Degraded Groundwater Quality

Significant & Unreasonable Minimum Thresholds & Measurable Objectives

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Santa Margarita Groundwater Agency

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Draft Statement of Significant & Unreasonable Degraded Groundwater Quality

Continuation from February Board Meeting

Proposal

Significant and unreasonable water quality conditions occur if SMGWA projects or management activities cause an increase in the concentration of constituents in groundwater that lead to adverse impacts on beneficial users or uses of groundwater or surface water because of non-compliance with drinking water standards. Adverse impacts include diminished supply or undue costs for mitigating such negative impacts.

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Discuss proposed statement of significant & unreasonable degraded water quality

Degraded Groundwater Quality Approach for Minimum Thresholds & Measurable Objectives

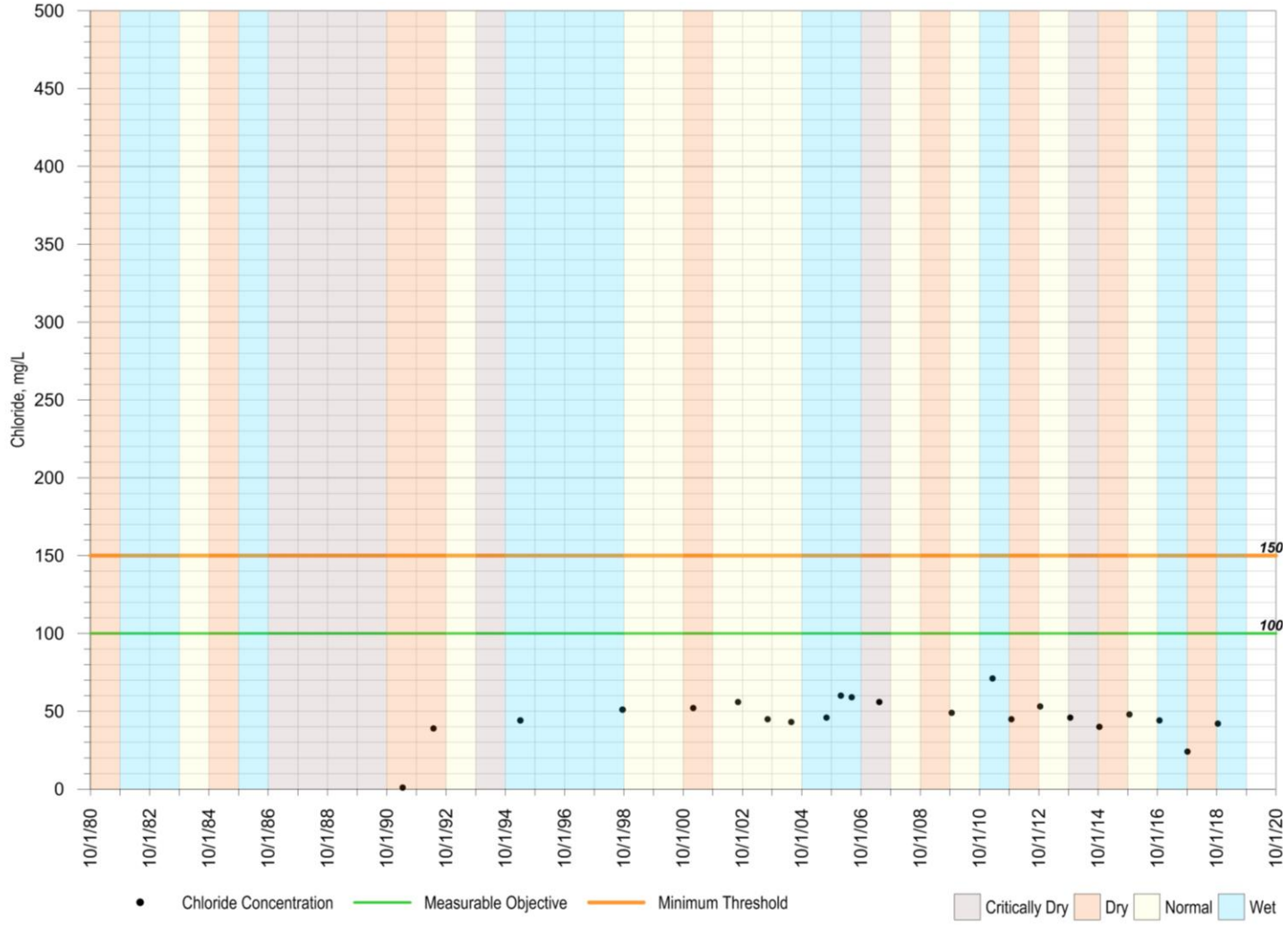
Minimum Threshold Approach

SMC BMP Document:

Degraded groundwater quality minimum threshold can be defined:

- At a **Site**
- Along an isocontour
- Calculated volume

Minimum Thresholds & Measurable Objectives recommended to be concentrations at Representative Monitoring Points (RMPs)



Minimum Thresholds

Measurable Objective

Representative Monitoring Points (RMPs)

- Focus in areas where projects & management actions are likely to happen with a few RMPs in other parts of the Basin
- Select RMPs that:
  - Represent each primary aquifer
  - Are part of a regular sampling program
  - Have historical data
- Potential points:
  - All Municipal Wells (these wells are tested per State requirements)
  - Monitoring Wells (none are monitored for water quality)
  - Springs?
  - Private wells?

