Salinas Valley Basin GSA

Projects & Management Actions and Allocation Options

Presented to Langley Area Subbasin Committee
March 3, 2021

Prepared by

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Outline

- SMC
- Projects and Management Actions
  - Overview
  - Allocation Options
  - Discussion

SMC - Update

Sustainable Management Criteria

New Slide

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result
Chronic lowering of groundwater levels	Water level minimum thresholds set to 2019 groundwater elevations. See Table 8-2.	Measured through groundwater elevation representative monitoring well network	Water level measurable objectives set to 2010 groundwater elevations	Over the course of any one year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the Langley Area Subbasin.
Reduction in groundwater storage	Extraction minimum threshold set to the estimated long-term future sustainable yield. The current estimate of the future sustainable yield is [TO BE DETERMINED BY MODEL] for the entire Langley Area Subbasin. This number will be revised as additional data and additional projects are implemented.	Measured through total groundwater extractions. Municipal users report groundwater extractions to MCWRA. Agricultural pumping will either be collected by MCWRA or estimated based on crop data.	Measurable objective is Identical to the minimum threshold. Pumping is set to the estimated long-term future sustainable yield of [TO BE DETERMINED] for the Langley Area Subbasin	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold.
Seawater intrusion	Minimum threshold is set using the 500 mg/L chloride isocontour at the Subbasin boundary	Seawater intrusion maps developed by MCWRA	Measurable objective is identical to the minimum threshold, resulting in no seawater intrusion in the Langley Area Subbasin	On average in any one year there shall be no exceedances of the minimum threshold, resulting in no mapped seawater intrusion beyond the subbasin boundary

New Slide

Sustainable Management Criteria

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result
Degraded groundwater quality	Minimum threshold is zero additional exceedances of either the regulatory drinking water standards (potable supply wells) or the basin objectives (agricultural supply wells) for groundwater quality constituents of concern.	Groundwater quality data downloaded annually from state sources.	Measurable objective is identical to the minimum threshold.	There shall be no additional minimum threshold exceedances beyond existing groundwater quality conditions during any one year as a direct result of projects or management actions taken as part of GSP implementation.
Subsidence	Minimum threshold is zero net long-term subsidence, with no more than 0.1 foot per year of estimated land movement to account for InSAR errors.	Measured using DWR provided InSAR data.	Measurable objective is identical to the minimum threshold, resulting in zero net long-term subsidence.	In any one year, there will be zero exceedances of minimum thresholds for subsidence.
Depletion of interconnected surface water (ISW)	Minimum threshold is set to the shallow groundwater elevations in 2019 near locations of ISW.	Groundwater elevations in shallow wells adjacent to locations of ISW identified using the SVIHM.	Measurable objective is identical to the minimum threshold.	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the depletion of interconnected surface waters shall not exceed the minimum threshold.

