

Attachment B

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Attachment B: Salinas Valley Groundwater Basin Recommended Measures

This is a summary from the 2023 Salinas Valley Groundwater Basin Investigation Study (“Investigation Report”), Chapter 6: Measures to address groundwater levels and seawater intrusion. The County of Monterey (“County”) or other agencies can take the following measures to address groundwater level declines and seawater intrusion. The Investigation Report recommends that these measures be considered and some combination of them be implemented.

1. Maintain current infrastructure:

This measure recommends replacing the San Antonio spillway and other critical infrastructure at San Antonio and Nacimiento Reservoirs. The measure also recommends maintaining and improving the Castroville Seawater Intrusion Project (“CSIP”) infrastructure. Further, it recommends operating CSIP to maximize the reliance on recycled and re-diverted stored reservoir water, and minimize groundwater extraction from supplemental wells.

Infrastructure such as the Nacimiento and San Antonio Reservoirs are critical to providing water to the Salinas Valley by promoting groundwater recharge and delivering surface water to be used instead of groundwater in the seawater intruded coastal area. Less surface water and recycled water leads to increased groundwater extractions in the CSIP area, and more seawater intrusion. CSIP provides recycled water, re-diverted stored reservoir water, and groundwater to the Zone 2B coastal area, most of which has seawater intrusion in either or both of the 180-Foot and 400-Foot Aquifers.

2. Consider groundwater conditions in Land Use Planning:

This measure recommends taking into account water availability and the impact of extraction on groundwater conditions and working with the groundwater sustainability agencies when approving land use permits. Local land use agencies would consider groundwater sustainability plans and consult the relevant agencies to the specific area when revising or adopting policies. It is recommended agencies work collaboratively with GSAs to consider water availability when considering future growth. Specific examples could be considering the impact on long term water supplies or groundwater sustainability through zoning changes that accommodate development of new water supplies, enhancing groundwater recharge, and encouraging water conservation efforts.

Agencies should work collaboratively to proactively identify how to manage future growth without compromising long-term water supplies or groundwater sustainability, such as through zoning changes that accommodate development of new water supplies, enhance groundwater recharge, encourage water conservation efforts, and promote water recycling projects.

3. Prevent declines in groundwater recharge:

This measure recommends protecting areas of high groundwater recharge (Arroyo Seco Cone, and along the Salinas River south of Chualar). Areas of high groundwater recharge

exist and should be protected from land use activities that would reduce recharge. Use low impact development if development is necessary.

4. Support conservation to reduce groundwater demand:

Continue to support urban and agricultural water conservation to reduce demand from existing and new sources. This includes following State of California policies for urban water conservation, adopting more efficient technologies, and supporting water efficiency programs.

Agricultural water conservation work through the University of California Cooperative Extension and the Resource Conservation District of Monterey County help growers identify and tailor conservation practices.

Install more California Irrigation Management Information System stations to develop more accurate evapotranspiration data to provide a tool to help growers determine the amount of irrigation needed. Secure funding or coordinate with existing specialists to encourage programs that reduce groundwater demand.

5. Prevent seawater intrusion leakage between aquifers:

A portion of the existing seawater intrusion in the 400-Foot Aquifer results from vertical flow from the overlying 180-Foot Aquifer. The Deep Aquifers are additionally at risk of intrusion over overlying aquifers. A measure to prevent this vertical mitigation is to destroy wells that are perforated in numerous aquifers and/or leaking. Additionally, well design restrictions and pumping management could help in the coastal area. The Protection of Domestic Drinking Water Supplies for the Lower Salinas River Valley project by the MCWRA has destroyed 31 wells already. Wells in the CSIP area or in or near the areas of seawater intrusion should be evaluated and considered for destruction to prevent leakage of seawater between aquifers. Implementing Monterey County Code Chapter 15.08 would require new wells in or near seawater intruded areas to be screened in one aquifer to prevent seawater intrusion leakage between aquifers.

6. Reservoir operations:

Reservoir operations must balance multiple needs, including groundwater recharge in the Salinas Valley, providing surface water to the Salinas River Diversion Facility (“SRDF”), protecting endangered species, flood control, and recreation. MCWRA is working with the National Marine Fisheries Service to develop a Habitat Conservation Plan to meet Endangered Species Act requirements for activities associated with water operations and management activities. Reservoir operations must comply with laws, regulations, and water rights.

7. Reduce groundwater extraction:

Implement extraction controls or reductions on groundwater extraction, alongside the previously notes conservation efforts. This option requires planning, data, and engagement of interested parties.

8. Provide alternative supplies:

Under this recommendation, alternative water supply projects could be implemented or optimized. Reduce required shut-down time for CSIP maintenance, expand CSIP to provide irrigation water to additional farmland, and develop smaller recycled water plants. Some of these efforts are already existing, such as Monterey One Water's recycled water distribution to CSIP.

Surface water could be diverted for use instead of groundwater, including creek diversions and stormwater diversions. This would require storage options. Seawater desalination is the third alternative supply option that could be considered.

9. Increase groundwater recharge:

Groundwater recharge varies along the Salinas River. Groundwater recharge along the Salinas River could be enhanced by reducing vegetation, including invasive *Arundo*, a project that exists under the Monterey County Resource Conservation District's guidance. Floodplain restoration efforts along Gabilan creek, and other streams within the Salinas Valley would slow stormwater runoff and recharge the aquifer. Focusing efforts near the streams would reduce the impact on adjacent farmland.

