

# Salinas Valley Basin GSA


## **SWIG TAC Survey Results and Discussion**

Presented to SWIG  
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& ASSOCIATES





## SWIG TAC Purpose

- ▶ The Salinas Valley Basin's Seawater Intrusion Group (SWIG) Technical Advisory Committee (TAC) provides technical information in support of the SWIG's policy direction and decision-making functions.
- ▶ The SWIG requested that the TAC provides guidance on how the Salinas Valley defines and monitors seawater intrusion.



## SWIG TAC Survey

- ▶ Members of the TAC were asked to complete a survey in April 2021 to provide their thoughts and ideas on how seawater intrusion should be defined and monitored.
- ▶ Results of the survey will form the basis of the TAC's recommendations to the SWIG.



## SWIG TAC Survey Results – Q1

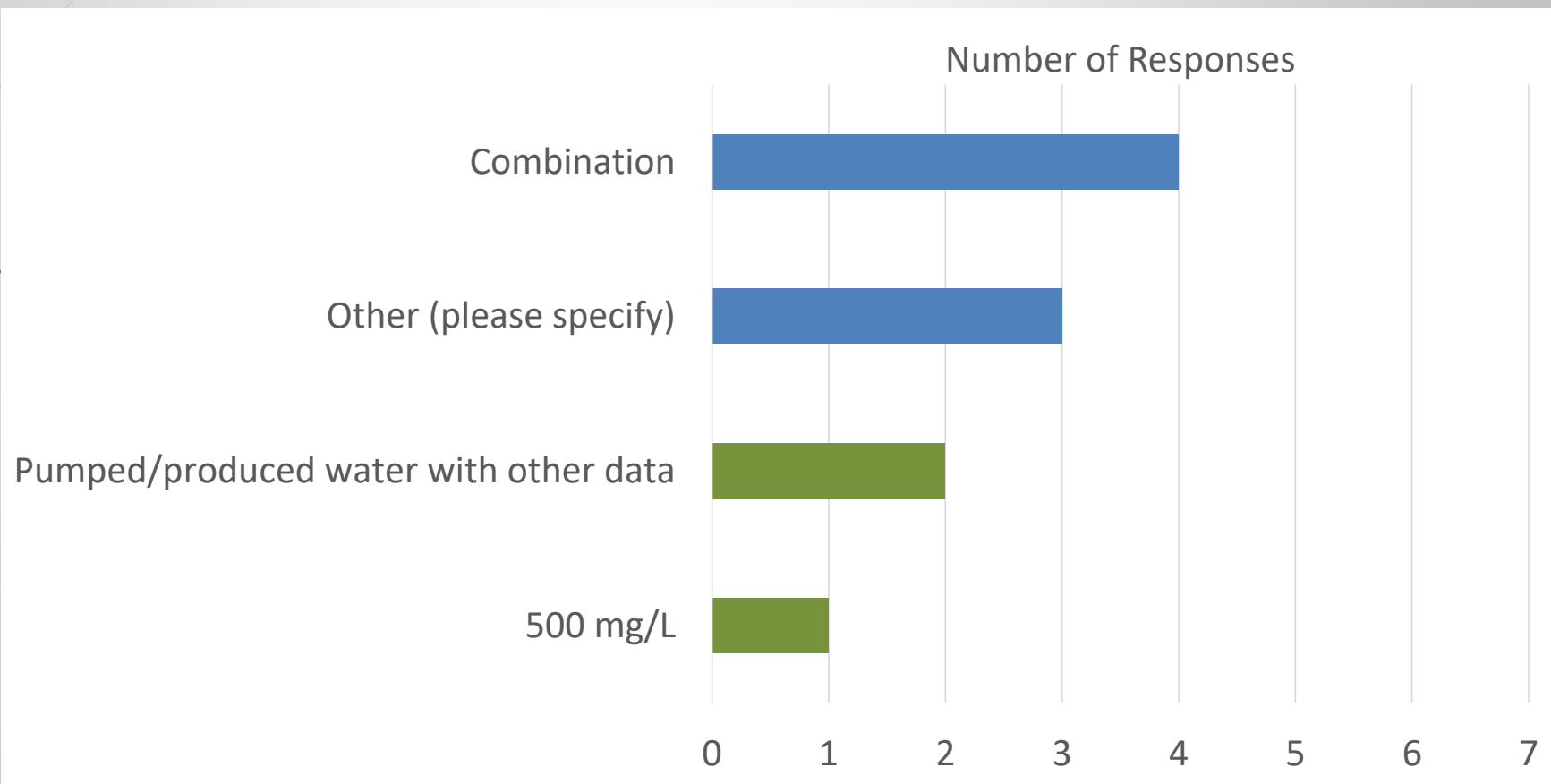
- Consider and describe your ideal/preferred monitoring system for seawater intrusion.



## SWIG TAC Survey Results – Q2

- ▶ How should we define seawater intrusion?
  - ▶ Pumped/produced groundwater quality and impacts on beneficial use
  - ▶ Static groundwater quality
  - ▶ Any available data
  - ▶ Combination
  - ▶ Other
  - ▶ Explain