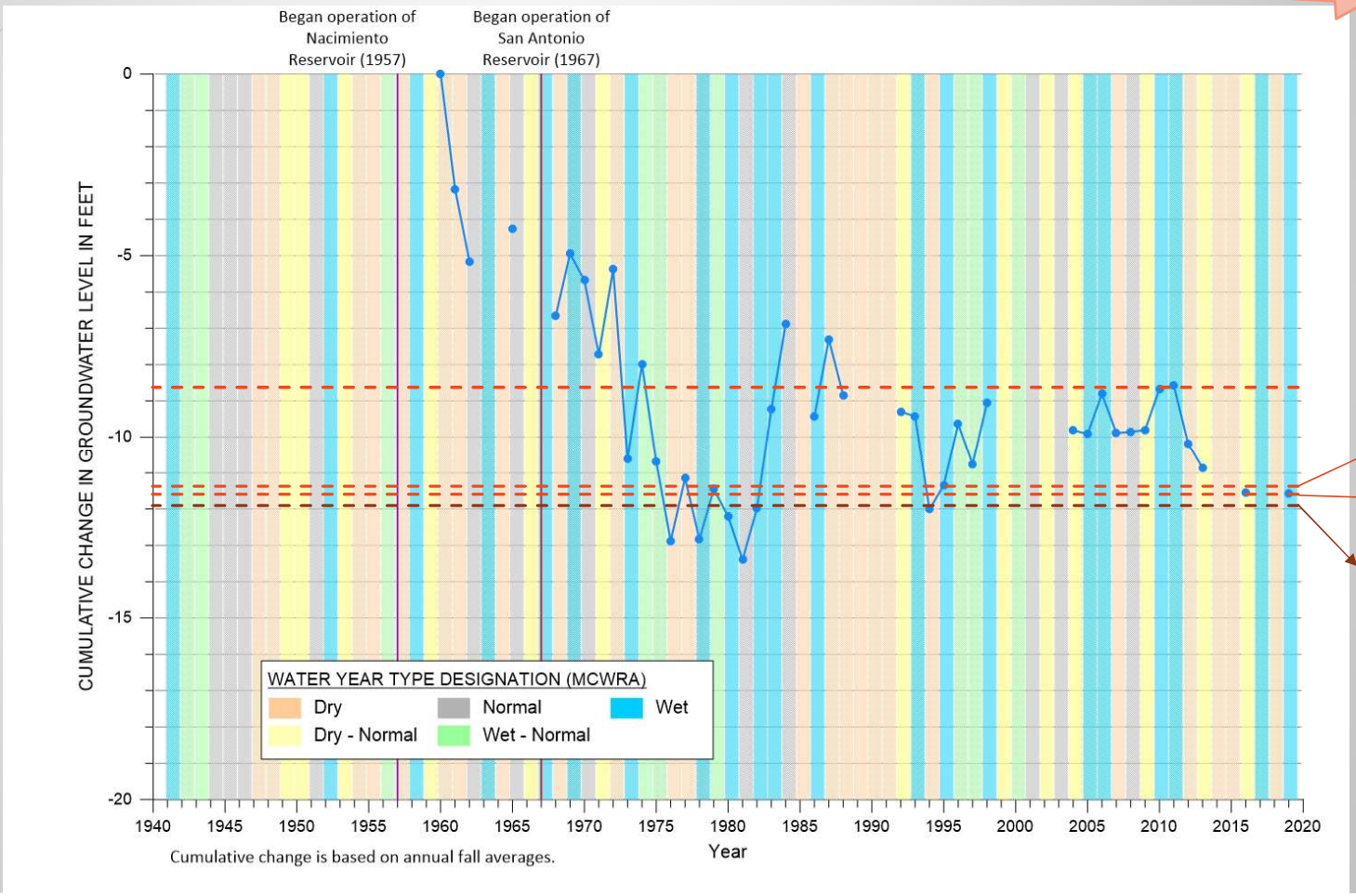
New Slide

Depletion of Interconnected Surface Water SMC

- The current rate of surface water depletion is not unreasonable (although it may be significant)
  - Minimum threshold
    - Equal to today's shallow groundwater levels
  - Measurable objectives
    - Equal to today's shallow groundwater levels

Year to set shallow groundwater levels as a proxy for Interconnected Surface Water Minimum Threshold/Measurable Objective

New Slide



2010

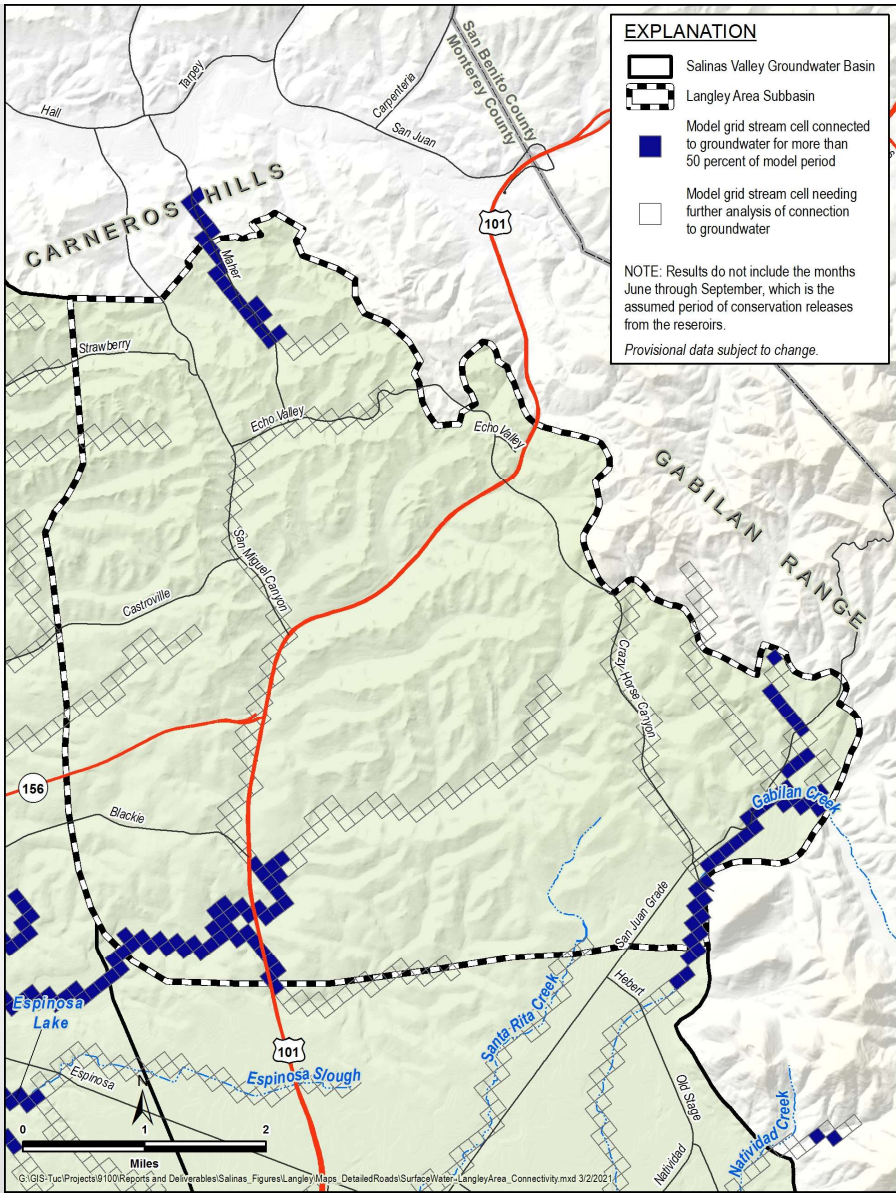
1995

2019

2015, approximate

Interconnected Surface Water

- Excludes the period from June to September assuming that is when conservation releases occur (for consistency with other subbasins)
- Blue cells indicate areas that are interconnected for more than 50% of model period
- Clear cell show areas that are potentially interconnected and require further evaluation
- This map does not show the extent of interconnection



This data (model and/or model results) are preliminary or provisional and are subject to revision. This model and model results are being provided to meet the need for timely best science. The model has not received final approval by the U.S. Geological Survey (USGS). No warranty, expressed or implied, is made by the USGS or the U.S. Government as to the functionality of the model and related material nor shall the fact of release constitute any such warranty. The model is provided on the condition that neither the USGS nor the U.S. Government shall be held liable for any damages resulting from the authorized or unauthorized use of the model.

