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TECHNICAL MEMORANDUM

DATE: September 7, 2021 **PROJECT #:** 9090.0201

TO: Brian Lockwood, P.G., C.Hg. and Casey Meusel, Pajaro Valley Water Management Agency (PV Water)

CC: Rural Residents for Water (RRW)
Community Water Center (CWC)
Ad Hoc Sustainable Groundwater Planning Advisory Committee (GSU22 Committee)

FROM: Cameron Tana, P.E, Luis Mendez, and Georgina King, P.G., C. Hg.

PROJECT: Basin Management Plan: Groundwater Sustainability Update 2022 (GSU22)

SUBJECT: Response to RRW Materials re: Groundwater Levels Sustainable Management Criteria (SMC), Monitoring Network, and Water Quality SMC (7/28/21 Slides and 8/10/21 Draft Memorandum)

INTRODUCTION

The Pajaro Valley Water Management Agency (PV Water) is preparing the first 5-year update to its Department of Water Resources (DWR) approved Groundwater Sustainability Plan Alternative. Funding for this approximately 16-month long, stakeholder driven effort is provided in part through a $500,000 Proposition 68 grant provided by DWR. The PV Water Board of Directors (Board) established the Ad Hoc Sustainable Groundwater Planning Advisory Committee (Committee) on August 19, 2020, with seats for 17-members. On the Committee are representatives of numerous affiliations; representing Rural Residential Well Owners are Marla Anderson, and her alternate, Mayra Hernandez of CWC. The Committee held its first meeting on October 14, 2020, and has met every month since with the final meeting planned for September 9, 2021.

As part of its engagement with the Committee and PV Water's Basin Management Plan: Groundwater Sustainability Update 2022 (GSU22), the north Monterey County-based community group, Rural Residents for Water (RRW) led by Ms. Anderson, Dan Castillo, and Gloria Murauto, provided materials with comments and questions on aspects of GSU22. These materials include the following:

- Slides prepared by RRW, received by staff on July 26, 2021, for discussion purposes during the PV Water-hosted public meeting that occurred on July 28, 2021. Attendees of that meeting included members of RRW, Community Water Center (CWC) staff, Ad Hoc Sustainable Groundwater Planning Advisory Committee (GSU22 Committee) members, and PV Water staff and consultants. The slides primarily focused on groundwater levels sustainable management criteria (SMC), and the monitoring network for groundwater levels and seawater intrusion.
- A memorandum dated August 10, 2021, received August 11 and forwarded by email to the GSU22 Committee on August 12, providing comments on Montgomery & Associates' draft *Sustainability Status in Pajaro Valley Subbasin: Water Quality* technical memorandum dated August 7, 2021. The August 7 technical memorandum was reviewed and considered by the GSU22 Committee on August 12, 2021.

Materials provided by RRW were provided to the GSU22 Committee in advance of the July 28, 2021, and August 12, 2021, meetings. PV Water staff and consultants provided responses and engaged in discussion with participants during the July 28, 2021, meeting. This technical memorandum provides additional information, addresses comments and questions expressed by RRW that were not discussed due to time limitations, and is drafted to be shared with interested parties.

SUMMARY OF RESPONSES

Below is a summary of the responses to RRW questions and comments by topic.

- **Groundwater Levels Minimum Thresholds:** The Committee voted in favor of minimum thresholds defined to prevent a long-term reduction in groundwater supply based on observed conditions over the past 20-years. Groundwater levels above minimum thresholds set at representative monitoring points indicate stable groundwater levels observed over the past 20 years are being maintained. Groundwater elevations at representative monitoring points may not be the same groundwater elevations at nearby domestic wells due to local differences in aquifer properties, topographic variability, and well screen depths, and as such, minimum thresholds below nearby well screen elevations do not directly correspond to an increased risk of well failure.
- **Groundwater Levels Undesirable Results:** The definition of undesirable results approved by the Committee is consistent with the significant and unreasonable conditions defined for the Pajaro Valley Subbasin (Basin) by the Committee, the basin-wide focus of the Sustainable Groundwater Management Act (SGMA) and DWR guidance, and is within the range of what other GSAs are proposing.

