

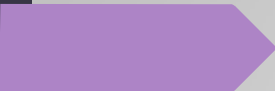
# Salinas Valley Basin GSA

## Projects & Management Actions Discussion


Presented to Monterey Subbasin  
Committee  
November 6, 2020

Prepared by





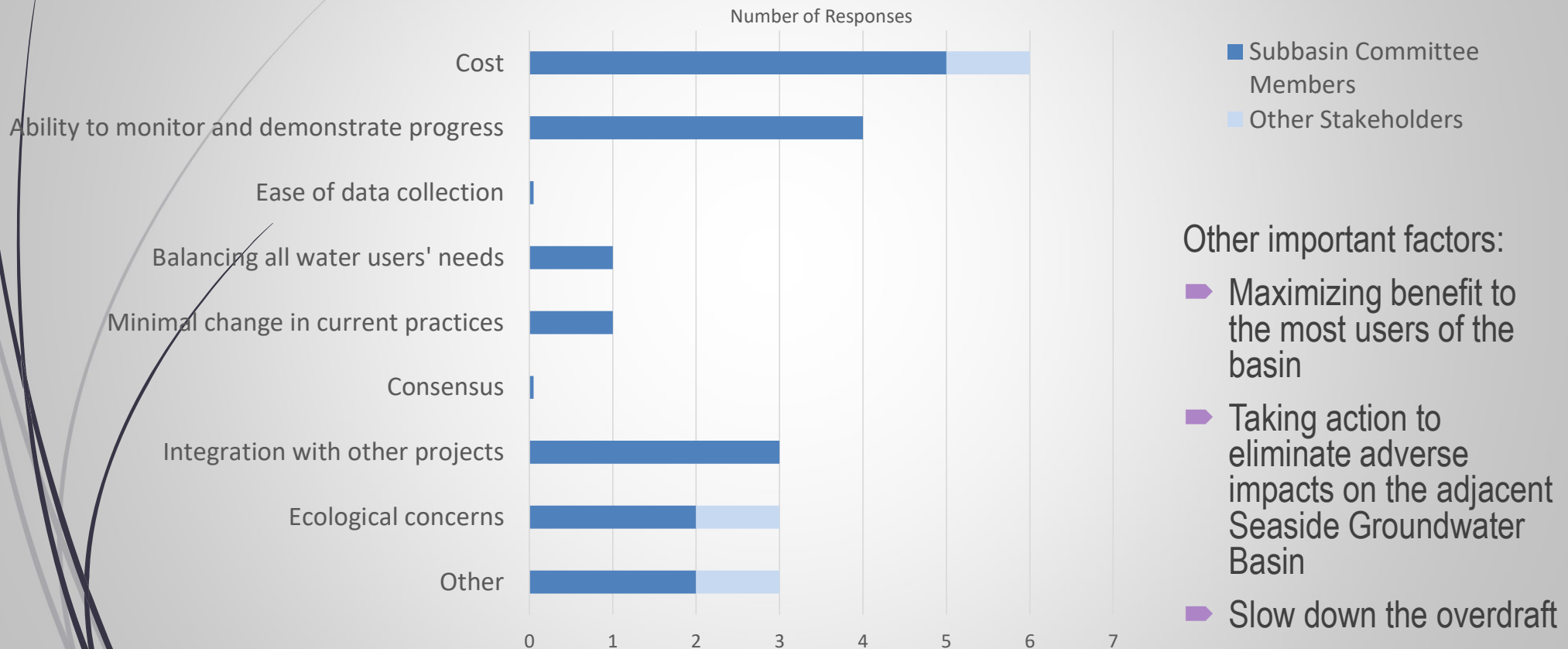
## Monterey Subbasin Challenges

- Seawater Intrusion
  - Overdraft
