IMPLEMENTING THE GSP: MADERA SUBBASIN

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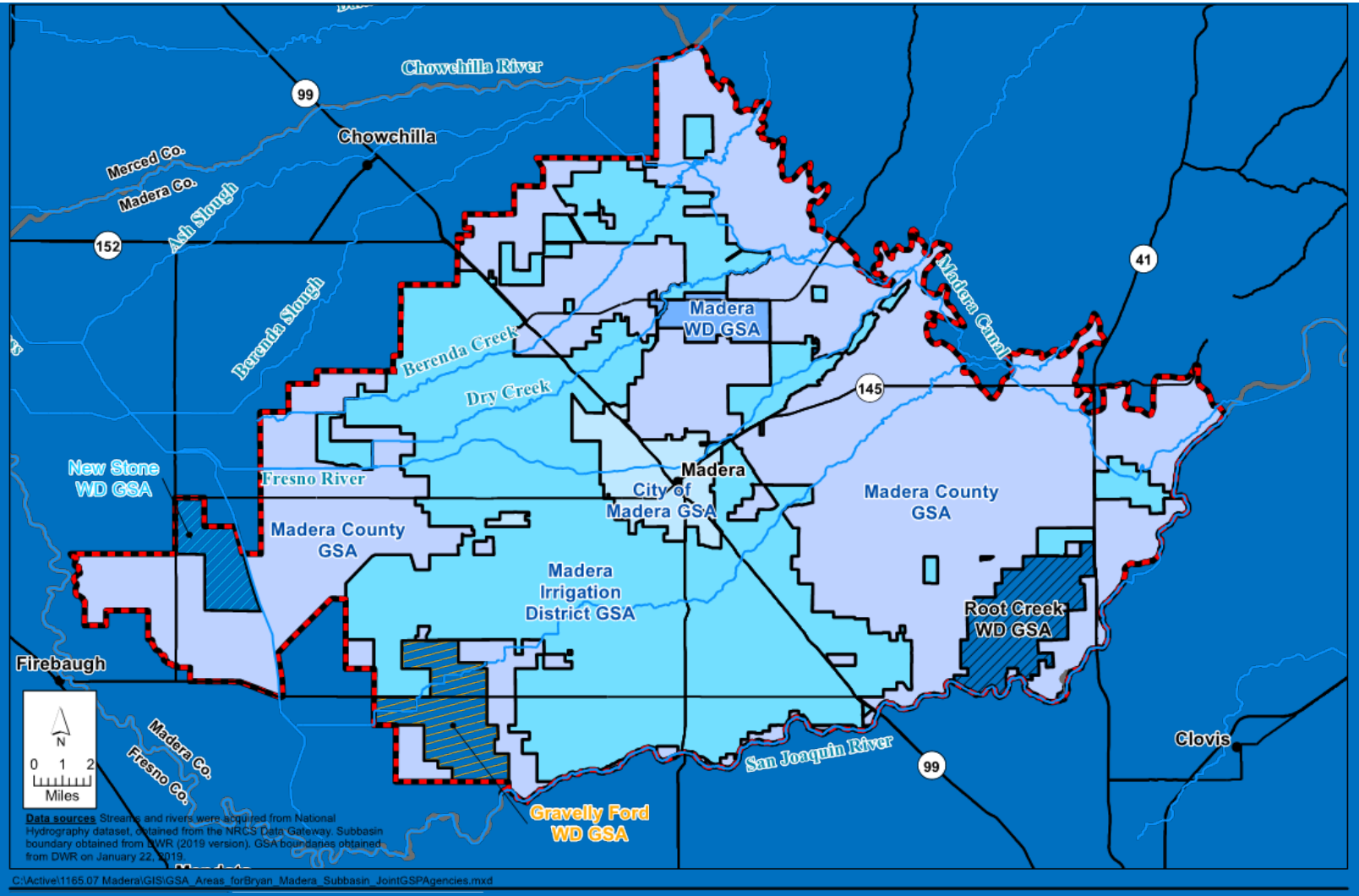
November 5, 2019