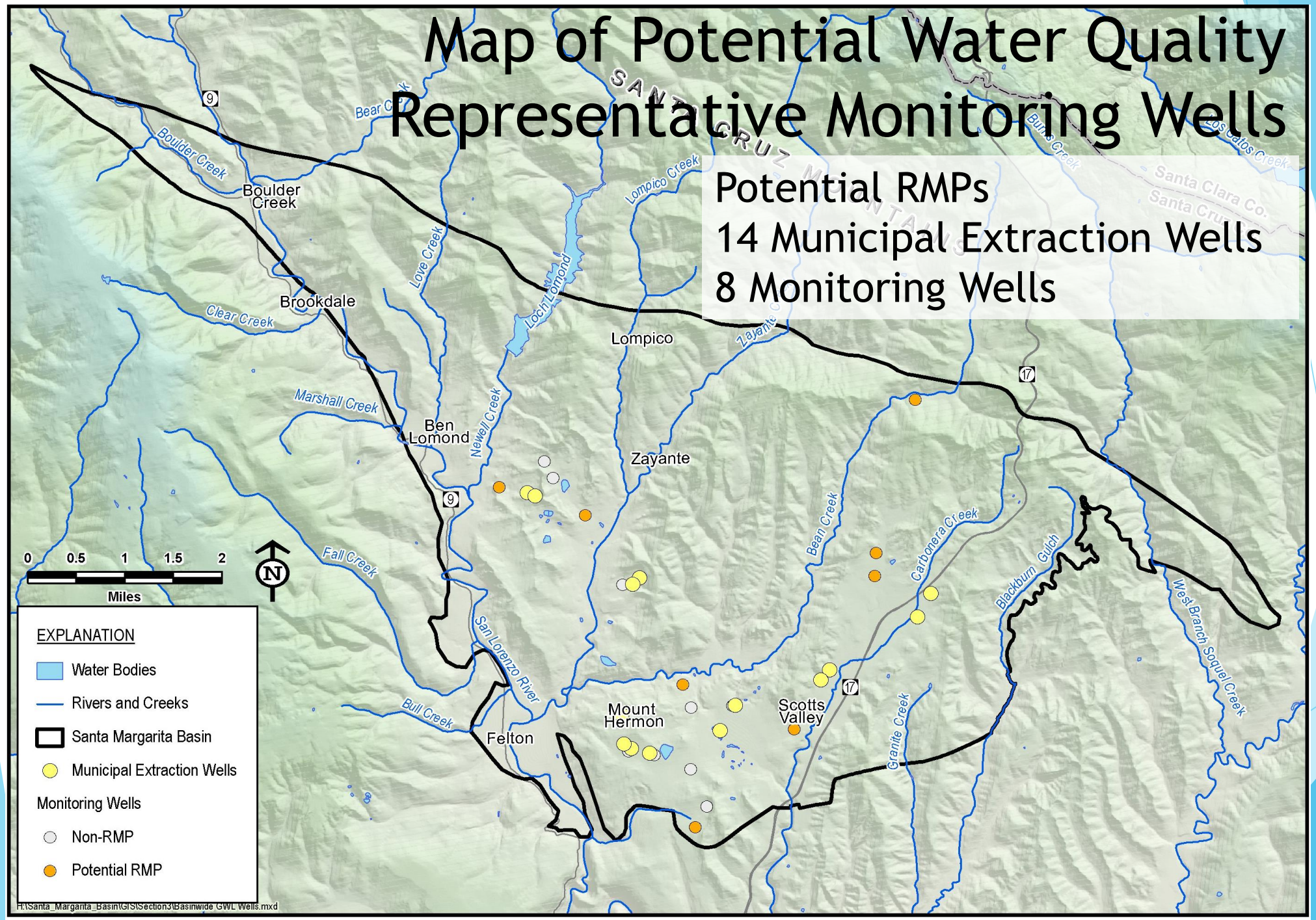
Other things to consider for RMPs

- Sampling frequency for some municipal wells is only every 3 years, this may need to be increased once there are PMAs
- Monitoring wells are not currently used to routinely test water quality. If they are added as RMPs, the cost of testing them will need to be added to GSP implementation costs
- Future projects that are implemented to achieve sustainability in the Basin will have strict water quality monitoring requirements. Some of those wells will become RMPs for water quality

Current Sampling Frequency for Municipal Supply Wells

Municipal Extraction Well	Inorganics	Included in Inorganics but called out as COC & if more frequent sampling than Inorganics				Volatile and Synthetic Organics	Aquifer
		Nitrate as N	Arsenic	Iron	Manganese		
SLVWD Olympia & Quail Hollow	Triennially	Annually	Triennially	Quarterly	Quarterly	Triennially	Santa Margarita
Mount Hermon #2 & #3	Triennially	Annually	Triennially	Quarterly	Triennially	Triennially	Lompico
SLVWD Pasatiempo #5A, #7 & #8	Triennially	Annually	Monthly	Monthly	Monthly	Triennially	Lompico
SVWD Well #10A	2 x year	Annually	2 x year	2 x year	2 x year	2 x year	Lompico
SVWD Wells #11A & #11B	Quarterly	Annually	Quarterly	Quarterly	Quarterly	Quarterly	Lompico
SVWD Wells #3B & Orchard	Quarterly	Annually	Quarterly	Quarterly	Quarterly	Quarterly	Lompico/Butano
SVWD Well #9 (to be destroyed)	Annually	Annually	Annually	Annually	Annually	Annually	Monterey

Map of Potential Water Quality Representative Monitoring Wells



Discuss Representative Monitoring Points

Minimum Thresholds

- Propose to use drinking water standards since municipal and domestic use are primary beneficial users in the Basin – still need to research water quality needed for fish
- Central Coast Basin Plan Water Quality Objectives for groundwater are the same as state primary drinking water standards
- As stricter standards or new detected constituents are added by the state, these will be added to the GSP in its five-year reviews

Constituents to Set Minimum Thresholds For

- Salinity constituents
  - TDS
  - Chloride
- Contaminant constituents already detected in the Basin in public groundwater supply
  - Nitrate as N
  - MTBE
  - PCE
  - TCE
  - cis-1,2-DCE
- Other constituent that is naturally occurring but may be affected by future PMAs
  - Arsenic