  - Limited recharge – Zone B-8 overlay in the El Toro area
  - Streams are intermittent and flashy. Limited surface water available for management
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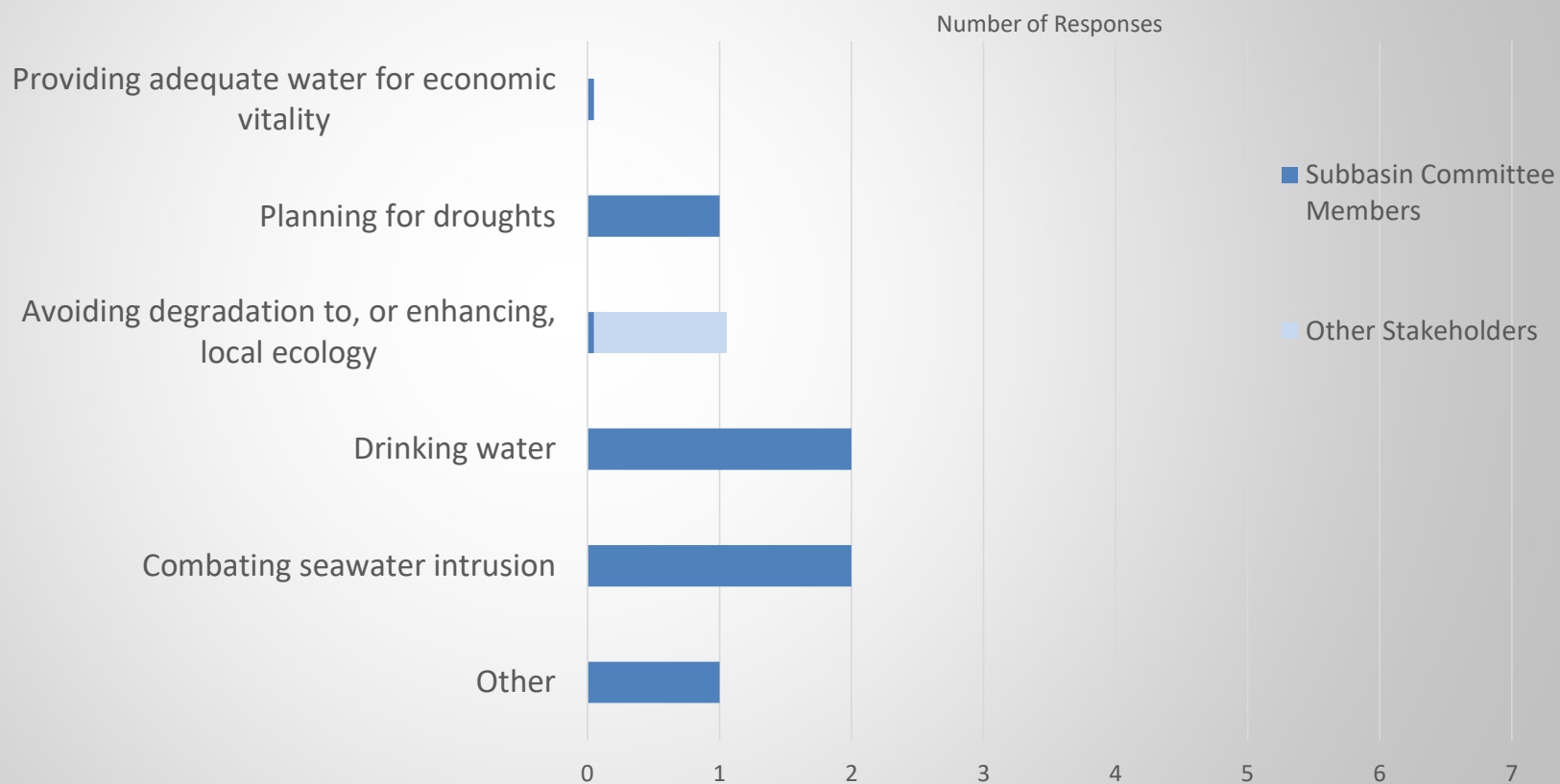
# Survey Results



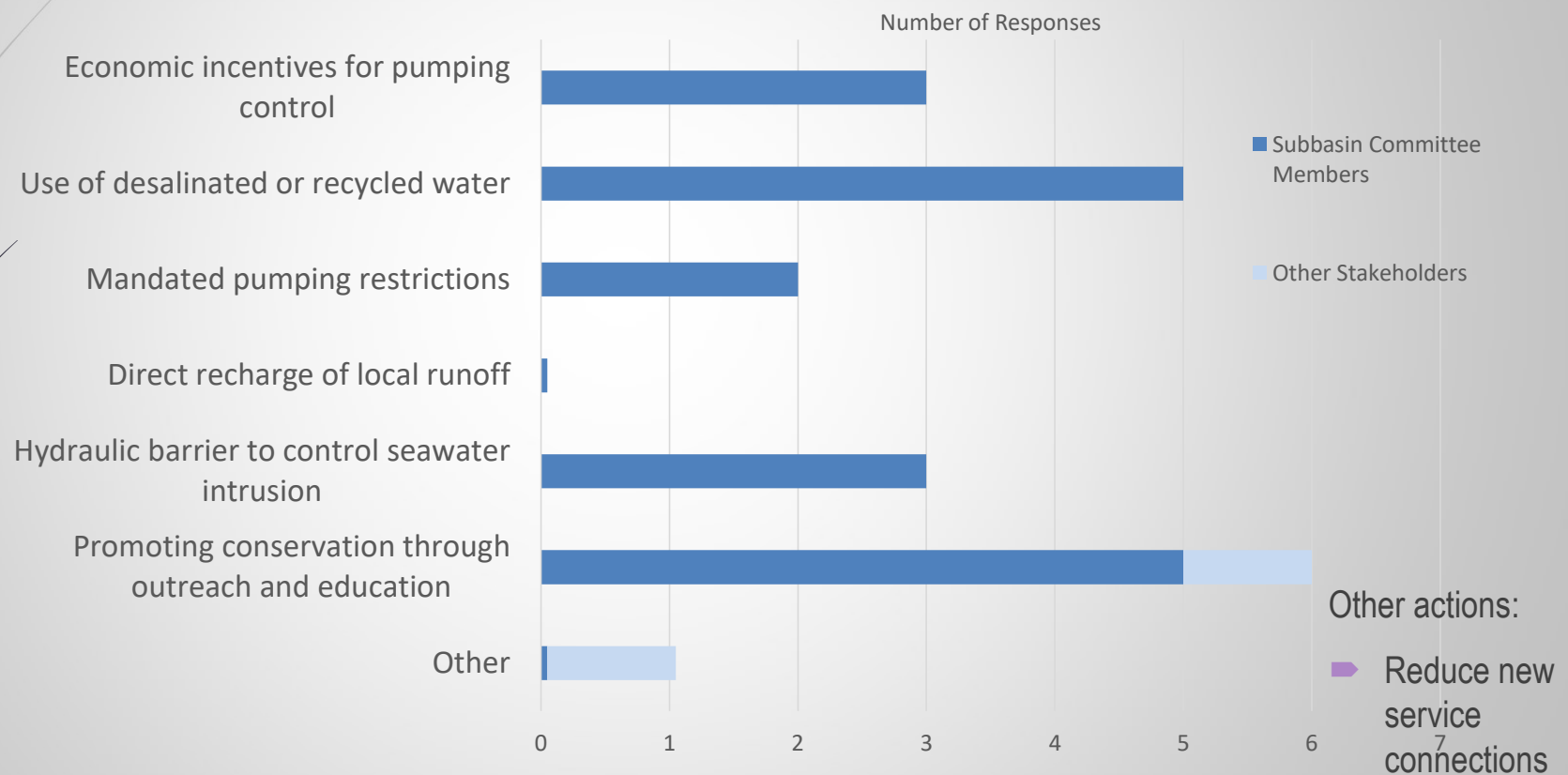
## Most important factors in prioritizing projects:



## Project benefits that concern me most:



## Actions that have the greatest impact on groundwater:



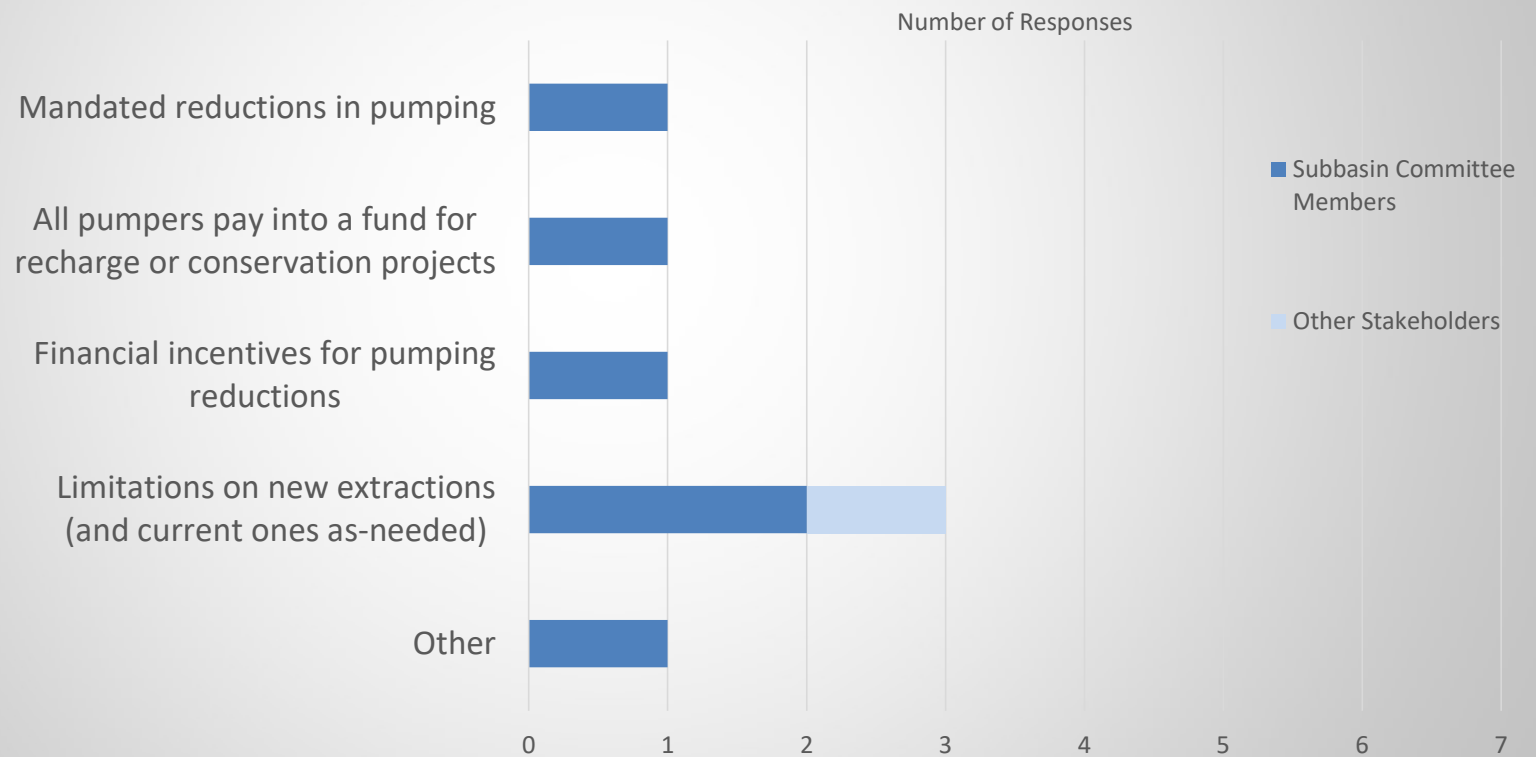


## Comments on potential groundwater actions:

- Replace groundwater pumping with **desalination or recycled water** in Marina area
- **Consider climate change** as it relates to sea level rise and its impact on groundwater levels
- Concern about the **adverse impacts that Corral de Tierra overpumping** is having on groundwater levels in the Seaside Groundwater Basin



## Preferred approach to potential pumping limitations:







## Suggestions for potential conservation BMPs:

- **Limit outdoor irrigation of landscaping** in rural residential areas
- **Irrigate golf courses with reclaimed water**
- **Prevent new wells and reduce pumping in existing wells**
- **Use newest technology and recycled water resources**
- **Incentivize voluntary conservation** by imposing charges to pumpers that do not implement conservation measures to reduce their pumping levels
- **Install drip irrigation and scheduled use of recycled water**, including winter use