Madera Subbasin: 7 GSAs preparing 4 GSPs

See Chapter 1 for Agency Descriptions



Total Subbasin

~ 348,000 ac

~ 216,000 ac irrigated

Madera County GSA

~180,000 ac

~85,000 ac irrigated

- Significant acres are ‘non-irrigated’ (unique to County GSA)

Madera subbasin "consumptive use"
[a.K.A. Evapotranspiration of applied water (ETAW)]

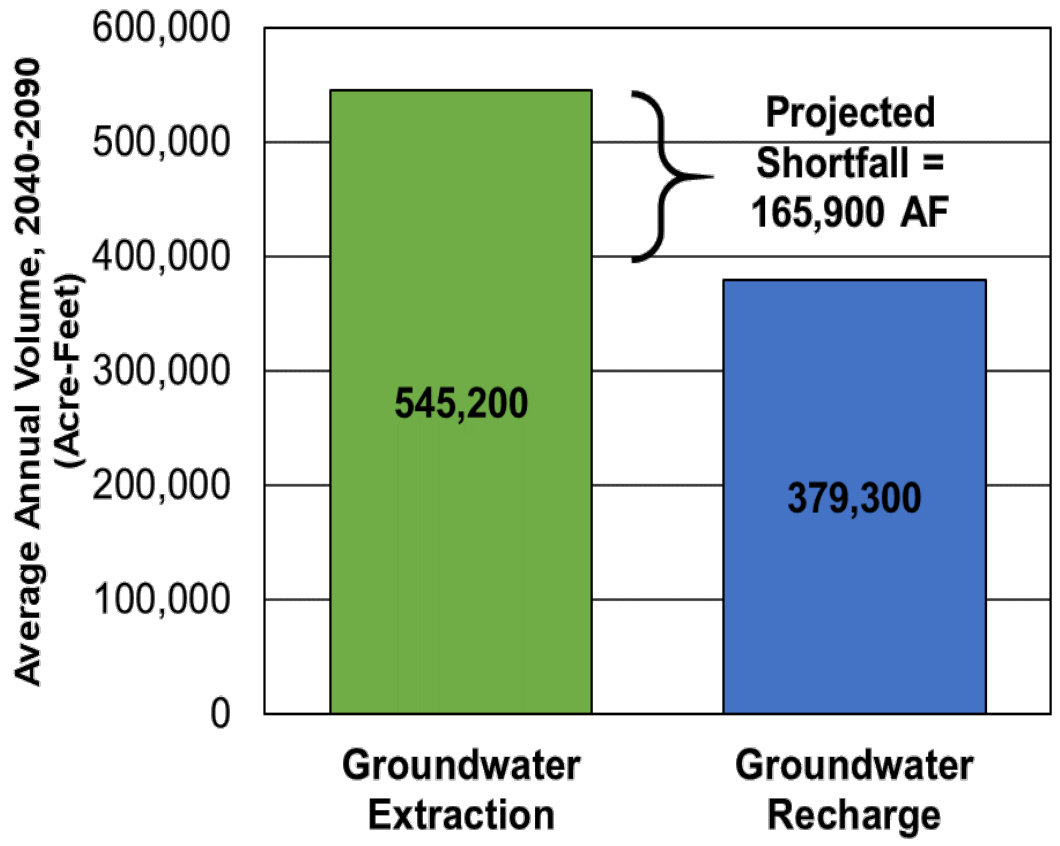
See Chapter 2 for more on land use

- Irrigated ag dominates
  - ~460,000 af/yr
- Avg ETAW has increased
  - 1989 = 1.75 af/ac
  - 2015 = 2.13 af/ac
- Urban use is minor
  - City of Madera ~ 4,500 af/yr
  - Rural residential ~ 18,200 af/yr

