and inequitable, since it lets those with more purchasing power have access to more water, and more likely than not will lead to concentrations of over-pumping by large agribusinesses, leaving nearby communities without drinking water. Furthermore, given all GSAs' severe lack of data on domestic wells and water use in their service areas, and our region's lack of understanding of how a market could impact groundwater use and subsurface groundwater flows, implementing groundwater markets now would be precipitous and reckless.

We know that Madera subbasin GSAs are considering a groundwater market, and we encourage the GSAs to take time to gather extensive data on existing groundwater resources and drinking water needs and analyze the potential impacts to drinking water before considering implementation of a groundwater market. We look forward to giving more feedback on the potential of developing a groundwater market in the Madera subbasin in the future if the subbasin decides to consider such an action.

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We look forward to speaking more in depth with consultants and the GSA members about our recommendations. We hope that the Madera County and Madera Irrigation District GSAs will consider the above recommendations, and hope to collaborate with the GSAs to ensure that the joint GSP protects the subbasin's most vulnerable drinking water users.

We are also in communication with the Department of Water Resources about current GSP development activities in the San Joaquin Valley, and hope to successfully work with GSAs, communities and DWR to ensure that groundwater management is equitable and sufficiently protective of vital drinking water resources.

Sincerely,

Madeline Harris
Policy Advocate
Leadership Counsel for Justice and Accountability
~~~~~~~

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: November 8, 2019

Submitted By: Madera Valley Water Company by Gregory E. Rodgers General Manager

Address: 18454 Road 26 Madera CA 93638

Phone Number / Email: 559-674-2407 maderavalleywater@onemain.com

APNs: Multiple

Located in Groundwater Sustainability Agency (GSA):
■ Madera County ☐ MID ☐ City of Madera ☐ MWD ☐ Other _____

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
■ Disadvantaged Community Member ☐ Agency/Government ☐ Other _____

November 8, 2019

Section 1: Comments on issues directly affecting MVWC service area.

1. Madera Valley Water Company (MVWC) is the third largest municipal water supplier in the Madera Basin, providing slightly less water than the City of Chowchilla and about half of the water delivered by the City of Madera. We provide potable water to residents in our service area, all of which is groundwater. However, there is no discussion of MVWC service and operations

anywhere in the text of the GSP (with the exception of brief statement in Chapter 2 that we conduct water quality testing). This omission appears to be because we are not a GSA and are lumped in with the County GSA in the "white areas" of the basin. However, our service population of approximately 8,900 is entirely dependent on our ability to provide drinking water of adequate quantity and quality. Our ability to provide this service is being negatively impacted by hydrogeologic conditions documented in the GSP. It appears likely that MVWC will need to incorporate infrastructure projects in the future to react to the changing hydrogeologic conditions in the Basin, and funding availability for many of these projects is likely to be contingent on the MVWC's inclusion in the GSA/GPS. Therefore, we request that the MVWC be specifically identified in the early chapter(s) of the GSP, as a distinct entity within the County GSA's area along with the included agencies. We provide the following summary text for inclusion in the plan.

"Madera Valley Water Company is located in the County of Madera north of the City of Madera and was constructed in 1956. Located north of Avenue 17 between Road 26 and Road 27. It encompasses approximately 1,600 acres. The population served is estimated at 8,900. The majority of the connections are residential. The lot sizes range from ¼ acre to 1 acre. There are approximately 50 commercial properties which consist mainly of small retail stores, restaurants, offices, and several gas stations. The water system has 5 wells ranging in depth of 543 feet to 770 feet and a 1.5-million-gallon elevated water storage tank. Each of the wells has a liquid chlorination unit for emergency chlorination. There are approximately 40 miles of pipeline in the system."

2. Declining water levels and well yield. It is acknowledged in the GSP that agricultural production is by far the largest user of groundwater in the Basin. In recent years there has been a substantial increase in the amount of groundwater used in the area surrounding the MVWC as agricultural acreage been converted from historical seasonal crops to crops that require more water such as almond and other orchards without the availability of surface water. The planting of new orchards immediately adjacent to and surrounding the MVWC service area for nut farming has accelerated since the passage of SGMA. Our service area is now bounded on three sides by recently installed deep agricultural wells. When these ag well pumps are turned on, MVWCs static water levels decline over 40 feet, and the resulting drawdown when we operate MVWC wells is significantly greater than any recorded drawdown in the MVWC's history. This results in total dynamic head pumping conditions that do not correspond to the pump design curve, resulting in pumping inefficiency, greater electricity costs, and likely ultimately necessitating the replacement of pumps before their design life has been reached. In September 2019, production in Well 5 decreased from 1,700 gpm to 1,300 gpm overnight when the ag well pumps were turned on. The standing water level dropped 40 feet and the pumping water level dropped 100 feet. Because MVWC serves 8,900 residents has been impacted in the last 3-5 years with unprecedented declines in water levels we believe that at least one SGMA-specific monitoring well should be included in or immediately adjacent to our service area.
3. Subsidence. To the extent that subsidence is discussed in the GSP, it is essentially stated that it is not a significant enough issue that it needs to be specifically addressed. However, subsidence is one of the six undesired results listed in SGMA as requiring actions to prevent undesired results. Since 2013 MVWC has already had to repair three well casing fractures caused by subsidence affecting two of our existing wells at a cost of approximately $500,000.00. It appears likely that subsidence-related damage to our wells over the course of the SGMA planning horizon

(through 2040) will require engineering projects to repair or replace damaged wells. Chapter 4 of the GSP states that no plan to address subsidence is necessary, and that subsidence of up to 0.25 feet per year does not require mitigation. Subsidence of 0.25 feet/year is equivalent to subsidence of 5 feet through 2040, which is significant. Having already experienced infrastructure issues due to subsidence to date, and anticipating additional engineering projects may be required in response to additional subsidence, MVWC believes that subsidence is an undesired result of increased groundwater usage that needs to be specifically addressed in greater detail in the GSP.

4. Change in Water Quality. Over the more than 60 years that MVWC has provided drinking water to our service area, there has not been an issue with delivered water exceeding either primary or secondary drinking water quality standards until recently. As discussed in comment #2, static and operating water levels elevations have declined substantially in recent years concurrent with increased agricultural pumping due to a lack of availability of surface water for agriculture use. As a result, MVWC now appears to be drawing groundwater from different and/or deeper geologic strata than we were previously. Simultaneous with these new hydrogeologic conditions, for the first time we have recently observed concentrations of iron and manganese (a secondary drinking water standard, affecting taste and odor) in groundwater pumped from MVWC wells. If this water quality issue persists or expands in area/wells, it may ultimately require well head treatment to maintain the delivered water quality that our service area has historically enjoyed. The GSP should address the impacts of the lowering groundwater levels on groundwater quality in greater detail and identify the possible mitigation of groundwater quality issues over the planning horizon of the GSP.
5. MVWC Projects. Although it is stated in the GSP that agricultural pumping is the dominant use of groundwater in the Basin, MVWC understands that we have to do our part to reduce groundwater usage. We have recently successfully received recognition as a disadvantaged community (DAC) from the state, which will allow us to pursue additional funding sources for future projects. We are currently pursuing state funding sources to implement flow meter installation for each connection in our service area. We anticipate that once we establish water use for each residence, we can pursue potential management actions such as conservation programs and tiered rate structures that will result in a decrease in per capita groundwater consumption in our service area. We anticipate that these actions will result in a decrease of at least 30% in our annual groundwater pumping volume. This project should be included in the GSP.
6. MVWC provided more than 30 years of data to the GSA consulting team for use in the GSP development, but we see no evidence in the plan that it was considered or utilized. Will there be an appendix or some acknowledgement that our data was used in the development of the plan?
7. The GSP utilizes estimates for much of the pumping data collection. The GSP should include a policy or at least a discussion of having all non-de minimis wells metered to ensure accuracy of the pumping data and for potential use to generate revenue to pay for recharge projects based on actual use.

Section 2: Comments on larger policy and management issues that do not directly affect the MVWC service area or operating conditions but may impact the implementation of the GSP for the MVWC and other agencies in the Madera Basin.

8. The GSP appears to depend on future purchases of surface water to account for much of the water budget deficit, but no details are given on these proposals. As the sub-basins are all interconnected, with no hard boundaries between them groundwater flows freely between sub-basins based on local gradients, pumping centers, etc. It seems that regional cooperation will be necessary to coordinate proposed recharge (and other) projects to optimize the impact of such projects. There is no discussion of such proposed regional cooperation outside of the Madera sub-basin in the plan. The GSP should include a policy or at least a discussion on how basin-wide or multi agency projects would be planned and developed to include all stake holders, including small agencies and DAC's, to ensure that recharge or other mitigation projects are effective and economically feasible.
9. Finally, the Implementation chapter of the GSP is the shortest chapter, and lacks the detail that would comprise a robust GSP. The MVWC recommends that the implementation chapter include more detail on how the GSP would be implemented and include policy statements regarding implementation such as those discussed in these comments.

Respectfully,

Gregory E. Rodgers
General Manager

CHOWCHILLA SUBBASIN
GROUNDWATER SUSTAINABILITY PLAN (GSP)
COMMENT FORM

Please complete the following information to provide comments on the draft Chowchilla Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email:ChowchillaGSPComments@maderacounty.com

Date Submitted: Nov 2, 2019

Submitted By: MARK Hutson

Address: 13534 Ave 19½ Chowchilla, CA 93610

Phone Number / Email: 559-217-6609

APNs: 023-040-014 + 022 023-110-009 + 008

Located in Groundwater Sustainability Agency (GSA):
☐ Madera County ☒ CWD ☐ Triangle TWD ☐ Merced County ☐ Other _____

Affiliation: ☒ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☐ Other _____

Chapter No. / Page No. of GSP: 5.5

Comments: I would remove the word 'All' in comply with all of the requirements"

Chapter No. / Page No. of GSP: 5.6.1

Comments: Implementation of all projects. Remove "all"

In short – remove the words all, shall, will, etc. These words are strong assertions + can be left out. This would apply to all chapters

Chapter No. / Page No. of GSP: 4

Comments: I believe it is very important to strongly state in this chapter + others, that as knowledge, technology + management practices adapt + change, that the methodology of projects will adapt. This area of operation is so new, what we think is right may be wrong, and visa-versa. Please leave

Chapter No. / Page No. of GSP:

Comments: A wide area to manuver within the GSP as GSA's become more knowledgable. They need to be nimble and not constrained by a plan that may become obsolete.

NORTH KINGS GROUNDWATER
SUSTAINABILITY AGENCY

November 8, 2019

Internet
www.NorthKingsGSA.org

Mail
North Kings GSA
c/o Fresno Irrigation District
2907 S. Maple Ave.
Fresno, CA 93725

Phone
559-233-7161

Via U.S. Mail and E-Mail (E-mail Address)

Ms. Stephanie Anagnoson, Director
Water and Natural Resources Department
Madera Subbasin GSA
C/O Madera County
200 W. 4th Street, Third Floor
Madera, CA 93637

RE: <u>Madera Subbasin Joint Groundwater Sustainability Draft Plan</u>

Dear Ms. Anagnoson:

The North Kings Groundwater Sustainability Agency (NKGSA) consists of member agencies including Fresno Irrigation District, the cities of Fresno, Clovis and Kerman, Fresno County, Bakman Water Company, Biola Community Services District, International Water District, Garfield Water District, and the Fresno Metropolitan Flood Control District. The NKGSA also consists of disadvantaged communities, private well owners, and other landowners. The Madera Subbasin borders the NKGSA boundary. The NKGSA submits this letter to the County of Madera (County) regarding the draft Joint Groundwater Sustainability Plan prepared for purposes of the Sustainability Groundwater Management Act (SGMA).

The NKGSA appreciates the opportunity to comment on the Madera Subbasin GSP. The NKGSA is concerned about the Madera Subbasin governing board adopting the draft GSP. Due to significant deficiencies as described below, NKGSA urges the Madera Subbasin to delay adoption of the GSP and address the issues described below, and summarized as follows:

About NKGSA: The North Kings Groundwater Sustainability Agency is a Joint Powers Authority formed in December 2016. Composed of local public agencies and others engaged through binding agreements, the NKGSA is the governing body of a portion of the Kings Subbasin (DWR Bulleting 118, 5-22.08) in compliance with the Sustainable Groundwater Management Act of 2014. NKGSA members are Bakman Water Company, Biola Community Services District, City of Clovis, City of Fresno, City of Kerman, County of Fresno, Fresno Irrigation District, Fresno Metropolitan Flood Control District, Garfield Water District, and International Water District.

- The Madera Subbasin draft GSP indicates there is approximately 69,400 AF of historical and current inflow and with no project actions, the amount of inflow increases to 108,200 AF in 2040, which the Madera Subbasin identifies as their sustainability goal. With projects implemented and completed, the inflow is reduced to approximately 21,400 AF between 2040 and 2090.

- The GSP demonstrates the Madera Subbasin will not achieve the sustainable yield or groundwater sustainability within SGMA's mandatory 20-year period, primarily due to the Madera Subbasin miscalculating the annual overdraft deficit when accounting for the inflow and failing to address how the Subbasin will mitigate the overdraft deficit including starting mitigation during the first year of GSP implementation. The Madera County GSA does indicate they will initiate their demand management program in year one but the details are being finalized. This could result in a reduction in demand of about 2%, which does not account for the total boundary flow of approximately 69,400 AF.

- The GSP infers the Madera Subbasin GSAs encroach on approximately 69,400 AF of water per year within the NKGSA's boundary which drains into the Madera Subbasin.

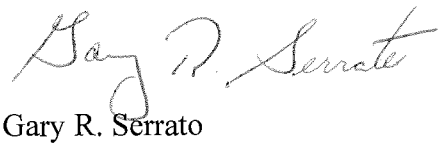
- NKGSA, including its member agencies and stakeholders, intends to capture and recapture water (as has been historically and currently occurring), whether surface water, groundwater, or recharge water, which the Madera Subbasin's draft GSP indicates is flowing into the Madera Subbasin and is a benefit to the Madera Subbasin through 2040. This practice is unlawful, inequitable and inappropriate by the Madera Subbasin.

- Time still remains to correct these deficiencies prior to the January 31, 2020, deadline for submitting the GSP to the California Department of Water Resources (DWR).

Ultimately, the Madera Subbasin GSP contains deficiencies arising to a definition of sustainability in the Madera Subbasin that is improperly reliant on boundary flows from the NKGSA, which may vary but more importantly, that are not abandoned by the NKGSA nor its member agencies or stakeholders. Accordingly, the Madera Subbasin GSAs must not make claim to that water.

The NKGSA looks forward to continuing to collaborate with the Madera Subbasin GSAs on the correction of the concerns contained in this letter. Please contact me at (559) 233-7161 should you have any questions.

Sincerely,



Gary R. Serrato
Executive Officer

CC: City of Madera GSA
Madera County GSA
Madera Irrigation District GSA
Madera Water District GSA
Root Creek Water District GSA
Gravelly Ford Water District GSA
Mr. Michael Carbajal – City of Fresno

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: November 9, 2019

Submitted By: Phil Janzen, President, Madera Ag Water Association

Address: 1102 S. Pine Street, Madera, CA 93637

Phone Number / Email: (559) 674-8871 maderaagwater@gmail.com

APNs: _____

Located in Groundwater Sustainability Agency (GSA):
☑ Madera County ☐ MID ☐ City of Madera ☐ MWD ☐ Other _____

Affiliation: ☑ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☐ Other _____

Chapter No. / Page No. of GSP: _____

Comments: See attached letter.

MADERA AG
WATER ASSOCIATION

November 5, 2019

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: ChowchillaGSPComments@maderacounty.com
MaderaGSPComments@maderacounty.com

Re: Comments on the Madera and Chowchilla Draft GSPs

Dear Ms. Anagnoson:

The Madera Ag Water Association (MAWA) appreciates the extraordinary effort that has gone into developing the Draft Groundwater Sustainability Plans for the Madera and Chowchilla Subbasins (Draft GSPs). Throughout the development process, the Madera County Groundwater Sustainability Agency (Madera County GSA) has made every effort to be inclusive and transparent in the development of the Draft GSPs. We thank you for that approach and for the opportunity to provide comments on the Draft GSPs.

MAWA is a non-profit membership organization representing farmers operating in areas of Madera County managed by the Madera County GSA. We are committed to working with all stakeholders in our community and with the Madera County GSA to make our basins sustainable. While this difficult task means significant changes for the agricultural community, we recognize the importance of being successful. State intervention is simply not an option.

We also want to thank the team at Madera County for identifying funding to offset the costs of establishing the Madera County Groundwater Sustainability Agency and developing the Draft GSPs. This allowed our community to comply with the rigorous initial requirements of the Sustainable Groundwater Management Act (SGMA) without simultaneously being financially burdened from the outset. We believe this deliberate approach has provided best possible opportunity for our community to successfully implement SGMA.

Even with this sound start, implementing the GSP will be challenging, particularly for agriculture. While many will be impacted, the greatest burden will be borne by the agricultural community. Because of that circumstance, MAWA encourages the Madera County GSA to

continue to ensure that farmers and ranchers have the appropriate opportunity to engage with the SGMA process.

Comments

Planning vs. Prescribing: One of the key challenges in drafting a GSP is balancing between establishing a workable long-term strategy and providing near-term certainty through specific prescriptions. The reality is that the first step in the journey to groundwater sustainability is establishing and refining critical measurement and monitoring systems. While this means that certainty about some parameters is delayed, this is a necessary foundation to ensuring a fair and workable system is ultimately implemented.

The Draft GSPs appropriately manage this balance by clearly identifying what is needed, how it will be obtained, and how it will be used to implement the management actions and projects that will achieve sustainability. The specific prescriptions and implementation of the tools is rightfully left to the implementation phase of the GSP. While this does leave some uncertainty at present, it is important that the tools and prescriptions be based on the needed information and not hurriedly placed on a flawed foundation.

ETAW vs. AW: In discussing the Draft GSPs with stakeholders there is some confusion about the difference between the Evapotranspiration of Applied Water (ETAW) and Applied Water (AW). Although the Draft GSPs are not deficient in their explanation of this distinction, additional clarification, perhaps in the Executive Summary, would help the reader understand the difference between these terms and how they are used in the Draft GSPs.

Projects and Management Actions – Section 4: The Draft GSPs identify recharge, conveyance, and (for the Chowchilla Subbasin) storage as projects, and demand management as a management action. These tools will be utilized to bring the basins into balance over the next twenty years.

While these projects and management actions may be implemented by the GSAs, it would be useful to clarify in the Draft GSPs how these projects and management actions may be also implemented by other entities or individuals. This would allow others, in coordination with the GSAs and consistent with the GSPs, to implement projects and management actions that move us toward sustainability. In some cases, these entities may be able to implement these projects or management actions more quickly and efficiently than the GSAs.

Recharge – Section 2.2.3.3 & Section 4 (Table 4-2): In discussing groundwater recharge, the Draft GSPs appropriately focus on Flood-MAR, recharge basins, and in lieu recharge. While these

surface water diversion projects should remain the priority of the GSP, it may be useful for the GSP to anticipate inclusion of other types of projects and management actions that may not divert surface water but may contribute to the groundwater replenishment portfolio.

Increasing consideration and study is being given to forest management, tillage practices, stormwater management, and other management practices that may increase the amount of precipitation infiltrating into the groundwater system. While these management practices are not sufficiently developed to be included in the projected budget, it would be helpful if the GSP also referenced groundwater replenishment practices that do not rely on diverted surface water.

Measurement – Section 4.4.4.3/4.2.3.3: The Draft GSPs identify several methods for measuring groundwater use that may be used in the basins. While simply identifying these tools is appropriate for the GSP, it will be useful to for tools like remote-sensing measurement and analysis of ETAW to be implemented quickly so that bugs can be worked out and groundwater users can gain confidence in these systems as soon as possible.

Rampdown – Section 4.4.4.2/4.2.3.2: The Draft GSPs identify a target for ramping down groundwater use of 2% per year for the first five years and 6% per year thereafter. While this is an appropriate goal, there are two clarifications that would be useful to include.

First, it would be helpful to further explain that the annual rampdown targets apply to the Madera County GSA area as a whole and not to individual parcels or ownerships. Although the Draft GSP already indicates this is the case, highlighting this fact in the Executive Summary and in the relevant sections may help alleviate some confusion.

Second, during the first few years of implementation, information and tools may not be available to provide specificity about whether these targets are being met. This is an expected challenge as not all the information needed to demonstrate these conditions is available. However, it may be useful to indicate this fact so that an inability to conclusively demonstrate planned reductions in the first year of implementation does not suggest the plan is inadequate. While actions will be taken to reduce demand immediately upon implementation of the GSPs, whether certain targets are hit may not be demonstrable for some time.

Allocations – Section 4.4.4.2/4.2.3.2: Implementing a groundwater allocation program may not be the only way to achieve the required demand reduction goals. Another option may be carefully managing access, consistent with property rights, and limiting the total available water without individual user allocations. Amending the Draft GSP to refer to “Allocation/Access” may clarify that approaches other than allocation may also be used to meet demand reduction goals.

Trading – Section 4.4.4.2/4.2.3.2: The Draft GSPs refer to a "water trading program" as a means of trading water credits. While market systems can add important flexibility to a system where available supply is limited, the details of the market system may end up being something other than a water trading program. Consider describing a "market system" generally to ensure that other types of market systems are also anticipated in the GSP.

Easements – Section 4.4.4.2/4.2.3.2: Because the term "easements" can be understood in different ways, it would be helpful to use a more descriptive term to refer to voluntary programs to cease irrigating lands. Whether through easements or leases, irrigation abeyance agreements are a useful tool and should remain in the GSP. Find a good term to describe the range of such alternatives will help reduce confusion.

Fallowing – Section 4.4.4.2/4.2.3.2: The Draft GSPs appear to use the term fallowing to refer to ceasing to irrigate land that is currently irrigated. To the extent this term is used in the typical agronomic context, namely referring to land that has been plowed and left unseeded or is otherwise not in use, it is unnecessarily restrictive.

As the GSP is implemented and land come out of irrigated agricultural production, much of that land may find other uses that do not require irrigation. Such land, for example, may be dryland farmed, transitioned to rangeland, converted to habitat, or be used for a solar array. Each of these new uses would cease irrigation, but would not technically be fallowing. Consider amending the Draft GSPs to refer to "land transition" or a similar term that indicates cessation of irrigation but anticipates a future economic use.

Conclusion

The GSAs that worked together on the Draft GSP have done a remarkable job setting forth a plan to bring the Madera and Chowchilla Subbasins into a sustainable condition. MAWA appreciates this work and looks forward to working with these GSAs and with other stakeholders to ensure our community follows the best path forward.

Thank you for considering these comments.

Sincerely,

/s/ *Phil Janzen*

Phil Janzen, President
Madera Ag Water Association, Inc.

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October 21, 2019

VIA E-MAIL TO AND TO: MADERAGSPCOMMENTS@MADERACOUNTY.COM
STEPHANIE.ANAGNOSON@MADERACOUNTY.COM

Stephanie Anagnoson, Director
Water and Natural Resources Dept.
200 W. Fourth Street
Madera, CA 93637

Re: Gunner Ranch West

Dear Ms. Anagnoson:

This firm represents Gunner Ranch Inc., and Richard V. Gunner and Mimi S. Gunner, trustees of the Richard V. Gunner and Margaret S. Gunner Community Property Revocable Trust Agreement dated March 11, 2002 (collectively, the "Gunner Family"), with respect to the project known as Gunner Ranch West (the "Project").

This letter is being submitted concerning the Public Review Draft Joint Groundwater Sustainability Plan (the "GSP") prepared for the Madera Subbasin on behalf of the Madera Subbasin Coordination Committee, including the Madera County Groundwater Sustainability Agency. Please ensure that this letter, and the referenced materials, is included in the administrative record concerning the deliberations of the GSP by the Madera Subbasin Coordination Committee as well as the separate deliberations that may be conducted by the Madera County Groundwater Sustainability Agency.

I. The Gunner Ranch West Project and Its Adopted Water Balance Plan.

The Madera County Board of Supervisors (the "Board") approved the Gunner Ranch West Specific Plan (the "Specific Plan") by resolution adopted dated July 14, 2014. The Specific Plan is supported by a Development Agreement and Conditions of Approval 1-7 requiring, in part, development of a Groundwater Plan (the "GRW Groundwater Plan") accounting for a 1:1 water balance within the Project area.

Once completed, the Project will consist of a comprehensively planned mix of residential, regionally serving commercial, retail, hospital-related services, medical offices and governmental services, open spaces and parks, and land dedicated to other public uses. The plans are an important part of the development that support of the growth and operation of Valley Children's Hospital, which itself owns a significant amount of land within the County and is the County's largest private sector employer.

In conjunction with approval of the Specific Plan and the Development Agreement, the Board also approved the creation of a Zone of Benefit within the existing County Service Area No. 22, designated "Zone C" ("CSA 22C"), to provide water, sewer and park services to the Project, including the delivery of water. In accordance with Government Code Section 31010, a Municipal Advisory Committee (the "MAC")

was subsequently formed to advise and provide recommendations the Board on all matters relating to the development of infrastructure and the provision of services within the geographic boundaries of CSA 22C. The MAC is empowered to provide recommendations to the Board regarding, in part, the development of water system improvements sufficient to support the Project.

Litigation concerning the Project's entitlements was initiated soon after the approval of those entitlements. Settlement of that litigation with Root Creek Water District (Settlement Agreement dated October 22, 2015, the "Settlement Agreement") resulted in the Board's adoption of an Enhanced Groundwater Balance Condition (the "Condition") applicable to the Project. That Condition required preparation and submission of the GRW Groundwater Plan to account for a 1:1 "Groundwater Balance" within the Project. The Condition defines Groundwater Balance as "the annual Water Extraction from the Local Aquifer for use within the [Project area] does not exceed [the Project's] annual Water Input to the Local Aquifer", as measured on a five-year rolling basis. The term "Water Input" is defined within the Condition to mean the direct and natural recharge of water to the aquifer, in addition to any off-site direct or "in lieu" water recharge (including conservation easements).

The Gunner Family submitted an initial draft of the GRW Groundwater Plan on March 9, 2018. Following a lengthy technical review and input by representatives from Madera Irrigation District, Chowchilla Water District, Root Creek Water District, Gravely Ford Water District and the Madera County Farm Bureau, and after further consideration by County staff, including the County Engineer, the revised and finalized GRW Groundwater Plan was approved by unanimous vote of the Board on May 7, 2019.[1]

The Board resolution adopting the GRW Groundwater Plan requires that the Gunner Family further revise the Plan within six (6) months of the adoption by the Board (sitting as the Madera County Groundwater Sustainability Agency) of a Groundwater Sustainability Plan ("GSP"), as required under California's Sustainable Groundwater Management Act ("SGMA"), and further "conform the [GRW Groundwater Plan] to the provisions of the adopted GSP."

In its present form, the GRW Groundwater Plan estimates a Project-specific average sustainable natural recharge per acre to the local aquifer of 1.05 acre feet of water per acre (the "Project Sustainable Yield"), as stipulated in the Settlement Agreement. The Project Sustainable Yield is based on the Hydrogeologic Investigation: Southeastern Madera County, October 2001, prepared for the Root Creek Water District by Provost & Prichard and Kenneth D. Schmidt and Associates, and calculated on a Project-specific basis by establishing demand, as offset by historic overdraft conditions, within the Project area itself. In essence, the Project Sustainable Yield is tied directly to the specific character of the Project and its underlying aquifer. Of utmost

[1] The GRW Groundwater Plan is available in the Board's May 7, 2019 Agenda meeting materials, item 7-F at http://maderacountyca.iqm2.com/Citizens/FileOpen.aspx?Type=1&ID=2561&Inline=True.

importance, the success of the Project is premised on the availability of a reasonable credit for the Project Sustainable Yield, any substantial reduction of which will significantly disrupt the functionality of the CSA 22C community water system.

To achieve a sustainable natural recharge, the GRW Groundwater Plan prohibits the pumping of groundwater in excess of annual groundwater recharge - either natural or engineered - such that there can never be a net negative in groundwater extracted. Although the Project is required to achieve groundwater balance within three years of the GRW Groundwater Plan's approval, the GRW Groundwater Plan demonstrates water balance at inception through Project build-out.

With respect to native groundwater recharge, in addition to rainfall and runoff, the GRW Groundwater Plan incorporates an analysis of returns to the aquifer resulting from the water applied to outdoor irrigation in excess of evapotranspiration demand that percolates to the groundwater basin. Deep percolation, as this processed is called, is an accepted element of groundwater accounting and is included in the Definitions section of the 2014 Madera Regional Groundwater Management Plan and the California Department of Water Resources' ("DWR") 2013 California Water Plan Update.

As for engineered recharge, the GRW Groundwater Plan contemplates the use of various enhancement recharge projects within the geographic boundaries of the Project, including ponds to be developed in conjunction with the Project's Waste Water Treatment Plant for recharge of effluent not applied for recycled water demand. The GRW Groundwater Plan further contemplates an extensive storm water drainage system, including substantial drainage basins, which is designed to provide significant enhanced recharge of storm water runoffs to the groundwater aquifer located beneath the Project.

In addition to implementing active recharge elements, the GRW Groundwater Plan requires ongoing, and real-time monitoring by the MAC, the County, and neighboring water districts to insure that the no net negative use requirement is fulfilled. To meet this requirement, the Gunner Family has placed a meter on each well located within the Project area in order to monitor water table elevation, and continues to provide monthly reports to the County Engineer to facilitate verification of the data collected from these meters.

The GRW Groundwater Plan also contains severe penalties for use of groundwater in excess of annual groundwater recharge, including the County's automatic refusal to process subdivision maps and building permits related to the Project, and the levy of a stiff per-acre foot penalty for any excess groundwater pumped.

In short, the GRW Groundwater Plan represents a comprehensive strategy for long-term groundwater sustainability within the portions of the County Subbasin that the Project overlies.

II. Summary of GSP's Key Findings about the Subbasin.

Since formation of the Madera County Groundwater Sustainability Agency ("MC GSA") on January 27, 2017, whose territories include the Project, the County has been engaged in the process of developing its GSP for application within the Madera Subbasin through various efforts of County staff, hired consultants, and the Madera County Subbasin Advisory Committee (the "Committee") in order to meet its regulatory burden under SGMA. The MC GSA is comprised of approximately 177,800 acres of primarily agricultural land.

The territory that comprises the MC GSA includes areas that resemble a patchwork quilt of territory, most of which are not contiguous to other portions of the territory.[2] Given the disparate and expansive geographic distribution of the MC GSA, the geology of the land varies significantly throughout, a perspective frequently echoed by members of the Committee during its monthly public meetings.

A significant portion of the MC GSA encompasses lands in the western portion of the County whose geology cause it have significant differences in its hydrogeology relative to other portions of the MC GSA territories. Specifically, significant deposits of Corcoran Clay impact the western reaches of the MC GSA.[3] These Corcoran Clay deposits result in such different hydrogeological circumstances. In fact, when the mapping groundwater elevations the impacted area is described in the GSP as an aquifer system separate from the remaining basin.[4] Changes in groundwater elevations within the basin are an important component of "undesirable results" identified in the MC GSA.[5]

Because of the disparate and disconnected nature of the MC GSA territory, even portions of the aquifer outside the reaches of the Corcoran Clay reflect substantial differences in historical and recent changes in groundwater elevations.[6] In comparison, the GSP identifies the area of the aquifer that the Project overlays as a more stable area of the subbasin.[7]

Despite this disparate nature of the MC GSA territory acquirer, the GSP, with respect to the MC GSA territory, makes no distinction regarding the range of potential undesirable results, and the triggers for such results, that may exist within the MC GSA territory. This single treatment of the entirety of the MC GSA territory is

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[2] See GSP Figure 1-6.