## SWIG TAC Survey Results – Q2 Result

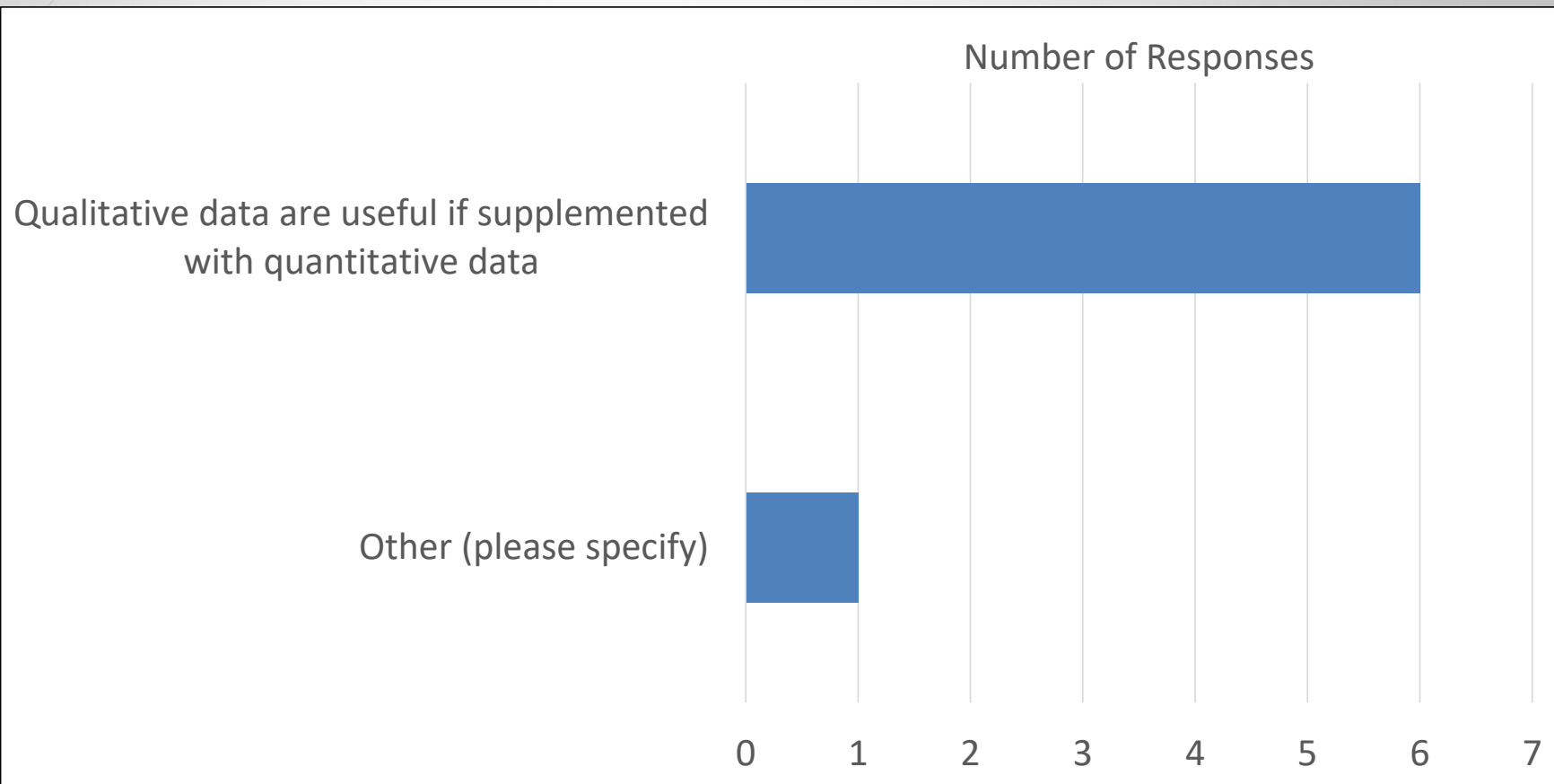




## SWIG TAC Survey Results – Q3

- ▶ How important is quantitative vs. qualitative data?
  - ▶ We must quantitatively map seawater intrusion, so all data should be quantitative
  - ▶ Qualitative data are useful if supplemented with quantitative data
  - ▶ A qualitative understanding of where seawater intrusion is occurring is adequate
  - ▶ Other
  - ▶ Explain

