

Sustainable Management Criteria Discussion

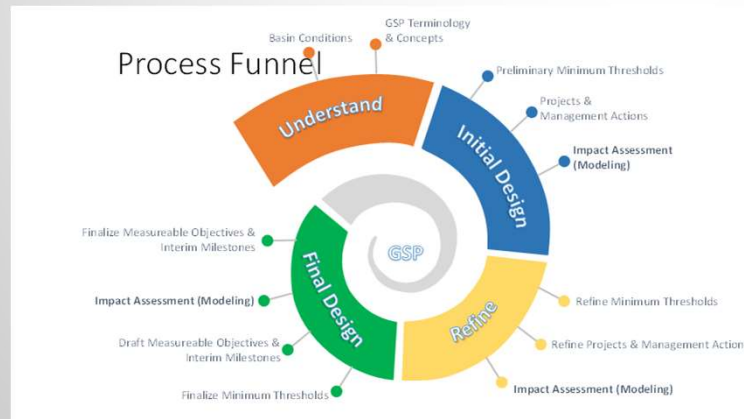
**SVBGSA Monterey Subbasin
Committee Meeting**

September 4, 2020



Process

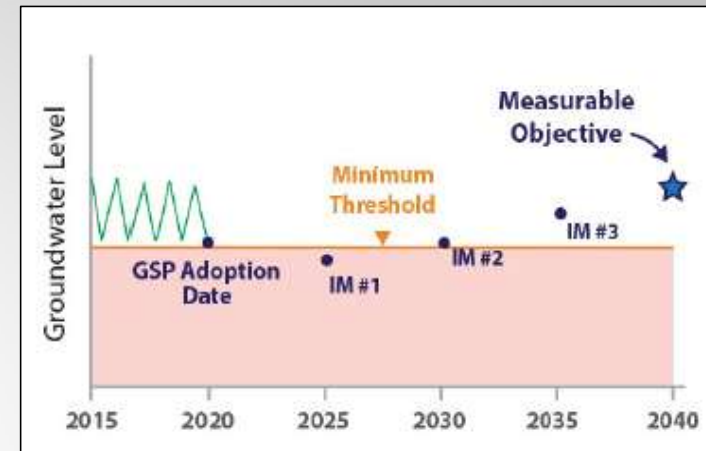
- ▶ July 7 Subbasin Committee Meeting – received overview of SMCs in the Monterey Subbasin
- ▶ July 28 workshop – provided greater detail on SMC terminology and concepts
- ▶ Sept 4 Subbasin Committee Meeting – discuss and give direction on SMCs in the Monterey GSP
- ▶ Jan 2021 – receive SMC chapter



Opinions/guidance will be included in boxes

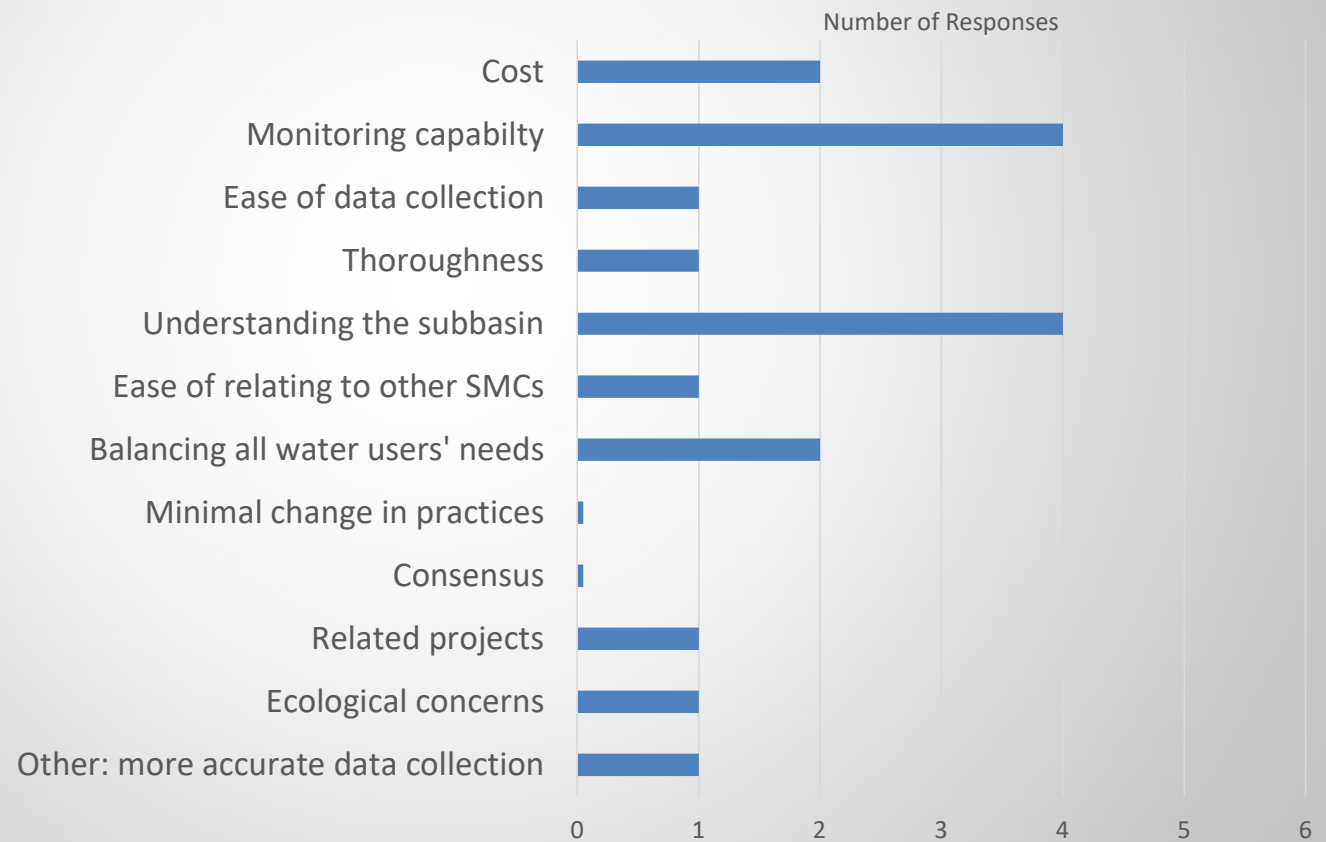
Each of the Six Sustainability Indicators has:

- A statement of what is **significant and unreasonable** for the GSP
- **Minimum thresholds** - quantitative value that define what is significant and unreasonable at every measuring point
- **Undesirable results** - combination of minimum thresholds exceedances for the whole subbasin
- **Measurable objectives** are quantitative goals
- *GSPs must clearly define a planned pathway to reach sustainability in the form of interim milestones towards measurable objectives, and show actual progress in annual reporting*