[3] See GSP Section 2.2.1.1, pg. 2-26 and Figure 2-15.

[4] GSP Section 2.2.1.3, pg. 2-29 and Section 2.2.2.1, pg. 2-32.

[5] See GSP Section 3.3.1, pg. 3-18.

[6] GSP Section 2.2.2.1, pg. 2-35 and Figures 2-53, 2-56 and 2-57.

[7] GSP Section 2.2.2.1, pg. 2-35.

inconsistent with other aspects of the GSP, which establishes separate water budgets for each of the separate GSAs that constitute the Madera Subbasin Coordination Committee. Such separate water budgets effectively allow the GSP to identify more particularized minimum thresholds and measurable objectives for undesirable results for territories within those GSAs. The benefit of such arrangements is not made available to lands within the MCS GSA territory, despite its disparate geology.

III. Lack of Reasoned Analysis Regarding Use of Management Areas within the MC GSA Territory.

The disparate qualities of the geology underlying the MC GSA territory is compounded by the fact that the MC GSA did not make use of separately defined management areas within the GSP, which are expressly permitted under the regulations that govern the GSP development. Specifically, 23 California Code of Regulations Section 354.20 confirms that the MC GSA may define management areas within a basin if it determines their creation will facilitate implementation of the plan. The intention of these laws is that different minimum thresholds and different measurable objectives for undesirable results should be employed where there are disparate qualities within an aquifer, including differences in geology.

The desirable use of separate management areas is emphasized in the California Department of Water Resources publication of Best Management Practices for the Sustainable Management of Groundwater, issued November 2018 ("GSA BMP").[8] The GSA BMP specifically encourages the use of such management areas by GSAs. That publication confirms that "Management areas may have different minimum thresholds and measurable objectives than the basin at large and may be monitored at a different level."[9]

Despite the law's intended desired use of appropriate management areas, and despite the disconnected and disparate geology of the portions of the Madera Subbasin underlying the MC GSA, the GSP makes no reference to or use of management areas. Again, this failure is mitigated with respect to the lands of the other GSAs that comprise the Committee, because they are each provided separate Water Budgets that are a basis for important determinations of minimum thresholds and measurable objectives. Similar management approaches were not, however, adopted for any portion of the MC GSA. The treatment of the MC GSA lands is therefore

[8] The referenced document can be found at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT.pdf

[9] GSA BMP, at pg. 6. See also GSA BMP at pg 33, which confirms that "Before setting sustainable management criteria, the GSA should understand the basin setting by establishing a hydrogeological conceptual model, engage stakeholders, **and define management areas as applicable.**" (emphasis added).

unreasonably and arbitrarily different than similarly situated lands within other GSAs within the Madera Basin.

The failure to incorporate appropriate management areas within the MC GSA to address these significant hydrogeologic differences will likely lead to regulatory impositions by the MC GSA upon landowners to address "undesirable results" in circumstances where the regulatory imposition on such landowner will be arbitrary because it has no relationship to avoidance of an actual circumstance of "undesirable result" intended for avoidance by SGMA.

Furthermore, the record of proceedings for the GSP adoption fails to reflect any reasoned consideration or evaluation of the potential benefits in using management areas within the MC GSA. The failure to incorporate management areas to GSP creates arbitrary treatment of the overlying lands that have dissimilar hydrogeology.

IV. Potential Arbitrary Allocations of Demand Reduction Targets.

Public deliberations of the draft GSP conducted by the Committee included substantial discussions of various options presented to it for potential allocation of "credits" concerning safe-yield extractions, native groundwater quantities, and activities that introduce new water to the Subbasin.[10] Similar allocations of such "credits" to specific properties are not an element of the implementation program of other GSAs whose arrangements are detailed in the GSP.

The GSP references California Water Code Section 10726.4(a)(2) as establishing the authority to control groundwater extractions through regulatory limitations.[11] However, the GSP does not specifically identify how it intends control such groundwater extractions. Nor does it specify establishment of any specific "credits" that it intends to be part of the regulatory regime it identifies. It simply confirms that any demand management strategies that incorporate trading programs will establish definitive limits on groundwater pumping through regulatory powers of the County.[12]

There are several concerns with the program that may be intended to be implemented by the MC GSA regarding its demand management criteria. The first relates to the failure to adopt management areas. By failing to do so, the demand management criteria will be imposing limitations on the groundwater rights of certain property owners in circumstances where such water usages (within the ambit of such water rights) does not contribute to an actual undesirable result in any portion of the basin. In that circumstance, the program would be imposing arbitrary and unreasonable

[10] GSP Section 4.4.4.2, pgs. 4-41 through 4-43.

[11] The GSP also states that its program for demand management would incorporate, among other principles, the maintenance of established water rights. (GSP at pg. 4-40). However, the manner in which existing groundwater rights of landowners is properly maintained, in a regulatory program of potentially unfettered regulation of groundwater extractions, is nowhere discussed in the GSP.

[12] GSP Section 4.4.4.2, pg. 4-43.

regulatory impositions on such groundwater rights. As previously noted, the arbitrary nature of this is compounded by the fact that other GSAs were provided separate water budgets that will not be impacted by the MC GSA's allocation arrangements.

The fact that the County has limited its evaluation to two classes of lands that seem primarily based upon alternative agricultural operations indicates that there has been limited consideration of these arrangements on the development entitled lands. It is possible that this is because the demand management programs proposed by the GSP for the MC GSA are to be applied only to agricultural uses and not to other land use activities. However, that is not readily apparent in the text of the GSP.

If the GSP intends to impose demand management programs on nonagricultural land users, then the failure to reasonably consider impacts on development entitled properties is significant omission in the GSP. The GSP specifically quantifies the economic impacts of the demand management strategies on the agricultural economy. However, no similar analysis or information is provided regarding the economic (and other policy impacts) of such strategies with respect to other businesses, employees, or residential development.[13]

The impact of the intended demand management strategies on the Project can lead to significant consequences for important goals of the County identified in its General Plan. Development of the new growth areas, including the Project, is intended by the County to assist in focusing development in designated growth areas, as a means of ameliorating development pressures on other locations where farmlands may be more substantially impacted (see Madera County General Plan Agricultural Land Use Policy 5.A.1).[14] Adding unnecessary and disproportionate regulatory constraints on the Project will arbitrarily frustrate such General Plan goals.

Continuation of large lot development patterns within the County is not a sustainable approach. A program that allocates existing large lots a right to 2 acre-feet of annual domestic water supply use per user, while imposing substantially more burdensome regulatory regimes on new growth areas (in instances where no actual "undesirable result" may be attributable to such development) has the potential to thwart the County's efforts at smart growth strategies.[15]

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[13] GSP Section 4.4.4, page. 4-45.

[14] The Madera County General Plan is available at https://www.maderacounty.com/Home/ShowDocument?id=2850.

[15] GSP Section 4.4.4, page. 4-40 references the fact that the SGMA establishes such 2-acre foot per annum use for domestic water supplies as de-minimis. The GRW Groundwater Plan indicates a projected population for the Project of 9,712. The total Project groundwater extractions (without regard to the substantial replenishment from natural recharge and engineered basins), is projected to total 1,887 acre-feet (inclusive of the Valley Children and commercial uses). Obviously, smart growth in

Long-term maintenance of a reasonably established Project Sustainable Yield is a critical component of the Project's ultimate success. Implementation of demand management strategies that do not take into account the effectiveness of the adopted GRW Groundwater Plan or its different geology, is an arbitrary regulatory approach.

V. Conclusion.

Based on the foregoing, the Gunner Family respectfully requests that the draft GSP be revised to incorporate management areas within the MC GSA territories to address the significant variation in geology and aquifer characteristics of lands within the MC GSP. As the GSP confirms, the geology and aquifer characteristics of the Project lands is significantly different from other portions of the MC GSA, and is in an area that is a more stable area of the subbasin.

Failure to have adequately documented a reasoned deliberation for the inclusion of such management areas is a violation of SGMA. It is particularly troublesome where the GSP intends (solely with respect to the MC GSA territories) to impose allocations of native groundwater credits as part of a potential demand management strategy. Management areas will help assure that a program of allocating credits for native groundwaters can be properly and rationally tailored to the unique geology of the underlying sub-aquifer of the management area. Without that aspect of the program, the program may be an arbitrary arrangement because it may not be rationally tied to properly structured thresholds required to avoid undesirable results.

The MC GSA should provide assurances that its demand management strategies will not encompass approaches that have arbitrary and unnecessary regulatory impositions on land owners. If the intention is to exempt non-agricultural users from such strategies (and instead rely on relevant land use entitlements conditions, such as the GRW Groundwater Plan) that should be made explicit. In all events such a program must assure that it establishes regulatory impositions that are reasonably and rationally tied to avoidance of "undesirable results".

We appreciate the opportunity to provide these comments to the Draft GSP.

Sincerely,
McCORMICK, BARSTOW, SHEPPARD,
WAYTE & CARRUTH LLP

Jeffrey M. Reid

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designated new growth areas is an important tool to preserve both farmland and groundwater resources.

NORTH KINGS GROUNDWATER
SUSTAINABILITY AGENCY

November 8, 2019

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Via U.S. Mail and E-Mail (E-mail Address)

Ms. Stephanie Anagnoson, Director
Water and Natural Resources Department
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C/O Madera County
200 W. 4th Street, Third Floor
Madera, CA 93637

RE: <u>Madera Subbasin Joint Groundwater Sustainability Draft Plan</u>

Dear Ms. Anagnoson:

The North Kings Groundwater Sustainability Agency (NKGSA) consists of member agencies including Fresno Irrigation District, the cities of Fresno, Clovis and Kerman, Fresno County, Bakman Water Company, Biola Community Services District, International Water District, Garfield Water District, and the Fresno Metropolitan Flood Control District. The NKGSA also consists of disadvantaged communities, private well owners, and other landowners. The Madera Subbasin borders the NKGSA boundary. The NKGSA submits this letter to the County of Madera (County) regarding the draft Joint Groundwater Sustainability Plan prepared for purposes of the Sustainability Groundwater Management Act (SGMA).

The NKGSA appreciates the opportunity to comment on the Madera Subbasin GSP. The NKGSA is concerned about the Madera Subbasin governing board adopting the draft GSP. Due to significant deficiencies as described below, NKGSA urges the Madera Subbasin to delay adoption of the GSP and address the issues described below, and summarized as follows:

About NKGSA: The North Kings Groundwater Sustainability Agency is a Joint Powers Authority formed in December 2016. Composed of local public agencies and others engaged through binding agreements, the NKGSA is the governing body of a portion of the Kings Subbasin (DWR Bulleting 118, 5-22.08) in compliance with the Sustainable Groundwater Management Act of 2014. NKGSA members are Bakman Water Company, Biola Community Services District, City of Clovis, City of Fresno, City of Kerman, County of Fresno, Fresno Irrigation District, Fresno Metropolitan Flood Control District, Garfield Water District, and International Water District.

- The Madera Subbasin draft GSP indicates there is approximately 69,400 AF of historical and current inflow and with no project actions, the amount of inflow increases to 108,200 AF in 2040, which the Madera Subbasin identifies as their sustainability goal. With projects implemented and completed, the inflow is reduced to approximately 21,400 AF between 2040 and 2090.

- The GSP demonstrates the Madera Subbasin will not achieve the sustainable yield or groundwater sustainability within SGMA's mandatory 20-year period, primarily due to the Madera Subbasin miscalculating the annual overdraft deficit when accounting for the inflow and failing to address how the Subbasin will mitigate the overdraft deficit including starting mitigation during the first year of GSP implementation. The Madera County GSA does indicate they will initiate their demand management program in year one but the details are being finalized. This could result in a reduction in demand of about 2%, which does not account for the total boundary flow of approximately 69,400 AF.

- The GSP infers the Madera Subbasin GSAs encroach on approximately 69,400 AF of water per year within the NKGSA's boundary which drains into the Madera Subbasin.

- NKGSA, including its member agencies and stakeholders, intends to capture and recapture water (as has been historically and currently occurring), whether surface water, groundwater, or recharge water, which the Madera Subbasin's draft GSP indicates is flowing into the Madera Subbasin and is a benefit to the Madera Subbasin through 2040. This practice is unlawful, inequitable and inappropriate by the Madera Subbasin.

- Time still remains to correct these deficiencies prior to the January 31, 2020, deadline for submitting the GSP to the California Department of Water Resources (DWR).

Ultimately, the Madera Subbasin GSP contains deficiencies arising to a definition of sustainability in the Madera Subbasin that is improperly reliant on boundary flows from the NKGSA, which may vary but more importantly, that are not abandoned by the NKGSA nor its member agencies or stakeholders. Accordingly, the Madera Subbasin GSAs must not make claim to that water.

The NKGSA looks forward to continuing to collaborate with the Madera Subbasin GSAs on the correction of the concerns contained in this letter. Please contact me at (559) 233-7161 should you have any questions.

Sincerely,

Gary R. Serrato
Executive Officer

CC: City of Madera GSA
Madera County GSA
Madera Irrigation District GSA
Madera Water District GSA
Root Creek Water District GSA
Gravelly Ford Water District GSA
Mr. Michael Carbajal – City of Fresno

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Memorandum

To:	Stephanie Anagnoson, Director of Water and Natural Resources, Madera County
CC:	Larkin Harman and Julia Berry, Clayton Water District
From:	Rick Iger (P&P) and Keasha Blew (former P&P)
Subject:	Dairy Water Budget Parameters
Date:	11/1/2019 Revised from 10/3/2018 Internal Draft

Introduction and Summary:

After attending the confined animal Ad Hoc Committee on October 3, 2019, I was concerned that the calculation of Dairy water use was not well developed in the Madera and Chowchilla Basin GSPs. Provost & Pritchard Consulting Group has been working on understanding Dairy use of groundwater for several years. We would like to share our methodology with the County to demonstrate how the consumptive use of dairies has been handled in the past and in other GSPs. Dairy water budgeting parameters, calculations, and data sources have been based on field calculations, canal turnout and water well measurements, annual dairy reports and milk production. Generally, about 9 gallons per cow each day is exported from the dairy as milk and another 7 to 10 is excreted as urine, sweat and solids; equating to 0.01 to 0.02 Acre Foot (AF) per cow each year. Wash water varies by operation and is reported in dairy reports as outflow to lagoons; generally, about 72 gallons/cow each day which equates to about 0.08 AF per cow each year. The total water used in the dairy facility ranges from 80 to 90 gallons per cow each day, or 0.09 to 0.1 AF/cow each year.

Methodology:

The following parameters are taken into consideration in determining groundwater use by dairy facilities:

Surface Water:
- Surface water from all sources should be monitored monthly and totaled annually
- Calculate all water flowing into and out of the Ranch and dairy facility

Groundwater
- If possible, collect all well construction reports and map shallow and deep wells
- Track pumping from deep and shallow wells separately in dairy facility and cropped land
- Monitor groundwater levels in both shallow and deep aquifers

Recycled Water
- Recycled water or lagoon water produced and applied is found in dairy reports

Precipitation
- Typically, about 50% of precipitation is used for crops. The remainder can become deep percolation or runoff depending on geographic location

Consumptive use

- For dairies consumptive use is from both fodder crops and cows so it is important to know:
    - Number of cows
    - Total lagoon water produced from dairy operations (dairy permit report)
    - Acreage of dairy facility (non-cropped area), of dairy lagoons/ponds and of crops by crop type
    - Location and quantity of irrigation for crops
- This information can be found in annual dairy reports as part of the State Dairy Permit requirements. A couple of studies were also referenced for use by another consulting firm (EKI) we are working with in Kern County using University of Nebraska-Lincoln resource: https://beef.unl.edu/water-requirements-for-beef-cattle, http://extensionpublications.unl.edu/assets/html/g2060/build/g2060.htm and https://beef.unl.edu/amountwatercowsdrink.
- Consumptive use for dairies also includes milk production. Milk is about 88% water and a cow can produce an average of 75 lbs of milk per day. This becomes approximately 9 gallons of water used for milk production per cow each day, adding cow consumption and dairy facility wash water the total becomes about 80 to 90 gallons of water per cow each day. This was verified with local dairymen and numbers calculated were within a small margin of error.

Other Losses

- Evaporation is the main source of losses that are not returned to the system. Publications have several different references for open water evaporation. Upon examination it was found that evaporation from small ponds surrounded by irrigated agriculture is about 0.8 or 80% of reference ET.

Groundwater Replenishment

- In order to know how surface water recharges back into the groundwater system it is important to know about soil types and recharge rates of the soil which can vary.
- It is assumed that any applied water not lost to evaporation or ET of crops is recharged into the system
- Ponding seepage or canal seepage can be determined many ways. The easiest being the difference between measurements at specific monitoring points and pond drops under no inflow and outflow conditions. Soil types can also be used to estimate seepage by comparing to known/measured recharge areas on various soil types. In the case of dairy lagoons, the State Permit requires lining to prevent seepage, so the majority of losses from the lagoons are due to evaporation, not seepage.

Example Calculation:

In the case of one particular dairy studied in Merced County with 2,900 cows, about 0.009 AF/cow each year was exported as milk and 0.08 AF/cow each year was effluent sent to lagoon (per Dairy Annual Report). The total being 0.089 AF/cow each year, say 0.09 AF/cow each year.

In this case the dairy facility footprint was about 105 acres resulting in an average annual unit rate of 2.5 AF/Ac (2,900 cows x 0.09 = 261 AF; 261 AF/105 Ac = 2.5 AF/Ac). Keep in mind that the effluent component (0.08 x 2,900 cows = 232 AF) of the water generated in the Dairy facility minus that part lost to evaporation, is sent to the cropped grounds for effluent disposal/irrigation, which does reduce the crop water needs as would be estimated on the cropped field using ET methods. In this case there is about 2,000 acres of cropped land, so about 0.12 AF/Ac (232 AF/2000 Ac) is provided for irrigation coming from the Dairy facility lands. If the ET method was used to calculate groundwater pumping from the cropped field, the pumping would be overestimated from the cropped acreage which could be inappropriately subject to reduction if demand reduction is implemented.

From: Madera County Water [mailto:website@maderacountywater.com]
Sent: Wednesday, September 4, 2019 8:10 AM
To: MCwater
Subject: New submission from Contact Us

Name

Paul Provenzano

Email

provenzanopc@aol.com

Phone

(559) 232-9249

Message

Hello Stephanie
Looking at Appendix 3 page 5. Just wondering how they calculated an annual domestic well mitigation program cost of $277,000. The annual administrative cost is purported to be $150,000 plus $5,000 per well. This would leave only $127,000 for wells ($277,000 less $150,000). At $30,000 per well ($25,000 plus $5,000 admin fee) this would leave enough for only enough reimbursement for about 4 wells yet there is supposed to be enough to reimburse for 12 wells per year. (240 impacted wells divided by a 20 year implementation period) Do I have my math right? This does not look right! I think 12 wells per year is a little light! Talked to my well driller Horner and Sons and he drills 2 wells per week for 100 per year. Thanks!

Meta

205.157.153.167 Mozilla/5.0 (Windows NT 6.1; Win64; x64; rv:68.0) Gecko/20100101 Firefox/68.0

ROOT CREEK Water District

MANAGING RESOURCES FOR A BETTER FUTURE

November 9, 2019

Stephanie Anagnoson
Water and Natural Resources Department
Madera County
200 W. Fourth Street
Madera, CA 93736

RE: Root Creek Water District Comments on Madera Subbasin Joint GSP

Dear Stephanie:

The Madera Subbasin Joint Groundwater Sustainability Plan (GSP) covers a significant majority of the Madera Basin. It is recognized that the Madera Irrigation District GSA and Madera County GSA cover over 89% of the basin and these two entities and the resultant programs implemented by these agencies will have the most significant ability to achieve sustainability. The Root Creek Water District (RCWD) GSP covers a small portion of the basin – almost 10,000 acres or about 4% of the total. To this end, the RCWD GSA has participated with the other GSA's in the basin to develop the data and information to develop a better understanding of the groundwater conditions of the basin and develop specific projects that will benefit our local agency. Because the land area is smaller, the RCWD GSP has the advantage of more specific data in the area that it encompasses and encourages the other GSAs to develop similar data sets in the areas that each GSA borders, so that there is more definition as to documenting the actions and results of each GSA.

Our comments can be grouped into three different categories. The first being conceptual or big picture issues on which the GSP is based. The second being water budget and model-based comments. The third being specific comments regarding specific language, statements, maps, boundaries and factual statements and/or differences in this GSP and numbers identified in the RCWD GSP.

Conceptual:
The Hydrological Conceptual Model for the Madera Subbasin Joint GSP depicts the aquifer as being semiconfined below about 200 feet, the Corcoran Clay extending midway through the

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basin and water levels that historically trended from Northeast to the Southwest and now, due primarily to pumping, trend from the Southeast to the Northwest. Wells are also identified as being deeper east of State Highway 99. From all the charts, graphs and data that has been developed, there is very little data and information in the approximately 72,000-acre area defined southeast of State Highway 99 and 145. This area accounts for about 33% of the total basin area and more than 50% of the County GSA and relies almost exclusively on groundwater. This is also an area that has significant rural residential properties and it is recommended that this be an area of keen interest going forward. In Figure 3-6, there are four wells that are identified as lower aquifer well monitoring sites. Two of these, MCE RMS-4 and, 5, are of unknown construction. Similarly, on Figure 3-7, MCE RMS-2, and 3 are also of unknown construction. It is concerning that there are not more monitor sites for water levels in this area and data from these wells may not be comparable.

Water Budget:
Per Section 354.18 a water budget is required for the basin. The Madera Subbasin Joint GSP provides a very detailed subbasin water budget given the information that is available at this time. The data and methodologies used to develop both the budget, estimate overdraft and determine sustainable yield are thought to be within the range of the estimates given the confidence in the basic data. It is expected that the numbers will change over time and as better information becomes available. It is also recognized partitioning these basin wide values to smaller areas is difficult and given that these smaller areas have more and perhaps better-defined numbers that the accuracy of more localized data and information will be more acceptable than the regional generalizations.

As documented in the Madera Subbasin Joint GSP, the goal of the GSP is to stabilize groundwater levels, allow for annual but stable storage change over the long term while maintaining quality without the realization of subsidence and limiting negative impacts to interconnected surface waters. Even though a model was used to develop some predictions of what may happen, it will be imperative to monitor levels and quality of groundwater supplies to measure success of the program.

The following are specific comments detailing page number, comment and discussion regarding the comment:

page	Issue or statement	Discussion
ES-3	Figure ES-1 shows RCWD GSA boundaries incorrectly	This map and all other maps in the GSP should reflect the current RCWD GSP boundary.
ES-7	The sustainable yield of 441,800 af doesn't match Figure ES-4	
ES-10	Table ES-3 Lowering of groundwater levels	The MO and MT are set via the model. The model is based upon data from wells. The RCWD GSP are based upon observed water levels

		and extending the trends into the future recognizing the implementation of projects.
ES-10	The GSA's intend to mitigate for potential impacts to domestic wells caused by further decline in groundwater levels	The RCWD GSA has implemented and is operating projects and does not intend to participate in mitigating impacts to wells in adjacent GSAs.
ES-13	Figure ES-5 – there are limited monitor wells in Southeast Madera basin bounded by State Highways 99 and 145	The RWCD GSA encourages installation of additional monitor wells at the border of the GSA's as well as in the Madera Ranchos as well as between the Madera Ranchos and State Highway 41 North of RCWD GSA.
ES-13	Figure ES-5 – The monitor system proposed in Southeast Madera County does not propose discrete sampling by zone.	The proposed monitoring program is spatially and temporally inadequate. One area of considerable interest is the level change within the Madera Ranchos. No proposed monitor well is proposed and many of the wells proposed are composite or are of unknown construction.
ES-14	Table ES-4 RCWD tabulation of surface supplies	See the attached information taken from the RCWD GSA proposed GSP for more information. See Attachment 1 to this communication.
ES-15	Table ES-5 RCWD tabulation of total surface water supplies	Same as above comment
1-4	Figure 1-1 Map incorrect – RCWD GSA boundaries	
	Figure 2-47 Spring 1988 Contour Map	It is noted that this Figure documents a northwesterly groundwater flow direction similar to the groundwater flow direction found on Figure 3-22 in the RCWD GSP.
	Figure 2-48 Spring 2014 Contour Map	This map appears to have more data points than the 1988 map but much fewer

		than in an area of the Madera Ranchos. Compared to Figure 3-23 in the RCWD GSP, it appears that the location of the depression in the Southeast is located more to the west under the Madera Ranchos.
	Figure 2-49 Spring 2016 Contour Map	It appears that there is even less data when compared to other maps to prepare this map in the Southeast portion of Madera County.
	Figure 2-53 Hydrograph shows level data from 2000 to present	The hydrograph for well id 11S20E31P001M is in the same proximate area as RCWD well 130 as shown on Figure 3-21 in the RCWD GSP which indicates a depth to water of approximately 275 feet in 1998 and continuing this trend to a depth of about 295 feet presently. The recovery shown in well P1M would be expected to be in a shallower well.
	Figure 2-56 Change shows ground water level rise in southeast Madera basin	As suggested in the document the groundwater elevation rise shown in the Southeast area south of State Highway 145 is from a lack of data and interpolations on data.
2-33	Paragraph 1 – identifies local depression in southeast	When looking at more specific data in the Southeast region it appears that the groundwater depressions are further east than noted on the maps.
3-5	Sustainable Management Criteria	As stated in the paragraph on measurable objectives (MO) the MO were developed based upon a model with average hydrology with implementation of projects. Since this is a layered model it is important to note that at

		varying depth or layers in the model that vary different water elevations can be realized. In the Southeastern Madera area as well, there were fewer wells to calibrate the model. Using historical data over a long period of time will provide significant insight into the realization of sustainability.
3-55	Data Gaps – elevations – lower aquifer and extreme eastern portions of basin	The data gaps mentioned earlier are identified. No plan to fill this data gap is offered.
4-3	Table 4-1	RCWD is currently purchasing water from partners outside the basin and should be added in this category.
4-4	Table 4-2	See Attachment 1 to this communication.
4-51	Section 4.7.1 Distribution of Purchased Water for In-Lieu Storage	Since completion over 16,000 af has been delivered through the system. The Madera SB GSP indicates only 8,000AF.
	Figure 3A-1 Elevation of Minimum Thresholds	Comparison with RCWD GSP shows in general range but RCWD GSP shows slightly lower levels
	Figure 3A-3 Elevation of Measurable Objectives	Comparison with RCWD GSP shows in general range but RCWD GSP shows lower levels
	Appendix 3 – Hydrograph MC-RMS-5	It should be noted that this well is shallow adjacent to the SJR and should be used discretely and may not be reflective of shallow groundwater levels.

Root Creek Water District GSA will add to its draft GSP documentation of the recent Riverstone municipal development and the resultant conversion of agricultural demand to urban demands. This project affects water use in the RCWDGSA and should be incorporated in summary in the Madera Subbasin Joint GSP. Attachment 1 illustrates the project.

Thank you for the opportunity to comment. We look forward to a successful relationship as we work toward the common goal of groundwater sustainability in the Madera Subbasin.

Sincerely,

JULIA BERRY
General Manager
Root Creek Water District

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ATTACHMENT 1

Root Creek Water District GSA GSP
Chapter 6

Project – RIVERSTONE DEVELOPMENT

6.3 Agricultural Land Conversion

6.3.1 Project Description
The Village of Gateway was initially conceived by Castle and Cooke and initiated discussions with the County of Madera in the early 1990's. Groundwater levels and the more recent dropping groundwater level trends was a problem and with the Madera Ranchos located in the vicinity and to the northwest of the lands proposed for development, the County of Madera established requirements for the development of land for municipal uses to balance the water supply. To this end, in 1996, the Root Creek Water District was formed with the purpose to balance the newly formed district's contribution to overdraft. The District contacted with various agencies for surface water supplies and have constructed a conveyance and distribution system to allow for the importation and delivery of surface supplies. This has allowed groundwater pumping to be lessened on the lands served by the surface water system. More recently, (in 2017) the construction and development of Riverstone (formerly the Village of Gateway) to commence. As of this date approximately 600 acres have been taken out of agricultural production and about 125 acres are occupied by residential properties. It is expected that about 100 acres will be converted annually until the 2,000 acres planned for development are built out.

6.3.2 Project Benefits
While it is understood that agriculture drives the economy of the county, urban development of agricultural lands can have a positive benefit on the water balance of an area and the county. The data for 2018 suggest that the reduction in agricultural pumping has been about 1,800 af with an associated municipal pumping demand of 186 af. The wastewater generated from the development is treated to tertiary levels and at present is recharged to offset pumping. The total recharge from treated effluent is 22 af resulting in a net demand of 164 af. The net result of these actions are a reduction in groundwater pumping of 1,636 af.

Similar results are projected to occur yearly as the development builds out and when fully completed the estimate is that the annual savings will approximate about 2,000 af/yr in reduced groundwater pumping for supply and a reclaimed water supply benefit of approximately 1,000 af/ yr for a total reduction in supply of about 3,000 af/yr or about 1.5 af/ac.

6.3.3 Measurable Objectives
The District will monitor water use of the development by use of meters both on water production as well as the wastewater flow and evaluate the efficiency of the system and means for water efficiency. When the wastewater flow is of an amount to justify the construction and use of this supply, the system will be constructed to either existing farm acreage and/or to parkway uses.