## SWIG TAC Survey Results – Q3 Result



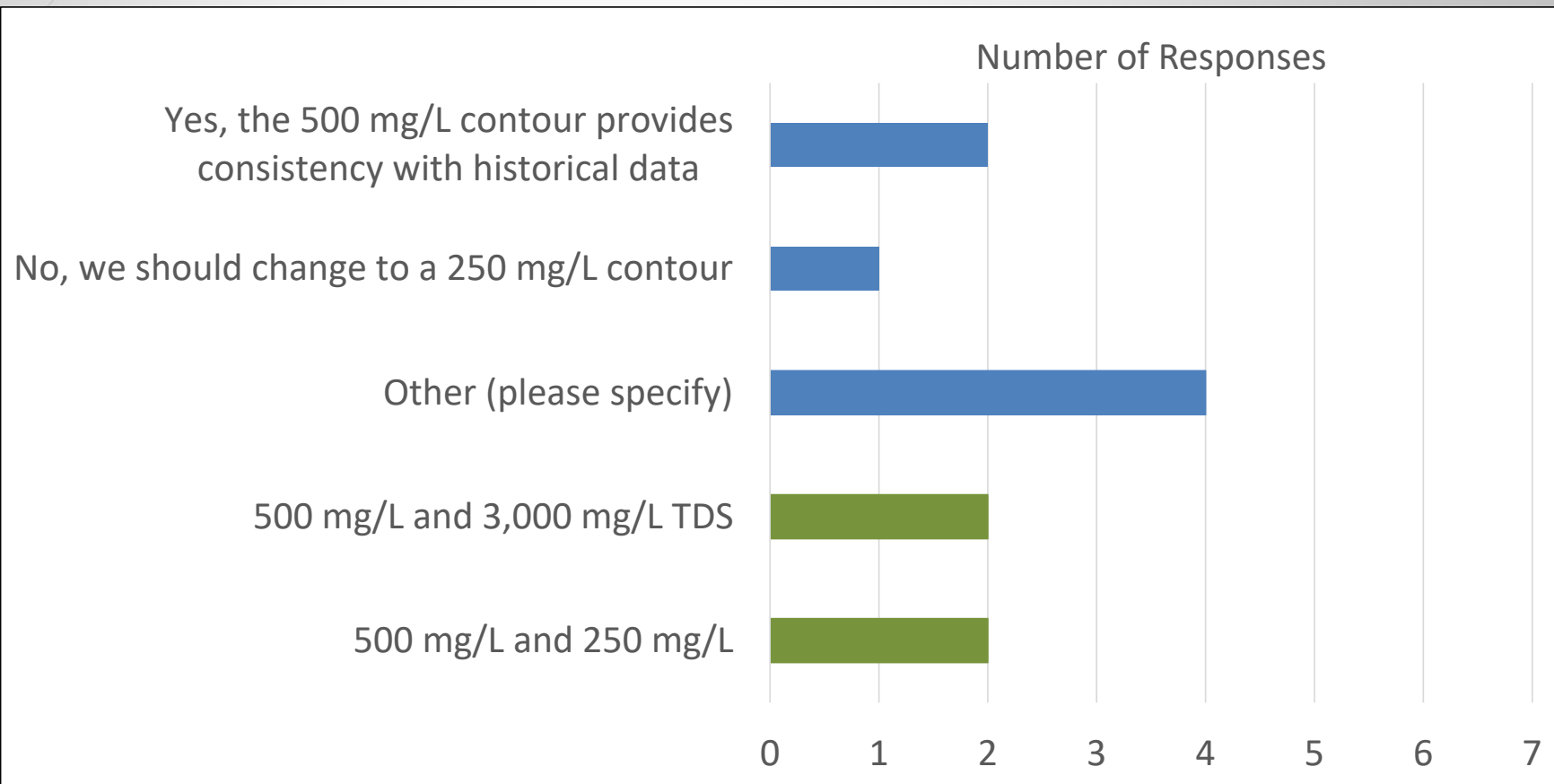




## SWIG TAC Survey Results – Q4

- ▶ Is the current 500 mg/L chloride concentration the appropriate metric for delineating the extent of seawater intrusion?
  - ▶ No, we should change to a 250 mg/L contour
  - ▶ Yes, the 500 mg/L contour provides consistency with historical data
  - ▶ Other
  - ▶ Explain

## SWIG TAC Survey Results – Q4 Result

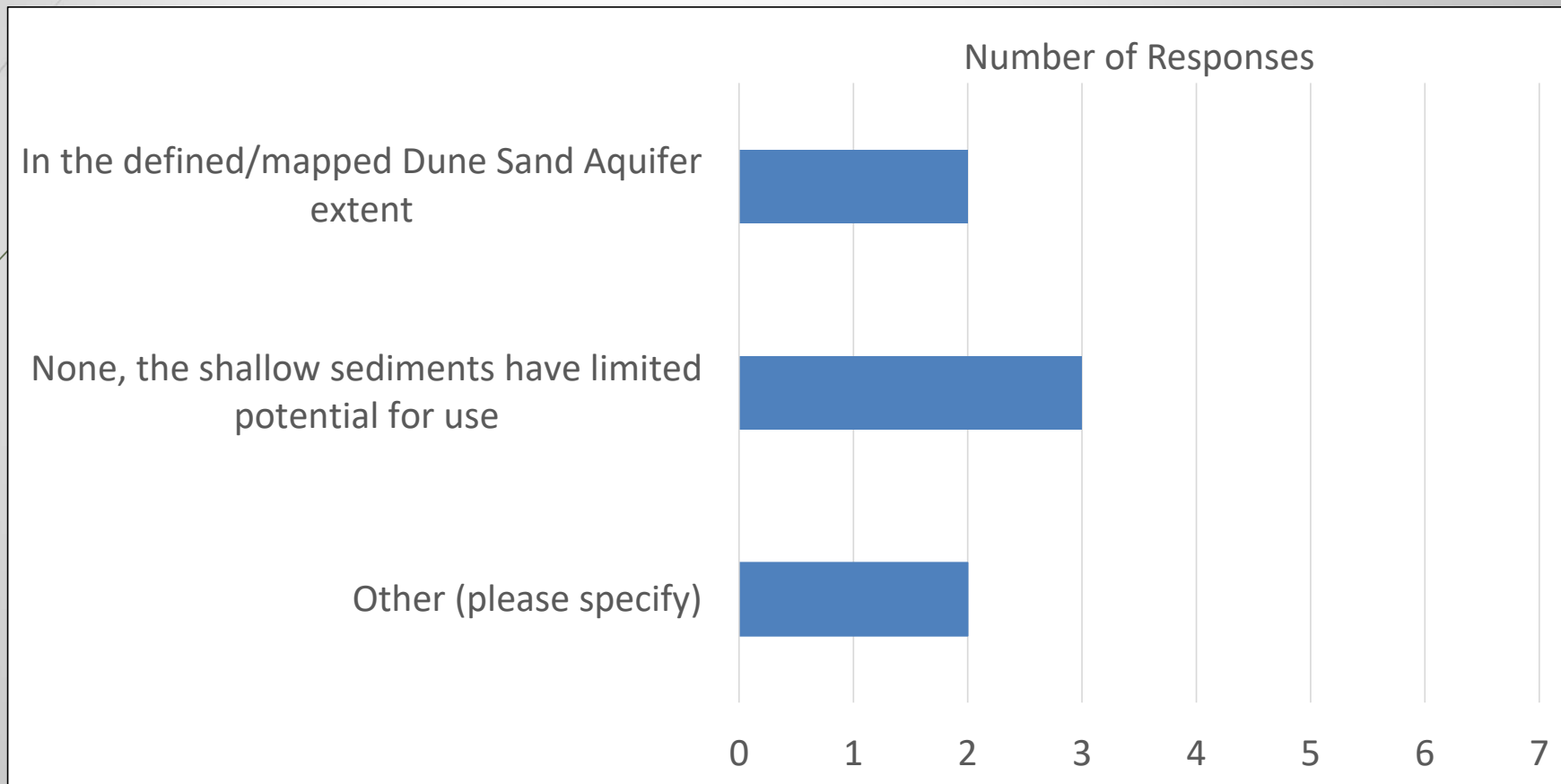




## SWIG TAC Survey Results – Q5

- ▶ How much of the shallowest sediments should be monitored for seawater intrusion?
  - ▶ None, the shallow sediments have limited potential for use
  - ▶ In the defined/mapped Dune Sand Aquifer extent
  - ▶ Everywhere: it is important to stop all seawater intrusion
  - ▶ Other
  - ▶ Explain

