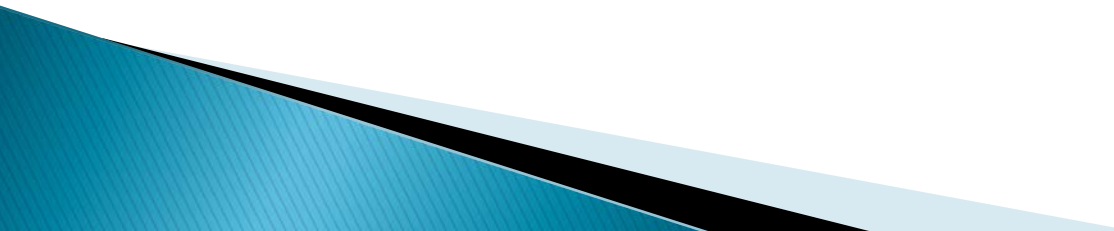


Water Exchange Options: Conjunctive Use Phase II

April 22, 2015


County of Santa Cruz, City of Santa Cruz, Scotts
Valley Water District, Soquel Creek Water District,
San Lorenzo Valley Water District

- ▶ Brief Background
 - ▶ Approach
 - ▶ Findings
 - ▶ Potential return to Santa Cruz
 - ▶ Additional Options for Consideration
 - ▶ Next Steps
- 

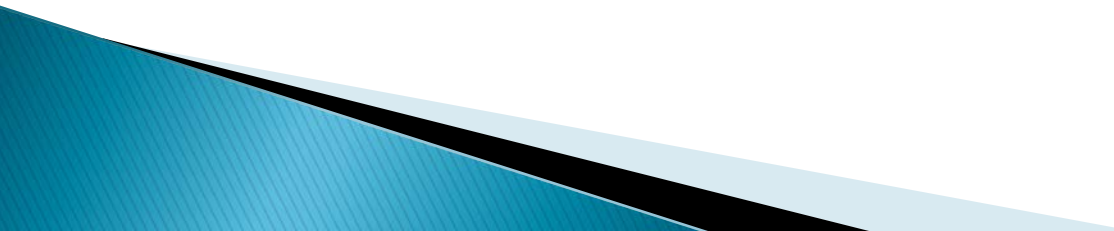
Background

- ▶ Integrated Regional Water Management (IRWM)
- ▶ Prop 50 project – focus on Scotts Valley area
- ▶ Prop 84 project – Includes Soquel
 - ▶ Most technical work done in 2012–2013
 - ▶ Status Reports to Soquel and Scotts Valley, Nov. 2013, Santa Cruz Water Commission, March 2014
- ▶ Additional hydraulic analysis and potential for transfer of water back to City
- ▶ Working Group: County, City, SLVWD, SVWD, SqCWD

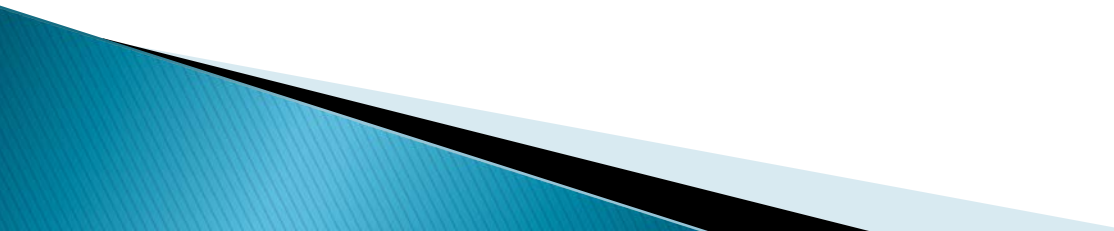
Methodology for Yield Assessment

- ▶ Confluence Model models City's whole system and how water transfers would fit within the overall City operation
 - ▶ Flow calculations establish flow records and estimated flows that would exist with and without City diversions and transfers; historical flow record
 - ▶ Fish Habitat Effects Analysis: utilizes flows with and without diversions to estimate effects from water transfers on habitat downstream
- 