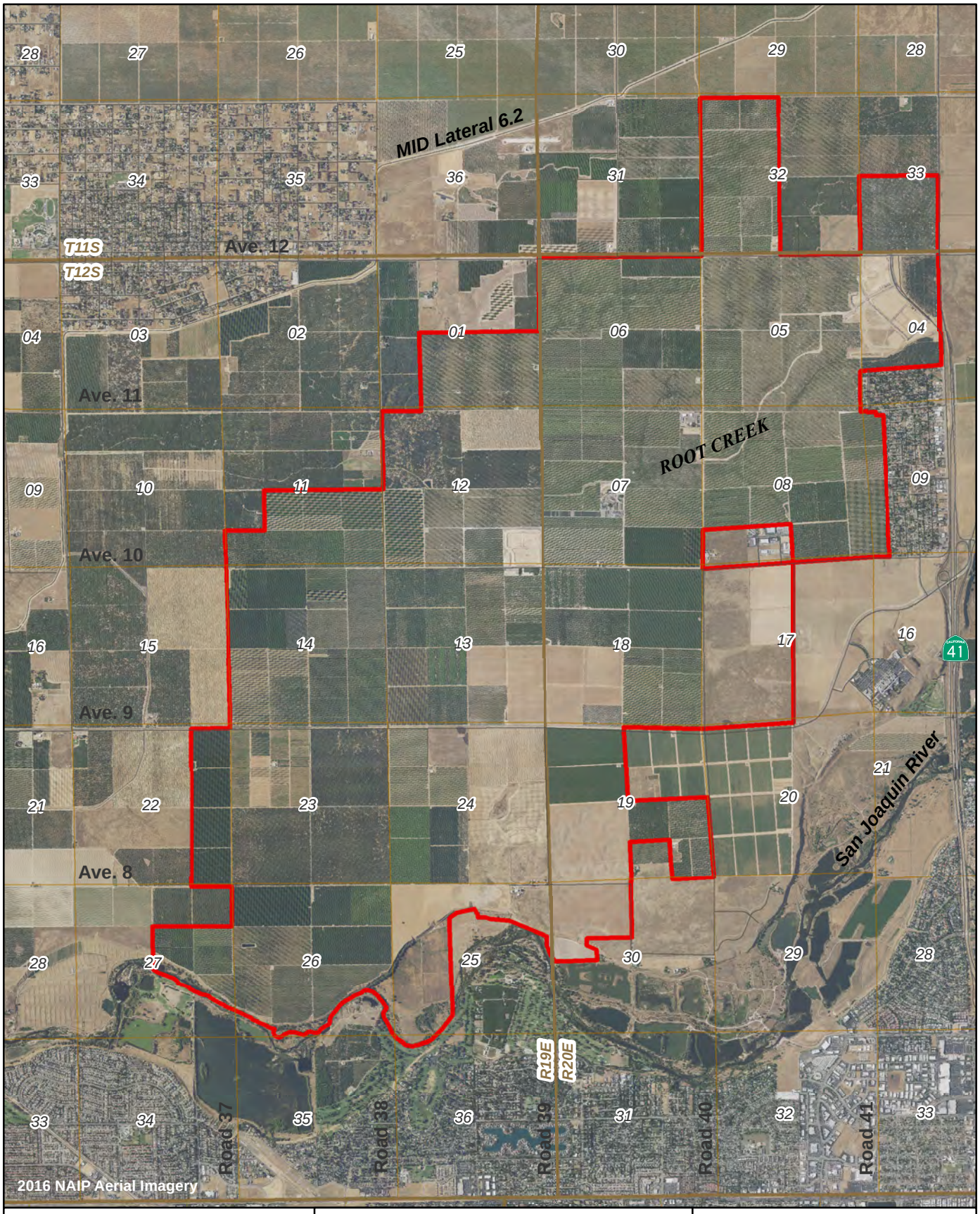
6.3.4 Circumstance for Implementation
The process has been ongoing for over 20 years and as of two years ago the development has been in the early stages of construction and development.

6.3.5 Permitting and Regulatory Process
As stated previously the permitting and regulatory process started over 25 years ago with the County of Madera with numerous studies investigations, permits by multiple agencies and ultimate approval in 2007.

6.3.6 Project Schedule
In progress

6.3.7 Legal Authority
Madera County Board of Supervisors in September 2007 adopted Ordinance 627 for the Gateway Village. An Infrastructure Master Plan was approved, and a groundwater recharge program was to be initiated to replace 3,400 AF of water on a 5-year rolling average basis within Root Creek Water District (District, RCWD or Root Creek WD). The recharge program included a combination of direct recharge via land application and in-lieu recharge.
6.3.8 Cost Estimate
Not applicable

6.3.9 Management of Groundwater Extractions and Recharge
As stated previously the groundwater extractions and wastewater flows will be monitored and compared to projections. Groundwater levels will also be monitored to understand the response to the activities and actions of the District.



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N

0 0.25 0.5 Miles

Legend

- Root Creek WD
- Township/Range
- Section

Root Creek WD

District Boundary

2/28/2018: G:\Root Creek WD-1249\GIS\Map\Basemaps\RCWD.mxd

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: 10/22/19

Submitted By: SARB JOHAL

Address: 12903 ROAD 34 3/4, MADERA, CA 93636

Phone Number / Email: (559) 917-8101

APNs:

Located in Groundwater Sustainability Agency (GSA):
☐ Madera County ☐ MID ☐ City of Madera ☐ MWD ☐ Other

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☑ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☐ Other

Chapter No. / Page No. of GSP:

Comments: HOW DO YOU PROPOSE TO CHANGE TYPES OF CROPS GROWN BY MARKET MECHANISMS?

A Nonprofit Housing and Community Development Organization

November 8, 2019

Madera Subbasin Groundwater Sustainability Agencies
Public Review Draft Joint Groundwater Sustainability Plan

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637

Submitted electronically to: MaderaGSPComments@maderacounty.com

Re: Comments/Recommendations on the Madera Draft Joint Groundwater Sustainability Plan

Dear City of Madera Groundwater Sustainability Agency, Madera County Groundwater Sustainability Agency, Madera Irrigation District Groundwater Sustainability Agency, and Madera Water District Groundwater Sustainability Agency, hereinafter referred to as Madera Groundwater Sustainability Agencies (Madera GSAs):

Self-Help Enterprises (SHE) would like to offer several comments and recommendations in response to the Madera Joint Groundwater Sustainability Plan (GSP) that was released for a 90-day public comment period on August 7, 2019. SHE is a nationally recognized community development organization whose mission is to work together with low-income families to build and sustain healthy homes and communities. To date, SHE has been assisting several communities to participate in Sustainable Groundwater Management Act (SGMA) related workshops, trainings and Groundwater Sustainability Agency (GSA) meetings. Within the Madera Subbasin, SHE has partnered with GSA staff to hold various regional SGMA workshops and conducted outreach in disadvantaged communities (DACs) in order to encourage and facilitate their participation in the development of their GSP. Additionally, SHE staff have served on the County's Advisory Committee and Domestic Well Ad Hoc committee.

The submitted comments are intended to assist Madera GSAs in developing a groundwater sustainability plan that accomplishes the following objectives:

1. Understands DACs' unique vulnerabilities and adequately addresses their drinking water needs;
2. Avoids developing groundwater management actions that cause negative impacts to drinking water supplies or cause a disparate impact on low-income communities of color; and
3. Achieves the objectives required by the GSP regulations and California's Human Right to Drinking Water (AB 685) in order to ensure the GSP adequately addresses the requirements necessary for GSP approval by the Department of Water Resources (DWR).

In 2012, California became the first state in the nation to legislatively recognize the Human Right to Water. AB 685 declares it is the policy of the state that "every human being has the right to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes." With this passage of AB 685, relevant state agencies, including the State Water Resources Control Board (SWRCB) and DWR are now required to consider this state policy when revising, adopting, or establishing policies, regulations, and grant

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criteria that may impact the uses of water for domestic purposes. These agencies must consider how state actions may impact the Human Right to Water. As such and according to 23 CCR §350.4, DWR will be considering AB 685 when reviewing and approving GSPs. Moreover, as stated in the Water Quality Frequently Asked Questions document developed by the SWRCB, which provides guidance to GSAs about the role of water quality in SGMA and the requirements of GSP regulations, a GSA "should particularly consider whether any groundwater quality constituents in the basin may impact the state's policy of protecting the right of every human being to safe, clean, affordable, and accessible water adequate for human consumption, cooking, and sanitary purposes (Water Code Section 106.3)." Therefore, GSPs that do not properly consider groundwater reliance and drinking water uses by DACs and households served by private domestic wells, or that do not effectively avoid significant and unreasonable impacts, may not be deemed adequate and may result in costly and time-consuming revisions in order to obtain approval from DWR which we all hope to avoid.

To review the Madera Joint GSP, SHE partnered with Leadership Counsel for Justice and Accountability to conduct a focused technical review of the sustainable management criteria for water levels and water quality, the proposed monitoring network, and the local water budget (hereinafter referred to as Focused Technical Review). For the remaining sections of the draft GSP, SHE conducted an independent review that focused on the description of the plan area, the current and historical groundwater conditions for water levels and water quality, the projects and management actions, and the framework for the potential domestic well mitigation program (hereinafter referred to as SHE Review). Both reviews can be found in **Attachment A**. The reviews provide detailed explanations of the draft GSP's main gaps and serve as the base of our key findings and recommendations included below.

Our key findings and recommendations also reflect concerns and suggestions provided by groundwater users who attended the Parksdale and Parkwood community GSP review workshop on November 5, 2019. Participants were asked to share their vision for sustainability and provide comments and recommendations on keys sections of the draft GSP, including the sustainable management criteria for groundwater levels and groundwater quality and potential projects and management actions.

Upon conducting these reviews, it appears that the draft GSP did not properly identify DACs and households served by domestic wells. In addition, the proposed sustainable management criteria and monitoring networks for groundwater levels and water quality appear to be inadequate to properly monitor and prevent adverse effects to these users if the subbasin is managed to these MOs/MTs. Lastly, it is unclear how the GSAs plan to inform the public about progress implementing the Plan.

For these reasons, we request that you consider the following comments and recommendations as well as direct GSA staff to work with the consulting team to thoroughly review and address our comments as a revision of the GSP.

Insufficient Identification of DACs and Households Served by Private Domestic Wells

Per SGMA, GSAs are required to develop and implement a GSP that considers the interests of all beneficial uses and users of groundwater within the subbasin, including DACs and domestic well users. Laying the foundation to properly consider the interests of all beneficial uses and users of groundwater happens by first identifying who are the users and describing their dependency on groundwater. The draft GSP section Description of Plan Area, however, does not incorporate a thorough description identifying the region's broad and diverse groundwater users and DACs' dependence on groundwater for drinking water purposes, nor does the plan include a map that captures the general distribution and characterization of domestic water supply wells and public water systems serving DACs. The draft GSP section Basin Setting also lacks important information about groundwater issues that is currently or has historically affected groundwater sources of DACs and households relying on domestic wells.

Without this information, the GSAs lack insight on the exact locations of drinking water wells that are more vulnerable to groundwater changes and potentially underestimates the effects of changes in groundwater levels and quality that may be exacerbated in specific areas by pumping volume or location, conjunctive management, or other forms of active management as part of GSP implementation. As a result, the public and DWR is not able to fully evaluate whether the interests of these beneficial uses and users have been considered per 23 CCR § 355.4; how the GSP may affect their drinking water sources per 23 CCR § 354.28; nor how the GSP may affect their Human Right to Water as required by 23 CCR §350.4. Please refer to the focused technical review (Attachment A) for more information about our analysis and for detailed recommendations by GSP section. Overall, we believe the following need to be included:

- A thorough description of DACs' and rural households dependence on groundwater for drinking water purposes, including the historical and current issues affecting drinking water sources caused by changes in water levels, plume migration, and increase of water quality degradation.
- Maps that capture the distribution and characterization of domestic water supply wells and public water systems serving DACs. Maps overlaying the location of these communities must be included in all sections of the GSP, including but not limited to maps describing the plan area, groundwater conditions, monitoring network, or potential recharge locations.
- A thorough description within Section 2.2.2.3 of all constituents of concern and most importantly those that have concentrations above the Maximum Contaminant Level (DBCP, EDB, 1,2,3-TCP, perchlorate, PCE, BTEX, uranium, and manganese) and that are shown in Appendix 2E.

Inadequate Sustainable Management Criteria (SMC) for Groundwater Levels and Water Quality

Groundwater Levels

According to the analysis contained in the Focused Technical Review, if water levels reach the proposed minimum threshold (MTs), then approximately 1,600 wells within a 1.5 mile radius of representative monitoring wells (RMWs) would be expected to be fully dewatered and an additional 330 wells would be expected to be partially dewatered. We acknowledge that this was a quick assessment of domestic well impacts; however, the results of this assessment are significantly different from the results of the domestic well impact assessment presented in the draft GSP Appendix 3D, which estimates that only 130 domestic wells[1] will be impacted by the implementation of the draft GSP. Additionally, the analysis included in the draft GSP did not fully describe or present information in a clear and transparent manner that allows the reader to understand the scope assumptions or results of the analysis and therefore appears to significantly underrepresent the potential impacts of the proposed SMCs on domestic well users.

Further, the GSP does not define the occurrence of an undesirable result (UR) until "greater than 30% of the representative monitoring sites each exceed the groundwater level minimum thresholds for the same two consecutive Fall readings" (draft GSP Section 3.4.1). Therefore, the GSP allows water levels to drop significantly across the subbasin, and allows large areas of the subbasin to fall below MTs for multiple years before the GSAs are required to take significant actions to stabilize water levels. Given that the subbasin is in critical overdraft, the proposed SMCs may be overlooking and neglecting the risks imposed on drinking water users and could create a disproportionate impact on already vulnerable communities, particularly those that rely on domestic wells and have limited financial resources.

Water Quality

The draft GSP identifies nitrate, total dissolved solids, and arsenic as contaminants of concern (COCs) and established SMCs for these constituents. However, Appendix 2E includes maps of other constituents that have concentrations above the MCLs (DBCP, EDB, 1,2,3-TCP, perchlorate, PCE, BTEX, uranium, and manganese).

[1] Appendix 3 D identifies the count of impacted domestic wells as 120 in one location and 130 in another location.

Because these constituents are present above MCLs and because they present a clear risk to drinking water beneficial users of the subbasin and thus do not represent sustainable conditions, the GSAs should include these constituents in its monitoring program and establish MOs and MTs for these constituents.

While we appreciate that a temporary domestic well mitigation program is under consideration to address water level declines that are expected to occur during the GSP implementation period, the draft GSP does not, however, provide sufficient information about the impact assessment and the domestic well mitigation program. Without this information, the public cannot assess the adequacy of the mitigation program to address the needs of the communities or provide productive and meaningful comments on such a plan. Moreover, the proposed domestic well mitigation program does not include any consideration to address water quality degradation.

Lastly, participants at the Parksdale community GSP review workshop expressed that, even though rural domestic and small water system demand do not contribute substantially to the overdraft conditions, the risks imposed on these groundwater users are significant and unreasonable, creating a disproportionate impact on already vulnerable communities. Participants stressed the importance of preserving drinking water supplies for shallow domestic well users, small farmers, and for future generations. In regards to groundwater quality, residents explained that some water providers are already having ongoing water quality challenges and that the GSA should, therefore, prioritize protecting water quality to further prevent public health impacts. In terms of recommendations, participants would like more protective thresholds for groundwater levels near vulnerable groundwater users. They also recommended that the SMCs for groundwater quality cover all contaminants of concern for public health and that the Madera GSAs work together to avoid any further degradation of the water quality. Lastly, residents appreciated Madera GSAs considering a well mitigation program, as this addresses interim solutions for drinking water users in need of dry well remediation. Additionally, residents were concerned with how the program might be funded and encourage the GSA to avoid offering loans to support low-income families with replacing their dry, or contaminated wells. They would like the GSAs to seek public funding and exempt residents from paying into the fund. The need for the availability of a water quality monitoring program to monitor COCs was also voiced.

For these reasons and given our involvement at several Madera Subbasin GSA meetings, SHE is proposing various recommendations on the SMC for water levels and water quality and their respective monitoring network in order to protect the human right to safe and affordable water. Please refer to the focused technical review (Attachment A) for more information about our analysis and for detailed recommendations by GSP section. Overall, our key recommendations include the following:

- Reconsider the approach to set SMCs (minimum thresholds, measurable objectives, and undesirable results). The revision of the SMCs should be based off a robust drinking water well impact assessment that provides information about: 1) what communities are most affected (including DACs) by water levels decline, water quality degradation, and plume movement, 2) where the likely impacted wells are located, 3) an estimate of the size of the population that relies on these domestic wells, 4) if the creation of a new or expanded community water system could address some or all of the population affected by the loss of domestic wells, and 5) potential impacts to groundwater gradients at the proposed MOs and MTs and how that could affect water quality for drinking water users. Ensure that the analysis is described and presented in a clear and transparent manner sufficient for the reader to understand the scope assumptions and result of the assessment.
- Include and set SMCs for all constituents of concern and most importantly those that have concentrations above the Maximum Contaminate Level (DBCP, EDB, 1,2,3-TCP, perchlorate, PCE, BTEX, uranium, and manganese) and that are shown in Appendix 2E.
- Provide more specific and clearer details about the domestic well mitigation plan. Key considerations for establishing such a program are provided in Attachment A, under SHE review.

Limited Monitoring Network Coverage for drinking water users.

As required by 23 CCR § 354.34, DWR will evaluate the ability to properly monitor impacts to the beneficial uses or users of groundwater. However, based on the information presented in the draft GSP, it is not clear how representative the monitoring network is for domestic well users and DACs. The focused technical review indicates that that current monitoring network for water levels lacks adequate coverage for roughly 2,700 domestic wells, including those in the communities of Fairmead and Chowchilla (both DACs), Storey, Lake Madera Country Estates, and the area north of Madera. It also appears that limited monitoring of water quality will be conducted in areas with high densities of domestic well users. The GSP should therefore explain how the proposed monitoring network is adequate to monitor conditions for sensitive beneficial users, in particular for Fairmead, Chowchilla, Storey, Lake Madera Country Estates, and the area north of Madera, including areas with high densities of domestic well users. When assessing the monitoring network data gaps, the GSP should consider the locations of beneficial users, including DACs, small water systems, and domestic wells. For detailed comments and recommendations, please refer to the focused technical review.

Inadvertent Risks on Water Quality from Projects and Management Actions

Even though it is acknowledged in the draft GSP that additional percolation of water on agricultural lands can affect movement of nitrates or other constituents into groundwater, it is unclear if these proposed projects will include precautions of groundwater quality degradation such as water quality monitoring and mitigation strategies. Given that even relatively unpolluted water used for recharge, such as most purchased water or streamflow, may contain constituents of concern, GSAs must consider potential impacts to water quality when planning groundwater recharge projects[2]. The draft GSP should provide more information regarding how the risks of inadvertent drinking water impacts associated with management actions and projects, in particular on-farm recharge projects, will be evaluated and monitored as a part of each identified project and management action. For detailed comments and recommendations for specific projects and management actions, please refer to the SHE review.

Effective Public Engagement

Effective public engagement is extremely important during plan development and implementation. Based on the information presented in section 2.1.5 and Appendix 2 of the draft GSP, it is unclear how the GSAs plan to inform the public about progress implementing the Plan. Per 23 CCR § 354.10, the GSP should include and describe the methods the Agency shall follow to inform the public about progress implementing the Plan, including the status of projects and actions. When developing such a strategy, Madera GSAs should develop recommendations to improve public participation during GSP implementation based on an evaluation of the success and constraints encountered during the GSP development phase. Key considerations for establishing effective outreach and engagement strategies for DACs are provided in Appendix A, under SHE review.

Moreover, given the significant non-English-speaking population, Madera GSAs should consider developing a more formalized translation policy to fund appropriate and effective outreach strategies to engage DAC residents, private domestic wells users and others. At a minimum, Madera GSAs should account for DAC outreach, engagement and translation services when establishing and approving operating budgets, enacting groundwater fees and applying for state funding.

Lastly, the draft GSP should include the outreach and engagement recommendations provided by participants at the Parksdale GSP Review workshop. Participants provided recommendations that include: shifting GSA and Advisory Committee meeting times to the evening (i.e. 6:00 P.M.) with consideration of residents' travel. It would also be helpful to share more information about their local GSAs and appropriately include residents in discussions about proposed rate increases.

---

[2] State Water Boards, Water Quality Frequently Asked Questions document: https://www.waterboards.ca.gov/water_issues/programs/gmp/docs/sgma/sgma_water_quality_faq.pdf

In closing, we would like to reiterate our commitment to working with you, GSA staff, and the consulting team to ensure that the Madera Joint GSP properly protects the drinking water sources of the most vulnerable, and often underrepresented, groundwater users within the subbasin.

Please let us know if you have any questions or wish to discuss our comments and recommendations further.

Sincerely,

Tom Collishaw
President/CEO

Attachments

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP) COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: November 8, 2019

Submitted By: San Joaquin River Exchange Contractors GSA

Address: 541 H Street, P.O. Box 2115, Los Banos, CA 93635

Phone Number / Email: 209-827-8616/cwhite@sjrecwa.net

APNs: _____

Located in Groundwater Sustainability Agency (GSA):
☐ Madera County ☐ MID ☐ City of Madera ☐ MWD **[x]** Other SJREC GSA

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member **[x]** Agency/Government ☐ Other _____

Chapter No. / Page No. of GSP:

Comments:

The SJREC GSA, representing two public water agencies, two mutual water companies, six disadvantaged communities and county white areas, include our comments in the attached letter.

Chapter No. / Page No. of GSP:

Comments:

Chapter No. / Page No. of GSP:

Comments:

Chapter No. / Page No. of GSP:

Comments:

SAN JOAQUIN RIVER EXCHANGE CONTRACTORS
GROUNDWATER SUSTAINABILITY AGENCY
Post Office Box 2115
Los Banos, CA 93625
(209) 827-8616

November 8, 2019

Stephanie Anagnoson
Madera Subbasin GSP
Madera County
200 W. Fourth Street
Madera, CA 93637

RE: ***Comments on the Draft Madera Subbasin Groundwater Sustainability Plan***

Dear Stephanie:

The San Joaquin River Exchange Contractors Groundwater Sustainability Agency (SJREC GSA) has reviewed the draft GSP for the Madera Subbasin. Additionally, the SJREC GSA participated in workshops between the Delta-Mendota Subbasin and the Madera Subbasin. The purpose of these workshops was to review groundwater conditions along our shared basin boundary and evaluate the draft proposed Sustainable Management Criteria and potential impacts to our adjacent subbasin. Included herein are comments from the SJREC GSA.

1. The GSP relies too heavily on a numerical groundwater model that has not been calibrated and therefore does not accurately reflect current and future boundary conditions with the Delta-Mendota Subbasin.

2. For the storage change calculations in the unconfined or upper aquifer, instead of over reliance on the water budget, a better method is evaluating unconfined water-level changes and specific yields. For the confined or lower aquifer, compaction of fine-grained layers, as reflected by the amount of land subsidence, is a better approach.

3. The groundwater flow estimates were developed from the groundwater model, which is not the preferred approach. This approach relies on values for a multitude of parameters, some of which are poorly known. The preferred approach is to use suitable water-level elevation maps and transmissivity values from pump tests for both the upper and lower aquifer.

4. Subsidence - The plan asserts in Sections 3.2.3 and 3.3.3.1 that "No significant impacts to infrastructure has been noted in the Plan area..." and therefore the Land Subsidence analysis and proposed actions were minimized. However, there was no discussion of the subsidence along the Eastside Bypass which the California Department of Water Resources has determined the flood carrying capacity has been significantly decreased by about 50% in the area near the Fresno River, nor the collapsed wells due to subsidence in the vicinity due to subsidence.

5. The Madera GSP should be updated to mitigate land subsidence in the areas closest to the Delta-Mendota Subbasin. A successful mitigation program is being implemented by the Triangle T Water District in cooperation with the member agencies of the SJREC GSA. Other areas in the western Madera County should be held to a similar standard and immediately reduce extractions from the lower aquifer at or below the sustainable yield.

6. The "net groundwater flow" (one value) should be divided into flow at each of the three sub-basin boundaries, also between the upper and lower aquifers in each case. As presented, one cannot readily check the groundwater flow value. There is also downward groundwater flow throughout most of the subbasin (from the upper aquifer to the lower aquifer). This also needs to be determined but wasn't discussed in the plan.

7. The GSP for the Exchange Contractor GSA calls for keeping water levels in the future from declining below 2015 levels. In contrast, the GSP for the Madera Subbasin allows continuing water level declines through almost 2040. This will result in more groundwater outflow from the Delta Mendota Subbasin into the Madera Subbasin which will negatively impact our subbasin.

8. Your plan sets the minimum thresholds for Chronic Lowering of Groundwater Levels, and provides for the continued lowering of groundwater levels through almost 2040. As defined, this poses an immediate risk to the SJREC GSA and the Delta-Mendota Subbasin. Intentional decline in water levels in the Madera Subbasin will directly impact the Delta-Mendota Subbasins infrastructure, water supply, and the following sustainability indicators: a) chronic lowering of groundwater levels, b) reduction of groundwater storage, c) land subsidence, and d) degraded water quality.
    a. Chronic lowering of groundwater levels: the SJREC GSP is managing groundwater levels to maintain historic levels. If the Madera Subbasin intends to lower the water levels across the subbasin boundary, inherently more groundwater

will flow out of the Delta-Mendota Subbasin inducing a groundwater imbalance and overdraft in the Delta-Mendota Basin.

b. Reduction of groundwater storage: As described above lowering water levels will increase the lateral groundwater outflow from the Delta-Mendota Subbasin. The results of increased outflow will result in a reduction in groundwater storage in the Delta-Mendota Subbasin.
c. Land subsidence: this GSP fails to identify and address the subsidence occurring along the East Side Bypass and near the Delta-Mendota Subbasin.
d. Degraded water quality: Lowering water levels in the Madera Subbasin will exacerbate the problem of migrating high TDS water into the SJREC GSA. This problem is not discussed in the GSP and should be evaluated to ensure regional sustainability.

9. This GSP did not include a regional water quality concern of the northeasterly flow of high TDS groundwater associated with overdraft in the Madera Subbasin. Declining water levels in the upper aquifer of the Madera Subbasin has increased the migration of high TDS groundwater into the Delta-Mendota Subbasin.

10. There has consistently been groundwater flows in both the upper and lower aquifers from the Delta-Mendota Subbasin to the Madera Subbasin. Based on natural (pre-pumping) conditions, all of these flows have been induced by pumping in the Madera Subbasin.

This letter serves as a continuation of the regional coordination the SJREC GSA has pursued with neighboring subbasins and GSP's adjacent to the Delta-Mendota Subbasin. Please feel free to contact us with any questions or concerns you have so we can collectively and collaboratively manage our groundwater sustainability in the future.

Sincerely yours,

Chris White,
Executive Director

MADERA SUBBASIN GROUNDWATER SUSTAINABILITY PLAN (GSP)
COMMENT FORM

Please complete the following information to provide comments on the draft Madera Subbasin GSP. Type or print legibly for your comments to be considered.

Please return this form to (hand delivery, mail, or email accepted):

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com

Date Submitted: 11/8/2019

Submitted By: Ruthie Redmond, The Nature Conservancy

Address: 555 Capitol Mall, Ste. 1290 Sacramento, CA 95814

Phone Number / Email: Ruthie.Redmond@tnc.org

APNs: _____

Located in Groundwater Sustainability Agency (GSA):
☐ Madera County ☐ MID ☐ City of Madera ☐ MWD ☒ Other _____

Affiliation: ☐ Irrigated Ag ☐ Non-Irrigated Ag ☐ Rural Residential
☐ Disadvantaged Community Member ☐ Agency/Government ☒ Other The Nature Conservancy

Chapter No. / Page No. of GSP: Please see attached comments.

Comments: _____

The Nature Conservancy
Protecting nature. Preserving life.

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nature.org
GroundwaterResourceHub.org

8 November 2019

Stephanie Anagnoson, Director
Water and Natural Resources Department
Madera County
200 W. Fourth Street
Madera, CA 93637

Submitted via email: MaderaGSPComments@maderacounty.com

Re: Madera Subbasin Groundwater Sustainability Plan (GSP)

Dear Ms. Anagnoson,

The Nature Conservancy (TNC) appreciates the opportunity to comment the Joint GSP for the Madera Subbasin, being prepared under the Sustainable Groundwater Management Act (SGMA).

TNC as a Stakeholder Representative for the Environment

TNC is a global, nonprofit organization dedicated to conserving the lands and waters on which all life depends. We seek to achieve our mission through science-based planning and implementation of conservation strategies. For decades, we have dedicated resources to establishing diverse partnerships and developing foundational science products for achieving positive outcomes for people and nature in California. TNC was part of a stakeholder group formed by the Water Foundation in early 2014 to develop recommendations for groundwater reform and actively worked to shape and pass SGMA.

Our reason for engaging is simple: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. SGMA must be successful for us to achieve a sustainable future, in which people and nature can thrive within the Madera County Groundwater Sustainability region and California.

We believe that the success of SGMA depends on bringing the best available science to the table, engaging all stakeholders in robust dialog, providing strong incentives for beneficial outcomes and rigorous enforcement by the State of California.

Given our mission, we are particularly concerned about the inclusion of nature, as required, in GSPs. The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at GroundwaterResourceHub.org. Some of these tools have been used in the preparation of the present draft plan. Additional resources are available and referred to in the comments that follow, and are considered pertinent to the development of this plan.

Addressing Nature's Water Needs *in GSPs*

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2).

The GSP Regulations include specific requirements to identify and consider groundwater dependent ecosystems (23 CCR §354.16(g)) when determining whether groundwater conditions are having potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses, which include environmental uses, such as plants and animals. In addition, monitoring networks should be designed to detect potential adverse impacts to beneficial uses due to groundwater. Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decision, and using data collected through monitoring to revise decisions in the future. Over time, GSPs should improve as data gaps are reduced and uncertainties addressed.

To help ensure that GSPs adequately address nature as required under SGMA, The Nature Conservancy has prepared a checklist (Attachment A) for GSAs and their consultants to use. The Nature Conservancy believes the following elements are foundational for 2020 GSP submittals. For detailed guidance on how to address the checklist items, please also see our publication, *GDEs under SGMA: Guidance for Preparing GSPs*[1].

1. Environmental Representation

SGMA requires that groundwater sustainability agencies (GSAs) consider the interests of all beneficial uses and users of groundwater. To meet this requirement, we recommend actively engaging environmental stakeholders by including environmental representation on the GSA board, technical advisory group, and/or working groups. This could include local staff from state and federal resource agencies, nonprofit organizations and other environmental interests. By engaging these stakeholders, GSAs will benefit from access to additional data and resources, as well as a more robust and inclusive GSP.

2. Basin GDE and ISW Maps

SGMA requires that groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISWs) be identified in the GSP. We recommend using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online[2] by the Department of Water Resources (DWR) as a starting point for the GDE map. The NC Dataset was developed through a collaboration between DWR, the Department of Fish and Wildlife and TNC.

3. Potential Effects on Environmental Beneficial Users

SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. In addition to identifying GDEs in the basin, The Nature Conservancy recommends identifying beneficial users of surface water, which include environmental users. This is a critical step, as it is impossible to define "significant and unreasonable adverse impacts" without knowing *what* is being impacted. For your

[1] GDEs under SGMA: Guidance for Preparing GSPs is available at: https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf

[2] The Department of Water Resoruces' Natural Communities Commonly Associated with Groundwater dataset is available at: https://gis.water.ca.gov/app/NCDatasetViewer/

convenience, we've provided a list of freshwater species within the boundary of the Madera Subbasin in Attachment C. Our hope is that this information will help your GSA better evaluate the impacts of groundwater management on environmental beneficial users of surface water. We recommend that after identifying which freshwater species exist in your basin, especially federal and state listed species, that you contact staff at the Department of Fish and Wildlife (DFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the GSA's freshwater species list. We also refer you to the Critical Species Lookbook[3] prepared by The Nature Conservancy and partner organizations for additional background information on the water needs and groundwater reliance of critical species. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs.

4. Biological and Hydrological Monitoring

If sufficient hydrological and biological data in and around GDEs is not available in time for the 2020/2022 plan, data gaps should be identified along with actions to reconcile the gaps in the monitoring network.

The Nature Conservancy has thoroughly reviewed the Madera Draft GSP and appreciates the work that has gone into the preparation of this plan. Specifically, we recognize the use of the NC dataset, GDE Pulse, and other TNC guidance for initial identification and evaluation of GDE areas in the basin. However, we believe that additional work is needed for further identification and analysis of GDEs and ISWs. Hence, we consider the current GSP draft to be incomplete under SGMA.