Question 3

Select up to three priorities for selecting and implementing SMCs





Land Subsidence - Metric

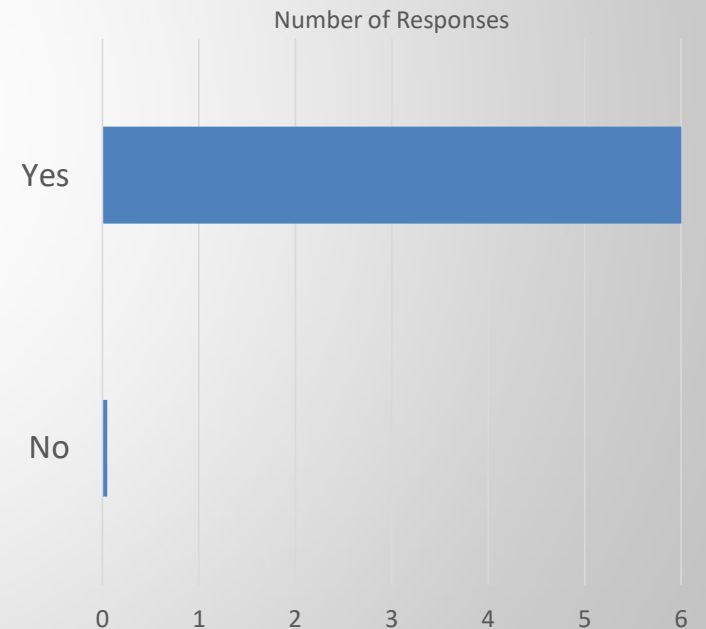
Question 4

Metric Options

Change in land surface elevation at each measuring point

- One minimum threshold and one measurable objective per measuring point
- Option to use groundwater level as a proxy for ground surface elevation

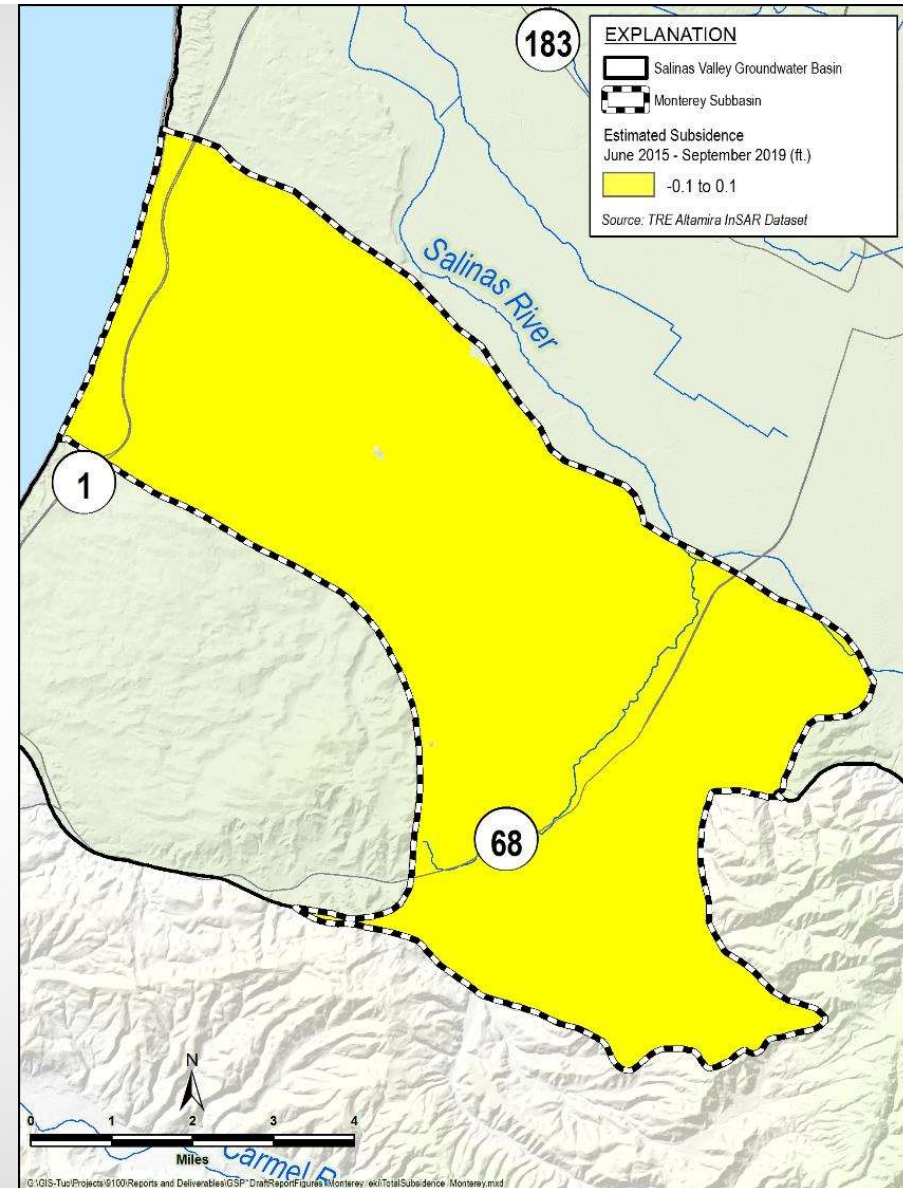
Are InSAR data sufficient?





Example Subsidence Data – InSAR (From DWR)

