Example Guiding Principles - Groundwater Demand Management Planning

Updated: 6.4.2025

Initially drafted by ERA, Davids Engineering, LSCE, and CBI. Reviewed by District staff. Discussed at June 4 Demand Management Working Group meeting

Context

Below are example guiding principles developed by the consulting team based on experiences and examples in other groundwater basins. Several principles have also been added or modified based on previous discussions with the Groundwater Demand Management Ad Hoc and Working Group.

Attachment 1 includes suggested principles and ideas provided by CAFF for the Ad Hoc and Working Group's consideration (as CAFF's suggestions were not explicitly incorporated into the example principles below).

Not all of these example principles may apply to the Tehama County subbasins; therefore, the consultants request that **the Ad Hoc and Working Group members review and identify their priority principles.** Hopefully, several principles will rise to the top as broadly agreed upon by the full group.

June 4, 2025 update: Working Group members reviewed and discussed these principles at a high level at the June 4 working group meeting. In general, working group members supported the proposed guiding principles with a few caveats and clarifications:

- The demand management program should leverage existing programs and activities to avoid duplicative efforts. In particular, resources and funds specific to the demand management program (i.e., fees) should have a direct connection to demand management actions. Indirect or broader efforts, such as outreach and engagement, should be supported through other mechanisms and leverage existing programs and opportunities.
- Working Group members expressed concerns about potentially creating added layers of bureaucracy and expenses. For instance, they preferred in-house monitoring and administrative activities as more cost-efficient than third-party monitoring and certification.
- There was a request for the technical consultants to provide more clarity in the technical memo regarding what practical coordination with land use and surface water planning agencies would entail.
- The CAFF recommendations (Attachment 1) generally aligned with these principles and the draft straw proposal. Working group members clarified that they interpreted CAFF's reference to "family farms" primarily as referring to smaller operations, not large family enterprises.

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Draft Guiding Principles

Example guiding principles provided by the consulting team for the group's consideration:

Sustainability and Resource Management

Sustainability and Resilience

Ground the plan in achieving long-term basin sustainability and drought resilience.

- Set enforceable restriction targets.
- Promote conjunctive use.
- Triggers incorporate buffers effect of drought to avoid a short-term impact from becoming long-term outcome.

Economic Feasibility and Incentives

Design the plan to minimize economic disruption while offering incentives for participation.

- Assess the costs and benefits of voluntary/incentivized demand management actions and focus on those that are most cost-effective (least cost).
- Offer compensation or offsets for voluntary/incentivized reductions.
- Establish grant or rebate programs for conservation upgrades.
- Consider fee structures that reward low-water users.

Coordination with Land Use and Surface Water Planning

Integrate groundwater demand strategies with land use policies, irrigated acreage changes, and surface water management.

- Work with local planning agencies and irrigation districts.
- Align with local policies (e.g., General Plan).
- Promote land fallowing, crop switching, or rotational recharge zones.

Fairness and Balanced Interests

Fair and Balanced Participation

Design the program to ensure fairness and involve all stakeholders in planning, implementation, and oversight.

- Represent the broad range of interests through multi-stakeholder discussions and forums.
- Prioritize human right to water for domestic users.
- Avoid disproportionate burdens on any one user group.

Protecting Vulnerable Communities

Identify and protect small water systems, shallow well users, and disadvantaged communities (DACs).

- Implement well mitigation programs.
- Offer financial assistance for compliance costs.
- Ensure these communities have a seat at the table.

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Building Awareness and Capacity

Education, Outreach, and Capacity Building

Where feasible, leverage existing programs and opportunities.

Data, Monitoring, and Technical Implementation

Transparent Data and Monitoring

Establish a shared, transparent monitoring system for groundwater use and availability.

- Use standardized metering (where permissible) and tracking tools.
- Publicly share data via accessible online platforms, while also respecting landowners' information privacy.
- Include peer-reviewed groundwater modeling (where applicable), fostering transparency in regard to data limitations.

Accountability and Adaptive Management

Accountability and Enforcement

Include clear rules, roles, and enforcement procedures to ensure the program is supported and effective.

- Set accountable triggers associated with realistic data points
- Use graduated enforcement tools (incentives, warnings, fees, etc.).
- Make enforcement data publicly available to build trust (respecting individual privacy).

Flexibility and Adaptive Management

Allow the plan to evolve based on new information, technology, and future environmental risks (more intense/prolonged droughts, storms, etc.).

- Focus on incentive-driven demand management actions that achieve groundwater benefits for the subbasins, supporting phased implementation with clear triggers.
- Integrate feedback loops and periodic performance reviews.
- Encourage innovative, voluntary and incentive-based programs that test new tools.
- Adjust demand management or conservation strategies as needed.
- Include adaptive management to adjust the program as data and sustainability indicators evolve.
- Include more restrictive, mandatory measures if incentive-driven programs do not achieve desired groundwater level results.