Assumptions:

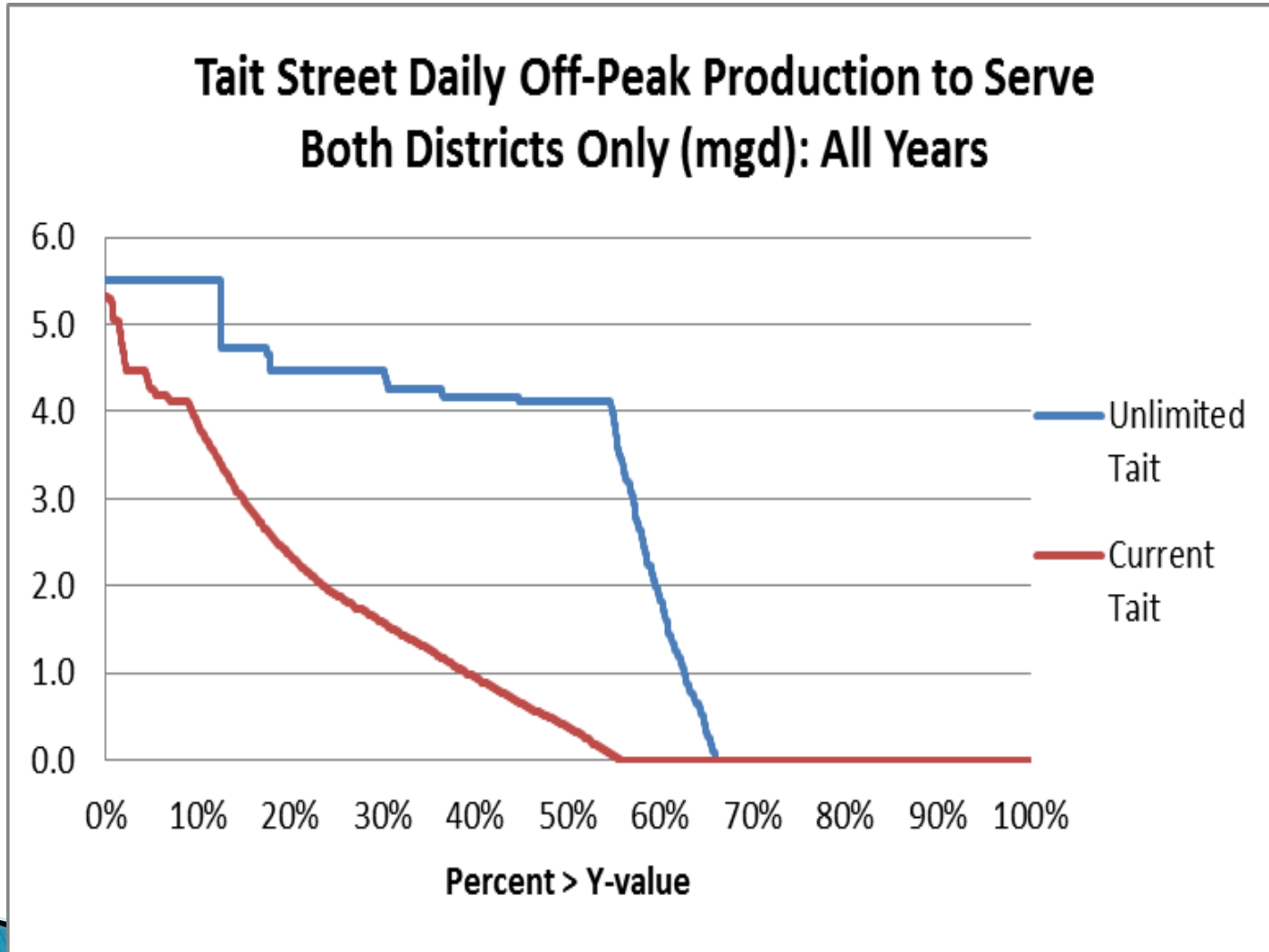
- ▶ Divert water Nov–April from Tait;
 - ▶ Satisfy City demand first: 2030, 4,046 MGY
 - ▶ Meet “Tier 3” flow targets throughout the system
 - ▶ Do not take water if flows below Tait are less than 25 cfs.
 - ▶ Water goes to Scotts Valley area first, excess to Soquel
 - ▶ Only divert amounts needed to satisfy Districts’ demand. Calculated yields are constrained by demand
- 