Proposed Constituents and their Minimum Thresholds

Constituent	Standard	Minimum Threshold/ Drinking Water Standard
TDS	Secondary	1,000 mg/L
Chloride	Secondary	250 mg/L
Nitrate and N	Primary	10 mg/L
Arsenic	Primary	10 µg/L
MTBE	Primary	13 µg/L
PCE	Primary	0.005 µg/L
TCE	Primary	0.005 µg/L
cis-1,2-DCE	Primary	0.07 µg/L

Measurable Objective Approach

- Measurable Objectives are concentrations that reflect what water quality the SMGWA wants in the Basin
  - Not enforceable
  - Must be achievable

- Options

1. Keep groundwater quality the same as it is now
2. Improve groundwater quality (SMGWA must have a means to do this)
3. Allow groundwater quality to degrade slightly to a better concentration than minimum thresholds

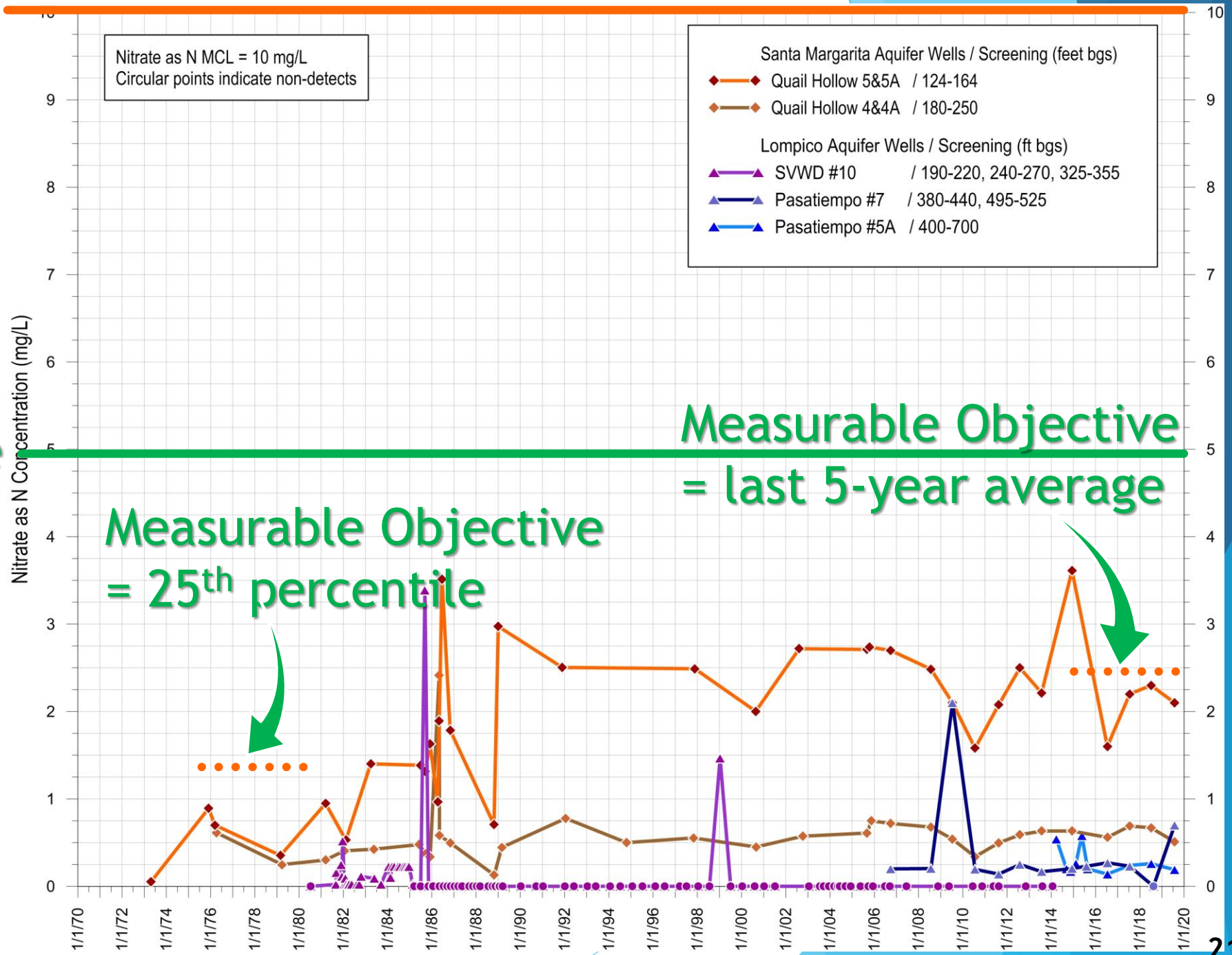
Measurable Objective Approach

Option	Approach
1. Keep groundwater quality the same as it is now	Use average concentrations from past X years * 5 yr average doesn't work if sampled every 3 years or if there is an increasing trend
2. Improve groundwater quality	Use X^{th} percentile concentration over period of record
3. Allow groundwater quality to degrade slightly	A percentage of Minimum Threshold/Drinking Water Standard, must have a concentration higher than historic data

Minimum Threshold

50% of MT
Measurable Objective

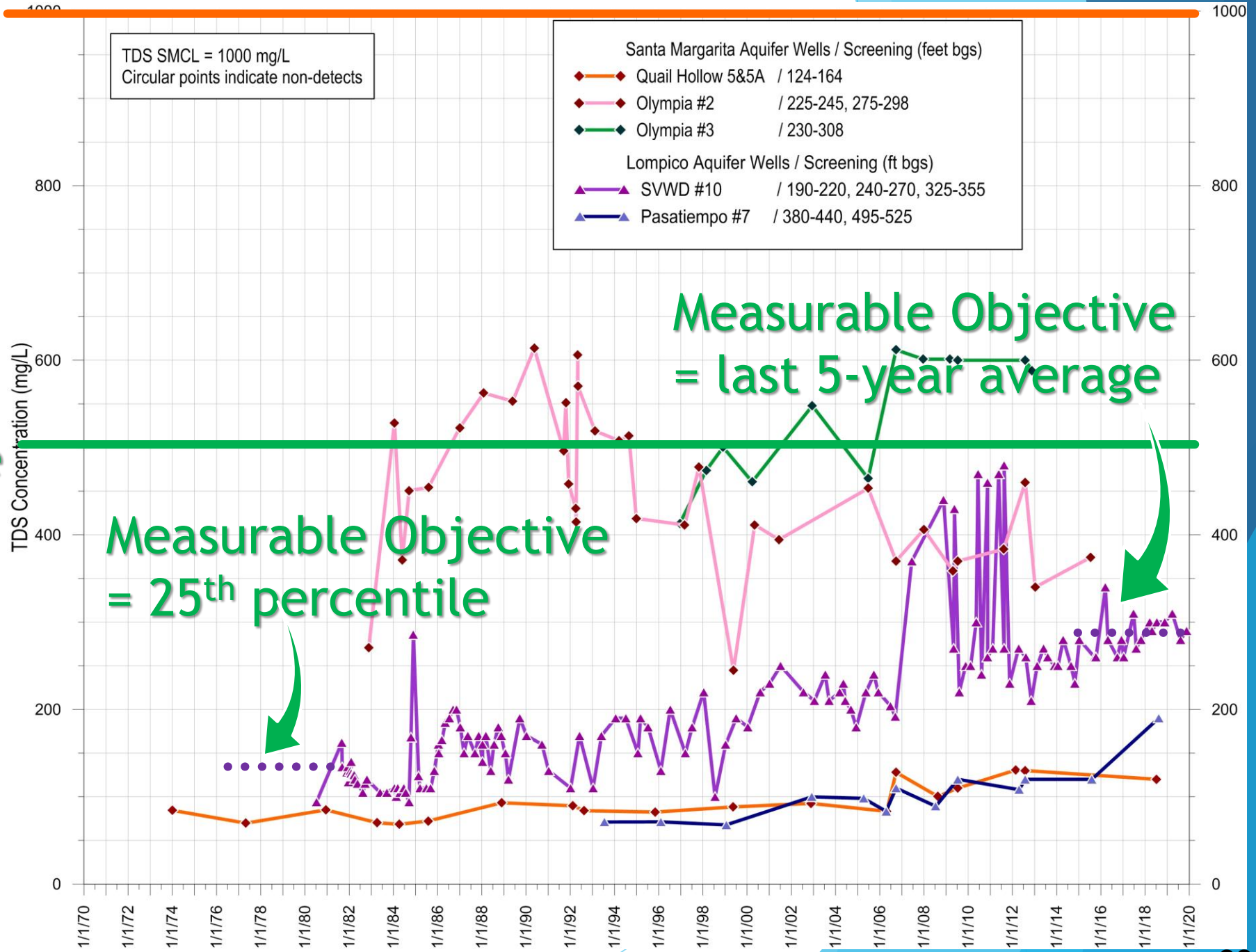
Nitrate as N
Example of Different Options for Measurable Objectives