New Slide

Projects and Management Actions

Overview & Purpose of Projects and Management Actions

- Projects and management actions are a critical ***component of GSPs***
- Meant to implement the GSP and enable the basin to ***reach sustainability by 2042*** and then maintain sustainability for 30 years
- Within GSP, they show that reaching sustainability is ***feasible***; however, further work is required to determine which projects to implement and project design
- Must address ***all of the SMCs*** relevant to the basin, which includes bringing pumping to within the sustainable yield

Projects and Management Actions for the Langley Subbasin

- **Decentralized Recharge Projects**
  - Decentralized Residential In-Lieu Recharge Projects
  - Decentralized Stormwater Recharge
- **Stream Diversion Recharge Project**
  - Surface Water Diversion from Gabilan Creek
- **Cross-Boundary Projects**
  - Floodplain and Stream Restoration
  - CSIP Expansion
- **Demand Management**
  - Pumping Allocations and Control
- **Implementation Actions**
  - Localized Groundwater Elevation Triggers
  - Expansion of GEMS
  - Well Registration

Wastewater

New Slide

- Langley has over 4,000 parcels spanning over 22,000 acres
- 3 known wastewater systems - Prunedale Shopping Center, Cabana RV Park, and Prunetree Shopping Center – that have total maximum permitted flow of approximately 37,000 gpd that is disposed of via percolation fields (0.11 AF/yr)
- There may be additional small community wastewater facilities, but they would be less than 10,000 gpd and do not require a waste discharge permit
- Remaining homes are assumed to be on septic systems
- From a groundwater recharge perspective, this subbasin is seeing the maximum amount of return to the groundwater basin through percolation via the three wastewater treatment plants, small community treatment systems or individual septic systems.
- From a water quality perspective, a regional wastewater treatment plant could increase water quality; however, due to the terrain of this area, this would be extremely expensive to construct, operate and maintain.

Decentralized In Lieu Recharge Projects

- Program incentivizing homeowners to install in lieu rainwater harvesting and greywater reuse on their properties to store and use rainwater for landscaping in lieu of groundwater use
- **Benefits:** increase groundwater elevations by reducing residential groundwater demand for outdoor irrigation

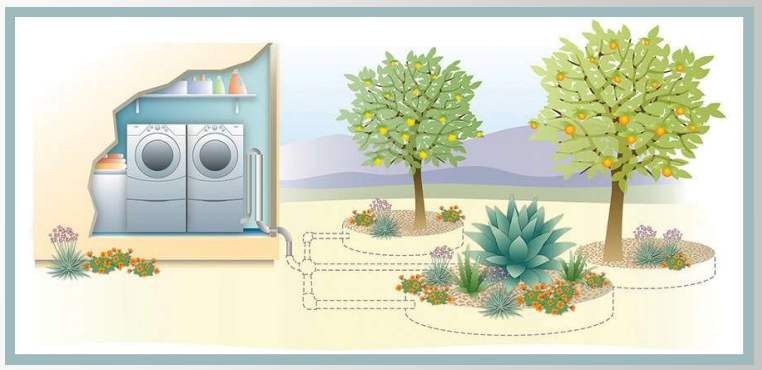
Decentralized In Lieu Recharge Projects

Benefits:

- Rainwater harvesting @ 10% uptake, ~29 AF/yr.
- Graywater systems @ 10% uptake, ~21 AF/yr.

Unit Cost of Water (e.g. cost/AF):

- Complete Rainwater Harvesting System $650,000 /AF.
- Complete Laundry to Landscape System $52,500 /AF.