## SWIG TAC Survey Results – Q5 Result

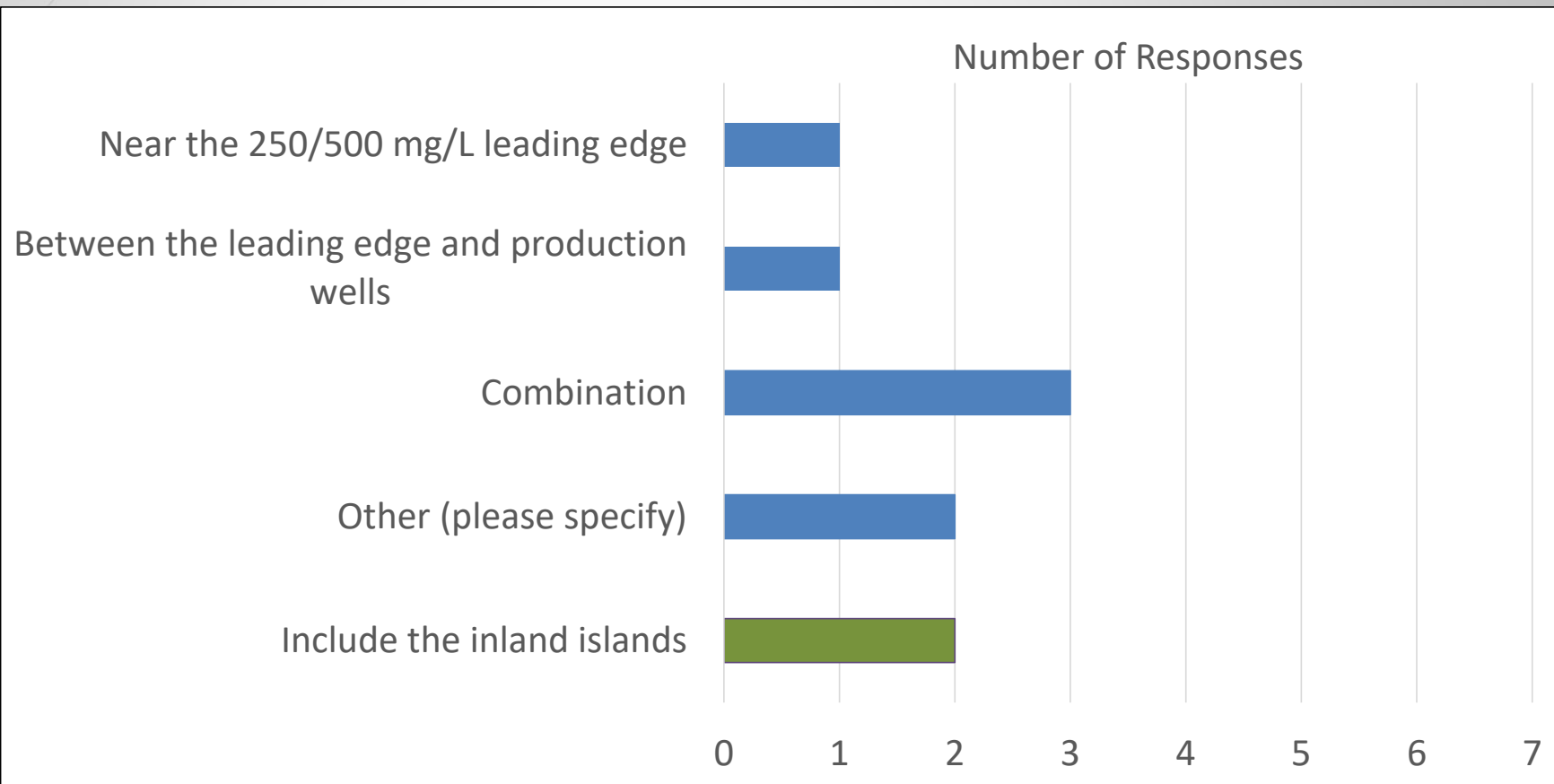




## SWIG TAC Survey Results – Q6

- ▶ In what areas should seawater intrusion mapping occur?
  - ▶ Near the 250/500 mg/L leading edge
  - ▶ Between the leading edge and the coast
  - ▶ Between the leading edge and production wells
  - ▶ Combination
  - ▶ Explain