Operational Scenarios

- ▶ Current Infrastructure/Water Rights/Soquel Service Area 1
 - ▶ New Interties to Scotts Valley and Soquel
 - ▶ New Expanded Water Rights
 - ▶ Upgraded diversion and treatment capacity
 - ▶ Treatment of higher turbidities
- 

	Scenario:	Total Potential Yield (MGY)
0	Existing Connection to Soquel	145
1	New intertie to SVWD, (Existing Capacity)	145
2	Increase GHWTP Capacity from 10 mgd to 16 mgd	204
3	Increase GHWTP Capacity and Tait Capacity from 7.8 to 14 mgd	488
4	Increase GHWTP Capacity and Turbidity Treatment from 15 to 200 NTU (7.8 mgd)	260
5	Increase GHWTP Capacity, Increase Tait Capacity, Increase Turbidity	558

Confluence Model Results, Scenario 2, 3



Scenario 3, Increase Tait, GHWTP Capacity

DEMAND SERVED (MG)	HYDROLOGIC YEAR TYPE				
	Critically Dry	Dry	Normal	Wet	All
Santa Cruz Only	823	879	812	663	778
Total	1102	1345	1378	1179	1262
Districts Only	278	464	566	517	488

Winter Treatment Challenges

- ▶ Turbidity, Sediment, Organic Load, Bacteria
- ▶ San Lorenzo water worse than North Coast
- ▶ For increased flow, need to replace/upgrade:
 - Pretreatment Filtration
 - Disinfection/Oxidation Process
 - Solids handling
- ▶ Improvements at Tait needed for increased sanding

Infrastructure Upgrades and Costs

(Additive)

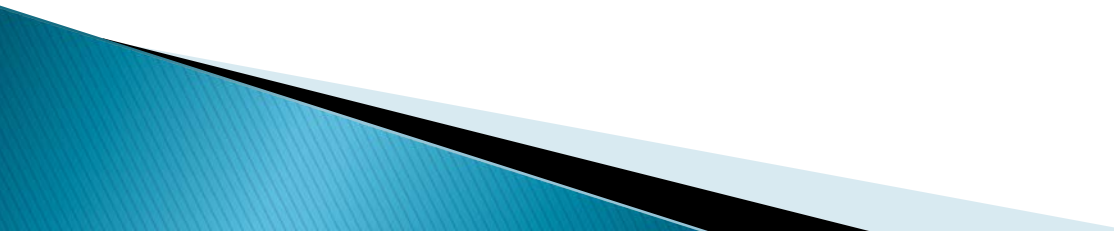
- ▶ Intertie to SLVWD/SVWD (1–2 mgd) \$ 5.8 M
- ▶ Intertie to Soquel(1.5–3.5 mgd) \$ 18.5 M
- ▶ Tait Diversion Works upgrades (7.8 mgd) \$ 2.8 M
- ▶ Tait Expansion (to 14 mgd) \$ 5.9 M
- ▶ Treatment Plant Upgrades (to 16 mgd) \$ 57.7 M
- ▶ Diversion of Increased Turbidity Water \$ 1.1 M