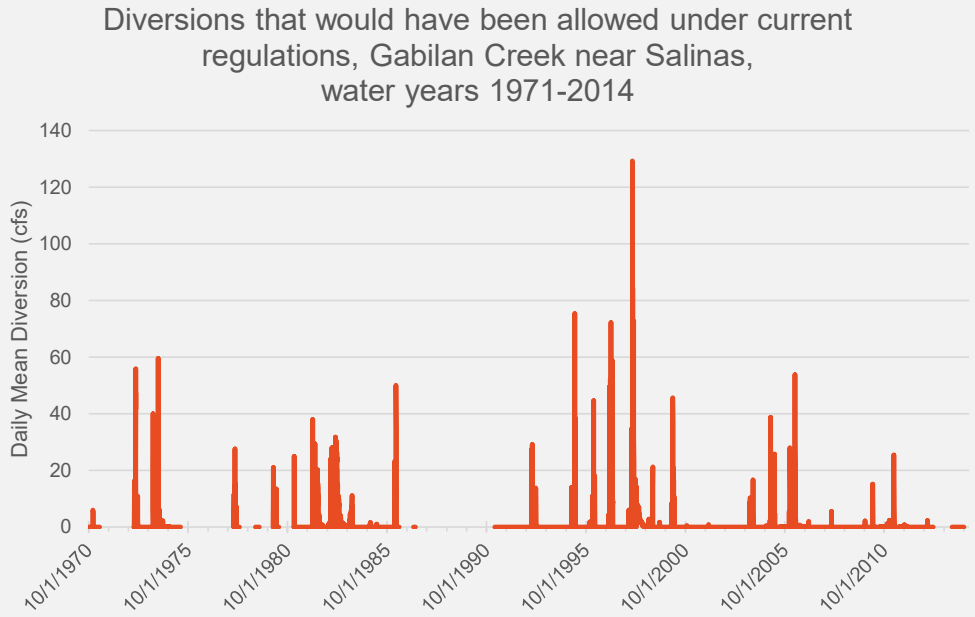


https://naparcd.org/workshop-laundry-to-landscape-grey-water-2016/

Decentralized Stormwater Capture

- Incentivizing installation of stormwater capture features for groundwater recharge
- Stormwater is directed to small recharge basins, flood plains, and bioswales for recharge, or for immediate irrigation application
- **Project benefit:** increased groundwater elevations and storage
  - Secondary flood hazard mitigation benefits
  - Stormwater capture off 1% of Langley land area would result in up to ~279 AF/yr.
- **Cost:** varies widely
- **Example of potential project under this program:** stormwater capture from Prunedale shopping center
  - 9 AF/yr captured for recharge
  - Capital cost = $3.3 million

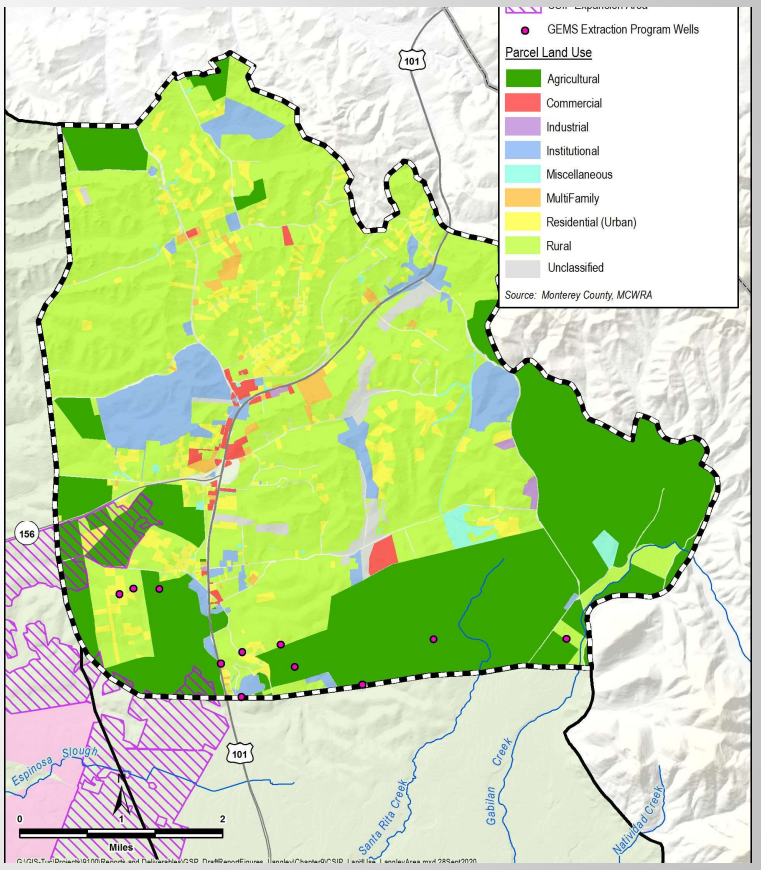
Surface Water Diversion from Gabilan Creek



- Divert water from Gabilan Creek to recharge
- Diversions are permitted on any day with flow greater than historical 90th percentile, up to 20% of total flow for that day
- Based on this analysis, a diversion capacity of 20 cfs would be expected to potentially capture a mean of 350 AF/yr.
- Capital costs estimated at $5,477,000
- Including operations and maintenance, the unit cost for water is $1,800/AF.

CSIP Expansion

- Expand CSIP into agricultural land in or adjacent to the Langley Subbasin, and could reduce the amount of groundwater pumped from the Subbasin
- Expansion area (total): 8,500 acres *(alternative expansion map for 3,500 acres would not extend into the Langley Subbasin)*
- **Benefits:** Expansion would generate an additional 14,000 AF/yr. (total, not just in Langley)