## SWIG TAC Survey Results – Q6 Result

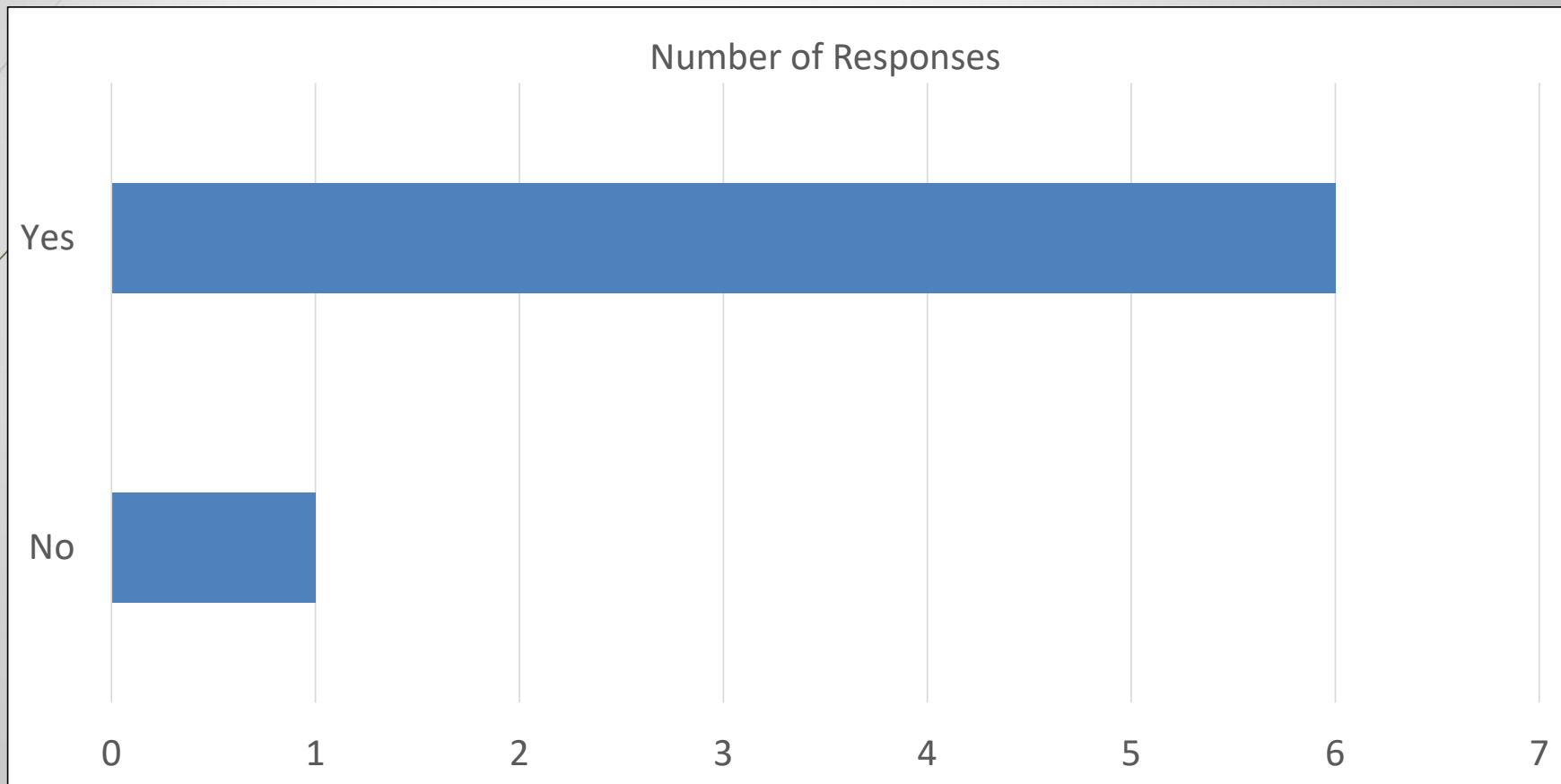




## SWIG TAC Survey Results – Q7

- ▶ Should additional SWI monitoring should be implemented to better assess and understand the risk of SWI to municipal drinking water supply wells (City of Salinas, Castroville, Marina Coast Water District, etc.)? Should these or other specific types of areas be monitored more closely?

## SWIG TAC Survey Results – Q7 Result



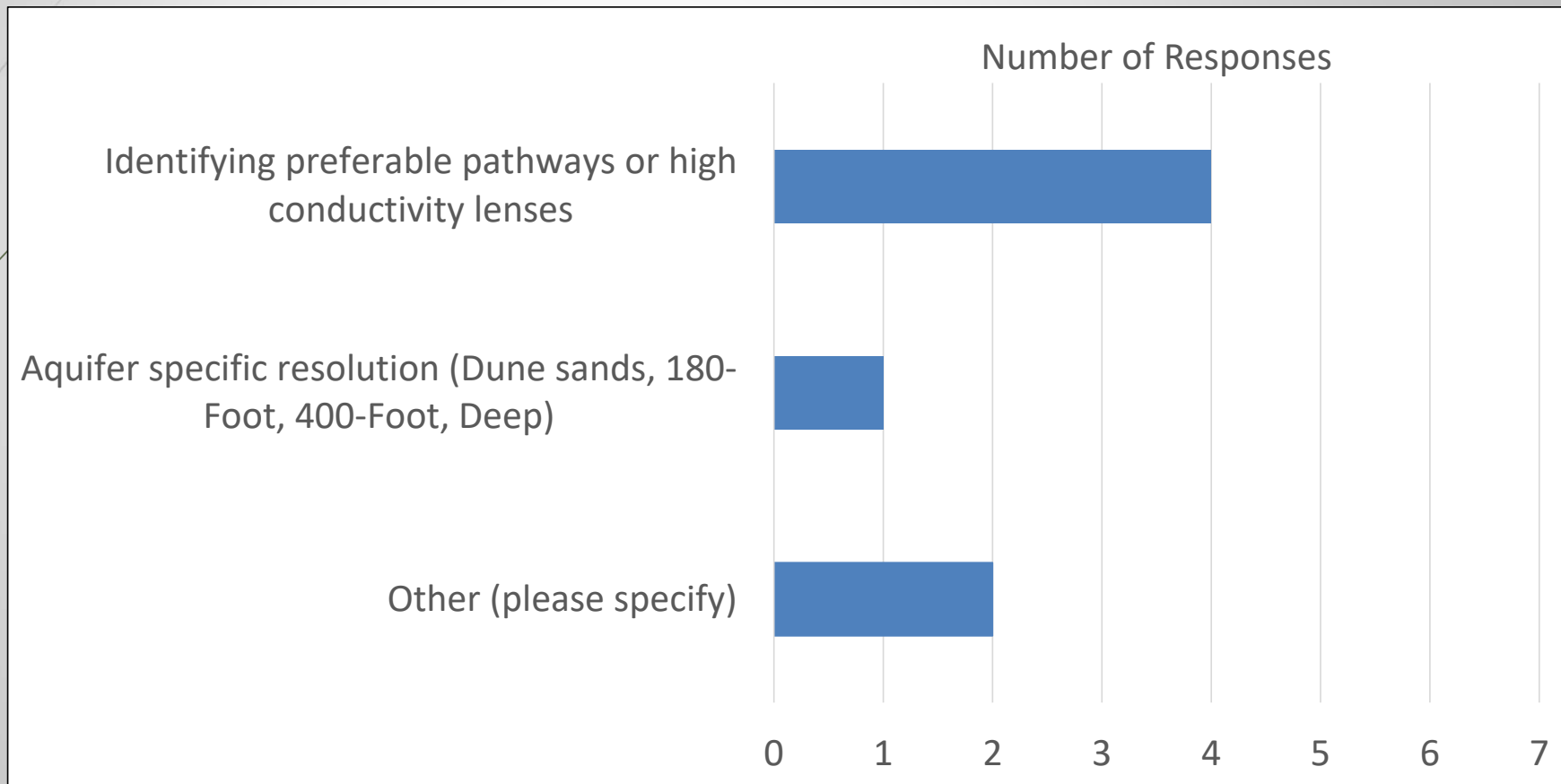




## SWIG TAC Survey Results – Q8

- ▶ What vertical resolution is necessary to adequately understand seawater intrusion and develop plans for controlling it?
  - ▶ Aquifer specific resolution (Dune sands, 180-Foot, 400-Foot, Deep)
  - ▶ Sub aquifer specific resolution (Upper 180-Foot Aquifer, Lower 180-Foot Aquifer, etc.)
  - ▶ Identifying preferable pathways or high conductivity lenses
  - ▶ Other
  - ▶ Explain how your selection in the previous question will impact projects or actions for controlling seawater intrusion.