- ▶ Operating Costs: \$147 – 715 K/yr

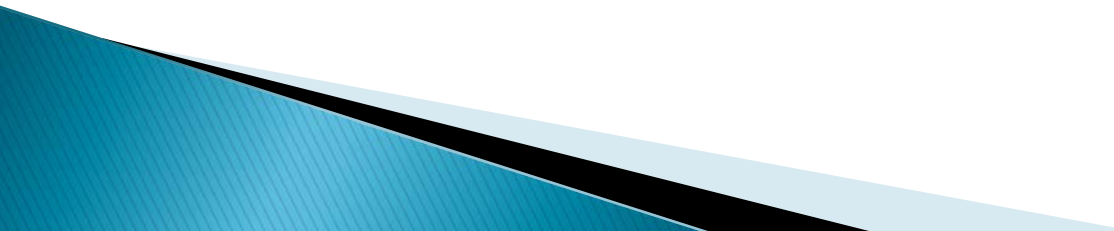
Pump Stations, additional wells to deliver water back to Santa Cruz – ??

	Scenario:	Total Potential Yield (MGY)	Capital Cost \$ M	Unit Cost (\$1,000/MG)
0	Existing Connection to Soquel	145	\$ 3 M	\$ 2.6
1	New interties (Existing Rights)	145	\$ 27 M	\$ 13.0
2	Increase GHWTP Capacity from 10 mgd to 16 mgd	204	\$ 78 M	\$ 25.8
3	Increase GHWTP Capacity and Tait Capacity from 7.8 to 14 mgd	488	\$ 91 M	\$ 13.1
4	Increase GHWTP Capacity and Turbidity Treatment from 15 to 200 NTU (7.8 mgd)	260	\$ 86 M	\$ 22.7
5	Increase GHWTP Capacity, Increase Tait Capacity, Increase Turbidity	558	\$ 92 M	\$ 11.9