CROSS-BOUNDARY PROJECT

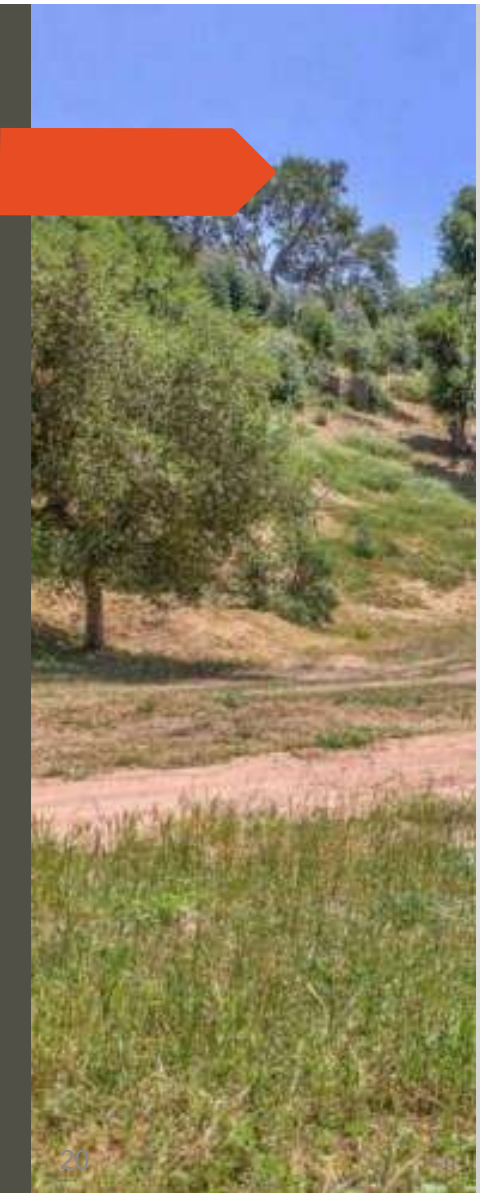
Floodplain and Stream Restoration

- Restore areas along floodplains and creeks to slow and sink flood waters and encourage infiltration
- Example: Gabilan Floodplain Enhancement Project by Central Coast Wetlands Group and IRWM Group
- **Benefits**: increases groundwater elevations and storage, and have secondary benefits of reduced downstream flooding and stormwater quality