Governance and Resolving Conflict

Transparent Governance and Conflict Resolution

Establish predictable, fair decision-making processes and conflict resolution pathways.

- Use governance charters or operating rules for the Tehama County FCWCD as the sole GSA within Tehama County, including its committees, while establishing coordinated governance procedures with Corning Sub-basin Committee GSA for effective joint management of the Corning Subbasin.
- Include neutral facilitators for contentious issues.
- Offer mediation or appeals processes to resolve disputes.

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Attachment 1. Recommendations from CAFF

Emailed May 2, 2025 | From Sadie M, CAFF | To: Justin Jenson; Eddy Teasdale; Michael Ward

GP1. Promote the viability of Tehama County family farms through incentivized, voluntary stewardship measures.

Incentivized measures could include but are not limited to the following:

- Winter cover cropping[1] to allow for better filtration of water,[2] holding of soil moisture,[3] and percolation of the water deeper into the ground to effect recharge.[4]
- Rotational fallowing with winter cover cropping between orchard replacements.[5]
- Rotational fallowing with winter cover cropping of annual production land and/or hay land.
- Establishment of conservation/water control corridors that benefit groundwater-dependent ecosystems and address storm runoff on farms.[6]

GP2. Promote the viability of Tehama County family farms through incentivized, voluntary efficiency measures.

Incentivized measures could include but are not limited to the following:

- In-situ monitoring for appropriate application of irrigation.[7]

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[1] Meaning a rain-fed crop that grows over winter and is terminated (mowed) at the end of Spring. There are a number of studies/reports that have looked at the impact of cover cropping on the water budget which indicate the impact depends on "specific management practices, weather conditions, soil type, species of cover crop, timing of establishment and termination, and more" (Cover Cropping in the SGMA Era, p. 22)

[2] The same report summarizes that cover cropping increases filtration by a minimum of 40% (Cover Cropping in the SGMA Era, p.7).

[3] "Cover cropping elicits soil changes that are beneficial to both infiltration and soil water holding capacity, such as increasing organic matter content, porosity, pore size distribution, soil aggregation, and aggregate stability (e.g. Araya et al., 2022; Koudahe et al., 2022, p28 of the Cover Cropping in the SGMA Era); Cover cropping can increase water held at field capacity by 9% (Basche & DeLonge, 2017); The NRCS states, "A one percent increase in soil organic matter can help the soil retain an additional 20,000 gallons of water per acre that can be banked and become available when plants need it most."

[4] "Cover crops also enhanced the ability of soils to transport water downward within the soil profile, resulting from increases in saturated hydraulic conductivity in a Mediterranean apricot orchard (Demir et al., 2019, p.399-408). One global meta-analysis observed that cover crops increased mean infiltration by over 76% and saturated hydraulic conductivity by 106% relative to non-cover cropped sites (Hao et al., 2023 in Cover Cropping in the SGMA Era, p.26); The state recognizes aquifers as "natural infrastructure" and on-farm recharge is being incentivized across the state. For example, the McMullin On-Farm Flood Capture Expansion Project.

[5] See for example, the Greater Kaweah GSA fallowing program. Pilot Fallowing Program FAQs. Paid for by "penalties" if users exceed an allocated water amount Penalty program Resolution. According to reporting, their 2023 pilot program enrolled 420 acres and was funded by overdraft penalties. Estimates $2,000,000 for 1,200 acres annually.

[6] There are a number of programs that could be utilized both for funding and/or as an example of an incentive program the county could create. The Multibenefit Land Repurposing Program through the California Department of Conservation funds alternatives to bare-dirt fallowing (here are projects currently being funded). The Natural Resources Conservation Service (NRCS) also has a list of healthy soil practices that are funded through both Healthy Soil Program block grants and the Environmental Quality Incentives Program (EQIP). Payments are also available for those healthy soil practices already on farms through the Conservation Stewardship Program; these include cover cropping as well as riparian forest buffer, filter strips, and field border projects.

[7] Soil-moisture monitoring systems and their benefits in water reduction are well quantified with users regularly seeing a 10% reduction in water use and an increase in crop yields.

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- Upgraded irrigation systems that enhance efficiency.[8]

GP3. Establish a rate structure that promotes the incorporation of farming practices that benefit groundwater sustainability, conservation, and ecosystem health (Examples included in GP1 and GP2) and benefits farms with practices already in place.

- For example, a progressive fee structure with different tiers for practices in use.
- Third-party monitoring and certification are likely necessary.

GP4: The allocation structure should support the viability of family farms, based on water usage for existing crops.

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[8] Tehama County RCD runs the Mobile Irrigation Lab which offer free irrigation evaluations for agricultural producers including pressure and flow testing, application rate calculation, leak inspections and plugging, equipment inspections and feedback summarizes. The RCD can also help connect growers with the State Water Efficiency and Enhancement Program (SWEEP) which can help pay for system upgrades for farmers.