Our specific comments related to the Madera Subbasin Groundwater Sustainability Plan are provided in detail in Attachment B and are in reference to the numbered items in Attachment A. Attachment C provides a list of the freshwater species located in the Madera Subbasin. Attachment D describes six best practices that GSAs and their consultants can apply when using local groundwater data to confirm a connection to groundwater for DWR's Natural Communities Commonly Associated with Groundwater Dataset[2].

Thank you for fully considering our comments as you develop your GSP.

Best Regards,

Sandi Matsumoto
Associate Director, California Water Program
The Nature Conservancy

[3] Available online at: https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/

Attachment A

Considering Nature under SGMA: A Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this checklist. Following this checklist does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State Water Resources Control Board.

GSP Plan Element*		GDE Inclusion in GSPs: Identification and Consideration Elements	Check Box
Admin Info	2.1.5 Notice & Communication *23 CCR §354.10*	Description of the types of environmental beneficial uses of groundwater that exist within GDEs and a description of how environmental stakeholders were engaged throughout the development of the GSP.	1
Planning Framework	2.1.2 to 2.1.4 Description of Plan Area *23 CCR §354.8*	Description of jurisdictional boundaries, existing land use designations, water use management and monitoring programs; general plans and other land use plans relevant to GDEs and their relationship to the GSP.	2
		Description of instream flow requirements, threatened and endangered species habitat, critical habitat, and protected areas.	3
		Summary of process for permitting new or replacement wells for the basin, and how the process incorporates any protection of GDEs	4
Basin Setting	2.2.1 Hydrogeologic Conceptual Model *23 CCR §354.14*	Basin Bottom Boundary: Is the bottom of the basin defined as at least as deep as the deepest groundwater extractions?	5
		Principal aquifers and aquitards: Are shallow aquifers adequately described, so that interconnections with surface water and vertical groundwater gradients with other aquifers can be characterized?	6
		Basin cross sections: Do cross-sections illustrate the relationships between GDEs, surface waters and principal aquifers?	7
	2.2.2 Current & Historical Groundwater Conditions *23 CCR §354.16*	Interconnected surface waters:	8
		Interconnected surface water maps for the basin with gaining and losing reaches defined (included as a figure in GSP & submitted as a shapefile on SGMA portal).	9
		Estimates of current and historical surface water depletions for interconnected surface waters quantified and described by reach, season, and water year type.	10
		Basin GDE map included (as figure in text & submitted as a shapefile on SGMA Portal).	11

		If NC Dataset *was* used:	Basin GDE map denotes which polygons were kept, removed, and added from NC Dataset (Worksheet 1, can be attached in GSP section 6.0).	12
			The basin's GDE shapefile, which is submitted via the SGMA Portal, includes two new fields in its attribute table denoting: 1) which polygons were kept/removed/added, and 2) the change reason (e.g., why polygons were removed).	13
			GDEs polygons are consolidated into larger units and named for easier identification throughout GSP.	14
		If NC Dataset *was not* used:	Description of why NC dataset was not used, and how an alternative dataset and/or mapping approach used is best available information.	15
		Description of GDEs included:		16
		Historical and current groundwater conditions and variability are described in each GDE unit.		17
		Historical and current ecological conditions and variability are described in each GDE unit.		18
		Each GDE unit has been characterized as having high, moderate, or low ecological value.		19
		Inventory of species, habitats, and protected lands for each GDE unit with ecological importance (Worksheet 2, can be attached in GSP section 6.0).		20
	2.2.3 Water Budget *23 CCR §354.18*	Groundwater inputs and outputs (e.g., evapotranspiration) of native vegetation and managed wetlands are included in the basin's historical and current water budget.		21
		Potential impacts to groundwater conditions due to land use changes, climate change, and population growth to GDEs and aquatic ecosystems are considered in the projected water budget.		22
Sustainable Management Criteria	3.1 Sustainability Goal *23 CCR §354.24*	Environmental stakeholders/representatives were consulted.		23
		Sustainability goal mentions GDEs or species and habitats that are of particular concern or interest.		24
		Sustainability goal mentions whether the intention is to address pre-SGMA impacts, maintain or improve conditions within GDEs or species and habitats that are of particular concern or interest.		25
	3.2 Measurable Objectives *23 CCR §354.30*	Description of how GDEs were considered and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.		26
	3.3 Minimum Thresholds *23 CCR §354.28*	Description of how GDEs and environmental uses of surface water were considered when setting minimum thresholds for relevant sustainability indicators:		27
		Will adverse impacts to GDEs and/or aquatic ecosystems dependent on interconnected surface waters (beneficial user of surface water) be avoided with the selected minimum thresholds?		28
		Are there any differences between the selected minimum threshold and state, federal, or local standards relevant to the species or habitats residing in GDEs or aquatic ecosystems dependent on interconnected surface waters?		29
	3.4 Undesirable Results *23 CCR §354.26*	For GDEs, hydrological data are compiled and synthesized for each GDE unit:		30
		If hydrological data *are available* within/nearby the GDE	Hydrological datasets are plotted and provided for each GDE unit (Worksheet 3, can be attached in GSP Section 6.0).	31
			Baseline period in the hydrologic data is defined.	32

			GDE unit is classified as having high, moderate, or low susceptibility to changes in groundwater.	33
			Cause-and-effect relationships between groundwater changes and GDEs are explored.	34
		If hydrological data *are not available* within/nearby the GDE	Data gaps/insufficiencies are described.	35
			Plans to reconcile data gaps in the monitoring network are stated.	36
		For GDEs, biological data are compiled and synthesized for each GDE unit:		37
		Biological datasets are plotted and provided for each GDE unit, and when possible provide baseline conditions for assessment of trends and variability.		38
		Data gaps/insufficiencies are described.		39
		Plans to reconcile data gaps in the monitoring network are stated.		40
		Description of potential effects on GDEs, land uses and property interests:		41
		Cause-and-effect relationships between GDE and groundwater conditions are described.		42
		Impacts to GDEs that are considered to be "significant and unreasonable" are described.		43
		Known hydrological thresholds or triggers (e.g., instream flow criteria, groundwater depths, water quality parameters) for significant impacts to relevant species or ecological communities are reported.		44
		Land uses include and consider recreational uses (e.g., fishing/hunting, hiking, boating).		45
		Property interests include and consider privately and publicly protected conservation lands and opens spaces, including wildlife refuges, parks, and natural preserves.		46
Sustainable Management Criteria	3.5 Monitoring Network *23 CCR §354.34*	Description of whether hydrological data are spatially and temporally sufficient to monitor groundwater conditions for each GDE unit.		47
		Description of how hydrological data gaps and insufficiencies will be reconciled in the monitoring network.		48
		Description of how impacts to GDEs and environmental surface water users, as detected by biological responses, will be monitored and which GDE monitoring methods will be used in conjunction with hydrologic data to evaluate cause-and-effect relationships with groundwater conditions.		49
Projects & Mgmt Actions	4.0. Projects & Mgmt Actions to Achieve Sustainability Goal *23 CCR §354.44*	Description of how GDEs will benefit from relevant project or management actions.		50
		Description of how projects and management actions will be evaluated to assess whether adverse impacts to the GDE will be mitigated or prevented.		51

* In reference to DWR's GSP annotated outline guidance document, available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GD_GSP_Outline_Final_2016-12-23.pdf

Attachment B

TNC Evaluation of the Madera Subbasin Groundwater Sustainability Plan

This attachment summarizes our comments on the complete public draft GSP for the Madera Subbasin. TNC previously submitted comments on early drafts of Chapters 1 and 2 of the GSP in a letter dated 1 July 2019. Where these comments have not yet been addressed, they are repeated here. Comments are provided in the order of the checklist items included as Attachment A.

Checklist Item 1 - Notice & Communication (23 CCR §354.10)

[Section 2.1.5.2 Description of Beneficial Uses and Users (p. 2-20)]

- In Table 2-5 (p. 2-21), please expand the stakeholder list associated with the Environmental and Ecosystem Uses category to include the appropriate agencies and list of environmental groups. Although environmental agencies and environmental groups are listed as one of the beneficial users of groundwater in the Subbasin, no specific uses are given.
- The types and locations of environmental uses, species and habitats supported, and the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin should be specified. To identify environmental users, please refer to the following:
    - Natural Communities Commonly Associated with Groundwater dataset (NC Dataset) - https://gis.water.ca.gov/app/NCDatasetViewer/
    - The list of freshwater species located in the Madera Subbasin in Attachment C of this letter. Please take particular note of the species with protected status.
    - Lands that are protected as open space preserves, habitat reserves, wildlife refuges, etc. or other lands protected in perpetuity and supported by groundwater or interconnected surface waters should be identified and acknowledged.

Checklist Items 2 to 4 - Description of general plans and other land use plans relevant to GDEs and their relationship to the GSP (23 CCR §354.8)

[Section 2.1.1 Summary of Jurisdictional Areas and Other Features (p. 2-1)]

- The GSP states "The Madera Subbasin … contains no considerable state land or federal land" and provides a brief description of these lands as a footnote. Other than State preserves and parks, protected lands that could contain aquatic, riparian, and other potentially groundwater-dependent habitat are not identified. Please identify all state park land, wildlife preserves, wetlands, open space, mitigation areas, and local parks with potentially groundwater-connected aquatic resources and habitat.

[Section 2.1.2 Water Resources Monitoring and Management Programs (p. 2-8)]

- Per the GSP Regulations (23 CCR §354.34), monitoring must address trends in groundwater *and related surface conditions*. For this section to provide the appropriate context and help assure integration of GSP implementation with other ongoing regulatory programs, please describe jurisdictions related to aquatic resources, interconnected surface waters (ISWs), instream flow requirements, and groundwater-dependent ecosystems (GDEs) that could be affected by groundwater withdrawals.

[Section 2.1.2.2 Surface Water Monitoring and Management Programs (p. 2-9 to 2-11]

- The GSP states (p. 2-10): "Limitations on surface water deliveries will limit operational flexibility by reducing surface water supplies available for conjunctive use programs." The limitations are not defined and warrant further description, either in this section or in Section 2.1.2.4, to more specifically identify potential effects on the flows of interconnected surface waters and potential stress to the groundwater system. Please ensure that description of the surface water monitoring system clarifies the limitations and please specify whether these limitations could affect the surface water conditions of any GDEs or instream habitat in ISWs that may be present in the area.
- This section describes the types of monitoring performed by federal, state and local entities of surface water inflows and outflows. The monitoring stations for flows are listed in Table 2-3 and other recording stations for flow or irrigation releases are listed in Table 2-4. Please explain the relationship of existing stream flow monitoring to the protection of ISWs and GDEs.

[Section 2.1.3.1 Madera County General Plan (p. 2-14 to 2-15)]

- The Madera County General Plan includes restrictions on development in "areas with sensitive environmental resources" (Policy 1.A.5). This section should include a discussion of General Plan goals and policies related to the protection and management of GDEs and aquatic resources that could be affected by groundwater withdrawals. Please include a discussion of how implementation of the GSP may affect and be coordinated with General Plan policies and procedures regarding the protection of wetlands, aquatic resources and other GDEs and ISWs.
- This section should identify Habitat Conservation Plans (HCPs) or Natural Community Conservation Plans (NCCPs) within the Subbasin and if they are associated with critical, GDE or ISW habitats. Please identify all relevant HCPs and NCCPs within the Subbasin and address how GSP implementation will coordinate with the goals of these HCPs or NCCPs.
- Please refer to the Critical Species Lookbook[4] to review and discuss the potential groundwater reliance of critical species in the basin. Please include a discussion

[4] Available online at: https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/

regarding the management of critical habitat for these aquatic species and its relationship to the GSP.

[Section 2.1.3.3 Permitting Process for Wells in Madera Subbasin (p. 2-16)]

- Madera County has an online well permitting system that includes agricultural wells, observation/monitoring wells, community water supply wells, and individual domestic water supply wells. Please include a discussion of how future well permitting will be coordinated with the GSP to assure achievement of the sustainability goals.
- The State Third Appellate District recently found that Counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near streams with public trust uses (ELF vs. SWRCB and Siskiyou County, No. C083239). Compliance of well permitting programs with this requirement should be stated in the GSP.

<u>Checklist Items 5, 6, and 7 – Hydrogeologic Conceptual Model (23 CCR §354.14)</u>

[Section 2.2.1.2 Lateral and Vertical Subbasin Boundaries (p. 2-27)]

- In the Madera Subbasin, the base of the usable aquifer corresponds with the base of fresh water, defined as having "total dissolved solids of less than 1,000 milligrams/liter (mg/L) or conductivity of less than 1,600 umhos/cm." The text states, "In general, the aquifer base is controlled mostly by the base of freshwater provided in Figure 2-18 except in the far eastern portions of the subbasin" where the depth of the basement complex is shallower. As noted on page 9 of DWR's Hydrogeologic Conceptual Model BMP (https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf) "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions." Thus, groundwater extraction well depth data should also be included in the determination of the basin bottom. Properly defining the bottom of the basin will prevent the possibility of extractors with wells deeper than the basin boundary from claiming exemption from SGMA due to their well residing outside the vertical extent of the basin boundary.

[Section 2.2.1.3 Major Aquifers/Aquitards (p. 2-27)]

- The cross sections in Chapter 2 (Figures 2-24 through 2-34) show the base of freshwater and the top of the basement rocks. However, they do not include a graphical representation of the manner in which shallow groundwater may interact with ISWs or GDEs that would allow the reader to understand this topic. Please include an example near-surface cross section that depicts the conceptual understanding of shallow or perched stream, riparian and other GDE interactions at different locations.

- The extent and depth of the Corcoran Clay layer is shown in Figure 2-15. "Where the Corcoran Clay aquitard exists, the aquifer system is subdivided into an upper unconfined aquifer above the Corcoran Clay and a lower confined aquifer below the Corcoran Clay. In the central and eastern portions of the subbasin where the Corcoran Clay does not exist, the aquifer system is generally considered to be semi-confined with discontinuous clay layers interspersed with more permeable coarse-grained units" (p. 2-29). Please confirm that only wells with screened intervals in the unconfined aquifer are being used to compare with surface water and to identify and confirm potential GDEs.

<u>Checklist Items 8, 9, and 10 – Interconnected Surface Waters (ISW) (23 CCR §354.16)</u>

[Section 2.2.2.5 Groundwater - Surface Water Interaction (p. 2-40)]

- Figures 2-71 and 2-72 present depth to shallow groundwater for 2014 and 2016. Please further describe how these figures were developed, specifically noting the following best practices for developing depth to groundwater contours presented in Attachment D. Ensure that the first step is contouring groundwater elevations, and the subtracting this layer from land surface elevations from a DEM to estimate depth to groundwater contours across the landscape. This will provide much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make.
- The text states (p. 2-40): "A review of historical regional aquifer groundwater levels compared to stream thalweg (deepest portion of stream channel) elevations conducted for this study indicate that surface water – groundwater interactions are not a significant issue (i.e., regional groundwater levels are relatively far below creek thalweg elevations) along Berenda Creek, Dry Creek, the Fresno River, and Cottonwood Creek in Madera Subbasin." Please note that ISWs are best estimated by first determining which reaches are completely disconnected from groundwater. This approach would involve comparing groundwater elevations with a land surface Digital Elevation Model that could identify which surface waters have groundwater consistently below surface water features, such that an unsaturated zone would separate surface water from groundwater. Groundwater elevations that are always deeper than 50 feet below the land surface can be used to identify the above ground reaches as disconnected surface waters. As shown in Figures 2-71 and 2-72, depth to groundwater is greater than 100 feet in 2014 and 2016 across much of the Subbasin. However, areas in upstream reaches of the Fresno River and San Joaquin River show depths to groundwater within 20-30 feet in 2014. Please provide further evidence, such as cross-sections or corresponding hydrographs, to show the relationship between the river channel and the depth to groundwater at wells near the Fresno River and San Joaquin river to improve ISW mapping. Where data gaps exist regarding the existence of ISWs, make plans to reconcile them in the Monitoring section.

- The regulations [23 CCR §351(o)] define interconnected surface waters as "surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted". "At any point" has both a spatial and temporal component. Even short durations of interconnections of groundwater and surface water can be crucial for surface water flow and supporting environmental users of groundwater and surface water. ISWs can be either gaining or losing. The defining feature of disconnected surface waters is that groundwater is consistently below surface water features such that an unsaturated zone always separates surface water from groundwater, not whether the reach is gaining or losing. To improve ISW mapping, please reconcile data gaps (shallow monitoring wells, stream gauges, and nested/clustered wells) along surface water features in the Monitoring Network section of the GSP.
- The GSP states (p. 2-41): "It is likely that seepage from the San Joaquin River is the source of water combined with the presence of shallow clay layers, which serves to maintain shallow groundwater levels at these locations." Please provide estimates of current and historical surface water depletions for the San Joaquin River, quantified and described by reach, season, and water year type. Provide a discussion of the expected effect of the SJRRP on flows, GDEs and ISWs along the San Joaquin River.

<u>Checklist Items 11 to 15, Identifying and Mapping GDEs (23 CCR §354.16)</u>

[Section 2.2.2.6 Groundwater Dependent Ecosystems (p. 2-42 to 2-48)]
[Appendix 2.B (Assessment of Groundwater Dependent Ecosystems)]

- The GSP states (p. 2-42): "GDEs may also occur in areas where regional groundwater levels are deeper than 30 feet but shallower perched groundwater exists atop bedrock or another type of aquitard; however, these types of GDEs would generally not be impacted by pumping of groundwater supply wells." The GSP discounts the perched water zones as derived from surface water, and therefore they were not considered in evaluation of GDEs. The GSP should provide clear evidence of hydraulic disconnection where shallow groundwater is considered perched or identify hydraulic connection as a data gap. In addition, the GSP should consider perched water as a shallow aquifer, because even though it may not be pumped at present, it could be in the future. Groundwater in the perched water zones may provide water supply to GDEs and ISWs. Please explicitly enumerate the principal aquifer(s) and intervening aquitards, their relationship to each other, and their role in supplying groundwater to all beneficial uses and users of groundwater (including environmental).
- The GSP states (p. 2-42): "A DTW cutoff of 30 feet was used in the initial screening of potential GDEs. The use of a 30-foot DTW criterion to identify potential GDEs is based on reported maximum rooting depths of California phreatophytes and is consistent with guidance provided by The Nature Conservancy (Rohde et al. 2018) for identifying potential GDEs." We have the following comments regarding this

sentence and on the methodology for identifying GDEs in the Subbasin as further described in Appendix 2.B.

- *30-ft criteria from TNC Guidance:* In TNC's GDE Guidance, the depth criterion of 30 feet is presented as a criterion for inclusion, not a standalone criterion for exclusion. In other words, if groundwater is within 30 feet of the ground surface, then a GDE can be identified. If it is not, then further analysis must be conducted (see Appendix III of the GDE Guidance, Worksheet 1, for other indicators of GDEs).
- *30-ft as maximum rooting depths of California phreatophytes:* Please use care when considering rooting depths of vegetation. While Valley Oak (*Quercus lobata*) have been observed to have a max rooting depth of ~24 feet (https://groundwaterresourcehub.org/gde-tools/gde-rooting-depths-database-for-gdes/), rooting depths are likely to spatially vary based on the local hydrologic conditions available to the plant. Also, max rooting depths do not take capillary action into consideration, which will vary with soil type and is an important consideration since woody phreatophytes generally do not prefer to have their roots submerged in groundwater for extended periods of time, and hence can access groundwater at deeper depths. In addition, while it is likely to be true that shallow water availability is necessary to support the recruitment of saplings, hydraulic lift of groundwater to shallow depths has been observed in *Quercus* spp.
- *Use of depth to water maps from 2014 and 2016:*
    - 2016 is <u>after</u> the SGMA benchmark date of January 1, 2015. Please rely on groundwater condition data prior to the SGMA benchmark date.
    - We highly recommend using depth to groundwater data from multiple seasons and water year types (e.g., wet, dry, average, drought) to determine the range of depth to groundwater around NC dataset polygons. Please refer to Attachment D of this letter for best practices for using local groundwater data to verify whether polygons in the NC Dataset are supported by groundwater in an aquifer. If insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP <u>until</u> data gaps are reconciled in the monitoring network. While depth to groundwater levels within 30 feet are generally accepted as being a proxy for confirming that polygons in the NC dataset are connected to groundwater, it is highly advised that seasonal and interannual groundwater fluctuations in the groundwater regime are taken into consideration. Utilizing groundwater data from one or two points in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Based on a study we recently submitted to Frontiers in Environmental Science Journal, we've observed riparian forests along the Cosumnes River to experience a range in groundwater levels between 1.5 and 75 feet over seasonal and interannual timescales. Seasonal fluctuations in the

regional water table can support perched groundwater near an intermittent river that seasonally runs dry due to large seasonal fluctuations in the regional water table. While perched groundwater itself cannot directly be managed due to its position in the vadose zone, the water table position within the regional aquifer (via pumping rate restrictions, restricted pumping at certain depths, restricted pumping around GDEs, well density rules) and its interactions with surface water (e.g., timing and duration) can be managed to prevent adverse impacts to ecosystems due to changes in groundwater quality and quantity under SGMA.

- Please provide more details on how depth to groundwater contour maps were developed (Figures 2-71 and 2-72):
  - Are the wells used for interpolating depth to groundwater sufficiently close (<5km) to NC Dataset polygons to reflect local conditions relevant to ecosystems?
  - Are the wells used for interpolating depth to groundwater screened within the surficial unconfined aquifer and capable of measuring the true water table?
  - Is depth to groundwater contoured using groundwater elevations at monitoring wells to get groundwater elevation contours across the landscape? This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)[5] to estimate depth-to-groundwater contours across the landscape. This will provide much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found. Depth to groundwater contours developed from depth to groundwater measurements at wells assumes that the land surface is constant, which is a poor assumption to make. It is better to assume that water surface elevations are constant in between wells, and then calculate depth to groundwater using a DEM of the land surface to contour depth to groundwater.

- Please further explain how NC Dataset polygons adjacent to the San Joaquin River were retained or removed as potential GDEs. On Appendix 2.B, Figure 1 polygons are shown as removed based on depth to groundwater greater than 30 feet, but the groundwater depth contours (Figures 2-71 and 2-72) do not show enough detail to make this distinction and subsequent determination. Please refer to specific well hydrographs that were used to analyze particular reaches of the San Joaquin River.
- The GSP states (p. 2-45): "The adjacent San Joaquin River contains Essential Fish Habitat (EFH) for the endangered Chinook salmon which is partially dependent on riparian inputs to provide important salmon habitat elements including shade, overhead cover, nutrients, and woody material for instream cover and habitat complexity," and further states (p. 25 of Appendix 2.B): "the riparian vegetation community of the San Joaquin River Riparian Potential GDE Unit fulfills several

[5] USGS Digital Elevation Model data products are described at: https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services and can be downloaded at: https://iewer.nationalmap.gov/basic/

essential ecosystem functions or provides important habitat elements, such as large wood and riparian shade, on which both semiaquatic species of the GDE unit and aquatic species of the San Joaquin River depend for completing essential life behaviors". Please consider retaining all NC Dataset polygons adjacent to the San Joaquin River due to the essential ecosystem function that the riparian vegetation community performs for the critical habitat of the Chinook salmon in the San Joaquin River.

- As shown on Appendix 2.B, Figure 1, it appears that there is one potential GDE unit in light green on the far western border of the Subbasin. Please describe further and clarify if this is indeed a polygon from the NC Dataset that was kept as a potential GDE.

Checklist Items 16 to 20, Describing GDEs (23 CCR §354.16)

[Section 2.2.2.6 Groundwater Dependent Ecosystems (p. 2-42 to 2-48)]
[Appendix 2.B (Assessment of Groundwater Dependent Ecosystems)]

- TNC acknowledges and appreciates the comprehensive evaluation of the four GDE Units identified in the GSP following our guidance, including analyzing hydrologic conditions, ecological conditions, providing an inventory of species and ecological value, along with concurrent field **studies and reconnaissance. We also appreciate the use of TNC's GDE Pulse** to examine NDVI and NDMI trend data for the GDE polygons within the GDE Units.
- The Sumner Hill GDE Unit is located on an unnamed tributary of the San Joaquin River and includes riparian vegetation and a freshwater wetland. The source of water to the wetland is unknown and may be an intermittent tributary to the San Joaquin River. This potential GDE was considered to have a high ecological value because it supports special status species and habitat. The GSP states (p. 2-48): "Reconnaissance level biological assessments, aerial photograph analysis, and NDVI/NDMI data indicate adverse impacts are not likely occurring in the Sumner Hill Potential GDE Unit (Appendix 2.B)." Please obtain groundwater data before concluding that there are no adverse impacts to the GDE Unit and make plans to address this data gap in the Monitoring section of the GSP.

Checklist Items 21 and 22 – Water Budget (23 CCR §354.18)

[Section 2.2.3.1 Water Budget Conceptual Model (p. 2-49 to 2-56)]

- In the Land Surface System component of the water budget, ET is split into ET of applied water and ET of precipitation (Table 2-11, p. 2-54). ET of groundwater (ETg) is not included. Please include ETg in the water budget, or explain where it is included.

[Section 2.2.3.3 Water Budget Components and Uncertainties (p. 2-61 to 2-64)]

- Please clarify how the Integrated Water Flow Model Demand Calculator (IDC) model of the root zone budget was used to differentiate ET among the agricultural, urban, and native vegetation land uses. Please explain how any native vegetation present in GDEs was handled in the water budget process.

[Section 2.2.3.4 Historical Water Budget Analysis (p. 2-77)]

- The GSP states (p. 2-84): "…for native lands, groundwater extraction by riparian vegetation was considered to be negligible because of the depth to groundwater in the subbasin." Because there are GDEs in the Madera Subbasin, please quantify the evapotranspiration from groundwater by riparian vegetation. Please revise the text and budget as necessary.

<u>Checklist Items 23 to 25 – Sustainability Goal (23 CCR §354.24)</u>

[Section 3.1 Sustainability Goal (p. 3-3)]

- The sustainability goal does not specifically mention beneficial uses or users of groundwater, including environmental users. It states "the six sustainability indicators, established measurable objectives, and minimum thresholds will ensure no undesirable results of significant and unreasonable economic, social, or environmental impacts occur…" Please rephrase the Sustainability Goal to specifically call out beneficial uses and users of groundwater, including environmental users. Please state how the sustainability of environmental uses will be protected. In addition, a statement about any intention to address pre-SGMA impacts should be included.
- Because potential GDEs have been identified along the Fresno and San Joaquin Rivers, please include these surface waters in the Sustainability Goal.

<u>Checklist Item 26 – Measurable Objectives (23 CCR §354.30)</u>

[Sections 3.2.1.1 Measurable Objectives for Chronic Lowering of Groundwater Levels (p. 3-5)]

- The description of Measurable Objectives (in this section of the text, or Appendix 2.B) does not explain how GDEs were considered. Please include GDEs in this section and explain how the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.
- The Sumner Hill and Friant Riparian GDE Units do not have nearby monitoring wells that monitor hydrologic conditions. Please specifically address the data gap with respect to these GDE Units, or refer to a later section of the GSP.

[Sections 3.2.4.1 Measurable Objectives for Water Quality (p. 3-12)]

- The description of Measurable Objectives does not consider how water quality needs of GDEs were considered. Please include a discussion about GDEs and water quality and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.

[Sections 3.2.5 Depletion of Surface Water (p. 3-15)]

- The GSP fails to establish measurable objectives or minimum thresholds for this sustainability indicator. The GSP states (p. 3-15): "Thus, the connection between regional groundwater and streams was broken prior to 2015, and the surface water depletion sustainability criteria is not applicable to the Plan area." However, the existence of riparian GDEs along the streams in the basin has been identified in Appendix 2.B, and their connection to groundwater is assumed. Their occurrence in the riparian zone means that these GDEs should be considered a beneficial user of groundwater that could be affected by chronic groundwater level decline as discussed above, as well as beneficial users of surface water that could be depleted by groundwater extraction. A more detailed discussion of the known facts regarding these surface-groundwater interactions in the riparian zone should be provided. In addition, a more detailed discussion regarding specific data gaps should also be included.
- There is a need to evaluate and discuss potential effects on beneficial uses of surface and groundwater. This is necessary, at a minimum, so that the nature of the data gaps can be understood. In addition, the applicable state, federal and local standards for the protection of aquatic, riparian and other protected habitats should be discussed. Please refer to Attachment C for a list of freshwater species in Madera Subbasin that may exist within ISWs. We recommend that after identifying which freshwater species exist in your basin, especially federal and state listed species, that you contact staff at the Department of Fish and Wildlife (DFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the freshwater species list. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs. Please refer to the Critical Species Lookbook[6] to review and discuss the potential groundwater reliance of critical species in the basin.
- The SJRRP identifies instream flow needs for salmon in multiple reaches which form the southern border of the Subbasin (http://www.restoresjr.net/about/overview-map/). Please include instream flow requirements in this section and set measurable objectives and interim milestones that will help achieve the sustainability goal as it pertains to the environment.

<u>Checklist Item 27-29 – Minimum Thresholds (23 CCR §354.28)</u>

[6] Available online at: https://groundwaterresourcehub.org/sgma-tools/the-critical-species-lookbook/

[Sections 3.3.1 Minimum Thresholds for Chronic Lowering of Groundwater Levels (p. 3-18 to 3-26)]

- For the discussion of GDE susceptibility to changes in groundwater conditions (p. 3-25 to 3-26), please present or refer to specific hydrologic data or figures to back up claims of low susceptibility to impacts related to groundwater management and to allow the reader to more readily follow the discussion.
- The Friant Riparian and the Sumner Hill GDE Units do not have wells nearby. While the likelihood of impacts due to pumping is considered low in these areas, the groundwater levels should be monitored; thus, new wells are recommended for installation in these areas. Please include proposed monitoring wells for the Friant Riparian and the Sumner Hill GDE Units as representative monitoring sites (RMS) for minimum thresholds.
- Until monitoring wells are available in GDE Units Friant Riparian and Sumner Hill, consideration should be given to establishing minimum thresholds based on species or ecosystem response as measured by biological monitoring or remote sensing.

[Sections 3.3.4 Degraded Water Quality (p. 3-30 to 3-33)]

- The Minimum Thresholds do not consider water quality needs of GDEs. The GSP states (p. 3-33): "Protection of municipal and domestic beneficial uses is also protective of all other groundwater beneficial uses." Please provide evidence or basis for the statement that protection of municipal and domestic beneficial uses is also protective of all other groundwater beneficial uses including environmental uses. Include a discussion about GDEs and water quality and whether the measurable objectives and interim milestones will help achieve the sustainability goal as it pertains to the environment.

[Sections 3.3.5 Depletion of Surface Water (p. 3-34)]

- Minimum Thresholds for depletion of surface water were not developed for the Subbasin because the GSP determined that surface water was no longer connected to groundwater. GDEs are often adjacent to streams or associated with riparian corridors where ISWs exist, even if only seasonally or are discontinuous along a longitudinal profile. GDEs have been identified along parts of Fresno and San Joaquin Rivers. The San Joaquin River "contains Essential Fish Habitat (EFH) for Chinook salmon which is partially dependent on riparian inputs to provide important salmon habitat elements including shade, overhead cover, nutrients, and woody material for instream cover and habitat complexity" (p. 2-45). Following the discussion presented above for Checklist Item 26 (Measurable Objectives), please include a discussion of Sustainable Management Criteria for ISWs, including Minimum Thresholds, in the GSP. Cite data gaps regarding ISWs and make plans to reconcile them in the Monitoring Section of the GSP.