## SWIG TAC Survey Results – Q8 Result

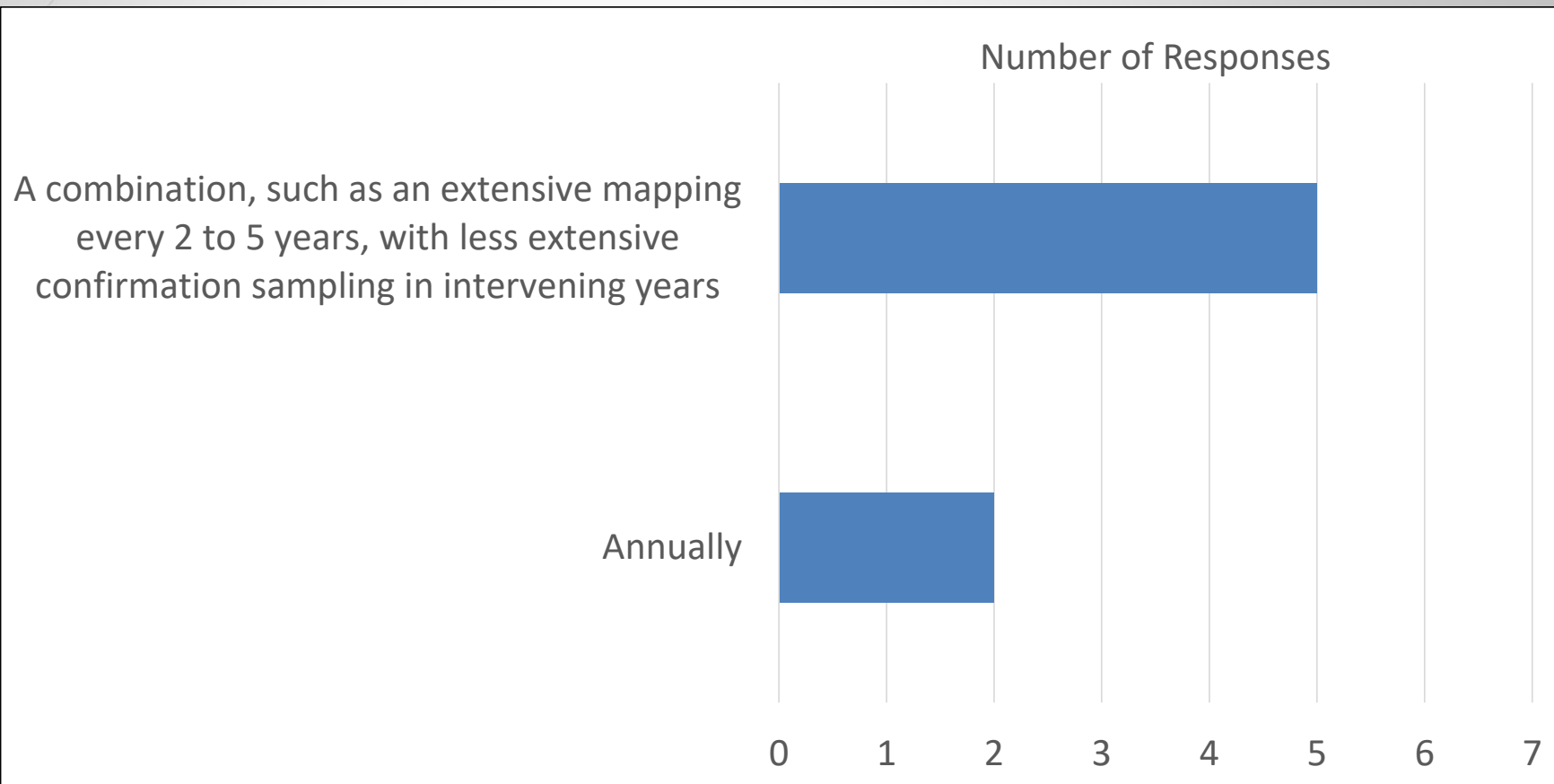





## SWIG TAC Survey Results – Q9

- ▶ How should seawater intrusion data be collected over time?
  - ▶ Annually
  - ▶ Every 2 years
  - ▶ Every 5 years
  - ▶ A combination, such as an extensive mapping every 2 to 5 years, with less extensive confirmation sampling in intervening years
  - ▶ Other
  - ▶ Explain