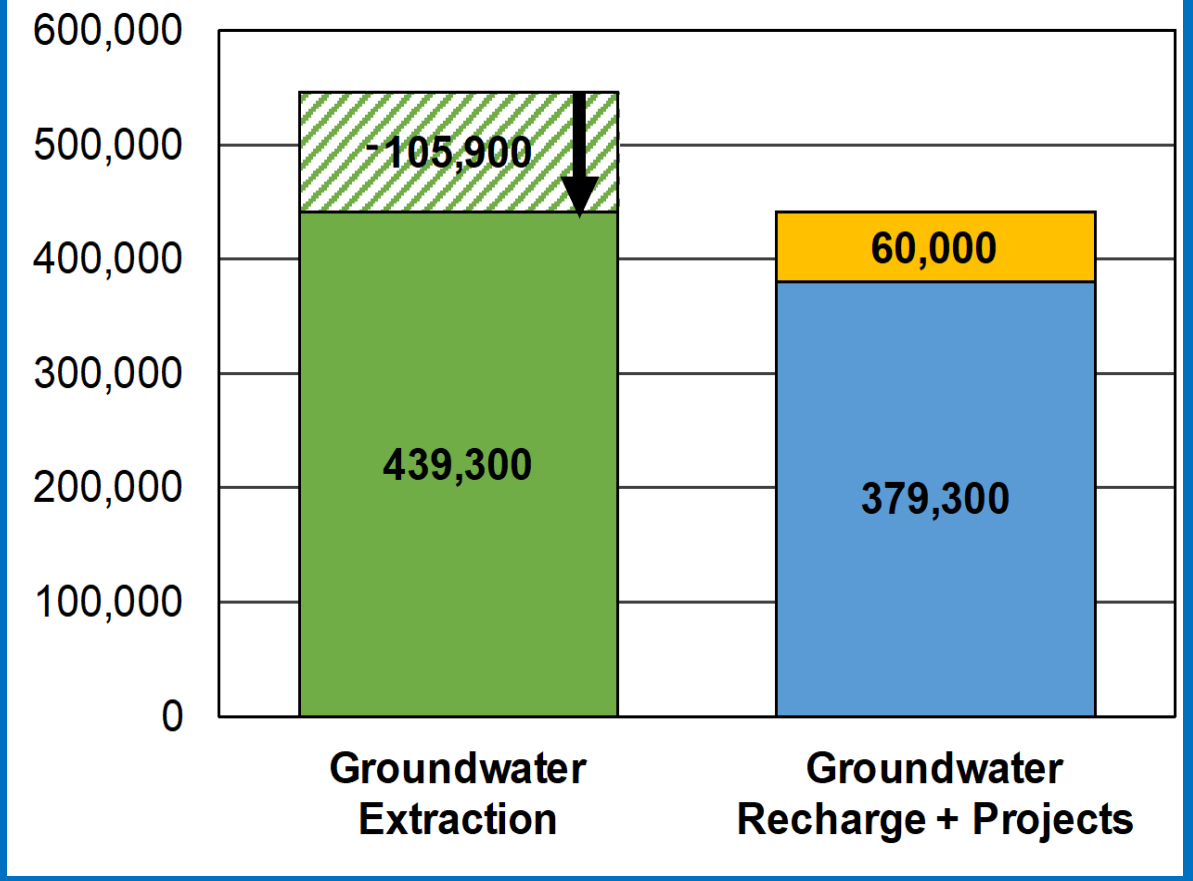
Land Use	Crop Area (acres)	
	1989	2015
Citrus and Subtropical	6,071	4,512
Corn	5,266	6,963
Grain and Hay Crops	5,548	9,118
Grapes	69,562	67,489
Idle	32,783	4,198
Miscellaneous Field, Truck, Decid.	27,480	12,943
Almonds	21,797	75,006
Pistachios	14,169	27,189
Walnuts	1,180	1,157
Pasture and Alfalfa	30,069	7,581
Total	**213,924**	**216,158**