Subsidence is not a significant
problem in this subbasin

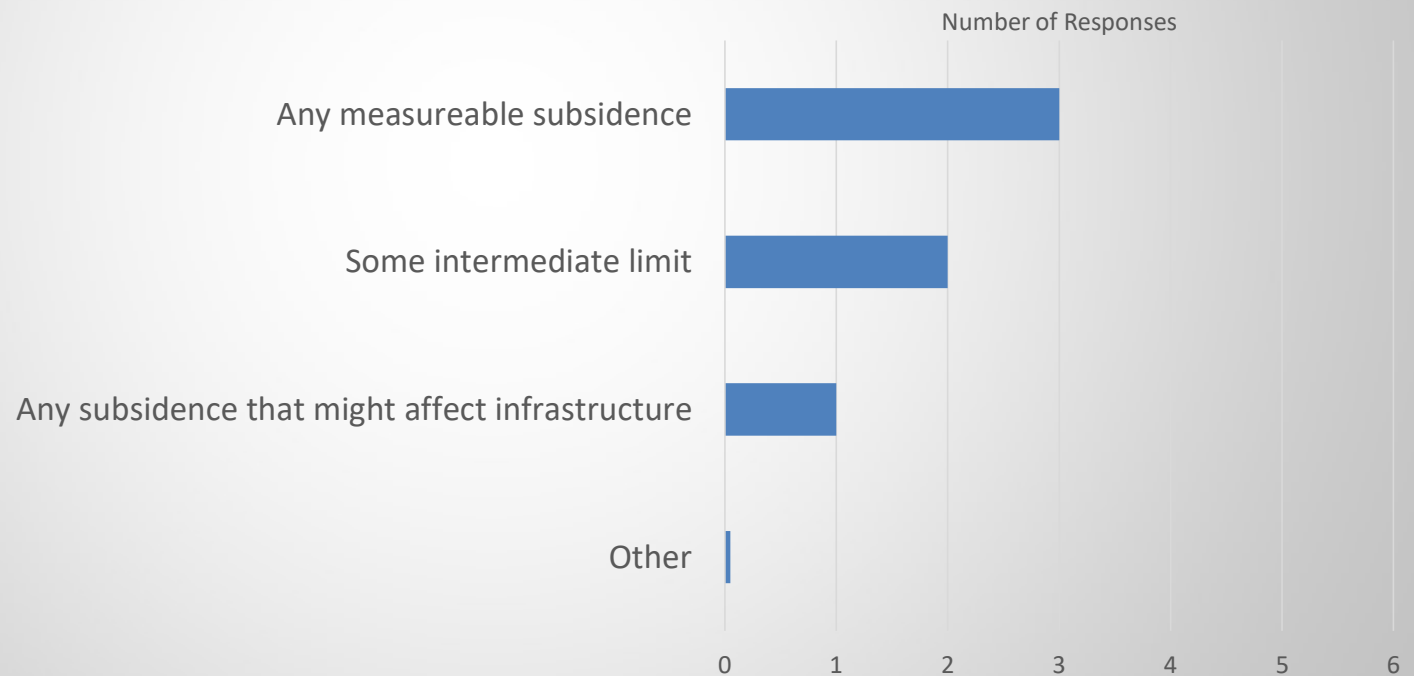




Land Subsidence

Question 5

How much subsidence is too much?





Top pick

Subsidence SMC Options

1. **Any subsidence** anywhere in the Subbasin is significant and unreasonable
 - Minimum threshold = 0 subsidence
 - Measurable Objective = 0 subsidence
2. **Any subsidence may impact infrastructure** in the Subbasin is significant and unreasonable
 - Map infrastructure locations
 - Minimum threshold = 0 in mapped locations
 - Minimum threshold = ? outside of mapped locations
 - Measurable objective = 0 everywhere
3. **Some level of subsidence** is acceptable.
 - Minimum threshold = ? subsidence everywhere
 - Measurable Objective = 0 subsidence everywhere

180/400
GSP

Subsidence Direction



Metric - InSAR

Option 1 (any subsidence), or

Option 2 (any subsidence that might affect infrastructure)

If option 2, what infrastructure?

Option 3 (some subsidence is acceptable)





Groundwater Storage

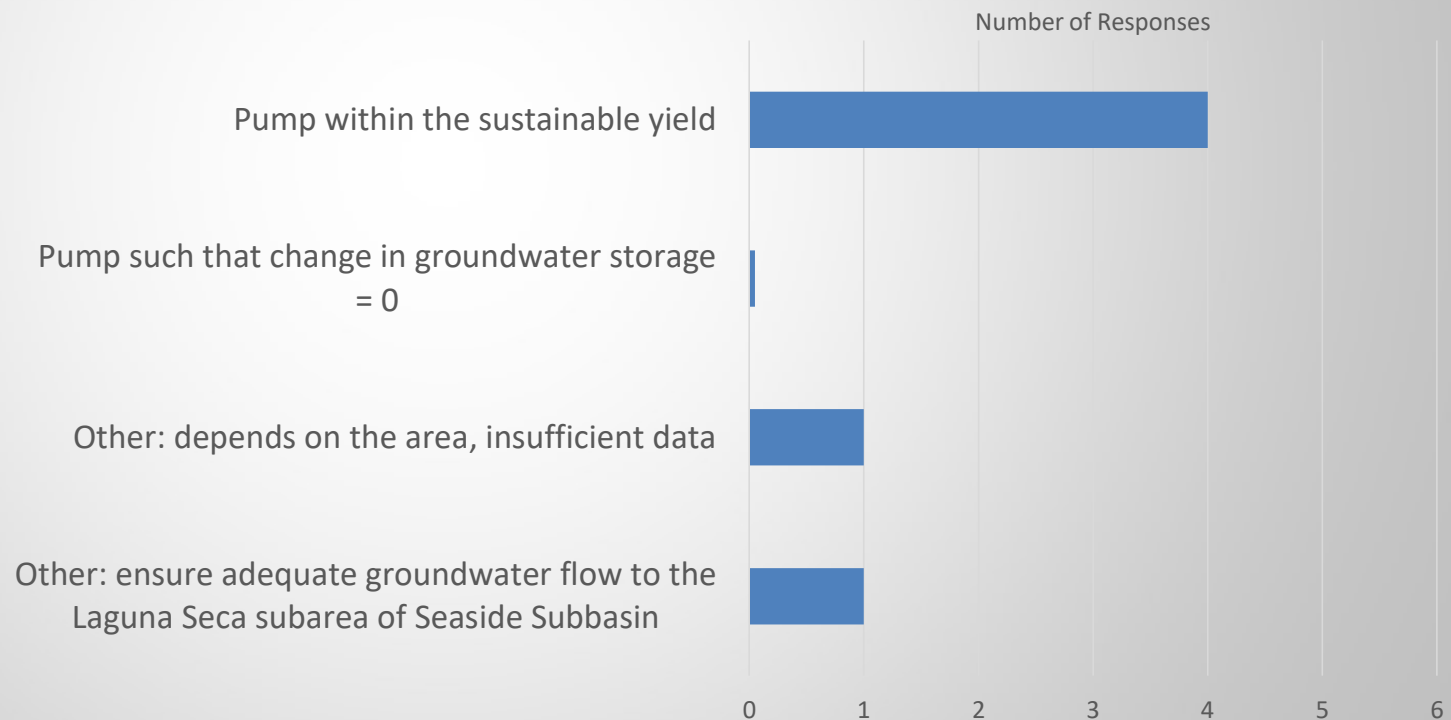
Question 10

Metric

Total extractions (pumping)

- One minimum threshold and one measurable objective for the entire subbasin
- *(Many GSPs have opted to calculate storage from groundwater levels as a proxy for extractions)*

How should groundwater pumping be limited?





Top pick

It is unclear how using groundwater levels as a proxy strictly meet SGMA regulations

Groundwater Storage SMC Options

1. Pumping in excess of the sustainable yield leads to significant and unreasonable impacts
 - Minimum threshold = pump within the sustainable yield. Provide an estimate of the sustainable yield, acknowledging it will be refined with better data
 - Measurable objective = pump at, or less than the sustainable yield.
2. *Net change in groundwater storage, based on groundwater elevations is zero*
 - *Minimum threshold = no long-term change in storage based on calculations using groundwater elevation data*
 - *Measurable objective = long-term stability, or increase in storage based on calculations using groundwater elevation data*