<u>Checklist Items 30-46 – Undesirable Results (23 CCR §354.26)</u>

[Section 3.4 Undesirable Results (p. 3-34 to 3-35)]

- This section only describes undesirable results relating to human beneficial uses of groundwater and neglects environmental beneficial uses that could be adversely affected by chronic groundwater level decline. **Please add "potential adverse** impacts to GDE**s" to the list of potential undesirable results presented in** Table 3-8 (p. 3-35).

[Section 3.4.1 Undesirable Results for Chronic Lowering of Groundwater Levels (p. 3-35)]

- The GSP states (p. 3-36): "The undesirable result for groundwater levels is defined as more than 30 percent of RMS exceeding their minimum thresholds for the same two consecutive Fall readings. The 30 percent criterion was selected to balance the interest of beneficial use with the practical aspect of groundwater management uncertainty. Given a total of 37 RMS sites, a total of 12 or more of the initial RMS would need to exceed MTs as defined above to constitute an undesirable result for chronic lowering of groundwater levels." The use of 30 percent to define an undesirable result does not allow for the occurrence of low water levels in one area, such as near a GDE, to be an Undesirable Result, which may impact an environmental beneficial use. Please consider the use of separate management areas for the GDE Units, so that Sustainable Management Criteria protective of GDEs can be established for the GDE Units. Please elaborate on how the exceedance criteria would be applied in a way that is protective of significant and unreasonable harm to GDEs.

[Section 3.4.4 Description of Undesirable Results for Degraded Water Quality (p. 3-38)]

- This section describes undesirable results in terms of meeting drinking water standards, including arsenic, but does not discuss degradation of water quality that may impact GDEs. Any potential undesirable results from degradation of water quality that may impact GDEs and freshwater species in the area should be discussed in this section.

[Section 3.4.5 Undesirable Results for Depletion of Surface Water (p. 3-39)]

- The Fresno and San Joaquin Rivers were connected historically, but are not considered connected under current conditions. The GSP states (p. 3-39): "The Fresno River and the San Joaquin River are adjacent to, but not a part of, the Fresno River Riparian potential GDE Unit and the Friant Riparian and San Joaquin River Riparian potential GDE units, respectively. Both rivers are in a net-losing condition, with surface flow likely contributing directly to the shallow groundwater systems that support the vegetation in these GDE units." The analysis for potential depletion of ISWs in Section 3.4.5 should include all beneficial users of surface water that could be affected by groundwater withdrawals, including environmental users.
- The GSP states (p. 2-47) that for the San Joaquin River Riparian Potential GDE Unit, "the adjacent San Joaquin River contains Essential Fish Habitat (EFH) for Chinook

salmon which is partially dependent on riparian inputs to provide important salmon habitat elements including shade, overhead cover, nutrients, and woody material for instream cover and habitat complexity (PFMC 2014)." Further, the GSP states (p. 3-39): "However, the shallow groundwater system underlying the portion of the San Joaquin River that supports the San Joaquin River Riparian Potential GDE Unit does have at least the potential (albeit quite muted) to be affected by regional groundwater pumping." These statements illustrate the need to develop Sustainable Management Criteria for ISWs. Following the discussion presented above for Checklist Item 26 (Measurable Objectives), please include a discussion of Sustainable Management Criteria for ISWs, including Undesirable Results, in the GSP. Please cite data gaps regarding ISWs and make plans to reconcile them in the Monitoring Section of the GSP.

<u>Checklist Items 47, 48 and 49 – Monitoring Network (23 CCR §354.34)</u>

[Section 3.5 Monitoring Network (p. 3-39)]

- Per the GSP Regulations (23 CCR §354.34 (a) and (b)), monitoring must address trends in groundwater <u>*and related surface conditions*</u> (emphasis added). Groundwater level monitoring alone may be insufficient to establish a linkage between groundwater extraction and potentially resulting impacts to environmental resources associated with GDEs and ISWs. The cause-effect relationship between groundwater levels and the biological responses that could result in significant and unreasonable impacts to ISWs and GDEs depends on a number of complicated factors, and this relationship is not characterized or discussed. The Monitoring Network section currently does not address future needs for ISW monitoring. In this section, please describe monitoring for ISWs as described below:
    - In addition to the need for additional shallow monitoring wells in the upper aquifer to map GDEs, there is also a need to enhance monitoring of stream flow and vertical groundwater gradients by installing more stream gauges and clustered/nested wells near streams, rivers or wetlands. Ideally, co-locating stream gauges with wells that can monitor groundwater levels in both the upper and lower aquifers would enhance understanding about where ISWs exist in the basin and whether pumping is causing depletions of surface water or impacts on beneficial users of surface water and groundwater. Please provide sufficient detail for the investigation and monitoring program including stream gauges, screened intervals and frequency of monitoring, in order to describe monitoring of both the extent of ISWs and the quantity of surface water depletions from ISWs.

[Section 3.5.1.1 Groundwater Level Monitoring Program (p. 3-41 to 3-45)]

- The proposed wells to be used for monitoring groundwater levels are shown in Figure 3-1 and include 11 wells in the Upper Aquifer and 22 wells in the Lower Aquifer. At present the Upper Aquifer wells are located in the southwestern part of the Madera GSA. Several of the monitoring wells are missing well construction information. Four

composite wells are listed in Table 3-11 (p. 3-44). Please describe how the missing well construction information will be obtained, or how data from the wells will be used if it cannot be obtained. Please indicate how the composite wells will be used and whether the proposed nested wells will replace them.

[Section 3.5.2.5 GDE Monitoring Program (p. 3-53)]
[Appendix 2.B, Section 5 GDE Monitoring]

- The GSP states (p. 3-53): "Biological data will be analyzed in conjunction with hydrological data, where available, to assess potential ecological effects related to changes in groundwater levels and the relative degree of influence on GDE conditions exerted by streamflows and groundwater levels associated with each potential GDE." Appendix 2.B refers to an adaptive management framework to facilitate improvements in the monitoring program. Please further describe how adaptive management will facilitate improvements in the monitoring program and refine projects and management actions.

[Section 3.5.4.2 Identification and Description of Data Gaps (p. 3-55)]

- The Friant Riparian Potential GDE Unit does not have any wells or monitoring points nearby and the true depth to groundwater is unknown. "Part of the GSP Implementation Plan will be to further investigate existing wells in this area for verifying presence of shallow groundwater (i.e., less than or equal to 30 feet bgs) and possible inclusion of a well as a representative monitoring station (RMS), if necessary (p. 19 of Appendix 2.B). If there are no appropriate existing wells to obtain current groundwater depth data for this GDE Unit, it is recommended to install one or more shallow wells to verify the presence of shallow groundwater.
- The Sumner Hill Potential GDE Unit is located on an unnamed tributary of the San Joaquin River and includes riparian vegetation and a freshwater wetland. This potential GDE has a shallow depth to bedrock and is close to the Madera Canal, but no groundwater data are available. If there are no appropriate existing wells to obtain current groundwater depth data for this GDE Unit, it is recommended to install one or more shallow wells to verify the presence of shallow groundwater.

<u>Checklist Items 50 and 51 – Projects and Management Actions to Achieve Sustainability Goal (23 CCR §354.44)</u>

[Section 4 Subbasin Project and Management Actions (p. 4-1 to 4-52)]

- The Madera Subbasin includes GDEs and ISWs that are beneficial uses and users of groundwater, and may include potentially sensitive resources and protected lands. Environmental beneficial users and uses of groundwater should be considered in establishing project priorities. In addition, consideration should be given to multi-benefit projects that can address water quantity as well as providing environmental

benefits or benefits to disadvantaged communities. Please include environmental benefits and multiple benefits as criteria for assessing project priorities.

- This section identifies many important projects; however, the descriptions of benefits for these projects only identifies benefits to water level and storage. Because maintenance or recovery of groundwater levels, or construction of recharge facilities, may have potential environmental benefits in many cases it would be advantageous to demonstrate multiple benefits from a funding and prioritization perspective.
    - For the projects already identified, please consider stating how ISWs and GDEs will benefit or be protected, or what other environmental benefits will accrue.
    - If ISWs will not be adequately protected by those listed, please include and describe additional management actions and projects targeted for protecting ISWs.
    - Recharge ponds, reservoirs and facilities for managed stormwater recharge can be designed as multiple-benefit projects that include elements that act functionally as wetlands and provide a benefit for wildlife and aquatic species. In some cases, such facilities have been incorporated into local Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs), more fully recognizing the value of the habitat that they provide and the species they support. For projects that construct recharge ponds, please consider identifying if there is habitat value incorporated into the design and how the recharge ponds will be managed for multiple-benefits including environmental users.
    - For examples of case studies on how to incorporate environmental benefits into groundwater projects, please visit our website: https://groundwaterresourcehub.org/case-studies/recharge-case-studies/

[Section 4.4.5.1 Arundo Removal (p. 4-45)]

- The GSP states (p. 4-45): "Based on preliminary estimates, approximately 500 acres of Arundo exists in concentrated stretches of Berenda, Cottonwood, and Dry Creeks. Details on acreage of infestation, water use, the potential for reduction, and the cost would be developed before a removal/control plan is prepared." We appreciate the citing of **TNC's** literature review of Arundo evapotranspiration studies and recognizing Arundo removal as a potential project for the Subbasin.

Attachment C

Freshwater Species Located in the Madera Subbasin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the Madera Subbasin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the GSA's boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[7]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[8] as well as on The Nature Conservancy's science website[9].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Actitis macularius	Spotted Sandpiper			
Aechmophorus occidentalis	Western Grebe			
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Aix sponsa	Wood Duck			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas cyanoptera	Cinnamon Teal			
Anas discors	Blue-winged Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya affinis	Lesser Scaup			
Aythya americana	Redhead		Special Concern	BSSC - Third priority
Aythya collaris	Ring-necked Duck			
Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	
Botaurus lentiginosus	American Bittern			
Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chlidonias niger	Black Tern		Special Concern	BSSC - Second priority

[7] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710
[8] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS
[9] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Egretta thula	Snowy Egret			
Empidonax traillii	Willow Flycatcher	Bird of Conservation Concern	Endangered	
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Geothlypis trichas trichas	Common Yellowthroat			
Grus canadensis	Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Limnodromus scolopaceus	Long-billed Dowitcher			
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
Mergus merganser	Common Merganser			
Mergus serrator	Red-breasted Merganser			
Numenius americanus	Long-billed Curlew			
Numenius phaeopus	Whimbrel			
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Pelecanus erythrorhynchos	American White Pelican		Special Concern	BSSC - First priority
Phalacrocorax auritus	Double-crested Cormorant			
Phalaropus tricolor	Wilson's Phalarope			
Plegadis chihi	White-faced Ibis		Watch list	
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Riparia riparia	Bank Swallow		Threatened	
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
Tringa solitaria	Solitary Sandpiper			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
CRUSTACEANS				
Branchinecta lynchi	Vernal Pool Fairy Shrimp	Threatened	Special	IUCN - Vulnerable
Lepidurus packardi	Vernal Pool Tadpole Shrimp	Endangered	Special	IUCN - Endangered
Linderiella occidentalis	California Fairy Shrimp		Special	IUCN - Near Threatened
FISH				
Catostomus occidentalis occidentalis	Sacramento sucker			Least Concern - Moyle 2013
Cottus asper ssp. 1	Prickly sculpin			Least Concern - Moyle 2013
Cottus gulosus	Riffle sculpin		Special	Near-Threatened - Moyle 2013
Gasterosteus aculeatus microcephalus	Inland threespine stickleback		Special	Least Concern - Moyle 2013

Lampetra hubbsi	Kern brook lamprey		Special Concern	Vulnerable - Moyle 2013
Lavinia exilicauda exilicauda	Sacramento hitch		Special	Near-Threatened - Moyle 2013
Lavinia symmetricus symmetricus	Central California roach		Special Concern	Near-Threatened - Moyle 2013
Mylopharodon conocephalus	Hardhead		Special Concern	Near-Threatened - Moyle 2013
Mylopharodon conocephalus	Hardhead		Special Concern	Near-Threatened - Moyle 2013
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Oncorhynchus tshawytscha - CV fall	Central Valley fall Chinook salmon	Species of Special Concern	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus tshawytscha - CV late fall	Central Valley late fall Chinook salmon	Species of Special Concern		Endangered - Moyle 2013
Orthodon microlepidotus	Sacramento blackfish			Least Concern - Moyle 2013
Ptychocheilus grandis	Sacramento pikeminnow			Least Concern - Moyle 2013
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC
Anaxyrus boreas boreas	Boreal Toad			
Pseudacris regilla	Northern Pacific Chorus Frog			
Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Spea hammondii	Western Spadefoot	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Taricha torosa	Coast Range Newt		Special Concern	ARSSC
Thamnophis couchii	Sierra Gartersnake			
Thamnophis gigas	Giant Gartersnake	Threatened	Threatened	
Thamnophis sirtalis sirtalis	Common Gartersnake			
INSECTS & OTHER INVERTEBRATES				
Ablabesmyia spp.	Ablabesmyia spp.			
Agapetus malleatus	A Caddisfly			
Baetidae fam.	Baetidae fam.			
Baetis spp.	Baetis spp.			
Baetis tricaudatus	A Mayfly			
Callibaetis spp.	Callibaetis spp.			
Centroptilum spp.	Centroptilum spp.			
Chironomidae fam.	Chironomidae fam.			
Chironomus spp.	Chironomus spp.			
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Cryptotendipes spp.	Cryptotendipes spp.			
Dicrotendipes spp.	Dicrotendipes spp.			
Eubrianax edwardsii				Not on any status lists
Eukiefferiella spp.	Eukiefferiella spp.			
Fallceon spp.	Fallceon spp.			
Heptageniidae fam.	Heptageniidae fam.			
Hetaerina americana	American Rubyspot			

Hydropsyche spp.	Hydropsyche spp.			
Laccobius spp.	Laccobius spp.			
Laccophilus spp.	Laccophilus spp.			
Leptoceridae fam.	Leptoceridae fam.			
Libellula luctuosa	Widow Skimmer			
Limnophyes spp.	Limnophyes spp.			
Mideopsis spp.	Mideopsis spp.			
Nanocladius spp.	Nanocladius spp.			
Nectopsyche spp.	Nectopsyche spp.			
Parakiefferiella spp.	Parakiefferiella spp.			
Paratendipes spp.	Paratendipes spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Polypedilum spp.	Polypedilum spp.			
Procladius spp.	Procladius spp.			
Pseudochironomus spp.	Pseudochironomus spp.			
Pseudosmittia spp.	Pseudosmittia spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Robackia spp.	Robackia spp.			
Serratella micheneri	A Mayfly			
Sigara spp.	Sigara spp.			
Simulium spp.	Simulium spp.			
Stenochironomus spp.	Stenochironomus spp.			
Tanytarsus spp.	Tanytarsus spp.			
Tipulidae fam.	Tipulidae fam.			
Tramea lacerata	Black Saddlebags			
Tricoryhyphes spp.	Tricoryhyphes spp.			
Tropisternus spp.	Tropisternus spp.			
MAMMALS				
Castor canadensis	American Beaver			Not on any status lists
Lontra canadensis canadensis	North American River Otter			Not on any status lists
Neovison vison	American Mink			Not on any status lists
Ondatra zibethicus	Common Muskrat			Not on any status lists
MOLLUSKS				
Anodonta californiensis	California Floater		Special	
Lymnaea spp.	Lymnaea spp.			
Margaritifera falcata	Western Pearlshell		Special	
Menetus spp.	Menetus spp.			
Physa spp.	Physa spp.			
Sphaeriidae fam.	Sphaeriidae fam.			
PLANTS				
Alnus rhombifolia	White Alder			
Alopecurus carolinianus	Tufted Foxtail			
Alopecurus saccatus	Pacific Foxtail			
Anemopsis californica	Yerba Mansa			
Azolla filiculoides	NA			
Bergia texana	Texas Bergia			
Brodiaea nana				Not on any status lists
Callitriche fassettii	NA			Not on any status lists
Callitriche heterophylla bolanderi	Large Water-starwort			
Callitriche longipedunculata	Longstock Water-starwort			
Callitriche marginata	Winged Water-starwort			
Callitriche trochlearis	Waste-water Water-starwort			
Carex alma	Sturdy Sedge			

Carex amplifolia	Bigleaf Sedge			
Carex densa	Dense Sedge			
Carex diandra	Lesser Panicled Sedge			
Carex feta	Green-sheath Sedge			
Carex hirtissima	Fuzzy Sedge			
Carex integra	Smooth-beak Sedge			
Carex lemmonii	Lemmon's Sedge	Endangered		
Carex senta	Western Rough Sedge			
Carex simulata	Copycat Sedge			
Carex utriculata	Beaked Sedge			
Castilleja campestris succulenta	Fleshy Owl's-clover	Threatened	Endangered	CRPR - 1B.2
Castilleja miniata miniata	Greater Red Indian-paintbrush			
Cephalanthus occidentalis	Common Buttonbush			
Chloropyron palmatum	NA	Endangered	Special	CRPR - 1B.1
Cicendia quadrangularis	Oregon Microcala			
Crassula aquatica	Water Pygmyweed			
Crypsis vaginiflora	NA			
Cyperus acuminatus	Short-point Flatsedge			
Cyperus erythrorhizos	Red-root Flatsedge			
Darmera peltata	Umbrella Plant			
Downingia bella	Hoover's Downingia			
Downingia cuspidata	Toothed Calicoflower			
Downingia ornatissima	NA			
Downingia pusilla	Dwarf Downingia		Special	CRPR - 2B.2
Echinodorus berteroi	Upright Burhead			
Elatine brachysperma	Shortseed Waterwort			
Elatine californica	California Waterwort			
Eleocharis acicularis acicularis	Least Spikerush			
Eleocharis atropurpurea	Purple Spikerush			
Eleocharis macrostachya	Creeping Spikerush			
Elodea canadensis	Broad Waterweed			
Epilobium campestre	NA			Not on any status lists
Epilobium cleistogamum	Cleistogamous Spike-primrose			
Eriophorum crinigerum	Fringed Cotton-grass			
Eryngium spinosepalum	Spiny Sepaled Coyote-thistle		Special	CRPR - 1B.2
Eryngium vaseyi vaseyi	Vasey's Coyote-thistle			Not on any status lists
Euthamia occidentalis	Western Fragrant Goldenrod			
Gratiola ebracteata	Bractless Hedge-hyssop			
Gratiola heterosepala	Boggs Lake Hedge-hyssop		Endangered	CRPR - 1B.2
Helenium bigelovii	Bigelow's Sneezeweed			
Hydrocotyle verticillata verticillata	Whorled Marsh-pennywort			
Hypericum anagalloides	Tinker's-penny			
Isoetes howellii	NA			
Isoetes nuttallii	NA			
Isoetes orcuttii	NA			
Juncus acuminatus	Sharp-fruit Rush			
Juncus dubius	Mariposa Rush			
Juncus effusus pacificus				
Juncus exiguus				Not on any status lists
Juncus uncialis	Inch-high Rush			
Juncus usitatus	NA			Not on any status lists

Juncus xiphioides	Iris-leaf Rush			
Lasthenia fremontii	Fremont's Goldfields			
Leersia oryzoides	Rice Cutgrass			
Lemna aequinoctialis	Lesser Duckweed			
Lemna minuta	Least Duckweed			
Leucothoe davisiae	Western Doghobble			
Limnanthes douglasii douglasii	Douglas' Meadowfoam			
Limnanthes douglasii nivea	Douglas' Meadowfoam			
Limnanthes douglasii rosea	Douglas' Meadowfoam			
Limnanthes montana	Mountain Meadowfoam			
Limosella acaulis	Southern Mudwort			
Lipocarpha micrantha	Dwarf Bulrush			
Ludwigia palustris	Marsh Seedbox			
Ludwigia peploides peploides	NA			Not on any status lists
Lythrum californicum	California Loosestrife			
Marsilea vestita vestita	NA			Not on any status lists
Mimulus guttatus	Common Large Monkeyflower			
Mimulus latidens	Broad-tooth Monkeyflower			
Mimulus tricolor	Tricolor Monkeyflower			
Myosurus minimus	NA			
Najas guadalupensis guadalupensis	Southern Naiad			
Navarretia intertexta	Needleleaf Navarretia			
Navarretia leucocephala bakeri	Baker's Navarretia		Special	CRPR - 1B.1
Navarretia leucocephala leucocephala	White-flower Navarretia			
Navarretia leucocephala minima	Least Navarretia			
Neostapfia colusana	Colusa Grass	Threatened	Endangered	CRPR - 1B.1
Oenanthe sarmentosa	Water-parsley			
Orcuttia inaequalis	San Joaquin Valley Orcutt Grass	Threatened	Endangered	CRPR - 1B.1
Orcuttia pilosa	Hairy Orcutt Grass	Endangered	Endangered	CRPR - 1B.1
Panicum acuminatum acuminatum				Not on any status lists
Panicum dichotomiflorum	NA			
Paspalum distichum	Joint Paspalum			
Perideridia bacigalupii	Bacigalupi's Perideridia		Special	CRPR - 4.2
Perideridia howellii	Howell's False Caraway			
Perideridia lemmonii	Lemmon's Yampah			
Perideridia parishii latifolia	Parish's Yampah			
Persicaria hydropiper	NA			Not on any status lists
Persicaria hydropiperoides				Not on any status lists
Persicaria lapathifolia				Not on any status lists
Persicaria maculosa	NA			Not on any status lists
Phacelia distans	NA			
Phalacroseris bolanderi	NA			
Phalaris arundinacea	Reed Canarygrass			
Phyla nodiflora	Common Frog-fruit			
Pilularia americana	NA			
Plagiobothrys acanthocarpus	Adobe Popcorn-flower			
Plagiobothrys austiniae	Austin's Popcorn-flower			

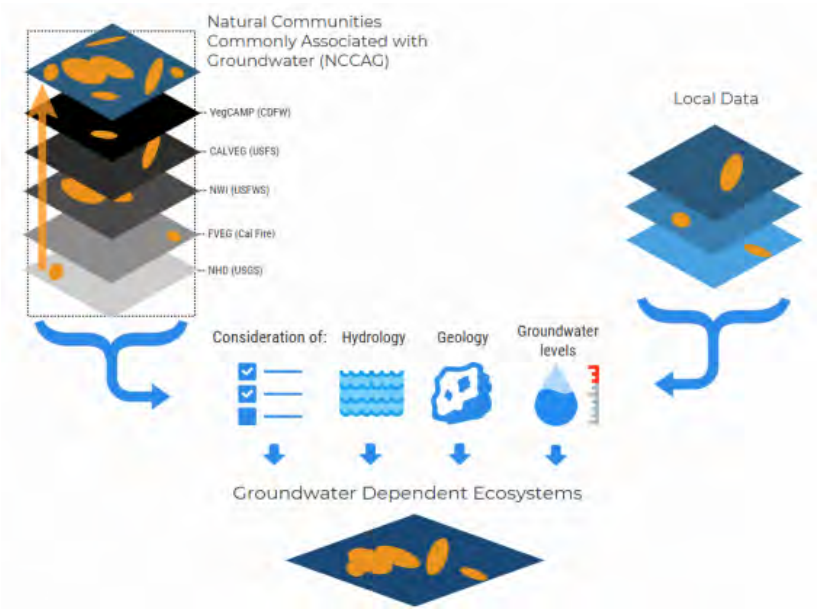
Plagiobothrys distantiflorus	California Popcorn-flower			
Plagiobothrys greenei	Greene's Popcorn-flower			
Plagiobothrys humistratus	Dwarf Popcorn-flower			
Plagiobothrys leptocladus	Alkali Popcorn-flower			
Plagiobothrys undulatus	NA			Not on any status lists
Plantago elongata elongata	Slender Plantain			
Platanus racemosa	California Sycamore			
Pogogyne douglasii	NA			
Potamogeton diversifolius	Water-thread Pondweed			
Potamogeton foliosus foliosus	Leafy Pondweed			
Potamogeton nodosus	Longleaf Pondweed			
Potamogeton pusillus pusillus	Slender Pondweed			
Psilocarphus brevissimus brevissimus	Dwarf Woolly-heads			
Psilocarphus oregonus	Oregon Woolly-heads			
Psilocarphus tenellus	NA			
Puccinellia simplex	Little Alkali Grass			
Ranunculus bonariensis	NA			
Rhododendron occidentale occidentale	Western Azalea			
Rorippa palustris palustris	Bog Yellowcress			
Rotala ramosior	Toothcup			
Sagittaria latifolia latifolia	Broadleaf Arrowhead			
Sagittaria longiloba	Longbarb Arrowhead			
Sagittaria sanfordii	Sanford's Arrowhead		Special	CRPR - 1B.2
Salix exigua exigua	Narrowleaf Willow			
Salix exigua hindsiana				Not on any status lists
Salix gooddingii	Goodding's Willow			
Salix laevigata	Polished Willow			
Salix lasiolepis lasiolepis	Arroyo Willow			
Salix melanopsis	Dusky Willow			
Schoenoplectus acutus occidentalis	Hardstem Bulrush			
Scirpus congdonii	Congdon's Bulrush			
Scirpus microcarpus	Small-fruit Bulrush			
Senecio triangularis	Arrow-leaf Groundsel			
Sidalcea calycosa calycosa	Annual Checker-mallow			
Sidalcea hirsuta	Hairy Checker-mallow			
Sidalcea reptans	Creeping Checker-mallow			
Solidago elongata				Not on any status lists
Stachys ajugoides	Bugle Hedge-nettle			
Stachys albens	White-stem Hedge-nettle			
Stachys stricta	Sonoma Hedge-nettle			
Tuctoria greenei	Green's Awnless Orcutt Grass	Endangered	Rare	CRPR - 1B.1
Typha domingensis	Southern Cattail			
Typha latifolia	Broadleaf Cattail			
Veronica americana	American Speedwell			
Veronica anagallis-aquatica	NA			
Viola macloskeyi	NA			
Wolffia columbiana	Columbian Watermeal			
Wolffia globosa	Asian Watermeal			

Attachment D

July 2019

IDENTIFYING GDEs UNDER SGMA
Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online[10] to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)[11]. This document highlights six best practices for using local groundwater data to confirm whether mapped features in the NC dataset are supported by groundwater.



[10] *NC Dataset Online Viewer: https://gis.water.ca.gov/app/NCDatasetViewer/*

[11] California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[12]. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset[13] on the Groundwater Resource Hub[14], a website dedicated to GDEs.

BEST PRACTICE #1. Establishing a Connection to Groundwater

Groundwater basins can be comprised of one continuous aquifer (Figure 2a) or multiple aquifers stacked on top of each other (Figure 2b). In unconfined aquifers (Figure 2a), using the depth-to-groundwater and the rooting depth of the vegetation is a reasonable method to infer groundwater dependence for GDEs. If groundwater is well below the rooting (and capillary) zone of the plants and any wetland features, the ecosystem is considered disconnected and groundwater management is not likely to affect the ecosystem (Figure 2d). However, it is important to consider local conditions (e.g., soil type, groundwater flow gradients, and aquifer parameters) and to review groundwater depth data from multiple seasons and water year types (wet and dry) because intermittent periods of high groundwater levels can replenish perched clay lenses that serve as the water source for GDEs (Figure 2c). Maintaining these natural groundwater fluctuations are important to sustaining GDE health.

Basins with a stacked series of aquifers (Figure 2b) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and GDEs (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water. The goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits. While groundwater pumping may not be currently occurring in a shallower aquifer, use of this water may become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer*.

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[12] *For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf*

[13] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at: https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/

[14] *The Groundwater Resource Hub: www.GroundwaterResourceHub.org*

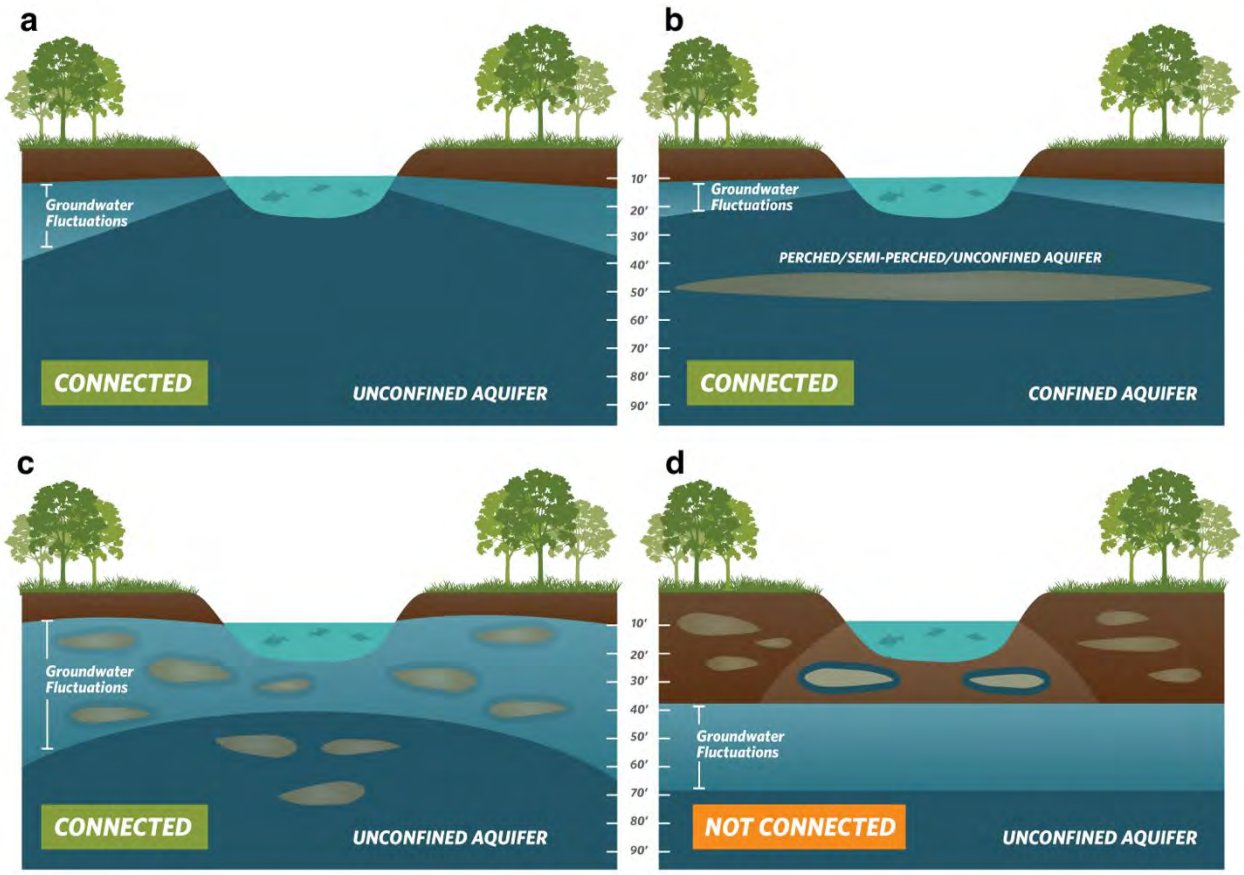

Figure 2. Confirming whether an ecosystem is connected to groundwater. Top: (a) Under the ecosystem is an unconfined aquifer with depth-to-groundwater fluctuating seasonally and interannually within 30 feet from land surface. (b) Depth-to-groundwater in the shallow aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the shallow aquifer. Bottom: (c) Depth-to-groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystem's connection to groundwater. (d) Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is due to direct recharge from precipitation and indirect recharge under the surface water feature. These areas are not connected to groundwater and typically support species that do not require access to groundwater to survive.