## Other project ideas:

- **Water conservation** everywhere, mandated if necessary
- No new wells means stop approving developments.
- **MCWD injection well project** and other strategies to alleviate seawater intrusion, including use of recycled water, direct delivery of water to replace pumping, or direct recharge.
- **Seawater barrier and utilize extracted water after desalting** for use to offset pumping
- **Review the technical documents** that led to the County's assessment that the Corral de Tierra subbasin has severe water constraints and is in overdraft
- Review all technical documents submitted to the County for proposed developments
- Review and use **well logs** for all available wells in the area to develop more accurate geological cross-sections
- In areas where data are lacking, **drill new exploratory wells** to complete geological cross-sections
- Perform **aquifer testing** on selected wells to determine aquifer properties
- **Develop model** (either expand the area covered by the Seaside Basin Groundwater Model or develop a new model)



## Most crucial data to guide projects:

- ▶ Cumulative pumping amounts and groundwater levels, potential pumping reductions if strict outdoor landscape irrigation conservation measures were implemented, number of wells that have gone bad or have degraded groundwater quality over the last 25 years (updates to existing reports)
- ▶ Geosyntec study's recommendations
- ▶ Groundwater elevation data
- ▶ Seawater contours and well levels
- ▶ Education outreach to the County Planning and Building Departments. 1. Adequate groundwater level data from existing wells (both production and monitoring) as well as installation of additional monitoring wells in areas where there are currently too few wells to adequately model groundwater levels. 2. Adequate production data from existing production wells, and obtaining such data from de minimis wells as well if they are deemed to collectively constitute significant pumping from the Corral de Tierra subarea.



## Data on Potential Projects and Management Actions



# *El Toro Groundwater Study Recommendations*

- 1.B-8 zoning should be expanded to cover the entire extent of the El Toro Primary Aquifer System, and for areas with negligible and poor potential for groundwater production.
- 2.Thorough aquifer testing and analysis is recommended to assess potential for additional groundwater potential in the basal sandstone.
- 3.The County will need to continue to periodically notify residents with individual domestic wells of potential dangers to health associated with elevated levels of arsenic that occurs naturally in much of the groundwater in the El Toro Planning Area
- 4.Eliminate the designated planning subareas for water resource management that are based on surface watershed topographic boundaries because they are not relevant to the groundwater aquifers, which are the sole source water supply source in the El Toro Planning Area.
- 5.Establish a formal collaborative groundwater management program for the Laguna Seca and El Toro Planning Areas since they are hydrogeologically contiguous in the area along Hwy 68, which has suffered the greatest declines in groundwater levels.
- 6.Install dedicated groundwater monitoring wells in the El Toro Planning Area to provide better resolution of groundwater levels (several already exist in Laguna Seca). Also, utilize additional inactive wells as monitoring wells. In general, a more formal groundwater monitoring program would provide better understanding of groundwater conditions.
- 7.Evaluate the feasibility of a wastewater reclamation program for the Corral de Tierra area to reduce the rate that water is exported via sewage to the Salinas Valley. Possibilities include treating sewage effluent and developing separate greywater recycling and distribution systems. End uses may include golf course or domestic property irrigation.
- 8.Evaluate the feasibility of retaining surface water runoff and enhancing aquifer recharge.
- 9.Evaluate the feasibility of surface water impoundment in the upper Calera Canyon area for supplementary water supply.
- 10.Evaluate the feasibility of additional groundwater production and storage in the Upper Corral de Tierra Valley with distribution to lower portions of Watson Creek and Calera Canyon.
- 11.Conduct a geotechnical assessment to evaluate potential risks of ground subsidence near Hwy 68 associated with continued groundwater levels declines.



## Potential Projects and Management Actions

- Use recycled water in lieu of groundwater pumping
- Use groundwater from the Upper Corral de Tierra Canyon, Upper Calera Canyon, and Watson Creek
- Build recharge basins with surface runoff
- Build decentralized recharge projects with stormwater
- Encourage domestic conservation
- Promote or enforce pumping limitations



## Additional Projects and Actions for Implementation

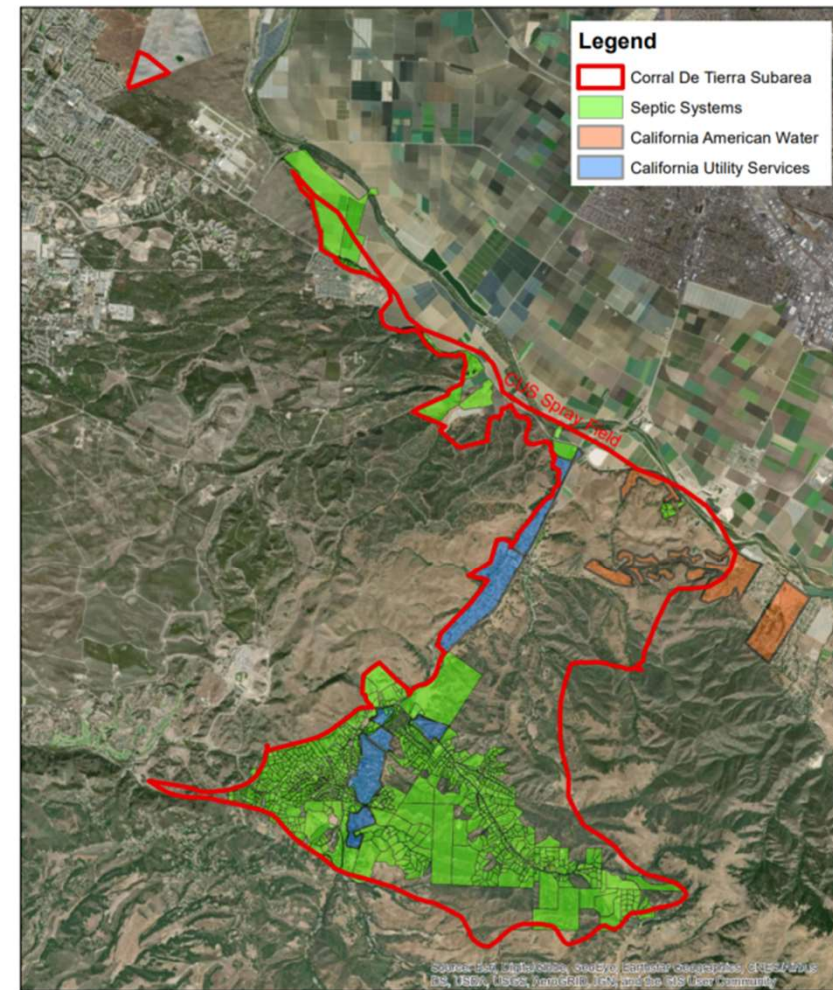
- Develop localized groundwater elevation trigger
- Other actions included in the El Toro Groundwater Study
  - Monitoring
  - Coordination and planning among stakeholders, the public, and MCWRA