Creek Restoration in Oakley, CA by Restoration Design Group

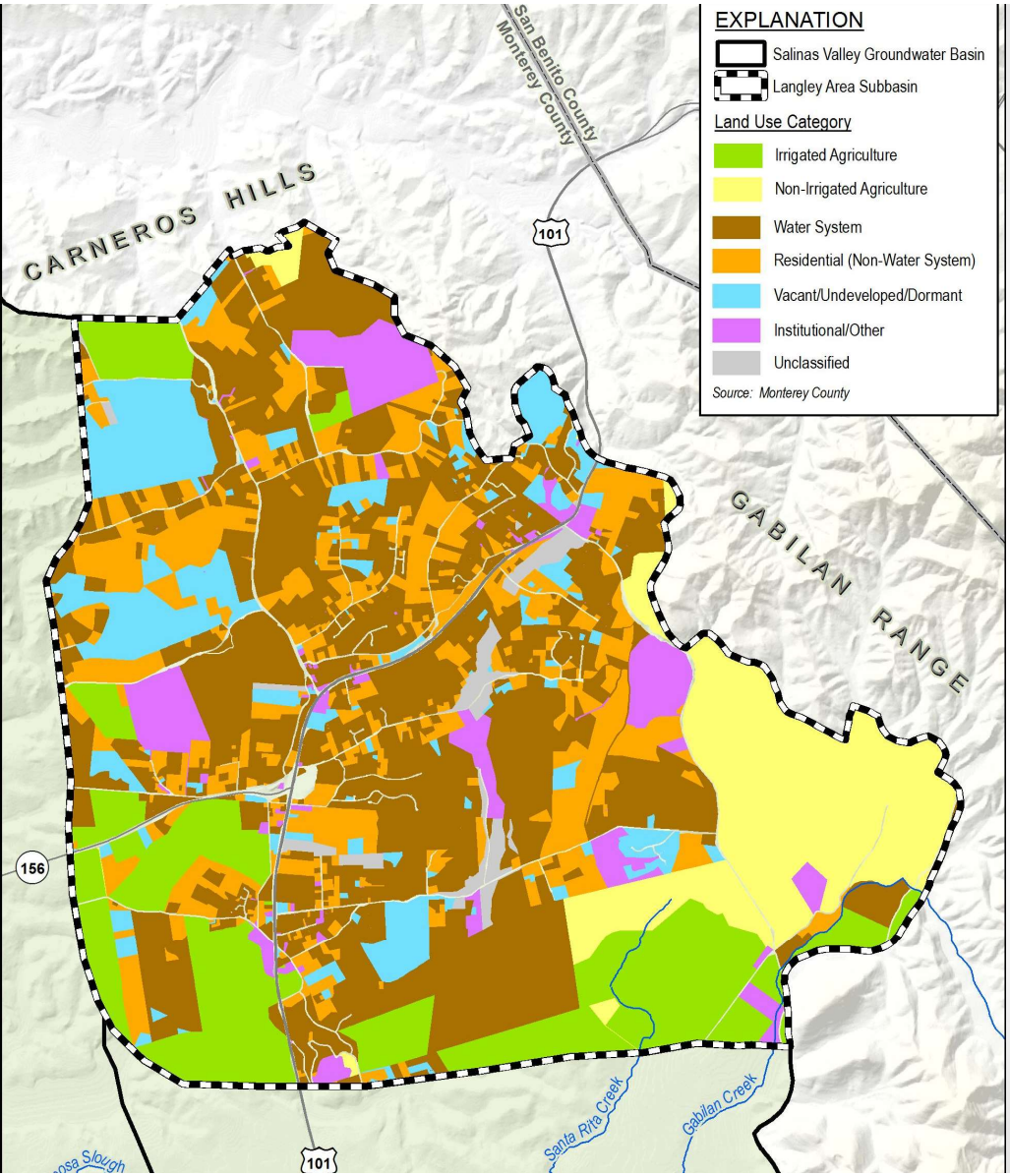
Projects for the Langley Subbasin

Project or Management Action	Project Benefit	Cost
Decentralized Residential In-Lieu Recharge Projects	Rainwater harvesting @ 10% uptake, ~29 AF/yr. Graywater systems @ 10% uptake, ~21 AF/yr.	Complete Rainwater Harvesting System $650,000 /AF Complete Laundry to Landscape System $52,500/AF
Decentralized Stormwater Recharge	Stormwater capture off 1% of Langley land area would result in up to ~279 AF/yr.	Example project: $3.3 million for 9 AF/yr.
Surface Water Diversion from Gabilan Creek	Annual average of 350 AF	Capital costs estimated at $5,477,000; Including operations and maintenance, the unit cost for water is $1,800/AF
Floodplain and Stream Restoration	Not yet calculated	Not yet calculated
CSIP Expansion	Expansion would generate an additional 14,000 AF/yr. (total, little in Langley)	Not yet calculated
Pumping Allocations and Control	Depends	Program cost low, but cost for individuals to implement varies

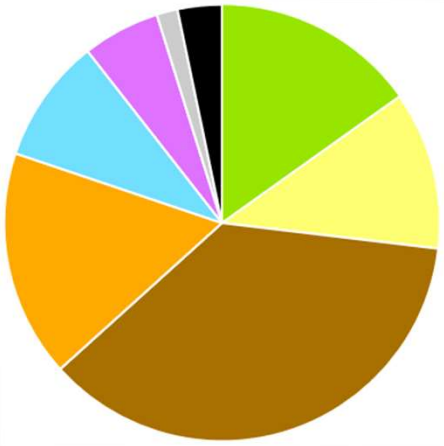


Pumping Allocations

- Management action to enable Subbasin to pump within sustainable yield
- Not water rights, but rather an approach to divide up sustainable yield among beneficial users
- They can be used to:
  - Underpin management actions that manage pumping
  - Generate funding for projects and management actions
  - Incentivize water conservation and/or recharge projects

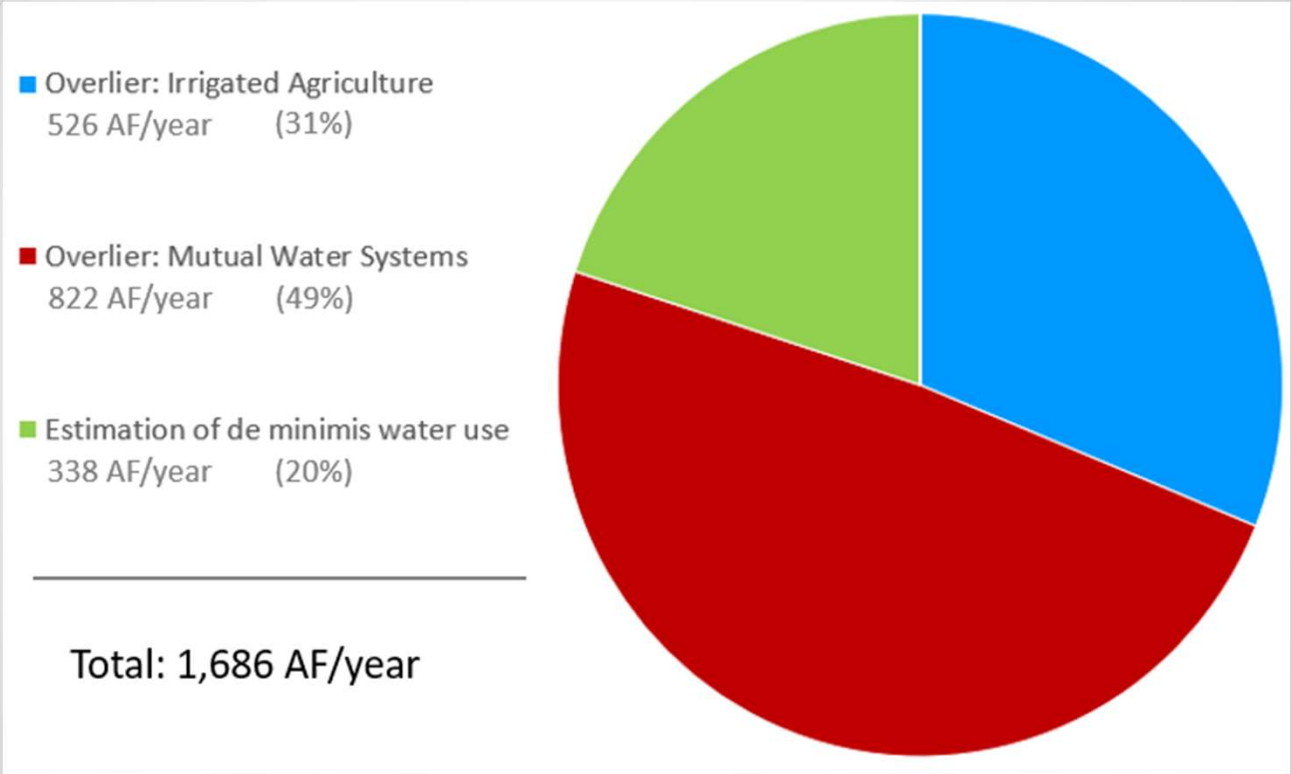


Land Use



Land Use	Acres	Percent
Irrigated Agriculture	2,671	15%
Non-irrigated Agriculture	2,064	12%
Water System	6,421	36%
Residential (Non-Water System)	2,966	17%
Vacant/Undeveloped/Dormant	1,631	9%
Institutional/Other	1,012	6%
Unclassified	274	2%
Not in Parcel Layer	577	3%
Total	**17,617**	**100%**