180/400
GSP



Seawater Intrusion

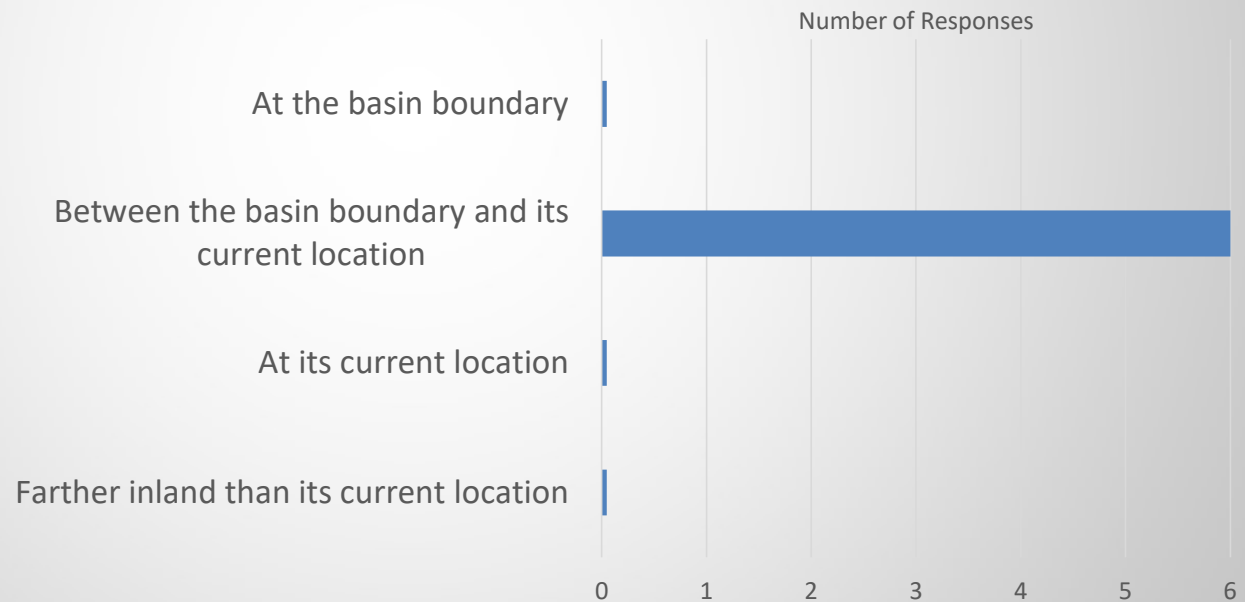
Question 13

Metric

Location of a chloride isocontour line

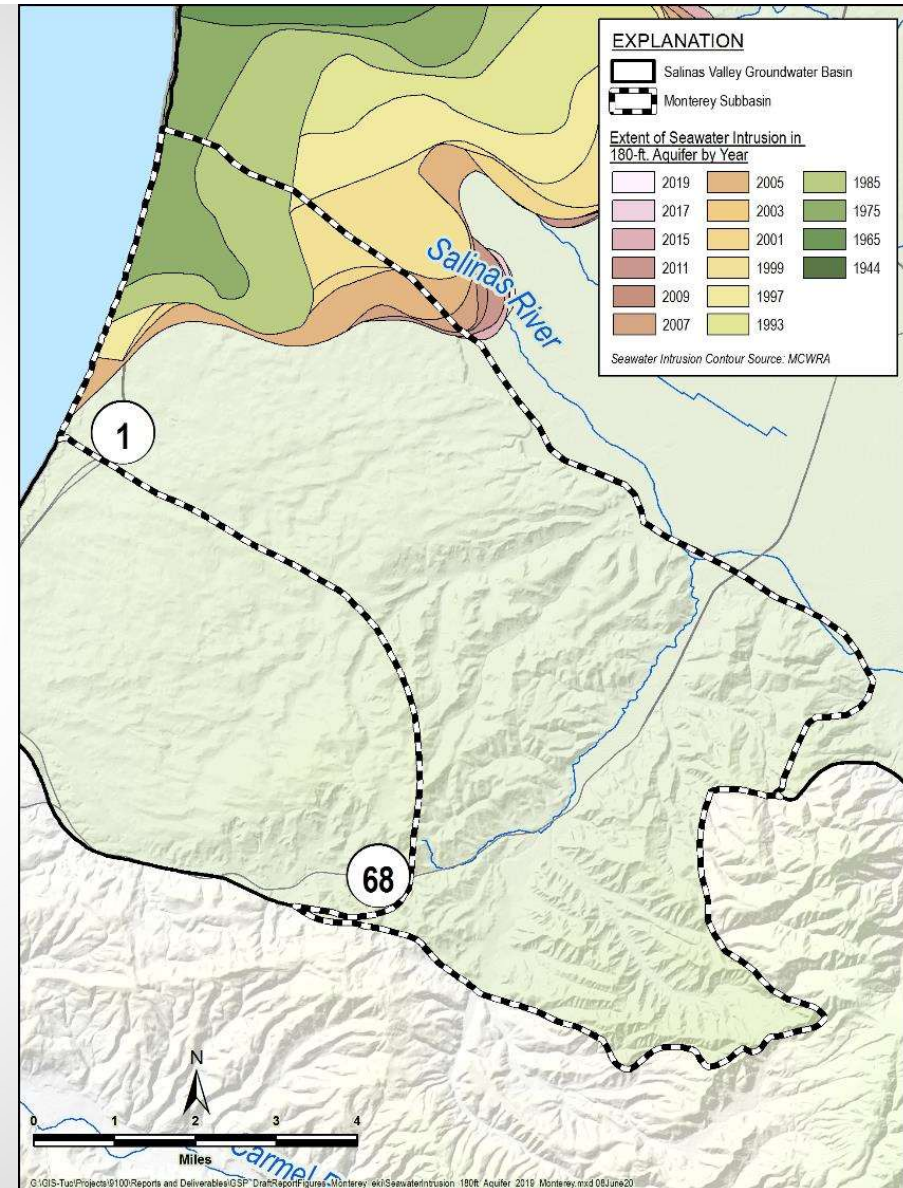
Option: groundwater elevations that are protective of seawater intrusion

Where should the chloride isocontour be set for the seawater intrusion minimum threshold?