BEST PRACTICE #2. Characterize Seasonal and Interannual Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California's climate. DWR's Best Management Practices document on water budgets[15] recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline[16] could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach[17] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC's GDE guidance document[4], one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (see Best Practice #5).

Groundwater levels fluctuate over time and space due to California's Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California's GDEs have adapted to dealing with intermittent periods of water stress, however if these groundwater conditions are prolonged, adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet[4] of the land surface are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer[18]. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP until data gaps are reconciled in the monitoring network (see Best Practice #6).

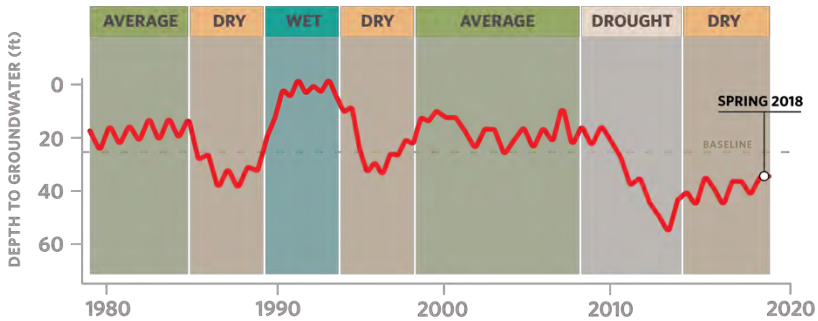

Figure 3. Example seasonality and interannual variability in depth-to-groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

[15] DWR. 2016. Water Budget Best Management Practice. Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf

[16] *Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]*

[17] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs[4]).

[18] *SGMA Data Viewer: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer*

BEST PRACTICE #3. Ecosystems Often Rely on Both Groundwater and Surface Water

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around a GDE does not preclude the possibility that it is supported by groundwater, too. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals[19], which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and may not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).

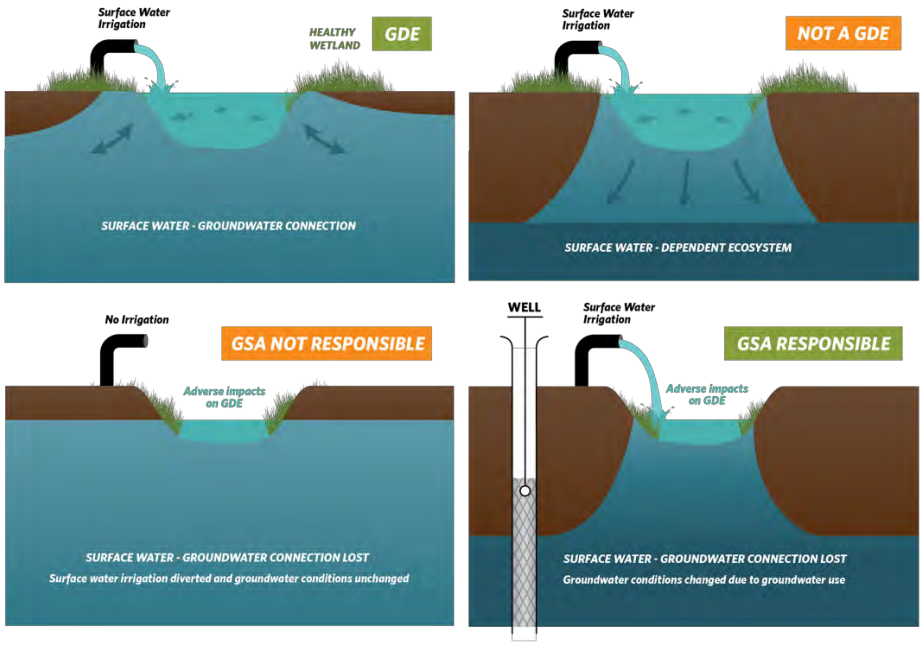

Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. (Right) Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. Bottom: (Left) An ecosystem that was once dependent on an interconnected surface water, but loses access to groundwater solely due to surface water diversions may not be the GSA's responsibility. (Right) Groundwater dependent ecosystems once dependent on an interconnected surface water system, but loses that access due to groundwater pumping is the GSA's responsibility.

[19] *For a list of environmental beneficial users of surface water by basin, visit: https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/*

BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin requires that groundwater conditions are characterized to confirm whether polygons in the NC dataset are supported by the underlying aquifer. To do this, proximate groundwater wells should be identified to characterize groundwater conditions (Figure 5). When selecting representative wells, it is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of each NC Dataset polygons because they are more likely to reflect the local conditions relevant to the ecosystem. If there are no wells within 5km of the center of a NC dataset polygon, then there is insufficient information to remove the polygon based on groundwater depth. Instead, it should be retained as a potential GDE until there are sufficient data to determine whether or not the NC Dataset polygon is supported by groundwater.

- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.

- Avoid relying on wells that have insufficient information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer. This type of well data should not be used to remove any NC polygons.

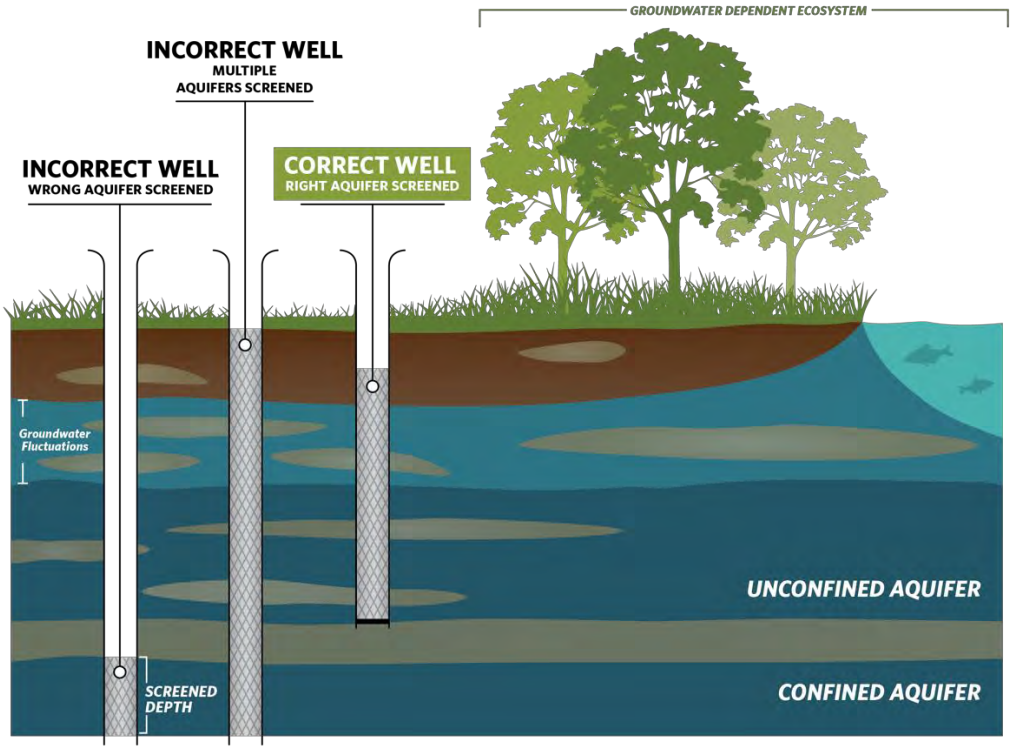

Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like stream and wetland depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6a). A more accurate approach is to interpolate groundwater elevations at monitoring wells to get groundwater elevation contours across the landscape. This layer can then be subtracted from land surface elevations from a Digital Elevation Model (DEM)[20] to estimate depth-to-groundwater contours across the landscape (Figure b; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.

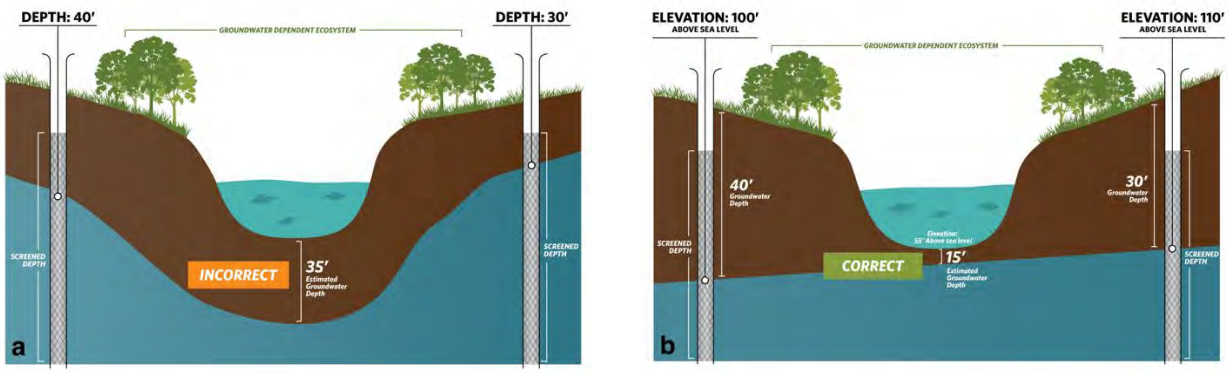

Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (a) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. (b) Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

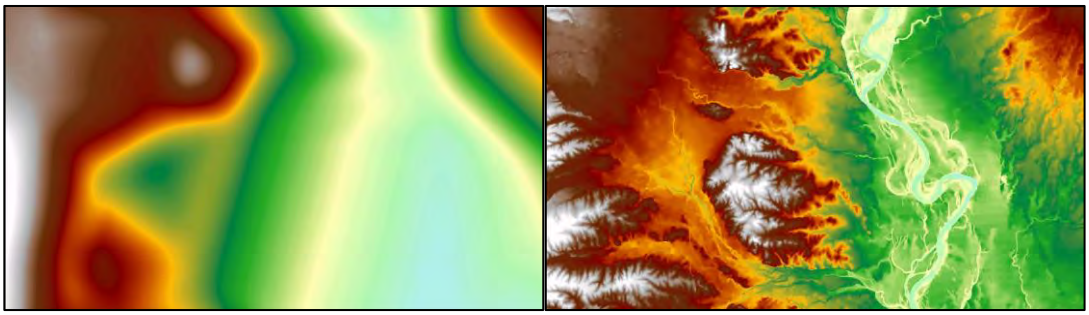

Figure 7. Depth-to-groundwater contours in Northern California. (Left) Contours were interpolated using depth-to-groundwater measurements determined at each well. (Right) Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth-to-groundwater contours. The image on the right shows a more accurate depth-to-groundwater estimate because it takes the local topography and elevation changes into account.

[20] USGS Digital Elevation Model data products are described at: https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services and can be downloaded at: https://iewer.nationalmap.gov/basic/

BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring programs to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network. Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

KEY DEFINITIONS

Groundwater basin is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. *23 CCR §341(g)(1)*

Groundwater dependent ecosystem (GDE) are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. *23 CCR §351(m)*

Interconnected surface water (ISW) surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

Principal aquifers are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. *23 CCR §351(aa)*

ABOUT US

The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

The Nature Conservancy
Protecting nature. Preserving life.

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GroundwaterResourceHub.org

1 July 2019

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637

Submitted via email: MaderaGSPComments@maderacounty.com

Re: Chapters 1 and 2 of the Madera Subbasin Groundwater Sustainability Plan (GSP)

Dear Stephanie Anagnoson,

The Nature Conservancy (TNC) appreciates the opportunity to comment on Chapters 1 and 2 of the Madera Subbasin Groundwater Sustainability Plan, being prepared under the Sustainable Groundwater Management Act (SGMA).

TNC as a Stakeholder Representative for the Environment

TNC is a global, nonprofit organization dedicated to conserving the lands and waters on which all life depends. We seek to achieve our mission through science-based planning and implementation of conservation strategies. For decades, we have dedicated resources to establishing diverse partnerships and developing foundational science products for achieving positive outcomes for people and nature in California. TNC was part of a stakeholder group formed by the Water Foundation in early 2014 to develop recommendations for groundwater reform and actively worked to shape and pass SGMA.

Our reason for engaging is simple: California's freshwater biodiversity is highly imperiled. We have lost more than 90 percent of our native wetland and river habitats, leading to precipitous declines in native plants and the populations of animals that call these places home. These natural resources are intricately connected to California's economy providing direct benefits through industries such as fisheries, timber and hunting, as well as indirect benefits such as clean water supplies. SGMA must be successful for us to achieve a sustainable future, in which people and nature can thrive within the Madera County Groundwater Sustainability region and California.

We believe that the success of SGMA depends on bringing the best available science to the table, engaging all stakeholders in robust dialog, providing strong incentives for beneficial outcomes and rigorous enforcement by the State of California.

Given our mission, we are particularly concerned about the inclusion of nature, as required, in GSPs. The Nature Conservancy has developed a suite of tools based on best available science to help GSAs, consultants, and stakeholders efficiently incorporate nature into GSPs. These tools and resources are available online at GroundwaterResourceHub.org. The Nature

Conservancy's tools and resources are intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Addressing Nature's Water Needs in GSPs

SGMA requires that all beneficial uses and users, including environmental users of groundwater, be considered in the development and implementation of GSPs (Water Code § 10723.2).

The GSP Regulations include specific requirements to identify and consider groundwater dependent ecosystems (23 CCR §354.16(g)) when determining whether groundwater conditions are having potential effects on beneficial uses and users. GSAs must also assess whether sustainable management criteria may cause adverse impacts to beneficial uses, which include environmental uses, such as plants and animals. In addition, monitoring networks should be designed to detect potential adverse impacts to beneficial uses due to groundwater. Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decision, and using data collected through monitoring to revise decisions in the future. Over time, GSPs should improve as data gaps are reduced and uncertainties addressed.

To help ensure that GSPs adequately address nature as required under SGMA, The Nature Conservancy has prepared a checklist (**Attachment A**) for GSAs and their consultants to use. The Nature Conservancy believes the following elements are foundational for 2020 GSP submittals. For detailed guidance on how to address the checklist items, please also see our publication, *GDEs under SGMA: Guidance for Preparing GSPs*[1].

1. Environmental Representation

SGMA requires that groundwater sustainability agencies (GSAs) consider the interests of all beneficial uses and users of groundwater. To meet this requirement, we recommend actively engaging environmental stakeholders by including environmental representation on the GSA board, technical advisory group, and/or working groups. This could include local staff from state and federal resource agencies, nonprofit organizations and other environmental interests. By engaging these stakeholders, GSAs will benefit from access to additional data and resources, as well as a more robust and inclusive GSP.

2. Basin GDE and ISW Maps

SGMA requires that groundwater dependent ecosystems (GDEs) and interconnected surface waters (ISWs) be identified in the GSP. We recommend using the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) provided online[2] by the Department of Water Resources (DWR) as a starting point for the GDE map. The NC Dataset was developed through a collaboration between DWR, the Department of Fish and Wildlife and TNC.

3. Potential Effects on Environmental Beneficial Users

SGMA requires that potential effects on GDEs and environmental surface water users be described when defining undesirable results. In addition to identifying GDEs in the basin, The Nature Conservancy recommends identifying beneficial users of surface water, which include

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[1]GDEs under SGMA: Guidance for Preparing GSPs is available at: https://groundwaterresourcehub.org/public/uploads/pdfs/GWR_Hub_GDE_Guidance_Doc_2-1-18.pdf

[2] The Department of Water Resoruces' Natural Communities Commonly Associated with Groundwater dataset is available at: *https://gis.water.ca.gov/app/NCDatasetViewer/*

environmental users. This is a critical step, as it is impossible to define "significant and unreasonable adverse impacts" without knowing *what* is being impacted. For your convenience, we've provided a list of freshwater species within the boundary of the Madera Subbasin in **Attachment C**. Our hope is that this information will help your GSA better evaluate the impacts of groundwater management on environmental beneficial users of surface water. We recommend that after identifying which freshwater species exist in your basin, especially federal and state listed species, that you contact staff at the Department of Fish and Wildlife (DFW), United States Fish and Wildlife Service (USFWS) and/or National Marine Fisheries Services (NMFS) to obtain their input on the groundwater and surface water needs of the organisms on the GSA's freshwater species list. Because effects to plants and animals are difficult and sometimes impossible to reverse, we recommend erring on the side of caution to preserve sufficient groundwater conditions to sustain GDEs and ISWs.

4. Biological and Hydrological Monitoring

If sufficient hydrological and biological data in and around GDEs is not available in time for the 2020/2022 plan, data gaps should be identified along with actions to reconcile the gaps in the monitoring network.

Our specific comments related to the Madera Subbasin Groundwater Sustainability Plan Chapters 1 and 2 are provided in detail in **Attachment B** and are in reference to the numbered items in **Attachment A.** Please note that because critical sections of Chapter 2 were not provided in the downloaded file, we will provide further comments on Chapter 2 when the full chapter is available. **Attachment C** provides a list of the freshwater species located in the Madera Subbasin. **Attachment D** describes six best practices that GSAs and their consultants can apply when using local groundwater data to confirm a connection to groundwater for DWR's Natural Communities Commonly Associated with Groundwater Dataset[2]. **Attachment E** provides an overview of a new, free online tool that allows GSAs to assess changes in groundwater-dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.

Thank you for fully considering our comments as you develop your GSP.

Best Regards,

Sandi Matsumoto
Associate Director, California Water Program
The Nature Conservancy

Attachment A
Considering Nature under SGMA: A Checklist

The Nature Conservancy is neither dispensing legal advice nor warranting any outcome that could result from the use of this
does not guarantee approval of a GSP or compliance with SGMA, both of which will be determined by DWR and the State W

GSP Plan Element*		GDE Inclusion in GSPs: Identification and Consideration Elements	
Admin Info	**2.1.5 Notice & Communication** *23 CCR §354.10*	**Description of the types of environmental beneficial uses of groundwater that exist within GDEs how environmental stakeholders were engaged throughout the development of the GSP.**	
Planning Framework	**2.1.2 to 2.1.4 Description of Plan Area** *23 CCR §354.8*	**Description of jurisdictional boundaries, existing land use designations, water use management programs; general plans and other land use plans relevant to GDEs and their relationship to the**	
		Description of instream flow requirements, threatened and endangered species habitat, critical h areas.	
		Summary of process for permitting new or replacement wells for the basin, and how the p protection of GDEs	
Basin Setting	**2.2.1 Hydrogeologic Conceptual Model** *23 CCR §354.14*	**Basin Bottom Boundary:** Is the bottom of the basin defined as at least as deep as the deepest groundwater extractions?	
		Principal aquifers and aquitards: Are shallow aquifers adequately described, so that interconnections with surface water and vertical groundwa aquifers can be characterized?	
		Basin cross sections: Do cross-sections illustrate the relationships between GDEs, surface waters and principal aquifers?	
	2.2.2 Current & Historical Groundwater Conditions *23 CCR §354.16*	**Interconnected surface waters:**	
		Interconnected surface water maps for the basin with gaining and losing reaches defined (included as a fig as a shapefile on SGMA portal).	
		Estimates of current and historical surface water depletions for interconnected surface waters quantified a season, and water year type.	
		Basin GDE map included (as figure in text & submitted as a shapefile on SGMA Portal).	
		If NC Dataset *was* used:	Basin GDE map denotes which polygons were kept, removed, and ad (Worksheet 1, can be attached in GSP section 6.0).

			The basin's GDE shapefile, which is submitted via the SGMA Portal, includ attribute table denoting: 1) which polygons were kept/removed/added, an (e.g., why polygons were removed).
			GDEs polygons are consolidated into larger units and named for easier id GSP.
		If NC Dataset *was not* used:	Description of why NC dataset was not used, and how an alternative da approach used is best available information.
		Description of GDEs included:	
		Historical and current groundwater conditions and variability are described in each GDE unit.	
		Historical and current ecological condition and variability are described in each GDE unit and adequate to 2015.	
		Each GDE unit has been characterized as having high, moderate, or low ecological value.	
		Inventory of species, habitats, and protected lands for each GDE unit with ecological importance (Workshee GSP section 6.0).	
	2.2.3 Water Budget *23 CCR §354.18*	Groundwater inputs and outputs (e.g., evapotranspiration) of native vegetation and managed wetlands are historical and current water budget.	
		Potential impacts to groundwater conditions due to land use changes, climate change, and population growi ecosystems are considered in the projected water budget.	
Sustainable Management Criteria	**3.1 Sustainability Goal** *23 CCR §354.24*	**Environmental stakeholders/representatives were consulted.**	
		Sustainability goal mentions GDEs or species and habitats that are of particular concern or interest.	
		Sustainability goal mentions whether the intention is to address pre-SGMA impacts, maintain or improve co species and habitats that are of particular concern or interest.	
	3.2 Measurable Objectives *23 CCR §354.30*	**Description of how GDEs were considered and whether the measurable objectives and interim achieve the sustainability goal as it pertains to the environment, beneficial uses and managed ar**	
	3.3 Minimum Thresholds *23 CCR §354.28*	**Description of how GDEs and environmental uses of surface water were considered when setting for relevant sustainability indicators:**	
		Will adverse impacts to GDEs and/or aquatic ecosystems dependent on interconnected surface waters (be water) be avoided with the selected minimum thresholds?	
		Are there any differences between the selected minimum threshold and state, federal, or local standards rel habitats residing in GDEs or aquatic ecosystems dependent on interconnected surface waters?	
	3.4 Undesirable Results *23 CCR §354.26*	**For GDEs, hydrological data are compiled and synthesized for each GDE unit:**	
		If hydrological data *are available* within/nearby the GDE	Hydrological datasets are plotted and provided for each GDE unit attached in GSP Section 6.0).
			Baseline period in the hydrologic data is defined.
			GDE unit is classified as having high, moderate, or low suscep groundwater.

			Cause-and-effect relationships between groundwater changes and GD
		If hydrological data *are not available* within/nearby the GDE	Data gaps/insufficiencies are described.
			Plans to reconcile data gaps in the monitoring network are stated.
		For GDEs, biological data are compiled and synthesized for each GDE unit:	
		Biological datasets are plotted and provided for each GDE unit, and provide baseline conditions for assessme variability.	
		Data gaps/insufficiencies are described.	
		Plans to reconcile data gaps in the monitoring network are stated.	
		Description of potential effects on GDEs, land uses and property interests:	
		Cause-and-effect relationships between GDE and groundwater conditions are described.	
		Impacts to GDEs that are considered to be "significant and unreasonable" are described.	
		Known hydrological thresholds or triggers (e.g., instream flow criteria, groundwater depths, water quality pa significant impacts to relevant species or ecological communities are reported.	
		Land uses include and consider recreational uses (e.g., fishing/hunting, hiking, boating).	
		Property interests include and consider privately and publicly protected conservation lands and opens space refuges, parks, and natural preserves.	
Sustainable Management Criteria	**3.5 Monitoring Network** *23 CCR §354.34*	Description of whether hydrological data are spatially and temporally sufficient to monitor groundwater cond unit.	
		Description of how hydrological data gaps and insufficiencies will be reconciled in the monitoring network.	
		Description of how impacts to GDEs and environmental surface water users, as detected by biological respo and which GDE monitoring methods will be used in conjunction with hydrologic data to evaluate cause-and-e groundwater conditions.	
Projects & Mgmt Actions	**4.0. Projects & Mgmt Actions to Achieve Sustainability Goal** *23 CCR §354.44*	Description of how GDEs will benefit from relevant project or management actions.	
		Description of how projects and management actions will be evaluated to assess whether adverse impa mitigated or prevented.	

* In reference to DWR's GSP annotated outline guidance document, available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/GD_GSP_Outline_Final_2016-12-23.pdf

Attachment B

TNC Evaluation of the Madera Subbasin Groundwater Sustainability Plan, Chapters 1 and 2

This attachment summarizes our comments on Chapters 1 and 2 of the Madera Subbasin GSP. Major sections of Chapter 2 were not included in the review draft, including many figures, key sections of the document, and appendices with supporting information. The missing sections are critical to TNCs review of this GSP. Therefore, please view the comments on Chapter 2 as preliminary, and take them into consideration as you finalize Chapter 2.

Section 2.1.5.2 Description of Beneficial Uses and Users in the Basin (p.16)
[Checklist Item #1]:

- Although environmental agencies and environmental groups are listed as one of the beneficial users of groundwater in the Subbasin, no specific uses are given. The types and locations of environmental uses, species and habitats supported, and the designated beneficial environmental uses of surface waters that may be affected by groundwater extraction in the Subbasin should be specified. To identify environmental users, **please refer to the following**:
    - Natural Communities Commonly Associated with Groundwater dataset (NC Dataset) - https://gis.water.ca.gov/app/NCDatasetViewer/
    - The list of freshwater species located in the Madera Subbasin in **Attachment C** of this letter. This list was previously sent to the GSA and is available online (https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/). Please take particular note of the species with protected status.
    - Lands that are protected as open space preserves, habitat reserves, wildlife refuges, etc. or other lands protected in perpetuity and supported by groundwater or interconnected surface waters should be identified and acknowledged.
- In Table 2-5 (p. 17), Environmental and Ecosystem Uses Category: Stakeholders representing State and Federal agencies should include the United States Fish and Wildlife Service and National Marine Fisheries Service. Environmental groups should be expanded in a manner similar to the environmental justice groups in the Human Right to Water category. **Please expand the stakeholder list associated with the Environmental and Ecosystem Uses category in Table 2-5 to include the appropriate agencies and list of environmental groups**.

Section 2.1.2 Water Resources Monitoring and Management Programs (p. 8-12)
[Checklist Item #2]:

- Per the GSP Regulations (23 CCR §354.34), monitoring must address trends in groundwater *and related surface conditions*. For this section to provide the appropriate context and help assure integration of GSP implementation with other

ongoing regulatory programs, **please describe jurisdictions related to aquatic resources, interconnected surface waters, instream flow requirements, and groundwater-dependent ecosystems (GDEs) that could be affected by groundwater withdrawals.**

Section 2.1.2.2 Surface Water Monitoring and Management Programs (p. 9-10)
[Checklist Item #2]:

- "*Limitations on surface water deliveries will limit operational flexibility by reducing surface water supplies available for conjunctive use programs.*" (p. 10) The limitations are not defined and warrant further description, either in this section or in Section 2.1.2.4, to more specifically identify potential effects on the flows of interconnected surface waters and potential stress to the groundwater system. **Please ensure that description of the surface water monitoring system in Appendix 2H clarifies the limitations and please specify whether these limitations could affect the surface water conditions of any GDEs or instream habitat in interconnected surface waters that may be present in the area.**

Section 2.1.3 Land Use Elements or Topic Categories of Applicable General Plans (p. 13-15)
[Checklist Item #2]:

- Policy 1.A.5 of the Madera County General Plan restricts development in "areas with sensitive environmental resources", but this is the only mention of sensitive areas in the GSP as it relates to the General Plans. This section should include a discussion of the relationship of GSP implementation to General Plan goals and policies related to GDEs and sensitive or aquatic habitat. **Please further describe General Plan goals and policies related to the protection and management of GDEs and aquatic resources that could be affected by groundwater withdrawals.**

Section 2.1.1 Summary of Jurisdictional Areas and Other Features (p. 1-8)
[Checklist Item #3]:

- The GSP states "*The Madera Subbasin ... contains no considerable state land or federal land*" and provides a brief description of these lands as a footnote. Other than State preserves and parks, protected lands that could contain aquatic, riparian, and other potentially groundwater-dependent habitat are not identified. **Please identify all state park land, wildlife preserves, wetlands, open space, mitigation areas, and local parks with potentially groundwater-connected aquatic resources and habitat.**

Section 2.1.3.3 Permitting Process for Wells in Madera Subbasin (p. 15)
[Checklist Item #4]:

- **Please include discussion of the following in the well permitting section:**
    - Detail how future well permitting will be coordinated with the GSP to assure achievement of the Plan's sustainability goals.

- The State Third Appellate District recently found that Counties have a responsibility to consider the potential impacts of groundwater withdrawals on public trust resources when permitting new wells near surface waters with public trust uses (ELF v. SWRCB and Siskiyou County, No. C083239). The need for well permitting programs to comply with this requirement should be stated.

Section 2.1.4 Additional GSP Elements (p. 15)
[Checklist Items #2-4]:

- The following topics were listed, but not included in this draft of the GSP:
  - Control of saline water intrusion
  - Wellhead protection
  - Migration of contaminated groundwater
  - Well abandonment and well destruction program
  - Replenishment of groundwater extractions
  - Conjunctive use and underground storage
  - Well construction policies
  - Groundwater contamination cleanup, recharge, diversions to storage, conservation, water recycling, conveyance, and extraction projects
  - Efficient water management practice
  - Relationships with State and Federal regulatory agencies
  - Land use plans and efforts to coordinate with land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity
  - Impacts on groundwater dependent ecosystems
- **These topics are an important part of the GSP and should be added. Further comments may be made with respect to GDEs after discussion of these topics is added to the GSP.**

Section 2.2.1.2 Lateral and Vertical Subbasin Boundaries (p. 24)
[Checklist Item #5]:

- The base of the vertical boundary for the GSP should be clearly defined. The base of freshwater appears to be defined as "*considered to have total dissolved solids of less than 1,000 milligrams/liter (mg/L) or conductivity of less than 1,600 umhos/cm.*" The text states "*in general, the aquifer base is controlled mostly by the base of freshwater provided in Figure 2-17 except in the far eastern portions of the subbasin.*" In the eastern part of the subbasin, the vertical boundary appears to be the depth to bedrock, Figure 2-18. The figures are missing so the comparison of the bottom of wells to either definition cannot be made. As noted on page 9 of DWR's Hydrogeologic Conceptual Model BMP (https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_HCM_Final_2016-12-23.pdf) "the definable bottom of the basin should be at least as deep as the deepest groundwater extractions". **Thus, groundwater extraction well depth data should also be included in the determination of the basin bottom.** This will prevent the possibility of extractors with wells deeper than the basin boundary

(defined by the base of freshwater) from claiming exemption from SGMA due to their well residing outside the vertical extent of the basin boundary.