- Two main sewage systems
- Wastewater used for irrigating medians and spray fields
- Still assessing what golf course uses for irrigation
- WWTPs could be upgraded and end use redirected

Wastewater Provider		
Wastewater Provider		Estimated Wastewater Flows (AF/yr.)
California Utility Service		232.2
California American Water		163.7
Septic Systems		
Parcel Type		Estimated Wastewater Flows (AF/yr.)
Residential		225
Commercial		4
Septic Subtotal		229
TOTAL		624.5

16



**Figure 3 - Wastewater & Septic Systems  
Corral De Tierra Subarea**



CIVIL ENGINEERING  
CONSTRUCTION MANAGEMENT  
LANDSCAPE ARCHITECTURE  
MECHANICAL ENGINEERING  
PLUMBING  
PUBLIC WORKS ADMINISTRATION  
SUPPLYING SOLUTIONS  
WATER RESOURCES

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SAN LUIS OBISPO, CA 93401  
T 805 544-4611 F 805 544-4140  
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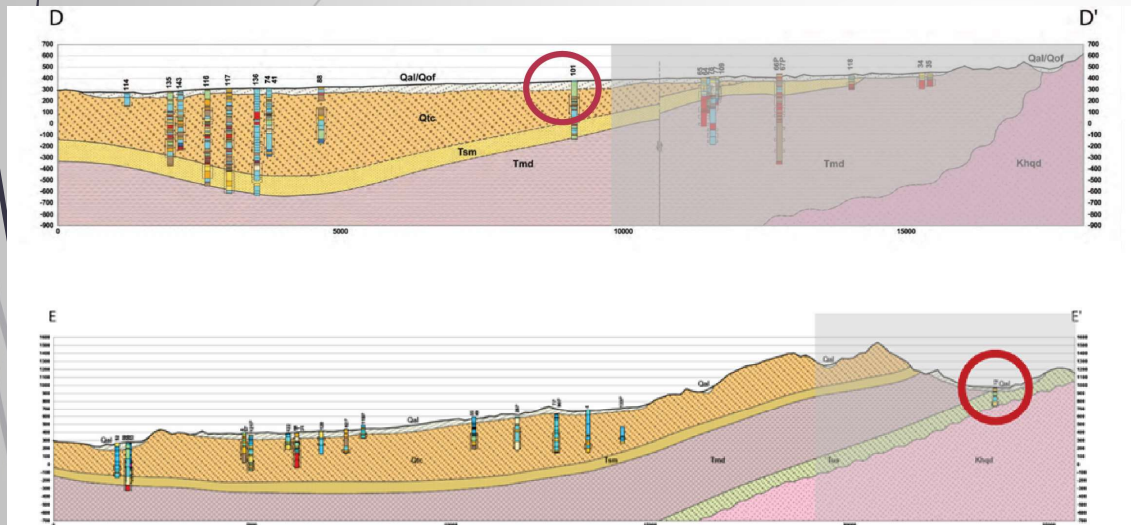