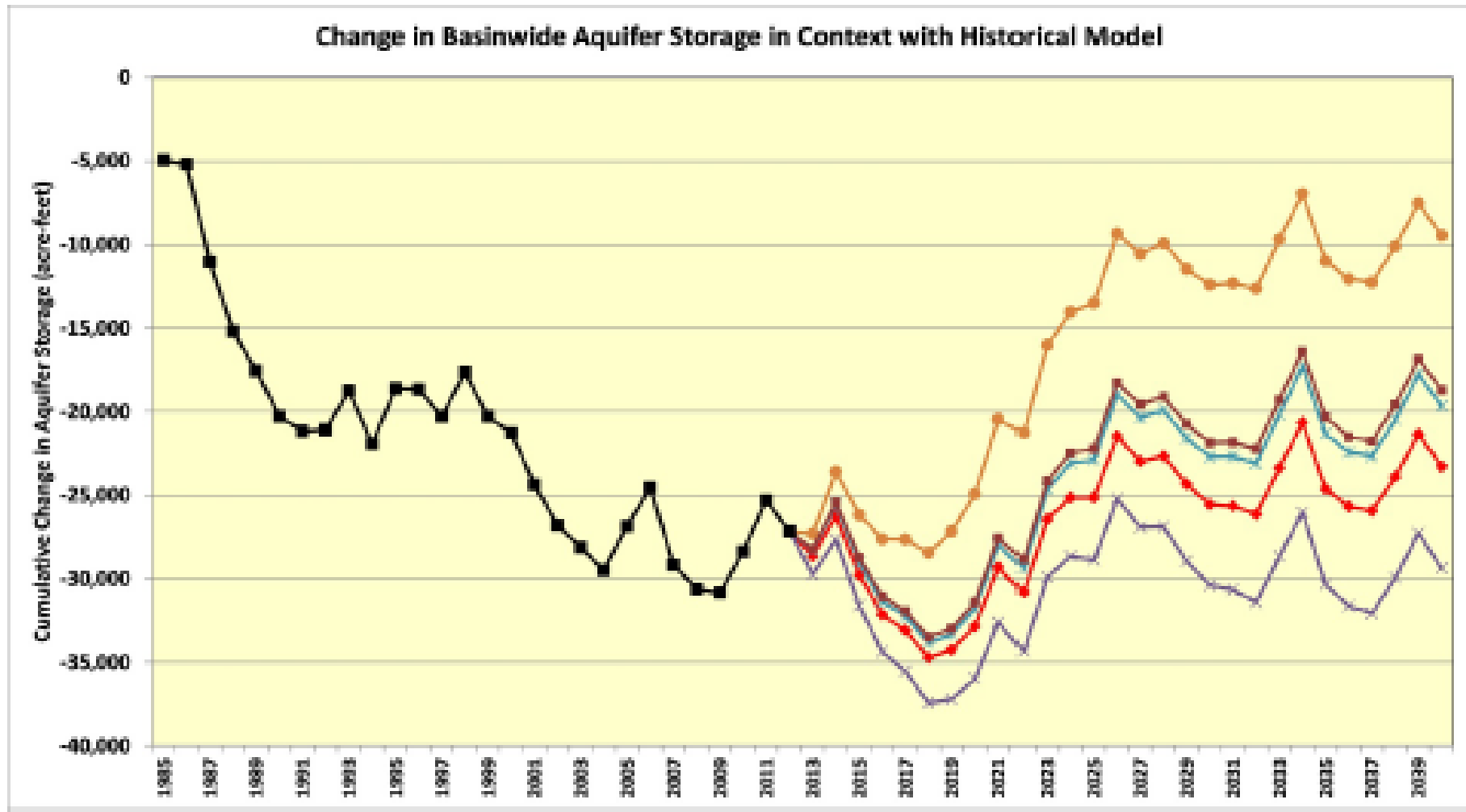
Water Rights Considerations

- ▶ Current limits
 - Volume limits
 - Place of use limits
 - Need for new rights
 - ▶ Long Term Options
 - ▶ Short Term Options
 - ▶ CEQA/Fishery Constraints
 - ▶ Protection of current rights
- 