Stormwater recapture could be increased by encouraging landowners to collect runoff in recharge ponds and directing overland flow into the ponds. Climate change is anticipated to bring more frequent and extreme precipitation events.

Small scale efforts to increase rain and stormwater infiltration could be implemented in Prunedale where the subsurface consists of fractured granite. Low Impact Development, dry wells, or rain gardens improve infiltration of stormwater into the ground water. Larger scale projects would have the highest impacts. Small scale or dispersed efforts would be unlikely to have substantial impacts on the groundwater table.

10. Reduce groundwater extraction near seawater intrusion:

Reduce extraction near seawater intruded areas to help raise groundwater levels and increase hydraulic pressure against seawater intrusion. Some areas will have the highest impact. CSIP has already slowed the rate of seawater by providing irrigation water in lieu of increased extraction.

11. Increase groundwater recharge near seawater intrusion:

Recharging groundwater inland increases the hydraulic pressure against intruding seawater. Recharge is most beneficial closest to the intrusion front. Three options that inject water into the underlying aquifers are injection with no recovery, indirect potable reuse, and aquifer storage and recover ("ASR"). Injection with no recovery provides a permanent hydraulic barrier, but requires a source of water that be injected and never used. Both indirect potable reuse and ASR effectively use aquifers as a reservoir for storage of water that will be extracted in the future. More water would be needed to be injected than recovered. Injected water would need to be treated to meet regulatory requirements.

12. Install seawater extraction barrier:

Extracting seawater from a line of wells to create a hydraulic barrier of low pressure that captures seawater intrusion and prevents seawater from moving inland of the wells. The brackish water could be desalted and used for municipal or agricultural use instead of groundwater.

Table 6-1 in the Investigation Report includes specific examples of the measures that can be taken to address groundwater level declines and seawater intrusion in the Salinas Valley. These are examples and are not exhaustive, nor do they constitute a recommendation of which projects or management actions are most appropriate. All examples have been or are being considered by a local agency or group within the Salinas Valley.

Table appears on next page.

Table 6-1. Example Management Actions and Projects to Address Groundwater Level Decline and Seawater Intrusion in Zone 2C

Subcategory	Management Action or Project (associated agency)	Description
GENERAL MEASURES		
Maintain Current Infrastructure	MCWRA Capital Asset Management Program (MCWRA)	Complete required San Antonio Dam spillway replacement and other high priority projects to comply with federal and state regulatory requirements, restore full operational functionality, and ensure public and/or employee safety.
Consider Groundwater Conditions in Land Use Planning	Land Use Jurisdiction Coordination Program (SVBGSA)	Increase coordination between agencies that manage groundwater and land use planning agencies to assess activities that potentially create risks to groundwater quality or quantity
Prevent Declines in Groundwater Recharge	Low Impact Development Projects (County of Monterey, Housing and Community Development)	Construct or require construction of systems and practices that manage stormwater and encourage infiltration in urban areas
Support Conservation to Reduce Groundwater Demand	Conservation and Agricultural Best Management Practices (SVBGSA)	Promote agricultural best management practices and support use of ET data as an irrigation management tool for growers
Prevent Seawater Intrusion Leakage Between Aquifers	Protection of Domestic Drinking Water Supplies for the Lower Salinas River Valley (MCWRA)	Destroy wells that could facilitate seawater intrusion leakage between aquifers. Grant-funded, concludes in 2023.
Continually Optimize Reservoir Operations and Undertake Reservoir-related Projects to Balance Multiple Needs	Drought Technical Advisory Committee (MCWRA)	When triggered by drought conditions, convene this committee of experts that develops and recommends plans for how to manage reservoir releases during drought to meet all needs
MEASURES TO ADDRESS GROUNDWATER LEVEL DECLINE		
Reduce Extraction	Fallowing, Fallow Bank, and Agricultural Land Retirement (SVBGSA)	Fallow agricultural land that currently relies on groundwater, such as through voluntary fallowing, a fallow bank whereby anybody fallowing land can draw against the bank to offset lost profit from fallowing, or retirement of agricultural land
Provide Alternative Supplies	CSIP Expansion (SVBGSA)	Expand service area of CSIP to provide a combination of Salinas River water, recycled water, and, when needed, groundwater in lieu of groundwater extraction
Increase Recharge	Multi-benefit Stream Channel improvements (SVBGSA)	Prune native vegetation and remove non-native vegetation, manage sediment, and enhance floodplains for recharge. Includes 3 components: Stream Maintenance Program, Invasive Species Eradication, and Floodplain Enhancement and Recharge
MEASURES TO ADDRESS SEAWATER INTRUSION		
Reduce Groundwater Extraction Near Seawater Intrusion	Demand Planning (SVBGSA)	Proactively determines how extraction should be controlled and planned for
Increase Groundwater Recharge Near Seawater Intrusion	Seasonal Release with ASR (SVBGSA)	Release flows from reservoirs during the winter/spring, for groundwater recharge and then diversion at the SRDF. Treat diverted water and then inject into the 180-Foot and 400-Foot Aquifers for seasonal storage, extracting a lesser amount for delivery to CSIP during the peak irrigation season
Install Seawater Extraction Barrier	Seawater Intrusion Extraction Barrier (SVBGSA)	Install a series of wells in the 180-Foot and 400-Foot Aquifers to extract groundwater and form a hydraulic barrier that prevents seawater intrusion from advancing inland of the wells

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