Section 2.2.1 Hydrogeologic Conceptual Model (p. 22)
[Checklist Item #6-7]:

- Numerous figures (Figures 2-9 through 2-72) and Appendices 2F, 2G, 2H, and 6E are not included in the review draft, so it is difficult to confirm the information stated in the text. The two principal aquifers are the Upper and Lower Aquifers. The Upper Aquifer is unconfined, and the Lower Aquifer is semi-confined in the eastern part of the basin and confined in the western part by the Corcoran Clay. The relationship of the aquifers to surface water is not defined, given the missing figures. **Please ensure that the cross-sections include example near-surface cross section details that depict the conceptual understanding of shallow or perched groundwater and stream, riparian and other GDE interactions at different locations.**

Section 2.2.2.6 Groundwater Dependent Ecosystems (p. 36-37)
[Checklist Item #11-20]:

- Page 37 states that the GDE analysis is in progress. **Please ensure that Best Practices for using the NC Dataset, included as Attachment D in this letter, is followed when identifying GDEs.**
- The text states (p. 37) "*However, the presence of perched water at a given location will not be affected by regional groundwater pumping, and therefore potential impacts to perched groundwater are not a consideration in evaluation of GDEs and sustainable yield for the Subbasin.*" The GSP discounts the perched water zones as derived from surface water, and therefore they were not considered in evaluation of GDEs. **The GSP should provide clear evidence of hydraulic disconnection where shallow groundwater is considered perched or identify hydraulic connection as a data gap. In addition, the GSP should consider perched water as a shallow aquifer, because even though it may not be pumped at present, it could be in the future.**
- The GSP indicates "*that there may be small isolated areas along the San Joaquin River on the southern boundary of Madera Subbasin and possibly at the extreme western tip of Madera Subbasin*" (p. 37) that will be evaluated for potential GDEs. **Please include maps and detailed near-surface cross-sections of these areas and refer to the figures in this section.**

Section 2.2.3.1 Water Budget Conceptual Model (p. 37-46)
[Checklist Item #21-22]:

- In the Land Surface System component of the water budget, ET is split into ET of applied irrigation water and ET of precipitation (Table 2-10, p. 43). ET of groundwater (ETg) is not included. **Please include ETg in the water budget or explain where it is included.**

Section 2.2.3.2 Water Budget Analysis Period (p. 46)

[Checklist Item #21-22]:

- The projected period for the water budget was selected as 2017-2090. The DWR mean 2030 climate change factors were used to adjust hydrologic data for 1965-2015. The land use was adjusted in urban areas based on the projected growth from 2017 to 2070. However, the results are not provided. The simulations were run with the MCSim model with and without projects and/or demand reductions actions to achieve sustainability yields by 2040. The results are needed to see how the projected water budget might impact any GDEs and aquatic ecosystems. **Please provide the complete water budget and supporting analysis for the projected period.**

Section 2.2.3.3 Water Budget Components and Uncertainties (p. 50)
[Checklist Item #21-22]:

- **Please clarify how the IDC model of the root zone budget was used to differentiate ET among the agricultural, urban, and native vegetation land uses (p. 52). Please explain how any native vegetation present in GDEs was handled in the water budget process.**

Attachment C

Freshwater Species Located in the Madera Subbasin

To assist in identifying the beneficial users of surface water necessary to assess the undesirable result "depletion of interconnected surface waters", Attachment C provides a list of freshwater species located in the Madera Subbasin. To produce the freshwater species list, we used ArcGIS to select features within the California Freshwater Species Database version 2.0.9 within the GSA's boundary. This database contains information on ~4,000 vertebrates, macroinvertebrates and vascular plants that depend on fresh water for at least one stage of their life cycle. The methods used to compile the California Freshwater Species Database can be found in Howard et al. 2015[3]. The spatial database contains locality observations and/or distribution information from ~400 data sources. The database is housed in the California Department of Fish and Wildlife's BIOS[4] as well as on The Nature Conservancy's science website[5].

Scientific Name	Common Name	Legal Protected Status		
		Federal	State	Other
BIRDS				
Actitis macularius	Spotted Sandpiper			
Aechmophorus occidentalis	Western Grebe			
Agelaius tricolor	Tricolored Blackbird	Bird of Conservation Concern	Special Concern	BSSC - First priority
Aix sponsa	Wood Duck			
Anas acuta	Northern Pintail			
Anas americana	American Wigeon			
Anas clypeata	Northern Shoveler			
Anas crecca	Green-winged Teal			
Anas cyanoptera	Cinnamon Teal			
Anas discors	Blue-winged Teal			
Anas platyrhynchos	Mallard			
Anas strepera	Gadwall			
Anser albifrons	Greater White-fronted Goose			
Ardea alba	Great Egret			
Ardea herodias	Great Blue Heron			
Aythya affinis	Lesser Scaup			
Aythya americana	Redhead		Special Concern	BSSC - Third priority
Aythya collaris	Ring-necked Duck			
Aythya marila	Greater Scaup			
Aythya valisineria	Canvasback		Special	
Botaurus lentiginosus	American Bittern			
Bucephala albeola	Bufflehead			
Bucephala clangula	Common Goldeneye			
Butorides virescens	Green Heron			
Calidris alpina	Dunlin			
Calidris mauri	Western Sandpiper			
Calidris minutilla	Least Sandpiper			
Chen caerulescens	Snow Goose			
Chen rossii	Ross's Goose			
Chlidonias niger	Black Tern		Special Concern	BSSC - Second priority

[3] Howard, J.K. et al. 2015. Patterns of Freshwater Species Richness, Endemism, and Vulnerability in California. PLoSONE, 11(7). Available at: https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0130710
[4] California Department of Fish and Wildlife BIOS: https://www.wildlife.ca.gov/data/BIOS
[5] Science for Conservation: https://www.scienceforconservation.org/products/california-freshwater-species-database

Chroicocephalus philadelphia	Bonaparte's Gull			
Cistothorus palustris palustris	Marsh Wren			
Egretta thula	Snowy Egret			
Empidonax traillii	Willow Flycatcher	Bird of Conservation Concern	Endangered	
Fulica americana	American Coot			
Gallinago delicata	Wilson's Snipe			
Geothlypis trichas trichas	Common Yellowthroat			
Grus canadensis	Sandhill Crane			
Haliaeetus leucocephalus	Bald Eagle	Bird of Conservation Concern	Endangered	
Himantopus mexicanus	Black-necked Stilt			
Limnodromus scolopaceus	Long-billed Dowitcher			
Lophodytes cucullatus	Hooded Merganser			
Megaceryle alcyon	Belted Kingfisher			
Mergus merganser	Common Merganser			
Mergus serrator	Red-breasted Merganser			
Numenius americanus	Long-billed Curlew			
Numenius phaeopus	Whimbrel			
Nycticorax nycticorax	Black-crowned Night-Heron			
Oxyura jamaicensis	Ruddy Duck			
Pelecanus erythrorhynchos	American White Pelican		Special Concern	BSSC - First priority
Phalacrocorax auritus	Double-crested Cormorant			
Phalaropus tricolor	Wilson's Phalarope			
Plegadis chihi	White-faced Ibis		Watch list	
Pluvialis squatarola	Black-bellied Plover			
Podiceps nigricollis	Eared Grebe			
Podilymbus podiceps	Pied-billed Grebe			
Porzana carolina	Sora			
Rallus limicola	Virginia Rail			
Recurvirostra americana	American Avocet			
Riparia riparia	Bank Swallow		Threatened	
Setophaga petechia	Yellow Warbler			BSSC - Second priority
Tachycineta bicolor	Tree Swallow			
Tringa melanoleuca	Greater Yellowlegs			
Tringa semipalmata	Willet			
Tringa solitaria	Solitary Sandpiper			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird		Special Concern	BSSC - Third priority
CRUSTACEANS				
Branchinecta lynchi	Vernal Pool Fairy Shrimp	Threatened	Special	IUCN - Vulnerable
Lepidurus packardi	Vernal Pool Tadpole Shrimp	Endangered	Special	IUCN - Endangered
Linderiella occidentalis	California Fairy Shrimp		Special	IUCN - Near Threatened
FISH				
Catostomus occidentalis occidentalis	Sacramento sucker			Least Concern - Moyle 2013
Cottus asper ssp. 1	Prickly sculpin			Least Concern - Moyle 2013
Cottus gulosus	Riffle sculpin		Special	Near-Threatened - Moyle 2013
Gasterosteus aculeatus microcephalus	Inland threespine stickleback		Special	Least Concern - Moyle 2013

Lampetra hubbsi	Kern brook lamprey		Special Concern	Vulnerable - Moyle 2013
Lavinia exilicauda exilicauda	Sacramento hitch		Special	Near-Threatened - Moyle 2013
Lavinia symmetricus symmetricus	Central California roach		Special Concern	Near-Threatened - Moyle 2013
Mylopharodon conocephalus	Hardhead		Special Concern	Near-Threatened - Moyle 2013
Mylopharodon conocephalus	Hardhead		Special Concern	Near-Threatened - Moyle 2013
Oncorhynchus mykiss irideus	Coastal rainbow trout			Least Concern - Moyle 2013
Oncorhynchus tshawytscha - CV fall	Central Valley fall Chinook salmon	Species of Special Concern	Special Concern	Vulnerable - Moyle 2013
Oncorhynchus tshawytscha - CV late fall	Central Valley late fall Chinook salmon	Species of Special Concern		Endangered - Moyle 2013
Orthodon microlepidotus	Sacramento blackfish			Least Concern - Moyle 2013
Ptychocheilus grandis	Sacramento pikeminnow			Least Concern - Moyle 2013
HERPS				
Actinemys marmorata marmorata	Western Pond Turtle		Special Concern	ARSSC
Ambystoma californiense californiense	California Tiger Salamander	Threatened	Threatened	ARSSC
Anaxyrus boreas boreas	Boreal Toad			
Pseudacris regilla	Northern Pacific Chorus Frog			
Rana draytonii	California Red-legged Frog	Threatened	Special Concern	ARSSC
Spea hammondii	Western Spadefoot	Under Review in the Candidate or Petition Process	Special Concern	ARSSC
Taricha torosa	Coast Range Newt		Special Concern	ARSSC
Thamnophis couchii	Sierra Gartersnake			
Thamnophis gigas	Giant Gartersnake	Threatened	Threatened	
Thamnophis sirtalis sirtalis	Common Gartersnake			
INSECTS & OTHER INVERTEBRATES				
Ablabesmyia spp.	Ablabesmyia spp.			
Agapetus malleatus	A Caddisfly			
Baetidae fam.	Baetidae fam.			
Baetis spp.	Baetis spp.			
Baetis tricaudatus	A Mayfly			
Callibaetis spp.	Callibaetis spp.			
Centroptilum spp.	Centroptilum spp.			
Chironomidae fam.	Chironomidae fam.			
Chironomus spp.	Chironomus spp.			
Corixidae fam.	Corixidae fam.			
Cricotopus spp.	Cricotopus spp.			
Cryptotendipes spp.	Cryptotendipes spp.			
Dicrotendipes spp.	Dicrotendipes spp.			
Eubrianax edwardsii				Not on any status lists
Eukiefferiella spp.	Eukiefferiella spp.			
Fallceon spp.	Fallceon spp.			
Heptageniidae fam.	Heptageniidae fam.			
Hetaerina americana	American Rubyspot			

Hydropsyche spp.	Hydropsyche spp.			
Laccobius spp.	Laccobius spp.			
Laccophilus spp.	Laccophilus spp.			
Leptoceridae fam.	Leptoceridae fam.			
Libellula luctuosa	Widow Skimmer			
Limnophyes spp.	Limnophyes spp.			
Mideopsis spp.	Mideopsis spp.			
Nanocladius spp.	Nanocladius spp.			
Nectopsyche spp.	Nectopsyche spp.			
Parakiefferiella spp.	Parakiefferiella spp.			
Paratendipes spp.	Paratendipes spp.			
Phaenopsectra spp.	Phaenopsectra spp.			
Polypedilum spp.	Polypedilum spp.			
Procladius spp.	Procladius spp.			
Pseudochironomus spp.	Pseudochironomus spp.			
Pseudosmittia spp.	Pseudosmittia spp.			
Rheotanytarsus spp.	Rheotanytarsus spp.			
Robackia spp.	Robackia spp.			
Serratella micheneri	A Mayfly			
Sigara spp.	Sigara spp.			
Simulium spp.	Simulium spp.			
Stenochironomus spp.	Stenochironomus spp.			
Tanytarsus spp.	Tanytarsus spp.			
Tipulidae fam.	Tipulidae fam.			
Tramea lacerata	Black Saddlebags			
Tricoryhyphes spp.	Tricoryhyphes spp.			
Tropisternus spp.	Tropisternus spp.			
MAMMALS				
Castor canadensis	American Beaver			Not on any status lists
Lontra canadensis canadensis	North American River Otter			Not on any status lists
Neovison vison	American Mink			Not on any status lists
Ondatra zibethicus	Common Muskrat			Not on any status lists
MOLLUSKS				
Anodonta californiensis	California Floater		Special	
Lymnaea spp.	Lymnaea spp.			
Margaritifera falcata	Western Pearlshell		Special	
Menetus spp.	Menetus spp.			
Physa spp.	Physa spp.			
Sphaeriidae fam.	Sphaeriidae fam.			
PLANTS				
Alnus rhombifolia	White Alder			
Alopecurus carolinianus	Tufted Foxtail			
Alopecurus saccatus	Pacific Foxtail			
Anemopsis californica	Yerba Mansa			
Arundo donax	NA			
Azolla filiculoides	NA			
Bergia texana	Texas Bergia			
Brodiaea nana				Not on any status lists
Callitriche fassettii	NA			Not on any status lists
Callitriche heterophylla bolanderi	Large Water-starwort			
Callitriche longipedunculata	Longstock Water-starwort			
Callitriche marginata	Winged Water-starwort			
Callitriche trochlearis	Waste-water Water-starwort			

Carex alma	Sturdy Sedge			
Carex amplifolia	Bigleaf Sedge			
Carex densa	Dense Sedge			
Carex diandra	Lesser Panicled Sedge			
Carex feta	Green-sheath Sedge			
Carex hirtissima	Fuzzy Sedge			
Carex integra	Smooth-beak Sedge			
Carex lemmonii	Lemmon's Sedge	Endangered		
Carex senta	Western Rough Sedge			
Carex simulata	Copycat Sedge			
Carex utriculata	Beaked Sedge			
Castilleja campestris succulenta	Fleshy Owl's-clover	Threatened	Endangered	CRPR - 1B.2
Castilleja miniata miniata	Greater Red Indian-paintbrush			
Cephalanthus occidentalis	Common Buttonbush			
Chloropyron palmatum	NA	Endangered	Special	CRPR - 1B.1
Cicendia quadrangularis	Oregon Microcala			
Crassula aquatica	Water Pygmyweed			
Crypsis vaginiflora	NA			
Cyperus acuminatus	Short-point Flatsedge			
Cyperus erythrorhizos	Red-root Flatsedge			
Darmera peltata	Umbrella Plant			
Downingia bella	Hoover's Downingia			
Downingia cuspidata	Toothed Calicoflower			
Downingia ornatissima	NA			
Downingia pusilla	Dwarf Downingia		Special	CRPR - 2B.2
Echinodorus berteroi	Upright Burhead			
Elatine brachysperma	Shortseed Waterwort			
Elatine californica	California Waterwort			
Eleocharis acicularis acicularis	Least Spikerush			
Eleocharis atropurpurea	Purple Spikerush			
Eleocharis macrostachya	Creeping Spikerush			
Elodea canadensis	Broad Waterweed			
Epilobium campestre	NA			Not on any status lists
Epilobium cleistogamum	Cleistogamous Spike-primrose			
Eriophorum crinigerum	Fringed Cotton-grass			
Eryngium spinosepalum	Spiny Sepaled Coyote-thistle		Special	CRPR - 1B.2
Eryngium vaseyi vaseyi	Vasey's Coyote-thistle			Not on any status lists
Euthamia occidentalis	Western Fragrant Goldenrod			
Gratiola ebracteata	Bractless Hedge-hyssop			
Gratiola heterosepala	Boggs Lake Hedge-hyssop		Endangered	CRPR - 1B.2
Helenium bigelovii	Bigelow's Sneezeweed			
Hydrocotyle verticillata verticillata	Whorled Marsh-pennywort			
Hypericum anagalloides	Tinker's-penny			
Isoetes howellii	NA			
Isoetes nuttallii	NA			
Isoetes orcuttii	NA			
Juncus acuminatus	Sharp-fruit Rush			
Juncus dubius	Mariposa Rush			
Juncus effusus pacificus				
Juncus exiguus				Not on any status lists
Juncus uncialis	Inch-high Rush			

Juncus usitatus	NA			Not on any status lists
Juncus xiphioides	Iris-leaf Rush			
Lasthenia fremontii	Fremont's Goldfields			
Leersia oryzoides	Rice Cutgrass			
Lemna aequinoctialis	Lesser Duckweed			
Lemna minuta	Least Duckweed			
Leucothoe davisiae	Western Doghobble			
Limnanthes douglasii douglasii	Douglas' Meadowfoam			
Limnanthes douglasii nivea	Douglas' Meadowfoam			
Limnanthes douglasii rosea	Douglas' Meadowfoam			
Limnanthes montana	Mountain Meadowfoam			
Limosella acaulis	Southern Mudwort			
Lipocarpha micrantha	Dwarf Bulrush			
Ludwigia palustris	Marsh Seedbox			
Ludwigia peploides peploides	NA			Not on any status lists
Lythrum californicum	California Loosestrife			
Marsilea vestita vestita	NA			Not on any status lists
Mimulus guttatus	Common Large Monkeyflower			
Mimulus latidens	Broad-tooth Monkeyflower			
Mimulus tricolor	Tricolor Monkeyflower			
Myosurus minimus	NA			
Najas guadalupensis guadalupensis	Southern Naiad			
Navarretia intertexta	Needleleaf Navarretia			
Navarretia leucocephala bakeri	Baker's Navarretia		Special	CRPR - 1B.1
Navarretia leucocephala leucocephala	White-flower Navarretia			
Navarretia leucocephala minima	Least Navarretia			
Neostapfia colusana	Colusa Grass	Threatened	Endangered	CRPR - 1B.1
Oenanthe sarmentosa	Water-parsley			
Orcuttia inaequalis	San Joaquin Valley Orcutt Grass	Threatened	Endangered	CRPR - 1B.1
Orcuttia pilosa	Hairy Orcutt Grass	Endangered	Endangered	CRPR - 1B.1
Panicum acuminatum acuminatum				Not on any status lists
Panicum dichotomiflorum	NA			
Paspalum distichum	Joint Paspalum			
Perideridia bacigalupii	Bacigalupi's Perideridia		Special	CRPR - 4.2
Perideridia howellii	Howell's False Caraway			
Perideridia lemmonii	Lemmon's Yampah			
Perideridia parishii latifolia	Parish's Yampah			
Persicaria hydropiper	NA			Not on any status lists
Persicaria hydropiperoides				Not on any status lists
Persicaria lapathifolia				Not on any status lists
Persicaria maculosa	NA			Not on any status lists
Phacelia distans	NA			
Phalacroseris bolanderi	NA			
Phalaris arundinacea	Reed Canarygrass			
Phyla nodiflora	Common Frog-fruit			
Pilularia americana	NA			

Plagiobothrys acanthocarpus	Adobe Popcorn-flower			
Plagiobothrys austiniae	Austin's Popcorn-flower			
Plagiobothrys distantiflorus	California Popcorn-flower			
Plagiobothrys greenei	Greene's Popcorn-flower			
Plagiobothrys humistratus	Dwarf Popcorn-flower			
Plagiobothrys leptocladus	Alkali Popcorn-flower			
Plagiobothrys undulatus	NA			Not on any status lists
Plantago elongata elongata	Slender Plantain			
Platanus racemosa	California Sycamore			
Pogogyne douglasii	NA			
Potamogeton diversifolius	Water-thread Pondweed			
Potamogeton foliosus foliosus	Leafy Pondweed			
Potamogeton nodosus	Longleaf Pondweed			
Potamogeton pusillus pusillus	Slender Pondweed			
Psilocarphus brevissimus brevissimus	Dwarf Woolly-heads			
Psilocarphus oregonus	Oregon Woolly-heads			
Psilocarphus tenellus	NA			
Puccinellia simplex	Little Alkali Grass			
Ranunculus bonariensis	NA			
Rhododendron occidentale occidentale	Western Azalea			
Rorippa palustris palustris	Bog Yellowcress			
Rotala ramosior	Toothcup			
Sagittaria latifolia latifolia	Broadleaf Arrowhead			
Sagittaria longiloba	Longbarb Arrowhead			
Sagittaria sanfordii	Sanford's Arrowhead		Special	CRPR - 1B.2
Salix exigua exigua	Narrowleaf Willow			
Salix exigua hindsiana				Not on any status lists
Salix gooddingii	Goodding's Willow			
Salix laevigata	Polished Willow			
Salix lasiolepis lasiolepis	Arroyo Willow			
Salix melanopsis	Dusky Willow			
Schoenoplectus acutus occidentalis	Hardstem Bulrush			
Scirpus congdonii	Congdon's Bulrush			
Scirpus microcarpus	Small-fruit Bulrush			
Senecio triangularis	Arrow-leaf Groundsel			
Sidalcea calycosa calycosa	Annual Checker-mallow			
Sidalcea hirsuta	Hairy Checker-mallow			
Sidalcea reptans	Creeping Checker-mallow			
Solidago elongata				Not on any status lists
Stachys ajugoides	Bugle Hedge-nettle			
Stachys albens	White-stem Hedge-nettle			
Stachys stricta	Sonoma Hedge-nettle			
Tuctoria greenei	Green's Awnless Orcutt Grass	Endangered	Rare	CRPR - 1B.1
Typha domingensis	Southern Cattail			
Typha latifolia	Broadleaf Cattail			
Veronica americana	American Speedwell			
Veronica anagallis-aquatica	NA			
Viola macloskeyi	NA			
Wolffia columbiana	Columbian Watermeal			
Wolffia globosa	Asian Watermeal			

Attachment D

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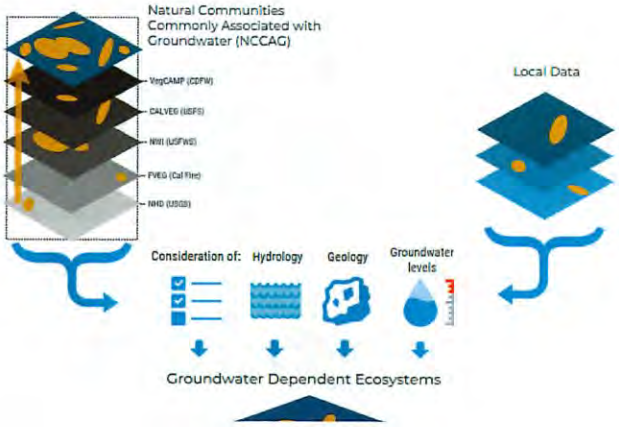
IDENTIFYING GDEs UNDER SGMA
Best Practices for using the NC Dataset

The Sustainable Groundwater Management Act (SGMA) requires that groundwater dependent ecosystems (GDEs) be identified in Groundwater Sustainability Plans (GSPs). As a starting point, the Department of Water Resources (DWR) is providing the Natural Communities Commonly Associated with Groundwater Dataset (NC Dataset) online[6] to help Groundwater Sustainability Agencies (GSAs), consultants, and stakeholders identify GDEs within individual groundwater basins. To apply information from the NC Dataset to local areas, GSAs should combine it with the best available science on local hydrology, geology, and groundwater levels to verify whether polygons in the NC dataset are likely supported by groundwater in an aquifer (Figure 1)[7]. This document highlights six best practices for using local groundwater data to confirm whether a potential GDE identified in the NC dataset is supported to groundwater.

The NC Dataset identifies vegetation and wetland features that are good indicators of a GDE. The dataset is comprised of 48 publicly available state and federal datasets that map vegetation, wetlands, springs, and seeps commonly associated with groundwater in California[8]. It was developed through a collaboration between DWR, the Department of Fish and Wildlife, and The Nature Conservancy (TNC). TNC has also provided detailed guidance on identifying GDEs from the NC dataset[9] on the Groundwater Resource Hub, a website dedicated to GDEs[10].



[6] *NC Dataset Online Viewer is available at: https://gis.water.ca.gov/app/NCDatasetViewer/*
[7] California Department of Water Resources (DWR). 2018. Summary of the "Natural Communities Commonly Associated with Groundwater" Dataset and Online Web Viewer. Available at: https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Data-and-Tools/Files/Statewide-Reports/Natural-Communities-Dataset-Summary-Document.pdf
[8] *For more details on the mapping methods, refer to: Klausmeyer, K., J. Howard, T. Keeler-Wolf, K. Davis-Fadtke, R. Hull, A. Lyons. 2018. Mapping Indicators of Groundwater Dependent Ecosystems in California: Methods Report. San Francisco, California. Available at: https://groundwaterresourcehub.org/public/uploads/pdfs/iGDE_data_paper_20180423.pdf*
[9] "Groundwater Dependent Ecosystems under the Sustainable Groundwater Management Act: Guidance for Preparing Groundwater Sustainability Plans" is available at https://groundwaterresourcehub.org/gde-tools/gsp-guidance-document/
[10] *The Groundwater Resource Hub is available at: www.GroundwaterResourceHub.org*

BEST PRACTICE #1. Establishing a Connection to Groundwater

Groundwater basins can be comprised of one continuous aquifer (Figure 2A) or multiple aquifers stacked on top of each other (Figure 2B). In unconfined aquifers (Figure 2A), using the depth to groundwater and the rooting depth of the vegetation is a reasonable method to determine groundwater dependence for GDEs. If groundwater is well below the rooting (and capillary) zone of the plants and any wetland features, the ecosystem is considered disconnected and groundwater management is not likely to affect the ecosystem (Figure 2D). However, it is important to consider local conditions (soil type, groundwater flow gradients, and aquifer parameters) and to review groundwater depth data from multiple seasons and water year types (wet and dry) because intermittent periods of high groundwater levels can replenish perched clay lenses that serve as the water source for GDEs (Figure 2C). Maintaining these natural groundwater fluctuations are important to sustaining GDE health.

Basins with a stacked series of aquifers (Figure 2B) may have varying levels of pumping across aquifers in the basin, depending on the production capacity or water quality associated with each aquifer. If pumping is concentrated in deeper aquifers, SGMA still requires GSAs to sustainably manage groundwater resources in shallow aquifers, such as perched aquifers, that support springs, surface water, domestic wells, and groundwater dependent ecosystems (Figure 2). This is because vertical groundwater gradients across aquifers may result in pumping from deeper aquifers to cause adverse impacts onto beneficial users reliant on shallow aquifers or interconnected surface water. The goal of SGMA is to sustainably manage groundwater resources for current and future social, economic, and environmental benefits. While groundwater pumping may not be currently occurring in a shallower aquifer, use of this water may become more appealing and economically viable in future years as pumping restrictions are placed on the deeper production aquifers in the basin to meet the sustainable yield and criteria. Thus, identifying GDEs in the basin should done irrespective to the amount of current pumping occurring in a particular aquifer, so that future impacts on GDEs due to new production can be avoided. A good rule of thumb to follow is: *if groundwater can be pumped from a well - it's an aquifer.*

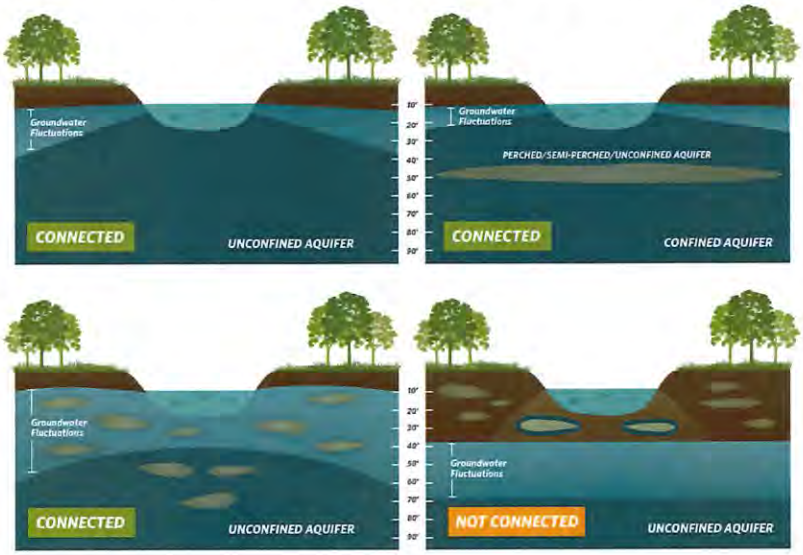


Figure 2. Confirming whether an ecosystem is connected to groundwater in a principal aquifer. Top: (Left) Depth to Groundwater in the aquifer under the ecosystem is an unconfined aquifer with depth to groundwater fluctuating seasonally and interannually within 30 feet from land surface. **(Right)** Depth to Groundwater in the shallow aquifer is connected to overlying ecosystem. Pumping predominately occurs in the confined aquifer, but pumping is possible in the shallow aquifer. **Bottom: (Left)** Depth to groundwater fluctuations are seasonally and interannually large, however, clay layers in the near surface prolong the ecosystem's connection to groundwater. **(Right)** Groundwater is disconnected from surface water, and any water in the vadose (unsaturated) zone is due to direct recharge from precipitation and indirect recharge under surface water feature. These areas typically support species that do not require access to groundwater to survive.

BEST PRACTICE #2. Characterize Seasonal and Interannual Groundwater Conditions

SGMA requires GSAs to describe current and historical groundwater conditions when identifying GDEs [23 CCR §354.16(g)]. Relying solely on the SGMA benchmark date (January 1, 2015) or any other single point in time to characterize groundwater conditions (e.g., depth-to-groundwater) is inadequate because managing groundwater conditions with data from one time point fails to capture the seasonal and interannual variability typical of California's climate. DWR's Best Management Practices document on water budgets[11] recommends using 10 years of water supply and water budget information to describe how historical conditions have impacted the operation of the basin within sustainable yield, implying that a baseline[12] could be determined based on data between 2005 and 2015. Using this or a similar time period, depending on data availability, is recommended for determining the depth-to-groundwater.

GDEs depend on groundwater levels being close enough to the land surface to interconnect with surface water systems or plant rooting networks. The most practical approach[13] for a GSA to assess whether polygons in the NC dataset are connected to groundwater is to rely on groundwater elevation data. As detailed in TNC's GDE guidance document[4], one of the key factors to consider when mapping GDEs is to contour depth-to-groundwater in the aquifer that is supporting the ecosystem (See Best Practice #5).

Groundwater levels fluctuate over time and space due to California's Mediterranean climate (dry summers and wet winters), climate change (flood and drought years), and subsurface heterogeneity in the subsurface (Figure 3). Many of California's GDEs have adapted to dealing with intermittent periods of water stress, however, if these groundwater conditions are prolonged adverse impacts to GDEs can result. While depth-to-groundwater levels within 30 feet[4] are generally accepted as being a proxy for confirming that polygons in the NC dataset are supported by groundwater, it is highly advised that fluctuations in the groundwater regime be characterized to understand the seasonal and interannual groundwater variability in GDEs. Utilizing groundwater data from one point in time can misrepresent groundwater levels required by GDEs, and inadvertently result in adverse impacts to the GDEs. Time series data on groundwater elevations and depths are available on the SGMA Data Viewer[14]. However, if insufficient data are available to describe groundwater conditions within or near polygons from the NC dataset, include those polygons in the GSP <u>until</u> data gaps are reconciled in the monitoring network (See Best Practice #6).

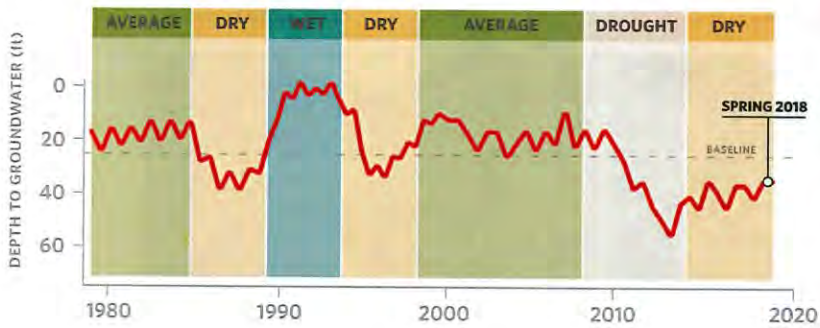


Figure 3. Example seasonality and interannual variability in depth to groundwater over time. Selecting one point in time, such as Spring 2018, to characterize groundwater conditions in GDEs fails to capture what groundwater conditions are necessary to maintain the ecosystem status into the future so adverse impacts are avoided.