## SWIG TAC Survey Results – Q9 Result

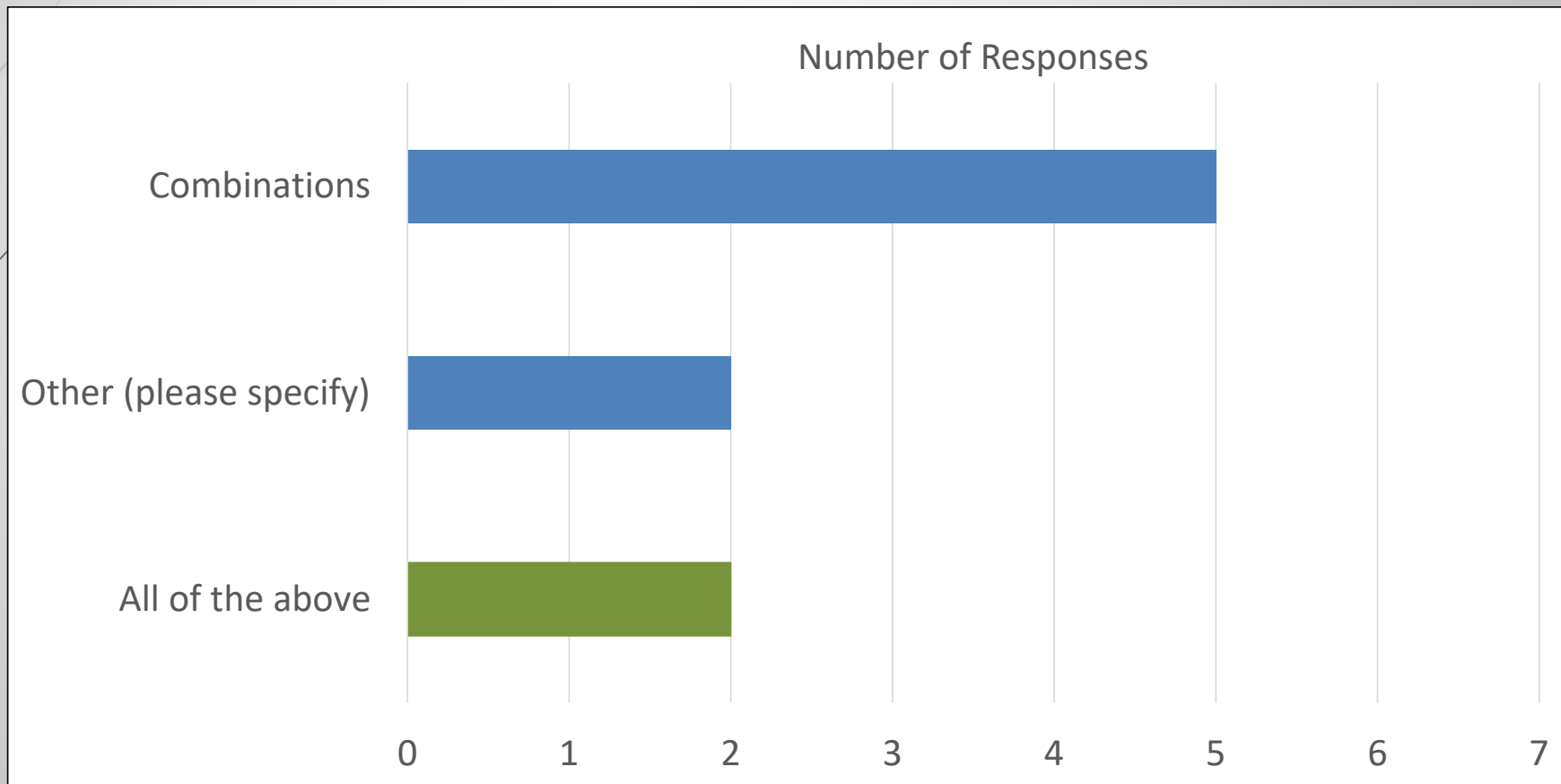





## SWIG TAC Survey Results – Q10

- ▶ What technologies or methodologies should be used to monitor seawater intrusion? You will likely support a range of technologies and methodologies. However, a well-designed monitoring system should collect data that are complimentary, and not result in data conflicts resulting from conflicting methodologies. One question raised at the end of the March 29 TAC meeting was whether any methodology other than well sampling provide adequate quantitative data.
  - ▶ Sampling dedicated monitoring wells (Individual or Clustered/Nested)
  - ▶ Induction logging
  - ▶ Sampling existing pumping wells
  - ▶ AEM
  - ▶ Other geophysics
  - ▶ Vertical gradients independent of groundwater quality
  - ▶ Combinations
  - ▶ Explain

## SWIG TAC Survey Results – Q10 Result





## SWIG TAC Survey Results – Q11

- ▶ Based on your responses above, please assess and refine your ideal/preferred monitoring system for seawater intrusion as you described at the beginning of this worksheet by considering the following questions.
  - ▶ How does your definition of seawater intrusion influence your monitoring network?
  - ▶ Is your monitoring network sufficient for any seawater intrusion mapping that may be necessary?
  - ▶ Is your monitoring network an accurate reflection of seawater intrusion as you have defined it?
  - ▶ Is the monitoring network adequate to inform projects and to control, push-back, or otherwise mitigate seawater intrusion?
  - ▶ Is the monitoring network sufficient for modeling purposes?
  - ▶ Is the monitoring network financially viable?



## SWIG TAC Survey Results – Q11 Result

- ▶ The majority of respondents here agreed with their initial answers. They added comments that revolved around considering costs, balancing needs and priorities, and collaboration.
- ▶ "Identification of priorities for the use of the data should occur first, followed by assessment of type of monitoring needed for each priority objective."





## Key Takeaways

- Define a clear purpose for monitoring seawater intrusion
- Impacts often occur at concentrations below 500 mg/L
- Seawater intrusion should be monitored with a multi-faceted approach that balances cost, ease, and quantitative certainty



## SWIG TAC Discussion

- ▶ Asked for consensus on generalized approach to underpin more detailed analyses
- ▶ Did not reach a consensus on best approach
- ▶ Lack of consensus may have been tied to lack of defined monitoring purpose

# Why Monitor?

## Overarching Purpose: prevent impacts on beneficial users

- **NEW SWI**: Monitoring for new impacts on beneficial users
  - Monitoring to assess rate and locations of new areas of SWI. MCWRA has a current program and it could be enhanced with additional sampling and to map the 250 mg/L. Details to be developed.
- **PROJECT PRIORITIZATION**: Monitoring for project prioritization
  - What do we need to know to move the specific projects forward? Can this be done solely through the SWI model improvements?
- **MODELING**: Monitoring to improve SWI model
  - Without striving for perfection, what additional data do we need for the model to an effective tool for management.
- **PROJECT ASSESSMENT**: Prevent impacts on beneficial users through project implementation
  - Monitor project benefits. What monitoring do we need to have in place to measure impacts of specific projects?