1 in = 6.875 Feet

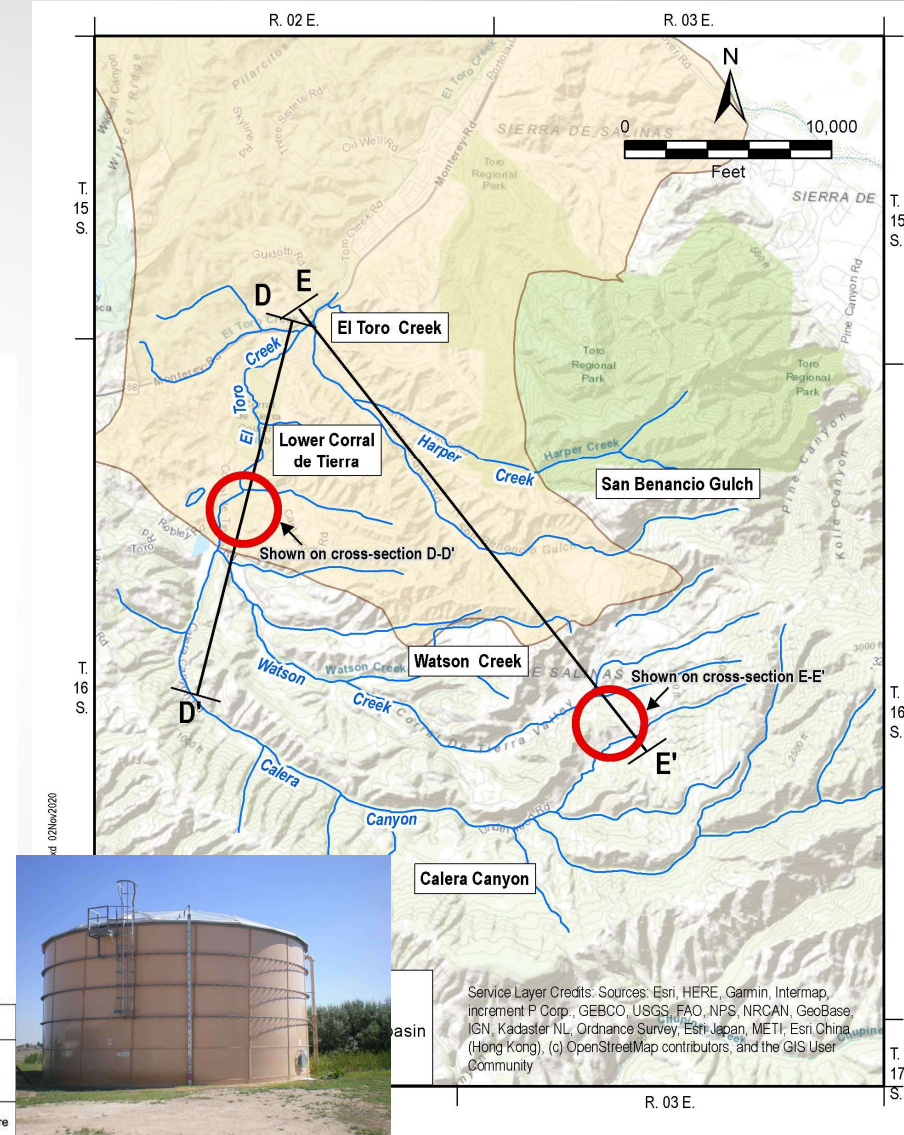
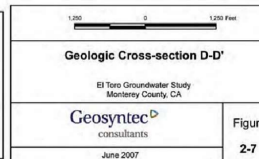
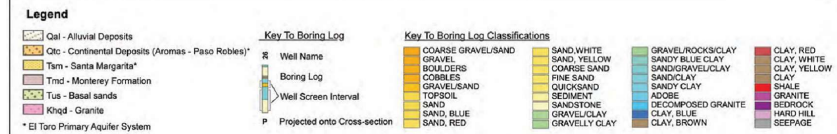


JOB NO: 1447-0002  
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CREATED BY: MB  
DATE: 10/7/2020  
EXHIBIT NOTES:  
WALLACE GROUP DID  
NOT PERFORM SURVEY  
SERVICES FOR THIS MAP.  
NOT A LEGAL DOCUMENT.

# Use groundwater from the Upper Corral de Tierra Canyon, Upper Calera Canyon, and Watson Creek



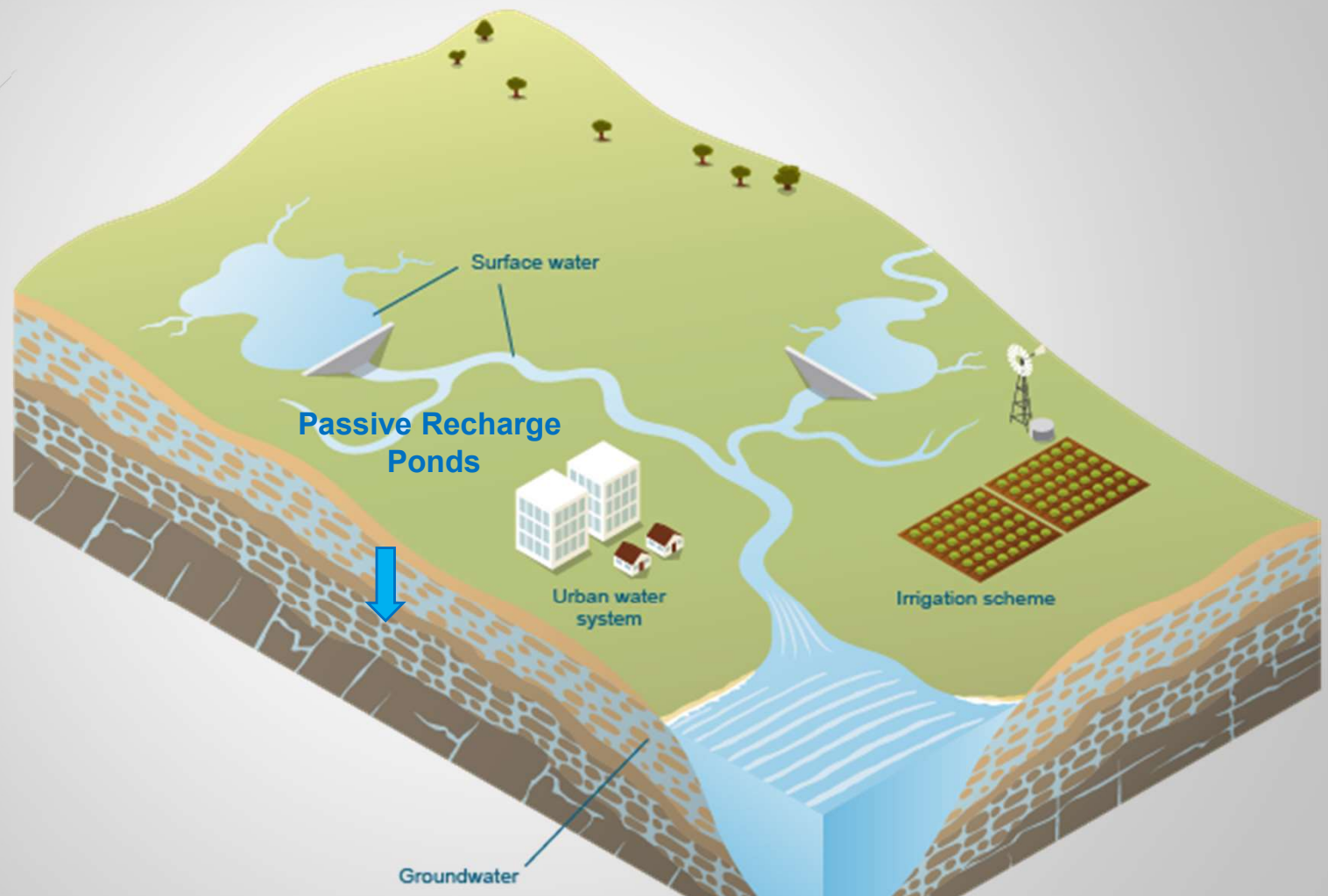
NOTES:  
Adapted from Clark et al. (2000), and well logs.  
This figure was originally produced in color. Reproduction  
in black and white may result in loss of information.