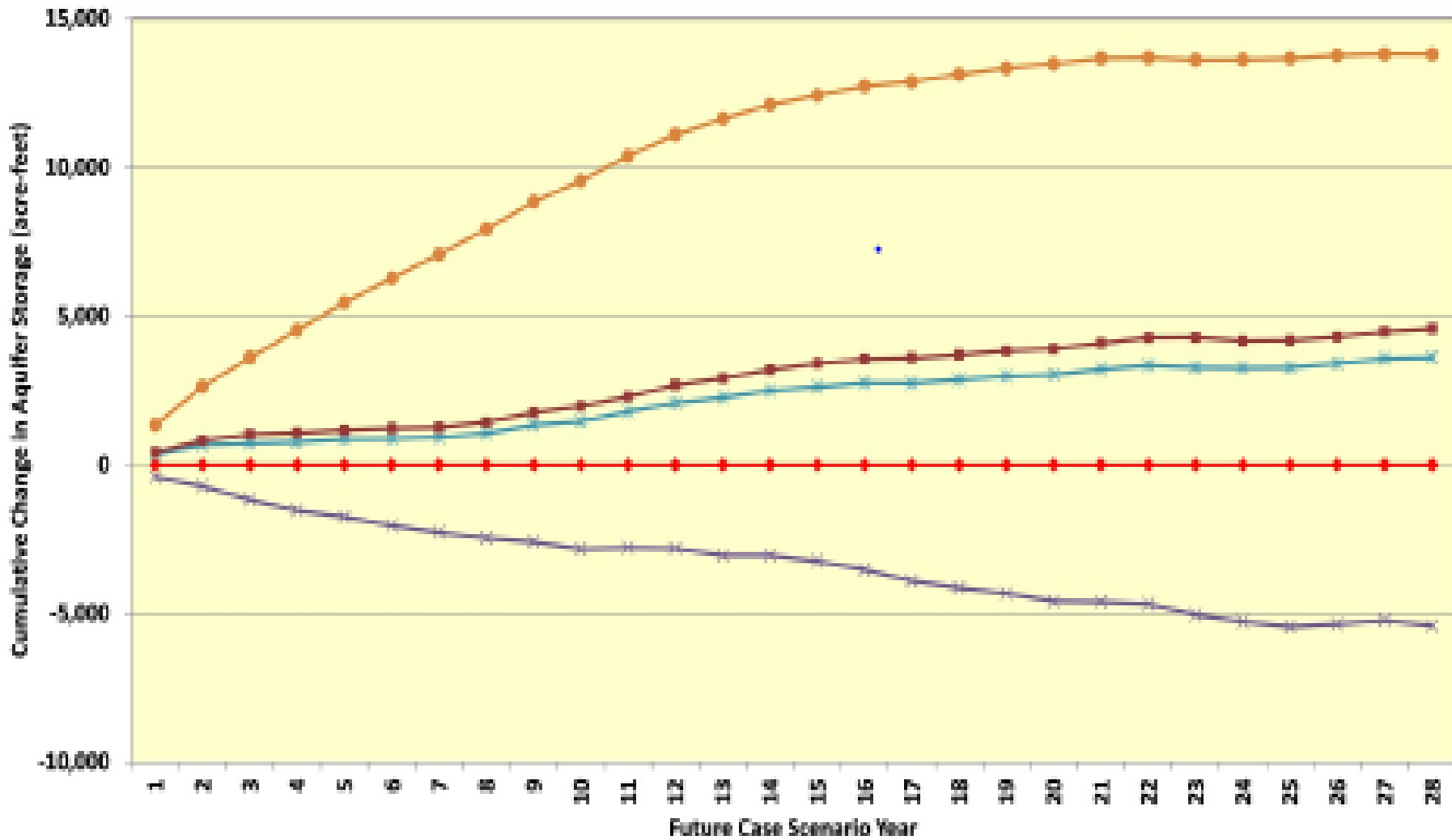
Water back to Santa Cruz

- ▶ Safeguards required to maintain groundwater levels and prevent seawater intrusion
 - ▶ Soquel presently has spare well pumping capacity of 1.4 mgd
 - ▶ Scotts Valley return would require intertie, additional wells
 - ▶ Need to develop policies and agreements
- 