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[11] DWR. 2016. Water Budget Best Management Practice. Available at: https://water.ca.gov/LegacyFiles/groundwater/sgm/pdfs/BMP_Water_Budget_Final_2016-12-23.pdf

[12] *Baseline is defined under the GSP regulations as "historic information used to project future conditions for hydrology, water demand, and availability of surface water and to evaluate potential sustainable management practices of a basin." [23 CCR §351(e)]*

[13] Groundwater reliance can also be confirmed via stable isotope analysis and geophysical surveys. For more information see The GDE Assessment Toolbox (Appendix IV, GDE Guidance Document for GSPs - link in footnote above).

[14] *SGMA Data Viewer: https://sgma.water.ca.gov/webgis/?appid=SGMADataViewer*

BEST PRACTICE #3. Ecosystems Often Rely on Both Groundwater and Surface Water

GDEs are plants and animals that rely on groundwater for all or some of its water needs, and thus can be supported by multiple water sources. The presence of non-groundwater sources (e.g., surface water, soil moisture in the vadose zone, applied water, treated wastewater effluent, urban stormwater, irrigated return flow) within and around NC polygons does not preclude the possibility that a connection to groundwater exists. SGMA defines GDEs as "ecological communities and species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface" [23 CCR §351(m)]. Hence, depth-to-groundwater data should be used to identify whether NC polygons are supported by groundwater and should be considered GDEs. In addition, SGMA requires that significant and undesirable adverse impacts to beneficial users of surface water be avoided. Beneficial users of surface water include environmental users such as plants or animals[15], which therefore must be considered when developing minimum thresholds for depletions of interconnected surface water.

GSAs are only responsible for impacts to GDEs resulting from groundwater conditions in the basin, so if adverse impacts to GDEs result from the diversion of applied water, treated wastewater, or irrigation return flow away from the GDE, then those impacts will be evaluated by other permitting requirements (e.g., CEQA) and may not be the responsibility of the GSA. However, if adverse impacts occur to the GDE due to changing groundwater conditions resulting from pumping or groundwater management activities, then the GSA would be responsible (Figure 4).

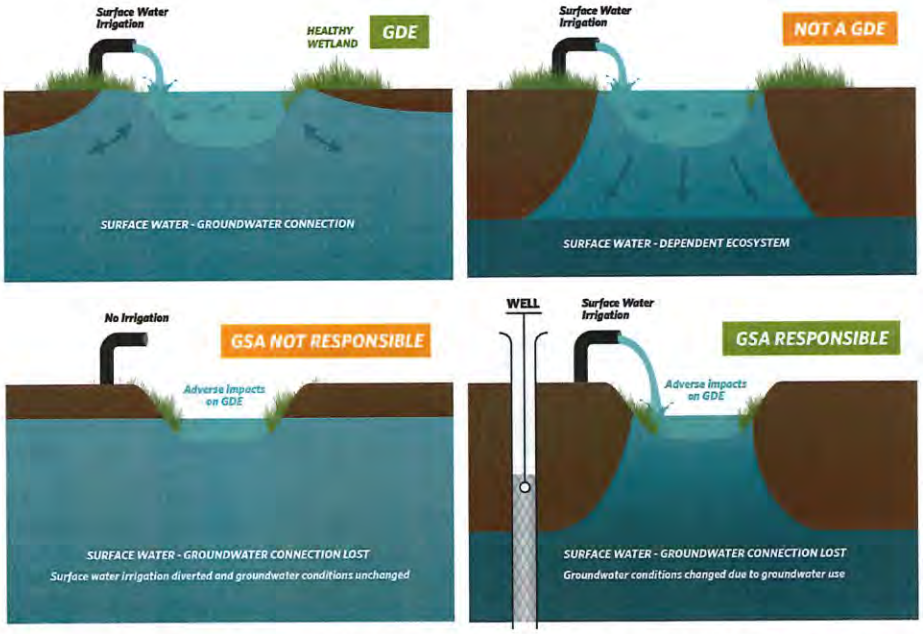


Figure 4. Ecosystems often depend on multiple sources of water. Top: (Left) Surface water and groundwater are interconnected, meaning that the GDE is supported by both groundwater and surface water. **(Right)** Ecosystems that are only reliant on non-groundwater sources are not groundwater-dependent. **Bottom: (Left)** An ecosystem that was once dependent on an interconnected surface water, but loses access to groundwater solely due to surface water diversions may not be the GSA's responsibility. **(Right)** Groundwater dependent ecosystems once dependent on an interconnected surface water system, but loses that access due to groundwater pumping is the GSA's responsibility.

[15] *For a list of environmental beneficial users of surface water by basin, visit: https://groundwaterresourcehub.org/gde-tools/environmental-surface-water-beneficiaries/*

BEST PRACTICE #4. Select Representative Groundwater Wells

Identifying GDEs in a basin requires that groundwater conditions are characterized to confirm whether polygons in the NC dataset are supported by the underlying aquifer. To do this, proximate groundwater wells should be identified to characterize groundwater conditions (Figure 5). When selecting representative wells, it is particularly important to consider the subsurface heterogeneity around NC polygons, especially near surface water features where groundwater and surface water interactions occur around heterogeneous stratigraphic units or aquitards formed by fluvial deposits. The following selection criteria can help ensure groundwater levels are representative of conditions within the GDE area:

- Choose wells that are within 5 kilometers (3.1 miles) of each NC Dataset polygons because they are more likely to reflect the local conditions relevant to the ecosystem. If there are no wells within 5km of the center of a NC dataset polygon, then there is insufficient information to remove the polygon based on groundwater depth. Instead, it should be retained as a potential GDE until there are sufficient data to determine whether or not the NC Dataset polygon is supported by groundwater.

- Choose wells that are screened within the surficial unconfined aquifer and capable of measuring the true water table.

- Avoid relying on wells that have insufficient information on the screened well depth interval for excluding GDEs because they could be providing data on the wrong aquifer. This type of well data should not be used to remove any NC polygons.

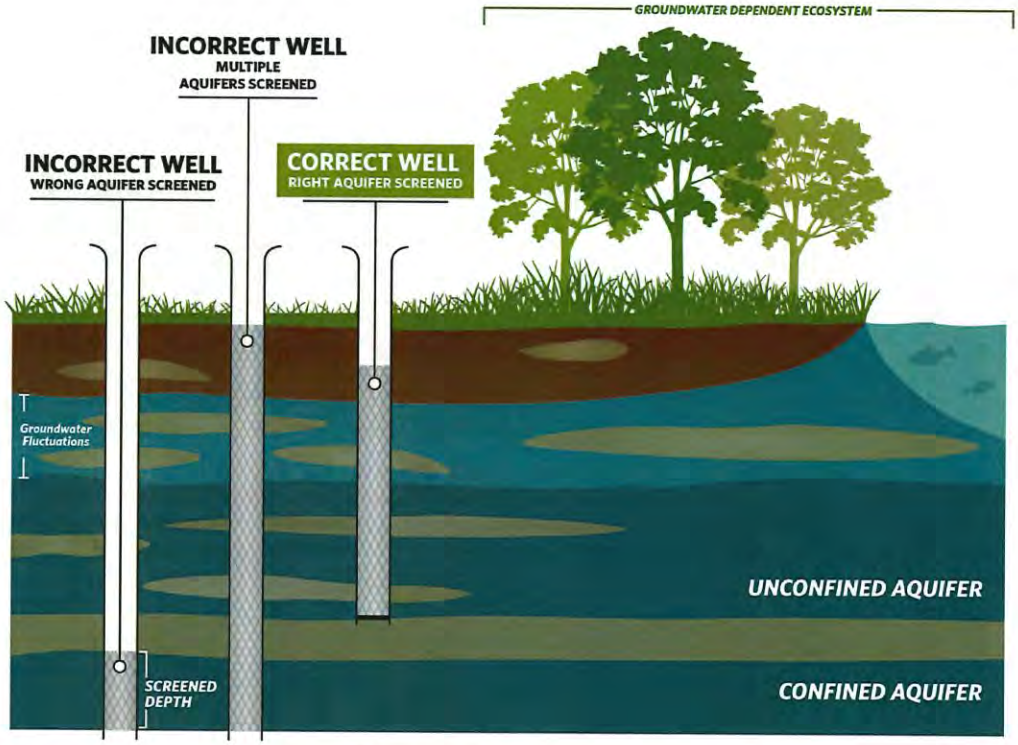


Figure 5. Selecting representative wells to characterize groundwater conditions near GDEs.

BEST PRACTICE #5. Contouring Groundwater Elevations

The common practice to contour depth-to-groundwater over a large area by interpolating measurements at monitoring wells is unsuitable for assessing whether an ecosystem is supported by groundwater. This practice causes errors when the land surface contains features like streams and wetlands depressions because it assumes the land surface is constant across the landscape and depth-to-groundwater is constant below these low-lying areas (Figure 6 - left panel). A more accurate approach is to interpolate **groundwater elevations** at monitoring wells to get an estimate of groundwater elevation across the landscape. This layer can then be subtracted from the land surface elevation from a Digital Elevation Model (DEM)[16] to estimate depth to groundwater contours across the landscape (Figure 6 – right panel; Figure 7). This will provide a much more accurate contours of depth-to-groundwater along streams and other land surface depressions where GDEs are commonly found.

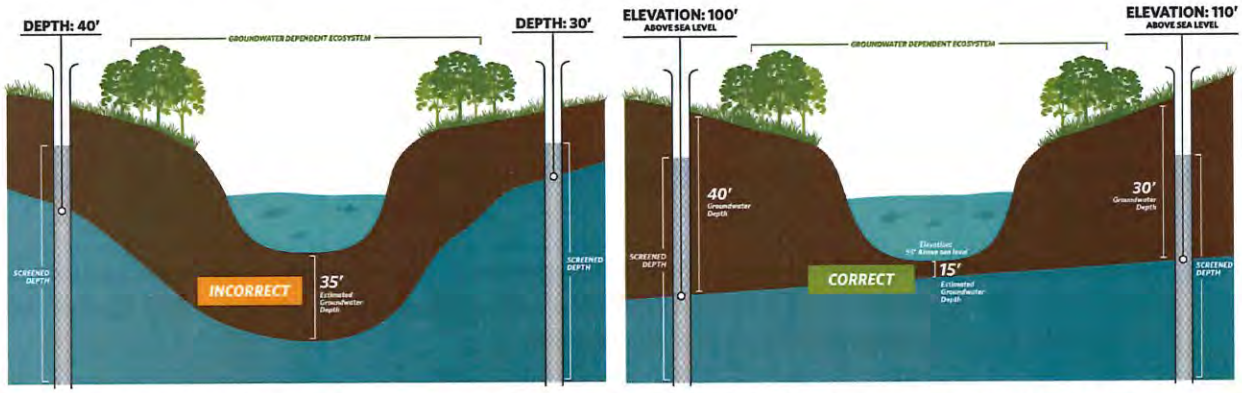


Figure 6. Contouring depth-to-groundwater around surface water features and GDEs. (Left) Groundwater level interpolation using depth-to-groundwater data from monitoring wells. **(Right)** Groundwater level interpolation using groundwater elevation data from monitoring wells and DEM data.

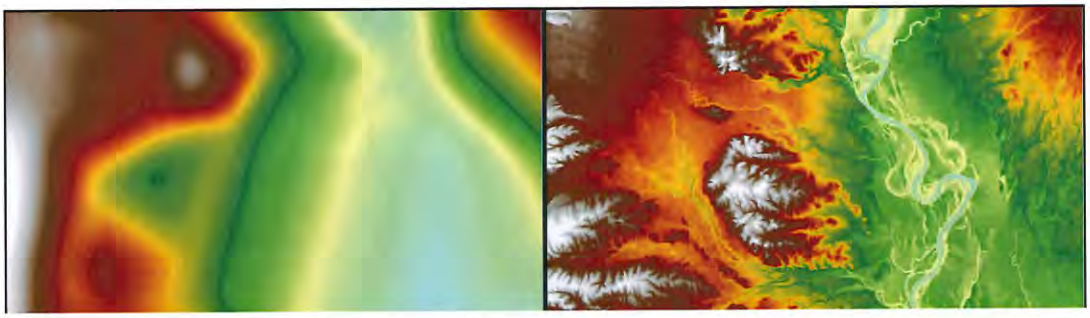


Figure 7. Depth to Groundwater Contours in Northern California. (Left) Contours were interpolated using depth to groundwater measurements determined at each well. **(Right)** Contours were determined by interpolating groundwater elevation measurements at each well and superimposing ground surface elevation from DEM spatial data to generate depth to groundwater contours. The image on the right shows a more accurate depth to groundwater estimate because it takes the local topography and elevation changes into account.

[16] USGS Digital Elevation Model data products are described at: https://www.usgs.gov/core-science-systems/ngp/3dep/about-3dep-products-services and can be downloaded at: https://viewer.nationalmap.gov/basic/

BEST PRACTICE #6. Best Available Science

Adaptive management is embedded within SGMA and provides a process to work toward sustainability over time by beginning with the best available information to make initial decisions, monitoring the results of those decisions, and using the data collected through monitoring to revise decisions in the future. In many situations, the hydrologic connection of NC dataset polygons will not initially be clearly understood if site-specific groundwater monitoring data are not available. If sufficient data are not available in time for the 2020/2022 plan, **The Nature Conservancy strongly advises that questionable polygons from the NC dataset be included in the GSP until data gaps are reconciled in the monitoring network.** Erring on the side of caution will help minimize inadvertent impacts to GDEs as a result of groundwater use and management actions during SGMA implementation.

KEY DEFINITIONS

Groundwater basin is an aquifer or stacked series of aquifers with reasonably well-defined boundaries in a lateral direction, based on features that significantly impede groundwater flow, and a definable bottom. *23 CCR §341(g)(1)*

Groundwater dependent ecosystem (GDE) are ecological communities or species that depend on groundwater emerging from aquifers or on groundwater occurring near the ground surface. *23 CCR §351(m)*

Interconnected surface water (ISW) surface water that is hydraulically connected at any point by a continuous saturated zone to the underlying aquifer and the overlying surface water is not completely depleted. *23 CCR §351(o)*

Principal aquifers are aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems. *23 CCR §351(aa)*

ABOUT US

The Nature Conservancy is a science-based nonprofit organization whose mission is *to conserve the lands and waters on which all life depends*. To support successful SGMA implementation that meets the future needs of people, the economy, and the environment, TNC has developed tools and resources (www.groundwaterresourcehub.org) intended to reduce costs, shorten timelines, and increase benefits for both people and nature.

Attachment E

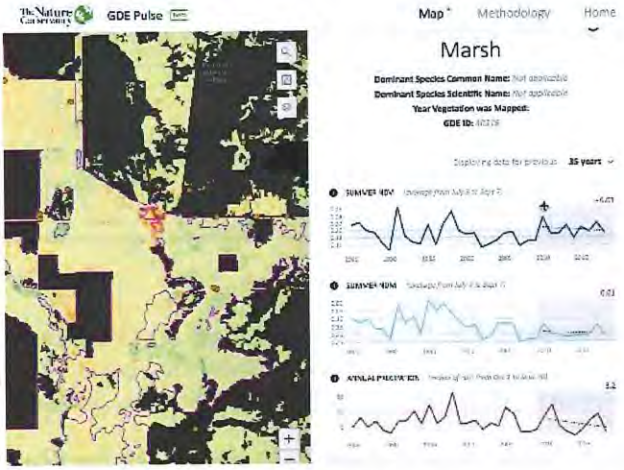
GDE Pulse

A new, free online tool that allows Groundwater Sustainability Agencies to assess changes in groundwater dependent ecosystem (GDE) health using satellite, rainfall, and groundwater data.

The Nature Conservancy

Protecting nature. Preserving life.®

Visit https://gde.codefornature.org/



Remote sensing data from satellites has been used to monitor the health of vegetation all over the planet. GDE pulse has compiled 35 years of satellite imagery from NASA's Landsat mission for every polygon in the Natural Communities Commonly Associated with Groundwater Dataset[17]. The following datasets are included:

Normalized Difference Vegetation Index (NDVI) is a satellite-derived index that represents the greenness of vegetation. Healthy green vegetation tends to have a higher NDVI, while dead leaves have a lower NDVI. We calculated the average NDVI during the driest part of the year (July - Sept) to estimate vegetation health when the plants are most likely dependent on groundwater.

Normalized Difference Moisture Index (NDMI) is a satellite-derived index that represents water content in vegetation. NDMI is derived from the Near-Infrared (NIR) and Short-Wave Infrared (SWIR) channels. Vegetation with adequate access to water tends to have higher NDMI, while vegetation that is water stressed tends to have lower NDMI. We calculated the average NDVI during the driest part of the year (July–September) to estimate vegetation health when the plants are most likely dependent on groundwater.

Annual Precipitation is the total precipitation for the water year (October 1st – September 30th) from the PRISM dataset[18]. The amount of local precipitation can affect vegetation with more precipitation generally leading to higher NDVI and NDMI.

Depth to Groundwater measurements provide an indication of the groundwater levels and changes over time for the surrounding area. We used groundwater well measurements from nearby (<1km) wells to estimate the depth to groundwater below the GDE based on the average elevation of the GDE (using a digital elevation model) minus the measured groundwater surface elevation.

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[17] *The Natural Communities Commonly Associated with Groundwater Dataset is hosted on the California Department of Water Resources' website: https://gis.water.ca.gov/app/NCDatasetViewer/#*

[18] The PRISM dataset is hosted on Oregon State University's website: http://www.prism.oregonstate.edu/

Valley Children's HEALTHCARE

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Madera, CA 93636

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valleychildrens.org

November 8, 2019

VIA EMAIL ONLY

Stephanie Anagnoson
Madera County
200 W. Fourth Street
Madera, CA 93637
Email: MaderaGSPComments@maderacounty.com
Stephanie.Anagnoson@maderacounty.com

Re: Public Review Draft Joint Groundwater Sustainability Plan – Madera Subbasin

Dear Ms. Anagnoson:

Valley Children's Hospital appreciates the opportunity to provide comments on the Public Review Draft Joint Groundwater Sustainability Plan ("Draft GSP") prepared for the Madera Subbasin on behalf of the Madera Subbasin Coordination Committee, which includes the Madera County Groundwater Sustainability Agency ("GSA"). The Draft GSP represents a critical first step toward Madera County's sustainable management of the Madera Subbasin to protect beneficial users of groundwater.

For nearly seventy years, Valley Children's Hospital (or "Hospital") has provided pediatric specialty and primary care to children of the Central Valley. The Valley Children's Hospital campus includes the main hospital and related medical uses, such as laboratories, outpatient health services, and extended stay accommodations like Ronald McDonald House. In addition to its critical medical services and community benefits, the Valley Children's Hospital also is Madera County's largest private sector employer.

Three wells located in the vicinity of the Hospital campus will meet its water demand. These wells are the only source of water for the Valley Children's Hospital's water system. In light of Valley Children's Hospital's reliance on groundwater to support its operations, we respectfully submit the following comments on the Draft GSP.

A. Adequacy of GSP to Protect Valley Children's Hospital's Beneficial Uses

The Sustainable Groundwater Management Act ("SGMA") requires GSAs to consider all beneficial uses and users of groundwater, including public water systems, municipal well operators and domestic users. (Water Code, § 10723.2.) Under SGMA, a GSA is tasked with managing groundwater in a manner that does not cause "significant and unreasonable impacts" to beneficial users. (See Water Code, §§ 10723.2, 10721(w); see also Cal. Code Regs., tit. 23, § 354.26.) To achieve sustainable groundwater management, the Department of Water Resources ("DWR") developed regulations that require a GSP to establish sustainable management criteria that set undesirable results, minimum thresholds and measurable objectives. (Cal. Code Regs., tit. 23, §§ 354.22 *et seq.*) These sustainable management criteria must be set to protect all beneficial users, including Valley Children's Hospital.

The Draft GSP currently sets a uniform approach for establishing sustainable management criteria without regard for the beneficial users. (See Draft GSP, Table ES-3, p. ES-9; Table 3-8, p. 3-35.) Although the Madera County GSA represents a disparate and disconnected territory and acknowledges variable geologic and hydrogeologic conditions, the Draft GSP makes no attempt to set sustainable management criteria that account for these differences. The Draft GSP defines an undesirable result as "30 percent of wells below the minimum threshold for two consecutive fall measurements."[1] (Draft GSP, pp. 3-35–3-36.) It is not clear what impact this could have on beneficial users, like Valley Children's Hospital, and the Draft GSP does not contain this analysis. The Draft GSP must evaluate the impact of undesirable results on drinking water users, including Valley Children's Hospital, and change the undesirable results to prevent drinking water impacts.

Further, the Draft GSP only proposes to monitor sustainable management criteria at "representative monitoring sites." (Draft GSP, Section 3.5.3, p. 3-53–3-54.) DWR regulations allow for representative monitoring sites, however, these sites must reflect the "general conditions in the area."[2] (Cal. Code Regs., tit. 23, § 354.36.) Valley Children's Hospital reviewed the nearest wells to its campus (MCE-RMS-9, MCE-RMS-7 and MCE-RMS-4). These wells are not representative of the Valley Children's Hospital's wells. We are concerned that the County's monitoring of these representative wells will not adequately reflect the conditions in the Hospital's wells.

To address our concerns, we request that Madera County set sustainable management criteria sufficient to protect Valley Children's Hospital's water supply. One approach could be to develop specific management areas within the Madera Subbasin to protect specific beneficial uses of water and facilitate implementation of the GSP. (See Cal. Code Regs., tit. 23, § 354.20.) Alternatively,

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[1] The GSP defines minimum thresholds as either the lowest of (a) projected lowest future groundwater level at the end of estimated 10-year drought or (b) the lowest modeled groundwater level from projected with projects model simulation (2019-2090)." (Draft GSP, pp. 3-35–3-36.) This defines a minimum threshold that is highly dependent on model assumptions and allows for water levels to continue to decline below historical conditions.

[2] DWR regulations also state that monitoring networks must include a sufficient density of monitoring wells to collect representative measurements through depth-discrete perforated intervals to characterize the groundwater table for each aquifer. (Cal. Code Regs., tit. 23, § 354.37(c)(1)(A).)

Madera County should consider including Valley Children's Hospital's wells, or nearby wells, in its representative monitoring network. We would be happy to work with the County to ensure the final GSP sets sufficient sustainable management criteria and establishes appropriate monitoring sites to maintain groundwater levels in Valley Children's Hospital's wells.

B. Vague Demand Reduction Project and Management Action

Madera County's proposed "Demand Management" or "Demand Reduction" management action is the crucial Project and Management Action for the basin to achieve sustainable groundwater management. (Draft GSP, Section 4.4.4, pp. 4-40–4-45.) The Demand Management program plans to reduce groundwater consumption by 90,000 acre feet accounting for approximately 42 percent of the total reduced groundwater use from all the proposed Projects and Management Actions. (Draft GSP, Table ES-4, p. ES-14.) As a result, the scope and details of the County's Demand Management program are critical for implementation of the GSP.

As written, the Draft GSP is unclear about whether the Demand Management program applies to only to Madera County GSA territory or to all GSAs within the Madera Subbasin.[3] The Demand Management program proposes to decrease average annual groundwater use by 10 percent by 2025 followed by an additional 6 percent decrease per year between 2026 and 2040. (Draft GSP, Section 4.4.4.2, p. 4-41.) This is an ambitious target. If the Demand Reduction program only applies to Madera County and is implemented immediately, beneficial users in the County will bear the burden of SGMA compliance, while other GSAs in the Subbasin choose to defer implementation.

Further, the Draft GSP does not clarify whether the Demand Management will apply to agricultural users or to all beneficial users. Although Valley Children's Hospital is taking steps to increase groundwater replenishment and reduce its irrigation demand, the proposed Demand Management program could create substantial hardship for the Hospital. Unlike agricultural users, the Hospital has relatively low water usage, cannot fallow land or change crops to reduce demand, and must continue to use its water supply for essential medical services. Any Demand Management program should contemplate how each type of beneficial users can achieve demand reductions and incorporate credits for activities like the Hospital's wastewater treatment and replenishment facilities.

Accordingly, we request that Madera County clarify whether the Demand Management program will apply to non-agricultural users and, if so, consider exempting Valley Children's Hospital from any such program. We hope Madera County will continue to coordinate with Valley Children's Hospital as it develops the Demand Management Program.

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[3] The Draft GSP states that "Madera County's primary approach to demand management is to set demand reduction targets for *the GSA service area as a whole*, based on conditions in the Subbasin." (Draft GSP, Section 4.4.4.1, p. 4-40 [emphasis added].) In Section 4.4.4.3, the Draft GSP indicates that "is currently working with GSA stakeholders and other GSAs in the subbasin to define the demand management program including the potential for a within-GSA groundwater market." (Draft GSP, p. 4-44.) These statements make it unclear whether Demand Management will apply subbasin-wide or only lands within the Madera County GSA.

C. Coordination with other GSAs

Valley Children's Hospital is located on the southwestern edge of Madera County between the Root Creek Water District ("RCWD") and the Madera Subbasin boundary with the North Kings Subbasin. This position makes Valley Children's Hospital vulnerable to the groundwater management decisions in the RCWD and North Kings Draft GSPs.[4] We request that Madera County take an active role in evaluating and commenting on the RCWD and North Kings Draft GSPs to ensure neither of these GSPs will impact the County's ability to achieve sustainable groundwater management and protect the Hospital's water supply under the Draft GSP.

For example, we note that Section 4.2.1.1 of the North Kings Draft GSP also proposes sustainable management criteria at levels below the historical groundwater levels. Setting sustainable management criteria below levels in the Draft GSP could impact Madera County's ability to achieve sustainable management by altering groundwater conditions near the subbasin boundary. In effect, this would shift the burden of complying with SGMA from the North Kings GSA to the Madera County GSA.

Under the California Water Code, a GSP shall not adversely affect the ability of an adjacent basin to implement their GSP or impede sustainable groundwater management. (Water Code, § 10733(c).) Further, the DWR regulations specify that the description of minimum thresholds shall include how the threshold has been selected to "avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals." (Cal. Code of Regs., tit. 23, § 354.28(b)(3).)

To ensure that the North Kings GSP does not affect the Valley Children's Hospital's groundwater resources or impact Madera County's ability to implement its Draft GSP, we request that the County closely scrutinize the North Kings GSP and consider entering into a an interbasin agreement with the North Kings GSA.[5] (Cal. Code of Regs., tit. 23, § 357.2.) Close coordination and collaboration is necessary to establish compatible sustainability goals in both the Madera and Kings subbasins to protect beneficial users in Madera County.

We request that the Madera County take a leading role in coordination within the Madera Subbasin and with neighboring GSAs to implement SGMA in a manner that protects all beneficial users.

* * *

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[4] For example, RCWD proposes measurable objectives at water levels that may impact the groundwater levels in Valley Children's Hospital's wells. (RCWD Draft GSP, pp. 4-6–4-9, available at https://ppeng.sharefile.com/share/view/s0f1b15d40e34a349.)

[5] We note that the Draft GSP indicates interbasin and coordination agreements, as applicable, will be included in Appendix 6. However, it is unclear from the GSP whether the Madera Subbasin Coordination Committee or Madera County is pursing these agreements at this time. Further, the RWCD Draft GSP indicates that the "other Madera Subbasin GSAs asked that there be regional cooperation rather than discussions between GSAs." (RCWD Draft GSP, Section 1.4, p. 1-4.)

We appreciate the opportunity to provide these comments on the Draft GSP. If you have any questions or concerns, regarding these comments please contact me at (559) 353-5008 or wchaltraw@valleychildrens.org.

Sincerely,

William Chaltraw, Jr.
Senior Vice-President and Chief Legal Officer
Valley Children's Hospital
(559) 353-5008

Jason Howard presented a verbal review of a letter submitted to the Joint GSP on behalf of Gunner Ranch West. The comment requests that management areas be formed within the Madera County GSA to tailor allocations and other demand reduction efforts based upon the geologic, and therefore groundwater, variability within the GSA. Mr. Howard requested that the GSP state explicitly that non-agricultural users will not be the focus of demand reduction.

Madeline Harris, Leadership Counsel for Justice and Accountability, said that the GSP, as written, prioritizes agriculture as the highest use of water, whereas State law requires the human right to water be protected as the highest use of water. The mitigation program, while an important consideration, is not sufficient. Ms. Harris said that the plan does not adequately lay out how projects and management actions will balance the overdraft and protect domestic well users. Communities that rely on domestic wells will bear the economic burden of continued overdraft by losing their source of drinking water.

Wonderful citrus

November 8, 2019

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200 W. Fourth Street
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Comments on Madera Subbasin Joint GSP Draft Groundwater Sustainability Plan

Dear Stephanie Anagnoson,

Thank you for all the hard work you have put into preparing the draft Groundwater Sustainability Plan (GSP), and for the opportunity to provide comments.

In order to best execute the GSP's goal to achieve sustainability by 2040, we encourage all GSAs in the subbasin to initiate stakeholder-driven processes and to work together cooperatively to achieve subbasin-wide coordination as GSPs are finalized and implementation begins. To that end, we submit the following comments.

Groundwater Allocations

Should allocation of the native yield be a necessary management action, the GSAs should use a stakeholder-driven process to develop a methodology of allocation that is consistent with the various legal considerations drawn from applicable case law. More information on allocation methodologies can be found in *Groundwater Pumping Allocations Under California's Sustainable Groundwater Management Act – EDF and NCWL, dated July 2018*. If pumping restrictions are required to achieve sustainability, they should be implemented with the most gradual ramp-down possible while still avoiding any undesirable results. This will help to ensure landowners have adequate time to plan, and it will help to prevent any sudden disruption to economic activity in the region.

Water Measurement, Data Management Systems and Groundwater Markets

GSAs should develop a coordinated, basin-wide data management system (DMS) that is capable

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of tracking groundwater and surface water use at the landowner, field or parcel level, and a coordinated methodology for measuring landowner-level use of groundwater. The DMS should also include, or be capable of interfacing with, a groundwater market platform. If landowner-level groundwater allocations are made, those should be accompanied with a market system that is as flexible as possible in allowing for broad geographic movement and carry-over from one year to the next. Markets are essential in facilitating the highest and best use of a limited resource and will be most effective if there is trust in the accuracy of measurements and consistency in data sources, and flexibility available to allow for transactions across the basin. GSAs using remote sensing to calculate crop ET as a measurement of consumptive use of groundwater should develop methodologies and quality assurance elements to allow for grower provided information to be included into the ET calculation and calibration. Additionally, GSAs should establish criteria and procedures to address any apparent inaccuracies in the ET calculations (for example: if calculated ET is greater than applied water).

Water Banking and Recharge

Where possible, GSPs should identify management areas that may benefit from additional recharge and banking and develop incentives for public or private investment to expand recharge and banking capacity as these facilities help to achieve multiple benefits (for example: habitat, water quality, drinking water, etc.). To do this, GSAs must develop clear and understandable policies and conditions that protect existing groundwater banking and banked inventory and allow them to continue operating as they have been under their existing rules and regulations without interference. They must also incentivize additional investment and allow flexibility for recharged or banked water to be freely transferrable subject to the rights and conditions of use associated with the source water and the avoidance of undesirable results.

Thank you for your consideration.

David Krause

President, Wonderful Citrus

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