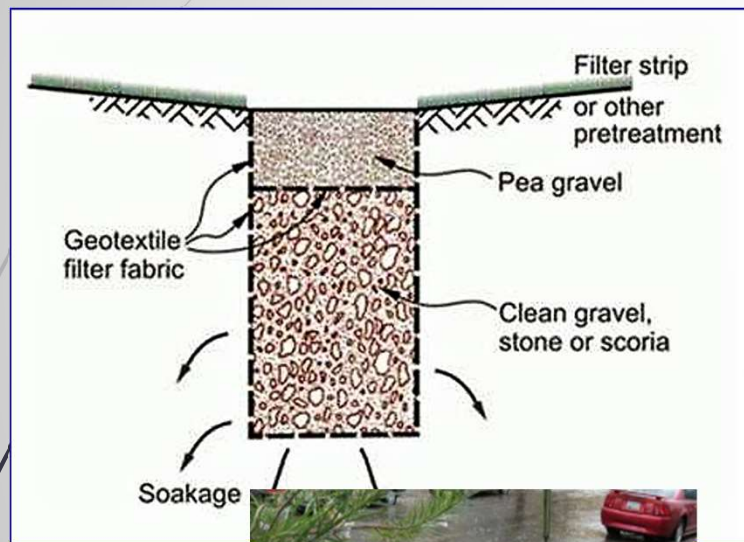
Service Layer Credits: Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community



## Build recharge basins with surface water runoff



## Build decentralized recharge projects with stormwater



- Bioswales and Basins
- Rooftop Rainwater Harvesting (cisterns)
- Dry wells
- Rain gardens
- *Slow it, Sink it!*

## Build decentralized recharge projects with stormwater

	Description	Potential Recharge Quantity	Benefits/Drawbacks
<b>Individual Household Scale</b>			
Infiltration ponds/ Rain gardens/ Bioswales	Small basins that redirect stormwater off streets	Low	<p>Pros: low cost, widely distributed recharge throughout the subbasin, shade opportunities, public engagement opportunity</p> <p>Cons: likely limited amounts of recharge could be obtained, relies on participation by a substantial number of landowners, evapotranspiration by plants</p>
Rain barrels/ cisterns	Residential rainwater harvesting off rooftops	No direct recharge; Low in-lieu recharge	<p>Pros: low cost, widely distributed recharge throughout the subbasin; in-lieu water use</p> <p>Cons: relies on participation by a substantial number of landowners; no direct measurement method for water demand reduction or water savings</p>
<b>Neighborhood Scale</b> (collecting water from large impervious areas and infiltrating it)			
Infiltration pond	Larger basins to divert stormwater from streets	Medium	<p>Pros: low cost, widely distributed recharge throughout the subbasin, greater recharge potential</p> <p>Cons: relies on available land, relies on regular maintenance from neighborhood or local stakeholder group, requires good siting to have groundwater impact</p>
Dry well	Wells that direct stormwater into the subsurface	High	<p>Pros: enhanced recharge mechanism, ability to measure water going into ground for accounting purposes</p> <p>Cons: expensive siting process, require maintenance, may require an adjacent retention basin</p>