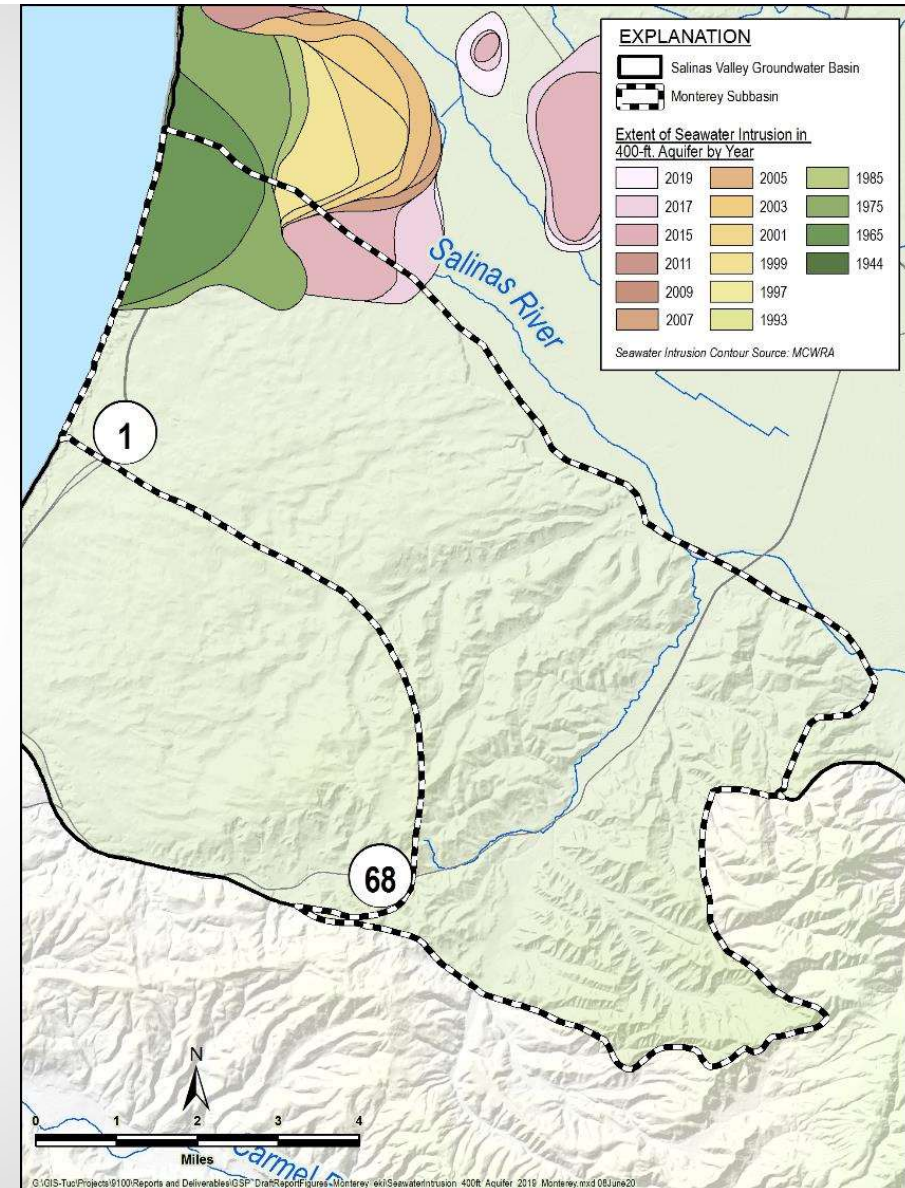


Sea Water Intrusion – 180-Foot Aquifer





Sea Water Intrusion – 400-Foot Aquifer





Sea Water Intrusion Minimum SMC Options

1. Any seawater intrusion in the Subbasin is significant and unreasonable
 - Minimum threshold = a chloride isocontour at the shoreline
 - Measurable objective = same as minimum threshold
2. Existing SWI is significant and unreasonable, and SVBGSA chooses to improve SWI. Goal is to push back seawater intrusion.
 - Minimum threshold = a chloride isocontour at the current location, or closer to the ocean
 - Measurable objective = a chloride isocontour closer to the ocean, or at the shoreline



Seawater Intrusion SMC Options

3. Existing SWI is significant and unreasonable, but SVBGSA chooses not to push back SWI
 - Minimum threshold = a chloride isocontour at it's current location
 - Measurable objective = same as minimum threshold
 - We are not required to meet the minimum thresholds in this example
4. Additional SWI is neither significant nor unreasonable. Seawater intrusion can advance farther inland.
 - Minimum threshold = a chloride isocontour inland of the current location
 - Measurable objective = same as minimum threshold

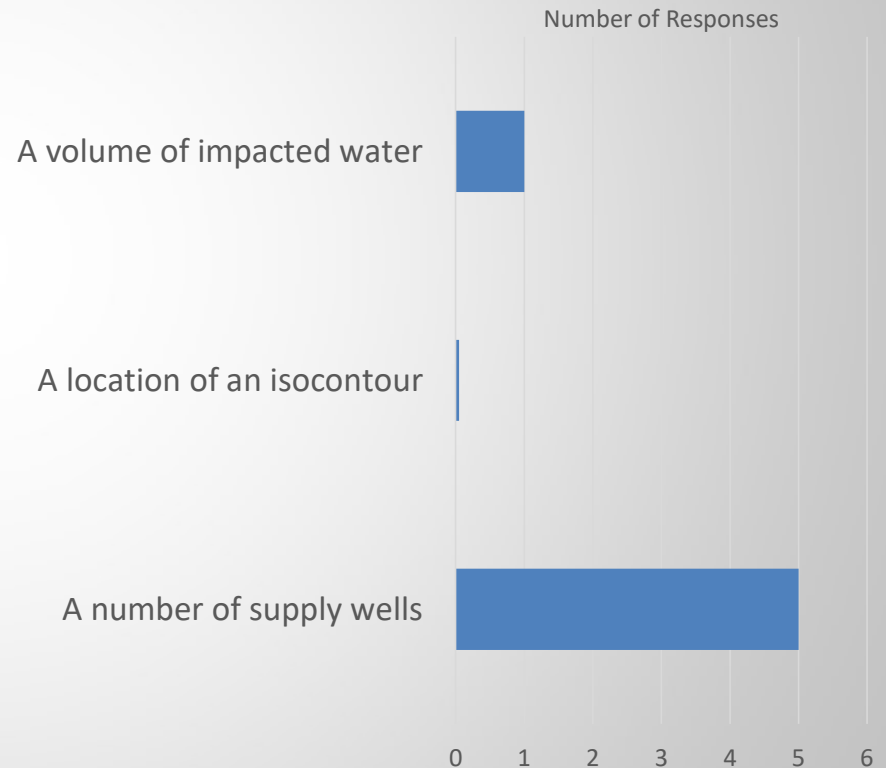


Quality Metric - Measuring Thresholds & Objectives (354.28(c))

Metric

Three options in the regulations.

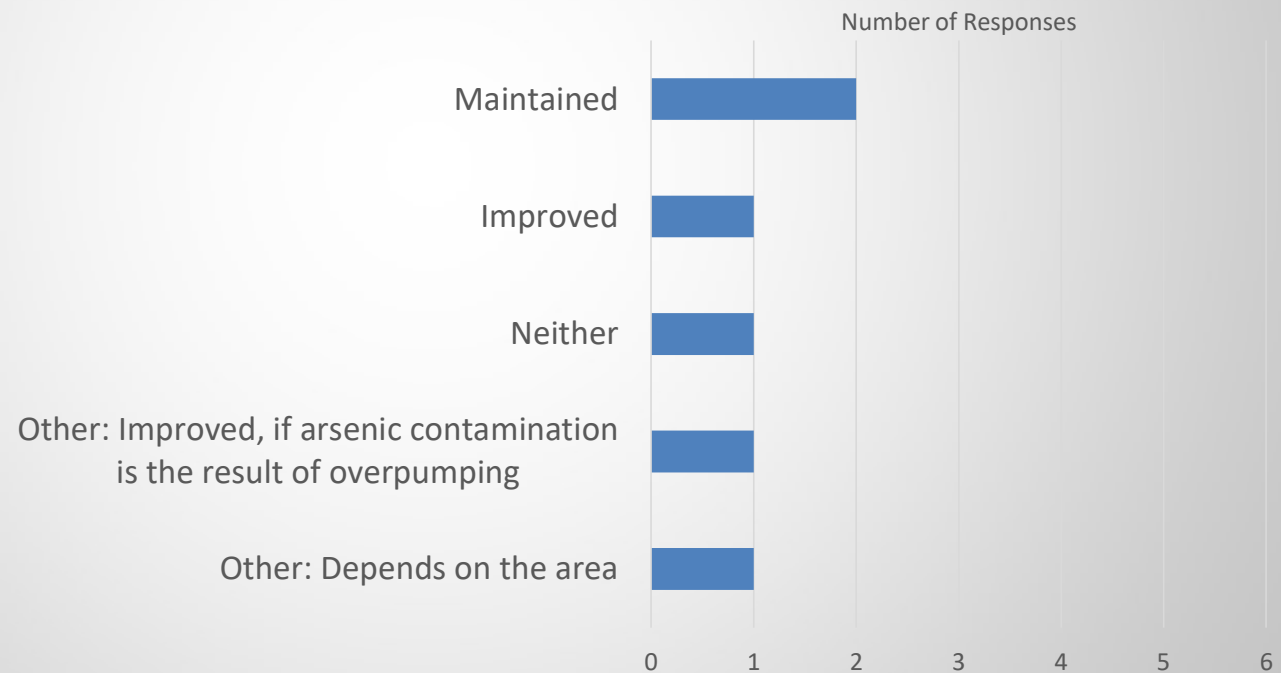
1. A volume of impacted groundwater. Annually contour and calculate the volume of impacted groundwater
2. The location of an isocontour. Annually contour concentrations
3. A number of supply wells. Review drinking water and irrigation water quality data