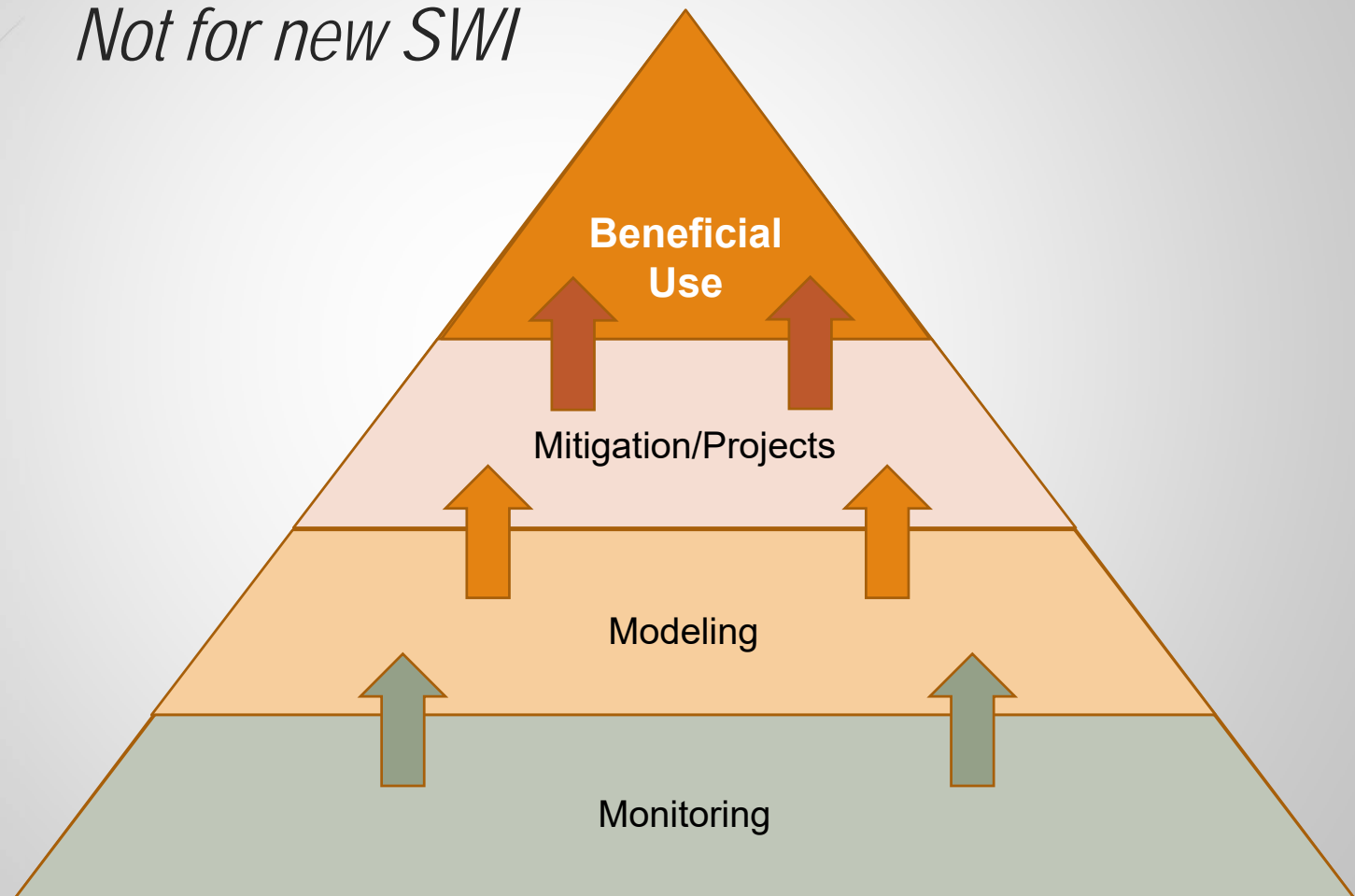
## Slide 32

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**VH1**

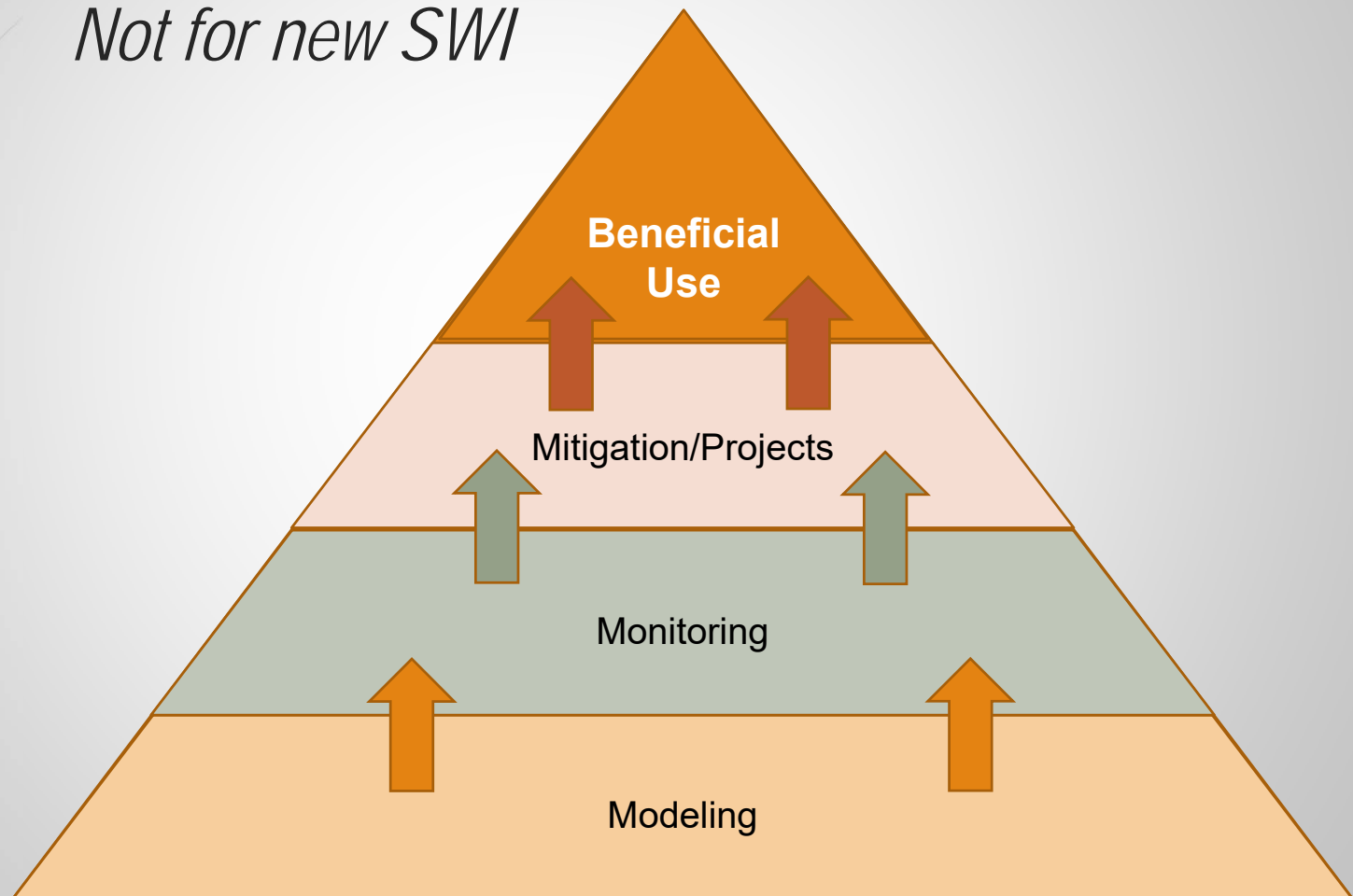
DERRIK this is straight from Emily's email  
Victoria Hermosilla, 6/25/2021

## Example Additional Monitoring *Not for new SWI*



## Optional Additional Monitoring

*Not for new SWI*



Questions?