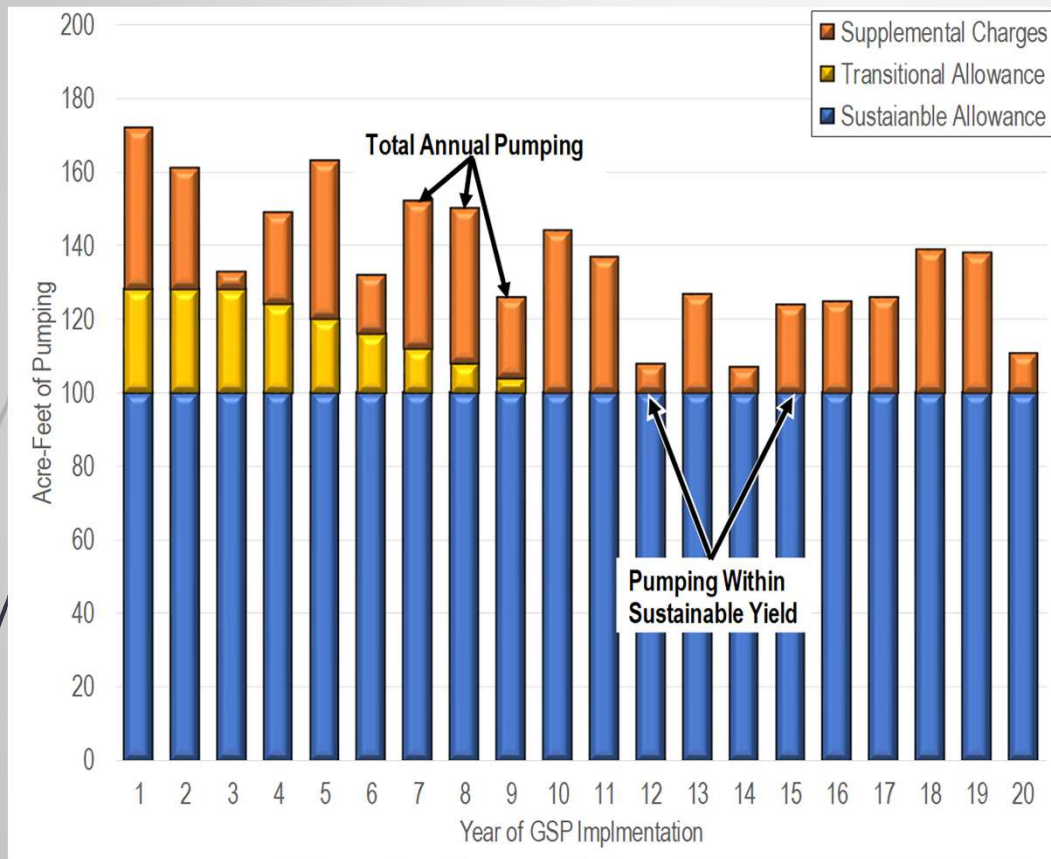


## Encourage domestic conservation

- ▶ Incentivize domestic conservation and replacing lawns with xeriscaping



# Pumping control

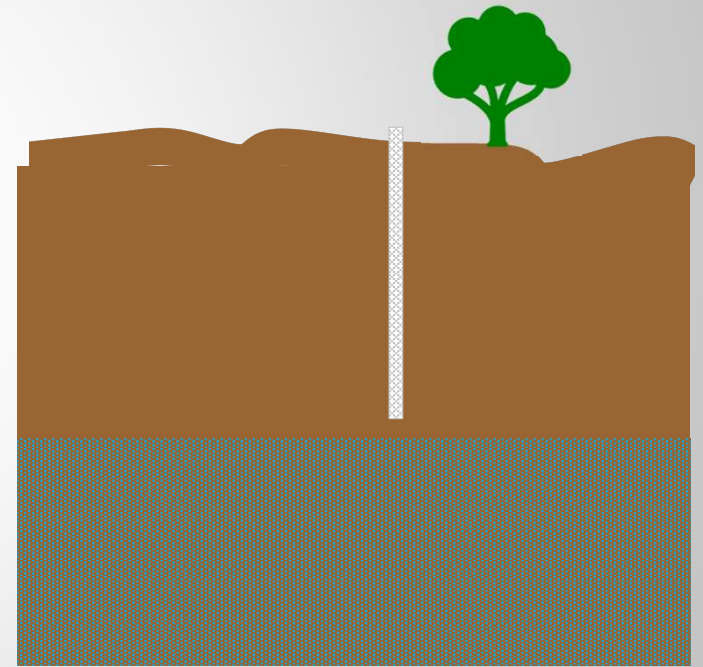


- Financial incentives
- Water markets
- Mandated reductions
- Voluntary program for *de minimus* users
- Other options:
  - Rotational fallowing
  - Fallow bank
  - Agricultural land retirement



## Implementation Action: Localized Groundwater Elevation Trigger

- ▶ Develop or support development of program to assist well owners whose wells go dry due to declining groundwater elevations
- ▶ Notification of GSA or relevant partner agency if a well goes dry
- ▶ Could include referral to assistance with short-term supply solutions, technical assistance to assess why it went dry, and long-term supply solutions
- ▶ Could set up a trigger system to convene a working group to assess the groundwater situation if several wells go dry in a specific area



## Other actions from the *El Toro Groundwater Study* :

- ▶ Monitoring
- ▶ Coordination and planning among stakeholders, the public, and MCWRA

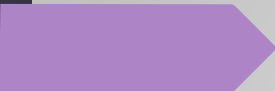


Image source: <https://www.healthcareitnews.com/news/no-acos-without-coordination>



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## Additional Projects and Actions for Implementation

- Develop localized groundwater elevation trigger
- Other actions included in the El Toro Groundwater Study
  - Monitoring
  - Coordination and planning among stakeholders, the public, and MCWRA




## DISCUSSION QUESTIONS & NEXT STEPS

- Which projects does the Subbasin Committee **not** want to include in the GSP?
- Which projects does the Subbasin Committee want to continue to pursue?
- What additional projects should be pursued?
  
- Next steps:
  - Further develop project concepts
  - Develop estimates of groundwater impacts and costs of selected projects



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## Next steps

- Develop water budget, sustainable yield, and overdraft
- Projects & Management Actions Chapter
  - Will discuss pumping allocation and financing in upcoming meetings
  - Should management actions include agricultural actions, such as (1) land retirement and (2) ag outreach and education for BMPs?
  - For selected projects
    - Further develop project concepts and descriptions,
    - Develop expected benefits and evaluation of benefits,
    - Draft circumstances for implementation, public noticing, permitting and regulatory process, implementation schedule, and legal authority sections
    - Estimate project cost and amortized cost of water
  - Assess mitigation of overdraft (once have sustainable yield estimate from model)



# Questions