Water Quality Question 12

Current groundwater quality should be:





Top pick

Groundwater Quality Minimum SMC Options

1. Degraded groundwater quality resulting from direct GSA actions is significant and unreasonable
 - Minimum threshold = maintain current groundwater quality impacts
 - Measurable objective = same as minimum threshold
2. Existing groundwater quality conditions are significant and unreasonable, but SVBGSA chooses not to improve existing groundwater quality
 - Minimum threshold = improve groundwater quality impacts
 - Measurable objective = same as minimum threshold
 - We are not required to meet the minimum thresholds in this example
3. Existing groundwater quality conditions are significant and unreasonable, and SVBGSA chooses to improve existing groundwater quality
 - Minimum threshold = improve groundwater quality impacts
 - Measurable objective = same as minimum threshold

180/400
GSP

Be cautious adopting responsibilities and authorities already held by other agencies such as CCRWQB, or County of Monterey



180/400-Foot Subbasin Example - Groundwater Quality Minimum Threshold

Minimum threshold is zero **additional** exceedances of groundwater quality constituents of concern known to exist in the Subbasin [option 1]

- Based on the idea that it is significant and unreasonable for the GSA to take an action that financially impacts a well owner.
 - Well owner has to treat water
 - Well owner has to abandon a well
 - Reduced crop production due to water quality



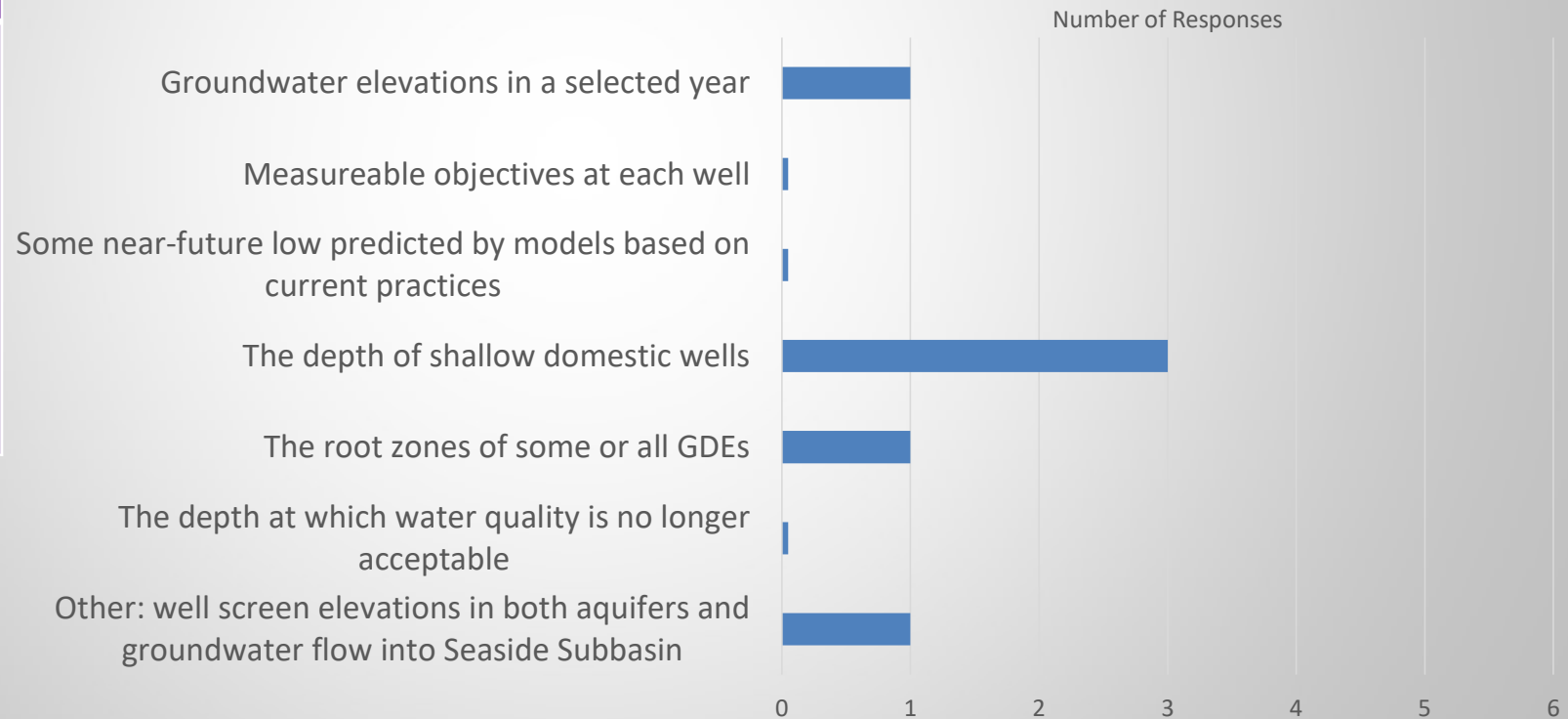
Metric

Groundwater levels measured in representative monitoring wells

- One minimum threshold and one measurable objective per well

Groundwater Levels Question 9

What should determine groundwater elevation minimum thresholds?