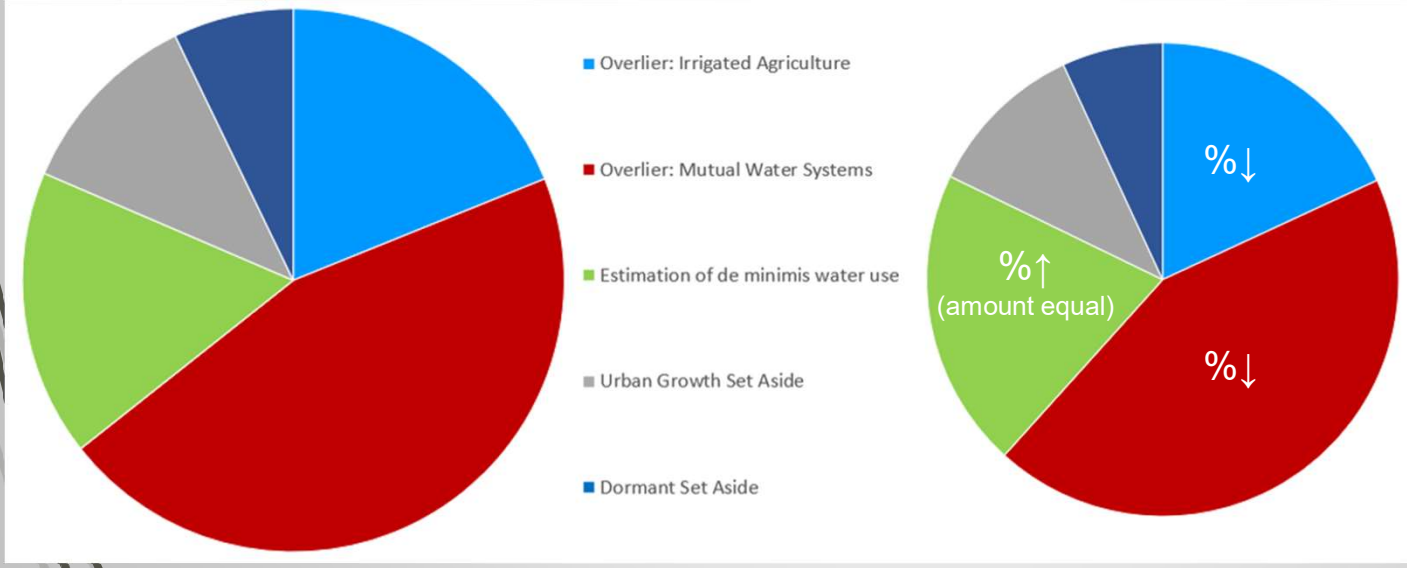
Example Estimated Groundwater Extraction (2015)



**Groundwater extraction by irrigated agriculture is derived from GEMS data and may be significantly less than is used within the Subbasin*

Option 1.
Basis: Allocation Based on Acreage

Adjustment: Correlative Reduction - If sustainable yield is reduced, all users reduce proportionately except *de minimis* users



De minimis uses have the same amount of water use in both current and reduced scenarios because it is estimated.

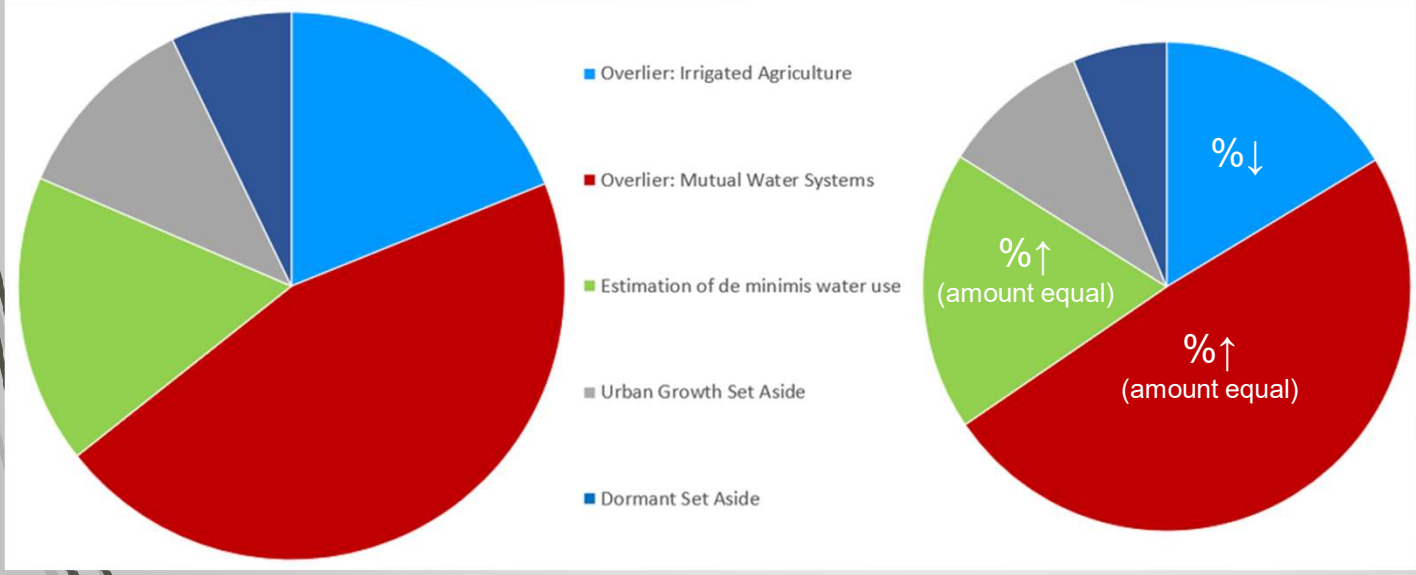
Includes urban growth set aside and dormant set aside for future agricultural growth.