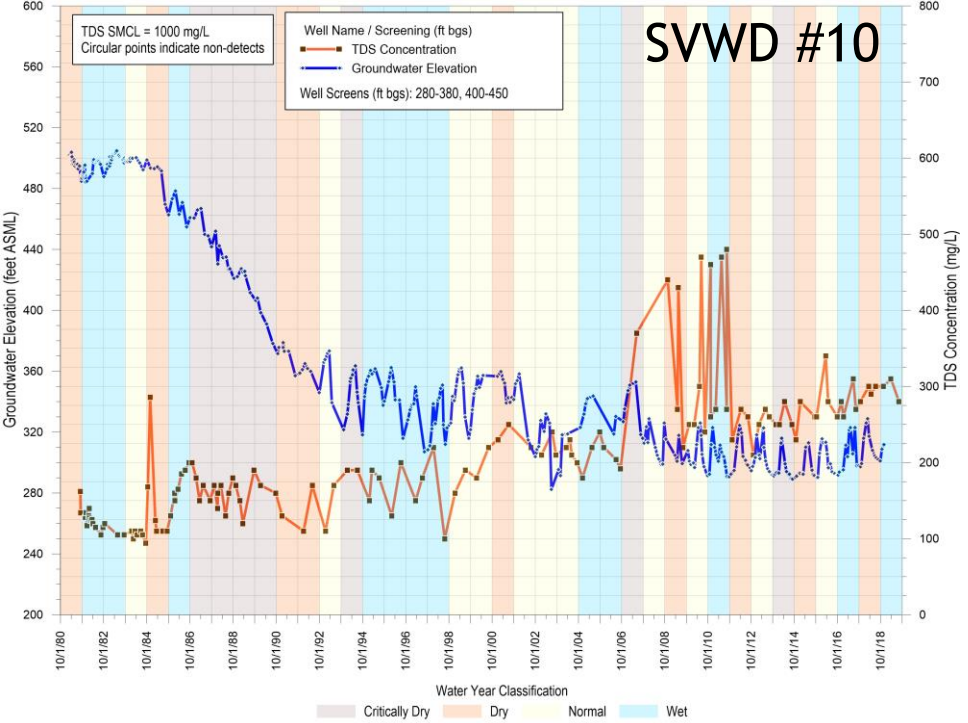
Minimum Threshold

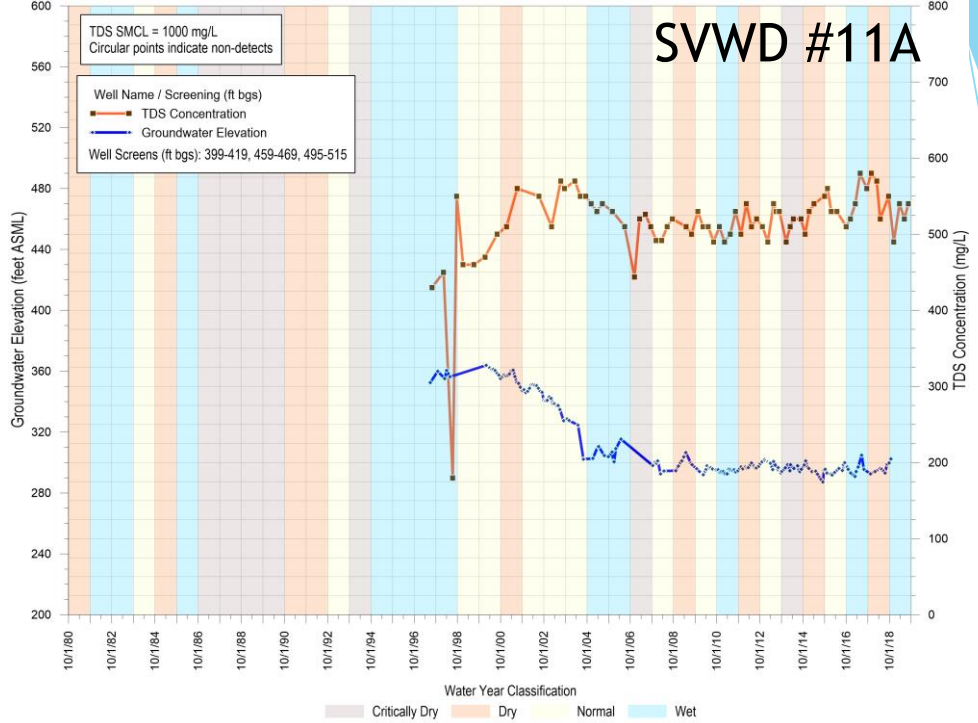