Top pick

Groundwater Levels SMC Options - *selected*

1. Groundwater elevations in a certain year were significant and unreasonable
 - Set minimum thresholds above whatever was recorded in the year in question
4. Impacting shallow, domestic wells is significant and unreasonable
 - Minimum thresholds are set to ensure **most** shallow domestic wells have adequate water for operation
 - Option: set minimum thresholds excluding the very shallowest domestic wells
 - Option: use this as a check on the reasonableness of minimum thresholds
5. Lowering groundwater elevations below the root zone of all (or selected) GDEs is significant and unreasonable
 - Minimum thresholds based on an assumed rooting depth of plants in a GDE
 - Measurable Objectives are above this depth to account for droughts

180/400
GSP



Groundwater Levels SMC Options – *not selected*

2. *Groundwater elevation Minimum Thresholds will be set a depth below the measurable objective at each well*

- ▶ *Set the groundwater level goal you would like to achieve, then set a minimum threshold that allows groundwater levels to drop during a drought.*
- ▶ *Need a way to set your groundwater level goal. Maybe current conditions?*

3. *Groundwater elevations minimum thresholds are set at the lowest point predicted by models if current practices continue*

- ▶ *Extend the current rate of groundwater decline out 20 years. Set the minimum thresholds there.*
- ▶ *Option is to set minimum thresholds after 5, 10, or 15 years of declines at current rates*

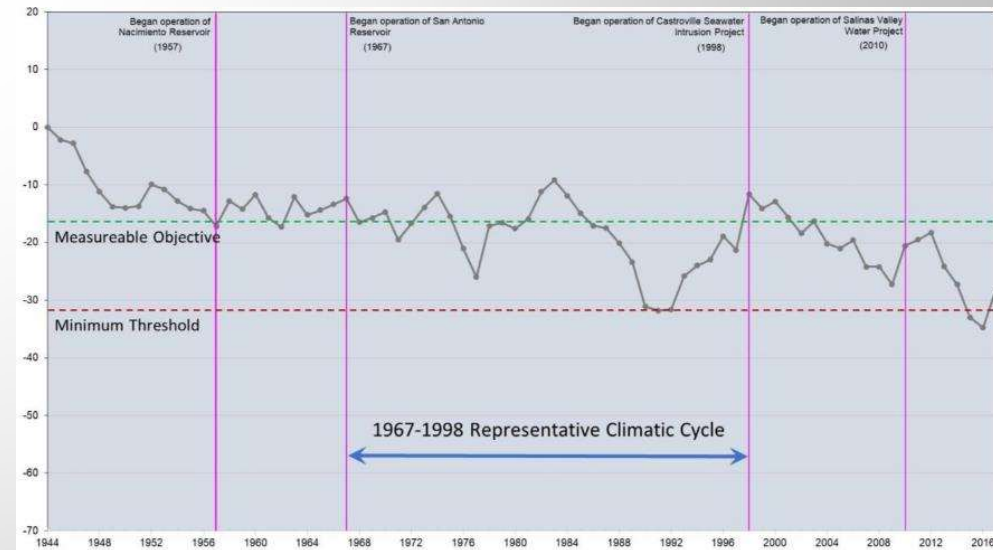
6. *Lowering groundwater levels to where wells pump poor quality groundwater is significant and unreasonable*

- ▶ *Requires data on groundwater quality with depth.*
- ▶ *Used for naturally occurring constituents such as Arsenic etc.*

180/400-Foot Subbasin Example - Groundwater Levels Minimum Threshold

Groundwater elevations will be maintained 1 foot above measured 2015 elevations.
[option 1]

- The GSP statistically assessed impacts on domestic wells
[option 4]





Interconnected Surface Water - Measuring Thresholds & Objectives (354.28(c))

Sustainability Indicator	Metric
Depletion of Interconnected surface water	<p>A rate or volume of surface water depletion. Set one minimum threshold and one measurable objective per surface water body. (per reach?)</p> <ul style="list-style-type: none">• Option 1. Estimate depletions with a model• Option 2. Use groundwater elevations as a proxy



Interconnected Surface Waters

Question 6

The SMC approach should focus on:

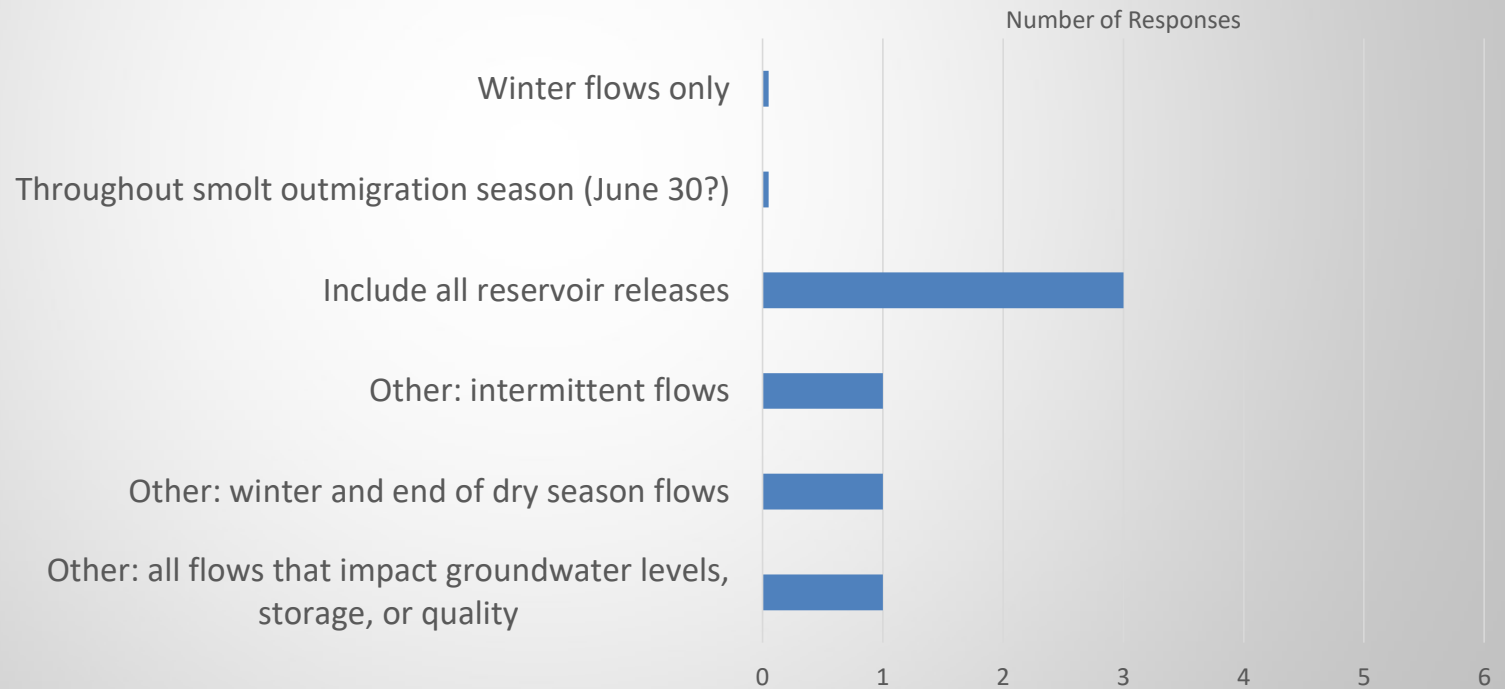




Interconnected Surface Waters

Question 7

What flows should the SMC approach be concerned about?