Madera Subbasin Joint GSP

Without the GSP



With the GSP



Madera County GSA: Actions detailed in the Joint GSP

See Chapter 4 for projects

Type	Max Rate and frequency	Estimated Avg. Annual Benefit
(Values in acre-feet)		
Recharge along Bypass	30,000 - 40,000 35% of years	10,000 to 15,000
Recharge in east area	20,000 15%-30% of years	5,000 to 7,000
Irrigate with surface water in east area	3,000 – 10,000 60%-70% of years	3,000 to 5,000
Demand reduction	Steady-annual decrease in consumption to 2040	Increase ~4,500/yr (additive) to ~90,000/yr

Sustainability is based on:

- Significant reduction in demand
- Recharge where feasible (likely with only localized benefits)
- High cost and likely impact to County economy

Projects

Projects

- Potential sources of water:
  - CVP Section 215 water
  - Purchased water from others (CVP, water rights)
  - Pursue new water right
- Locations for direct or in-lieu recharge:
  - East area with water conveyed via Madera Canal and MID/CWD laterals
  - West area with water diverted from Chowchilla Bypass, delivered to bottom-end of MID/CWD laterals, or via streams
- Methods: recharge ponds, Flood-MAR, dry-wells, in-lieu irrigation

Projects

- Pros
- Supplements native groundwater
- Offsets small portion of demand reduction

- Cons
- Requires significant infrastructure that does not yet exist
- Supplies are intermittent
- Benefits may be limited to certain areas in the GSAs

Demand Reduction

Demand Reduction

See Chapter 4 for County GSA Demand Reduction

- Madera County plans to gradually phase-in demand management between now and 2040.
- 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.
- However, if Madera County GSA project yields are lower than initially estimated, Madera County GSA will increase the level of demand management.

Madera County GSA's target for demand reduction in Madera Subbasin

- By 2040, crop ETAW will be reduced to about 64% of the current ETAW
  - ~ 90,000 af/yr less
- First 5 year to achieve 10% of target (9,000 af/yr)
  - ~ 2% additive reduction per year
  - ~ 1,800 af/yr
- Remaining time to 2040 to achieve remaining 90% (~81,000 af/yr)
  - ~ 6% additive reduction per year
  - ~ 5,400 af/yr

Current Options for Demand Reduction
(These can be combined and modified over time)

- Allocations at the parcel level
  - By crop? By acre? By historic use?
  - No domestic user participation
- Groundwater extraction charges/fees to irrigated agriculture
  - By quantity pumped?
- Parcel-based incentives to limit groundwater use
  - Easements (Annual, 5-10 year, perpetuity)
- Water markets/trading programs (requires an allocation)
- Demand reduction innovations
  - Irrigation variations to affect ET, new crop types, etc.

Things to consider

See Appendix 3C for Economic Analysis of Immediate Demand

- Administrative/regulatory burden for grower
- Administrative burden for County GSA
- Individual economics
- County GSA economics
- County economics
- Flexibility and adaptability of approach to modify to assure GSA reduction targets are met

Potential near-term groundwater impacts

See Chapter 4 for Setting of MTs and MOs

- GSAs need time to transition and complete projects and actions – which will lower groundwater levels during implementation
- Planned mitigation for impacts can address concerns of lowered groundwater levels during implementation

GSAs are considering a mitigation program for impacted drinking water wells

See Appendix 3D for Economic Analysis of Immediate Demand Reduction

- 2020/2021: Details developed with stakeholder input
- Possible mitigation actions
  - Replace/lower existing well
  - Connect to community water system
- Possible types of support
  - Low interest loans
  - Grants
- Likely will require well owners to sign up for program

Madera County GSA Layers of Costs

See Chapter 5 for County GSA Admin Costs

- Flood Control Agency serves two subbasins
- County GSA Fee – Admin and Planning
- County GSA Project Fee – Permitting, Water Purchases and Infrastructure