Overliers (irrigated ag and mutual water systems) are allocated water based on acreage.

If pumping is reduced, overliers reduce proportionally

Option 2.
Basis: Allocation Based on Acreage

Adjustment: Drinking Water Priority - If sustainable yield is reduced, agricultural allocation reduced before drinking water systems



De minimis uses have the same amount of water use in both current and reduced scenarios because it is estimated.

Includes urban growth set aside and dormant set aside for future agricultural growth.

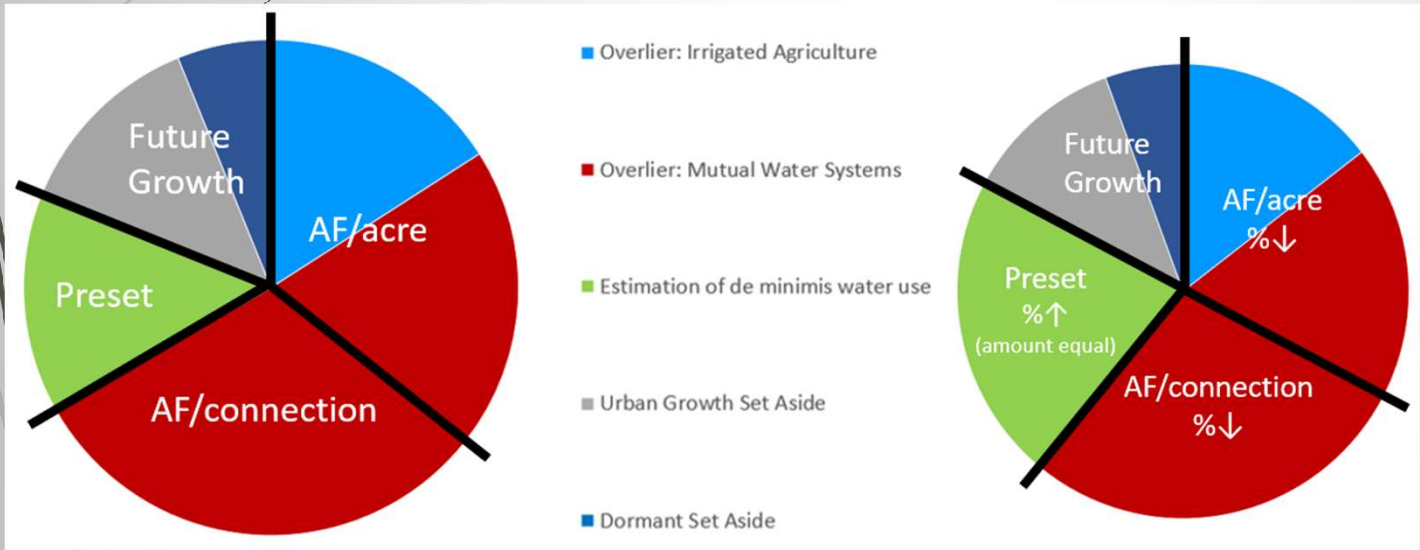
Overliers (irrigated ag and mutual water systems) are allocated water based on acreage.

If pumping is reduced, agricultural allocation reduced before drinking water systems

Option 3.

Basis: Per Connection Allocation for Small Parcels and Per Acreage for Large Parcels

Adjustment: If sustainable yield is reduced, all users reduce proportionately except *de minimis* users



De minimis users have the same amount of water use in both current and reduced scenarios because it is estimated.

Overliers (ag and mutual water systems) are allocated water based acreage for parcels over 5 acres and based on connections for parcels under 5 acres.

When pumping is reduced, all users reduce usage by the same percentage except for *de minimis* users.

New Slide

Discussion on Projects and Management Actions

- **Decentralized Recharge Projects**
  - Decentralized Residential In-Lieu Recharge Projects
  - Decentralized Stormwater Recharge
- **Stream Diversion Recharge Project**
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  - Pumping Allocations and Control

- Discussion on this list of projects and management actions
- Is the Committee in agreement with the projects and management actions added and our suggested approach?
- How should pumping allocations be included?

- Next up:
  - Implementation, specifically funding
  - Chapters 2, 6, and 8 (complete) will be released soon
  - Comments on Chapters 1-8 due April 15th

Questions