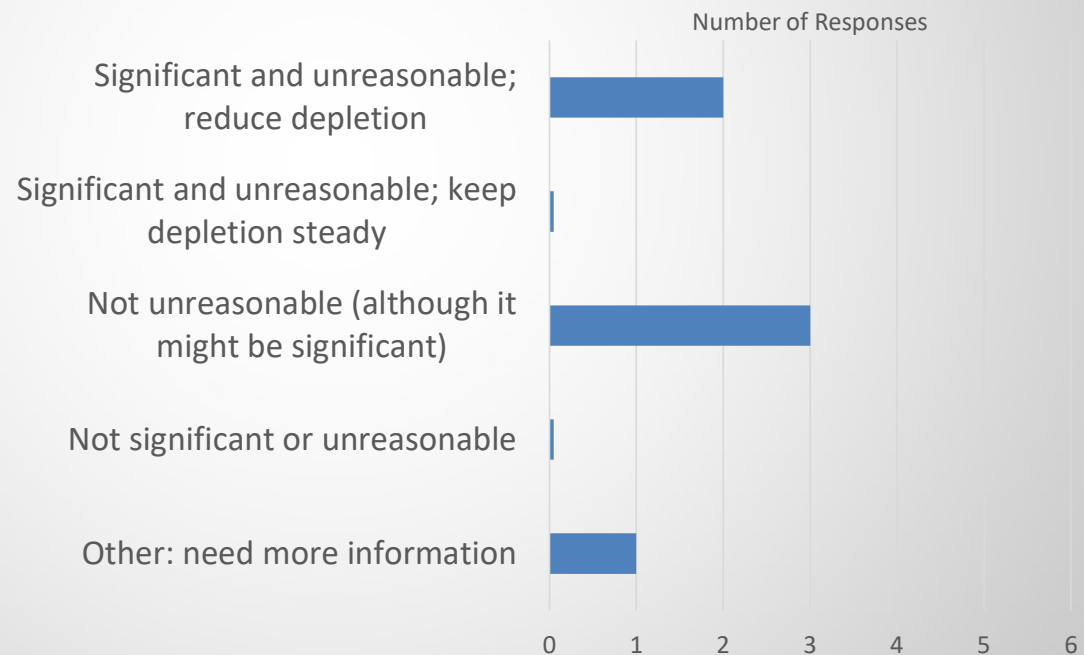




Interconnected Surface Waters

Question 8

The current rate of surface water depletion is:





Interconnected Surface Water SMC Options - *selected*

1. The current rate of surface water depletion is significant and unreasonable, and we choose to reduce the rate of depletion (leave more water in surface water bodies)
 - Minimum threshold
 - Less simulated depletion, or
 - Higher shallow groundwater levels
 - Measurable objectives
 - Less simulated depletion, or
 - Higher shallow groundwater levels
3. The current rate of surface water depletion is not unreasonable (although it may be significant)
 - Minimum threshold
 - Equal to today's simulated depletion, or
 - Equal to today's shallow groundwater levels
 - Measurable objectives
 - Equal to today's simulated depletion, or
 - Equal to today's shallow groundwater levels

Top pick

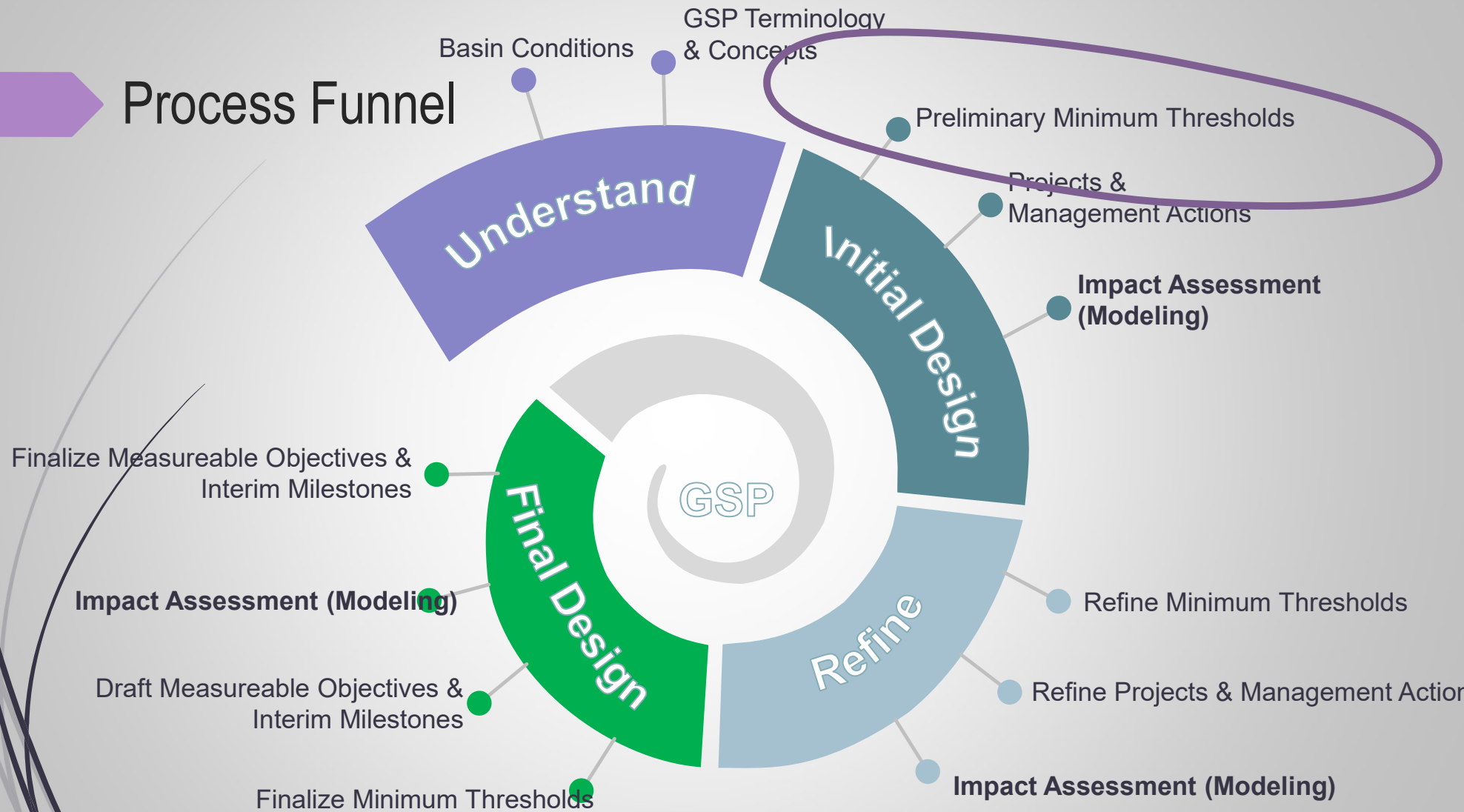
180/400
GSP



Interconnected Surface Water SMC Options – *Not selected*

2. *The current rate of surface water depletion is significant and unreasonable, but SVBGSA chooses not to reduce the rate of depletion*
 - ▶ *Minimum threshold*
 - ▶ *Less than today's simulated depletion, or*
 - ▶ *Higher shallow groundwater levels*
 - ▶ *Measurable objectives*
 - ▶ *Less simulated depletion, or*
 - ▶ *Higher shallow groundwater levels*
- **We are not required to meet the minimum thresholds in this example*
4. *Additional surface water depletion is neither significant nor unreasonable (take more water out of surface water bodies)*
 - ▶ *Minimum threshold*
 - ▶ *More than today's simulated depletion, or*
 - ▶ *Lower shallow groundwater levels*
 - ▶ *Measurable objectives*
 - ▶ *More than today's simulated depletion, or*
 - ▶ *Lower shallow groundwater levels*

Process Funnel



Questions