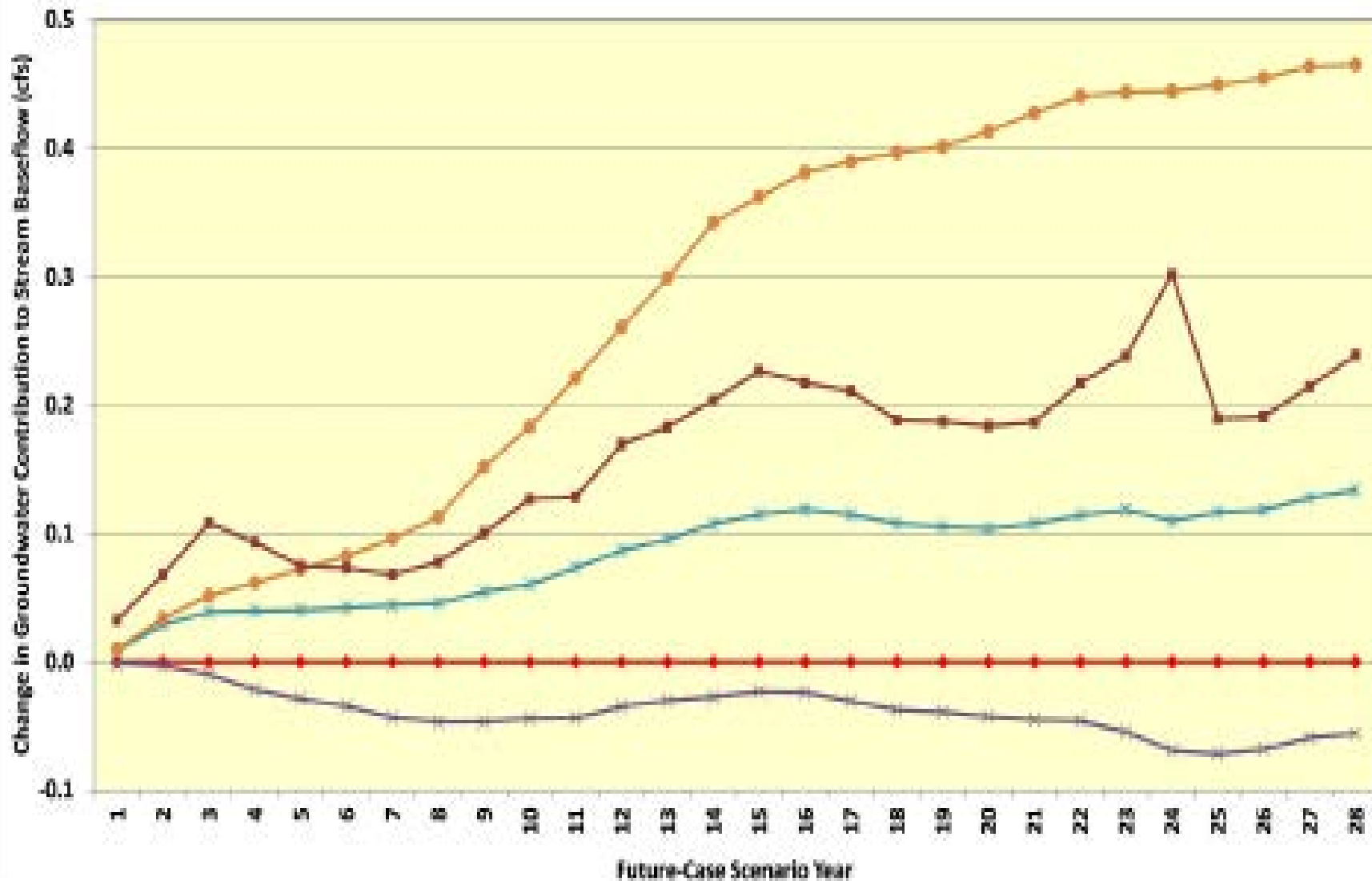
Potential Change in Aquifer Storage in Scotts Valley- 1 000 af/yr Injection (Preliminary: Kennedy/Jenks, 2015)



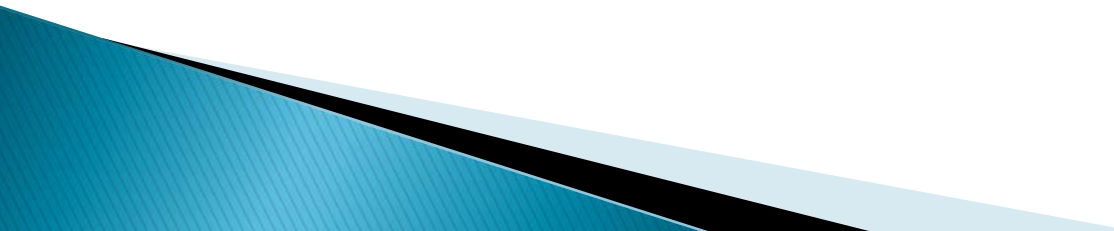
Change in Basinwide Aquifer Storage Relative to Base Case




Change in Summertime Streamflow in Bean Creek Relative to Base Case



Additional Conjunctive Use Options

- ▶ Felton Diversion or Loch Lomond to Hanson Quarry
 - ▶ Recycled water to Hanson
 - ▶ Stormwater to Hanson
 - ▶ Use of Ranney Collectors to reduce turbidity
 - ▶ Local stormwater recharge
 - ▶ ASR
 - ▶ Others
- 

Next Steps

- ▶ Update yield analysis with current info and climate impacts
 - ▶ Consider options relative to other potential projects
 - ▶ Develop agreement(s) among water agencies
 - ▶ Determine best strategy for short term and long term water rights applications
 - ▶ Use groundwater modeling or other methods to evaluate potential yield back to Santa Cruz
 - ▶ Conduct CEQA process
 - ▶ Financing plan for next steps
- 

Questions?