50% of MT Measurable Objective

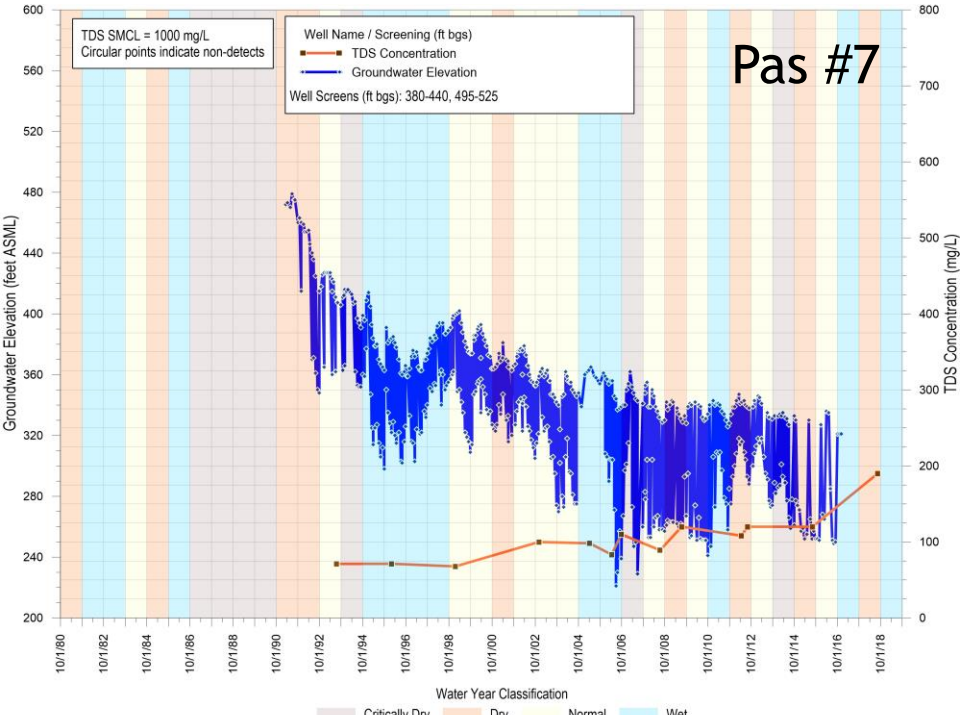
TDS Example of Different Options for Measurable Objectives