Madera County GSA current activities

- Water supplies
  - Reclamation contract
  - DWR FloodMAR investigation
- Monitoring, Recording and Reporting
  - Satellite-based analysis for ET baseline
  - Database RFP
  - GSA management and administration funding
- Implementation efforts
  - WaterSmart grant investigating groundwater trading
  - GSA implementation funding

5-year plan

Draft Madera County GSAs "First 5" Implementation Summary for Madera Subbasin and Chowchilla Subbasin

Category	2019	2020	2021	2022	2023	2024	2025
GSP	Write GSPs for Madera Subbasin, Chowchilla Subbasin and Delta Mendota Subbasins; Hold meetings/workshops for input	Submit GSPs by Jan 31, 2020 for three subbasins; Annual monitoring, data collection, analysis and preparation of State Report by April 1, 2020	Annual monitoring, data collection, analysis and preparation of State Report (on-going)	Annual monitoring, data collection, analysis and preparation of State Report (on-going)	Annual monitoring, data collection, analysis and preparation of State Report (on-going)	Annual monitoring, data collection, analysis and preparation of State Report (on-going)	Prepare 5-year GSP Update; Annual monitoring, data collection, analysis and preparation of State Report (on-going)
Financing & Revenue	1) Prop 218 Flood Agency funding proceeding (Fall 2019) 2) GSA administrative fee (Fall 2019) 3) Apply for grants (SALC, Prop 68)	1) Apply for grants 2) Prop 218 proceeding for domestic well mitigation	1) Apply for grants 2) Prop 218 proceeding for project and demand reduction financing 3) Establish enforcement fines related to parcel-based water use program	1) Apply for grants (on-going) 2) Adjust fees/fines as necessary (on-going)			
Studies	1) WaterSMART water market strategy exploration 2) Explore demand reduction approaches (gw extraction charge or parcel fee, allocations, water trading, innovation) 3) Design domestic well mitigation program 4) Assess funding opportunities for domestic well mitigation funding	1) Recharge project feasibility analysis 2) Land easement program development 3) Prepare parcel-based water use history (2020 use) 4) Initiate selected water assessment method 5) Complete WaterSMART water market strategy study 6) Prepare CVP 215 compliance documents	1) Complete recharge feasibility studies 2) Complete land easement program structure	1) Initiate and complete other studies as necessary (on-going)			
Projects	1) Work with DWR for recharge pilot program for dairies 2) Pursue CVP contract amendment	1) Work with DWR for recharge pilot program for dairies 2) CVP contract amendment 3) Acquire CVP 215 water or equivalent, as available	1) Work with DWR for recharge pilot program for dairies 2) CVP contract amendment 3) Acquire CVP 215 water or equivalent, as available	1) Pursue additional recharge projects per study findings (on-going) 2) Pursue CVP water (215, contract water, in-basin transfers, etc.) after contract amendment (on-going) 3) Acquire additional out-of-subbasin non-CVP supplies (on-going)			
	1) Demand reduction outreach and education	1) Continue design of domestic well mitigation program 2) Demand reduction outreach and education	1) Initiate domestic well mitigation program 2) Demand reduction outreach and education 3) Initiate land easement	1) Domestic well mitigation program (on-going) 2) Demand reduction outreach and education (on-going) 3) Land easement program (on-going) 4) Expand water market (on-going) 5) Parcel-based water use accounting (on-going)			

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Madera County GSA's planned actions during first 24 months

Financing/Revenue

- Prop 218 Flood Agency funding (Fall 2019)
- GSA Administrative fee
- Prop 218 proceeding for domestic well mitigation
- Continue to apply for grants

Studies/Programs/Projects

- Undertake WaterSMART water market study
- Prepare parcel-based water use history
- Explore and begin implementing demand reduction approaches
- Evaluate land easement program
- Initiate demand reduction outreach and education
- Design domestic well mitigation program and financing
- Assess recharge project opportunities
- Implement cooperative pilot recharge projects
- Pursue CVP contract amendment and position for Section 215 water
- Reduce demand

Discussion