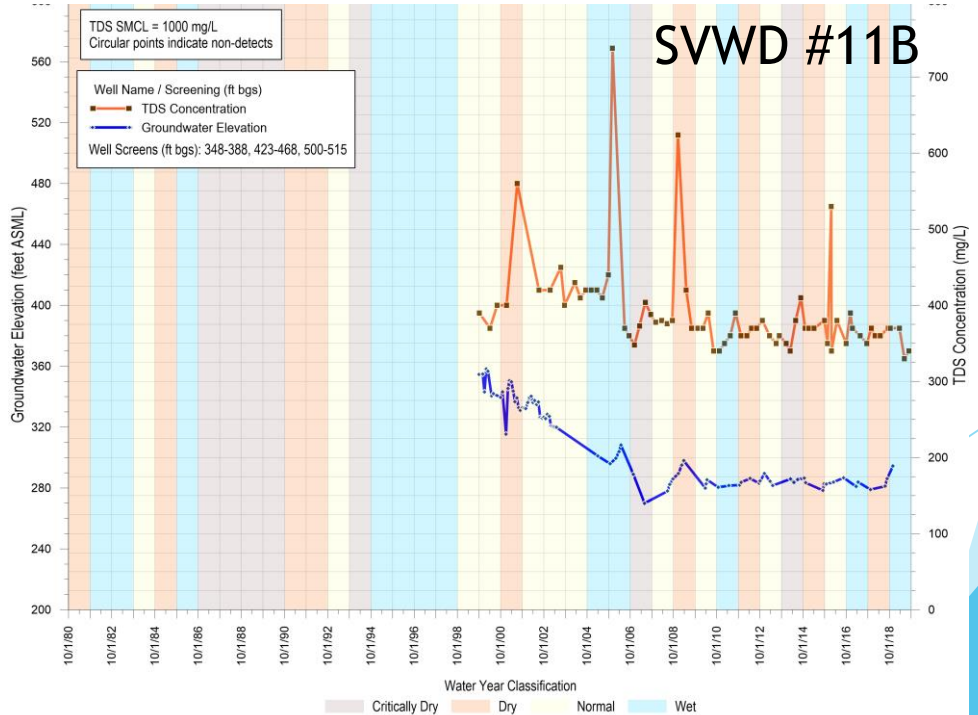


Lompico TDS and Water Levels









Proposed Measurable Objectives

Constituent	Recommended	Rationale
TDS	Average of past 10 years for all aquifers except Lompico Aquifer with increasing trends☞use 75% of MT	Uncertain if increased groundwater levels will stop increasing trends. MO can be changed to a lower concentration later
Chloride		
Nitrate as N	Average of past 10 years	Cannot get worse because of nitrate TMDL in SLR Cannot easily be improved
Arsenic	Average of past 10 years	Naturally occurring and variable
MTBE	Average of past 10 years	Do not want VOCs in groundwater to increase
PCE		
TCE		
cis-1,2-DCE		

Discuss degraded water quality:

- Proposed Minimum Thresholds
- Approaches for Measurable Objectives

Degraded Groundwater Quality Undesirable Results

Undesirable Results are:

A combination of Minimum Threshold exceedances caused by SMGWA activities

Options

- Allow some RMPs to exceed Minimum Thresholds
- Do not allow any RMPs to exceed Minimum Thresholds

Discuss degraded water quality undesirable results options:

- Allow some RMPs to exceed Minimum Thresholds
- Do not allow any RMPs to exceed Minimum Thresholds

Consider whether these options would cause locally defined significant & unreasonable water quality impacts to beneficial users and uses