- **Monitoring Network:** Gaps exist in the selection of representative monitoring points in part because PV Water can only identify and associate data to private wells in its extensive groundwater level and quality monitoring network when explicitly authorized by agreement. This authorization is necessary for representative monitoring points because data and information for these wells will be uploaded to DWR. The monitoring plan to be presented at the September 9, 2021, Committee meeting addresses evaluation of additional representative monitoring points.
- **Basin Management Plan Update (2014) Projects and Management Actions:** The Basin Management Plan Update (BMP 2014, Carollo, 2014) projects and management actions are being implemented to address critical overdraft and the associated seawater intrusion. The selected projects in BMP 2014 were the lowest cost per acre-foot and were estimated to solve 90% of seawater intrusion and 100% of the overdraft problems. The water supply projects work to reduce groundwater pumping in the coastal area which provides the greatest benefit in reducing the rate seawater intrusion and eliminating groundwater overdraft. The conservation program is designed to help conserve water throughout the Basin.
- **Groundwater Quality:** In approving PV Water's Groundwater Sustainability Plan (GSP) Alternative, DWR accepted the assimilative capacity thresholds described in the Pajaro Valley Water Management Agency Salt and Nutrient Management Plan (SNMP) as the water quality minimum thresholds. The SNMP was developed through a stakeholder process that included the participation of the Central Coast Regional Water Quality Control Board as well as local stakeholders, and members of the public. The definition of assimilative capacity thresholds follows standard practice for salt and nutrient management plans. Evaluation of groundwater quality conditions for the GSU22 uses the best available information as required by SGMA.

GROUNDWATER LEVELS SMC

Minimum Thresholds

RRW's July 28 slide 1 states "Proposed Minimum Thresholds are set at GWLs that will unacceptably impact domestic wells." This is not the case. Proposed minimum thresholds (MT) are set at groundwater levels (GWLs) that supported water supply uses over the past 20 years, including the drought period of 2012-2015.

Consideration of RRW's slide 2 illustrates this point. Slide 2 shows the hydrograph for the AWD_Aimee representative monitoring point (RMP) where SMC are set[1]. RMPs are selected based on the availability of a relatively long groundwater level record and because they are representative of groundwater level trends in nearby wells. Most nearby wells do not have the same groundwater elevations as the AWD_Aimee RMP due to local differences in aquifer properties and variable ground surface elevations (topography). A RMP is representative of nearby wells if it is screened in the same aquifer and has the same long-term GWL trends as nearby wells. The AWD Aimee RMP hydrograph shows relatively stable GWLs over the last 20 years. Its range of annual minimum GWLs is only 10-feet. Similar stable trends and ranges are observed at 3 nearby domestic wells monitored by PV Water. Figure 1 includes the groundwater elevations for the 3 nearby wells and AWD_Aimee. The MT is set to protect this stable condition that has supported long-term supply.

RRW also asks questions on slide 2 related to comparison of GWLs to information for domestic well screens near the AWD_Aimee RMP. Statements similar to the slide 2 questions appear on slide 3 for AWD_Aimee RMP, slide 6 for the Well 5 RMP, and slide 7 for the SC-A9A RMP. The paragraph below in response to RRW questions and statements attempts to clarify concepts for the MTs and potential impacts to nearby wells.

As noted above and illustrated in Figure 1, groundwater elevations observed at the RMPs may not always reflect the same groundwater elevations observed at nearby wells. Figure 2 shows groundwater elevation differences between 4 domestic wells near the Well 5 RMP of up to 140 feet. Figure 3 shows groundwater elevation differences at 5 domestic wells near SC-A9A. Groundwater elevations at the RMPs represent the general trend of GWL changes in specific areas of the Basin. Groundwater elevations below the MT at RMPs represent the likelihood that groundwater elevations at nearby wells may also drop below levels that supported beneficial uses over the last 20 years. It is important to note that the MT elevation applies to only the RMP and not to the nearby wells. If one of the nearby wells had been used as an RMP in place of the selected RMPs, the MT groundwater elevation would be different since it would be based on the average of the 2 lowest annual minimum groundwater elevations from water year (WY) 2000-2020 for the well at which is used as the RMP.

[1] GWL SMC are defined as groundwater elevations relative to a consistent vertical datum for the Basin (NAVD88) as opposed to depth to water from the ground surface which varies considerably throughout the Basin.

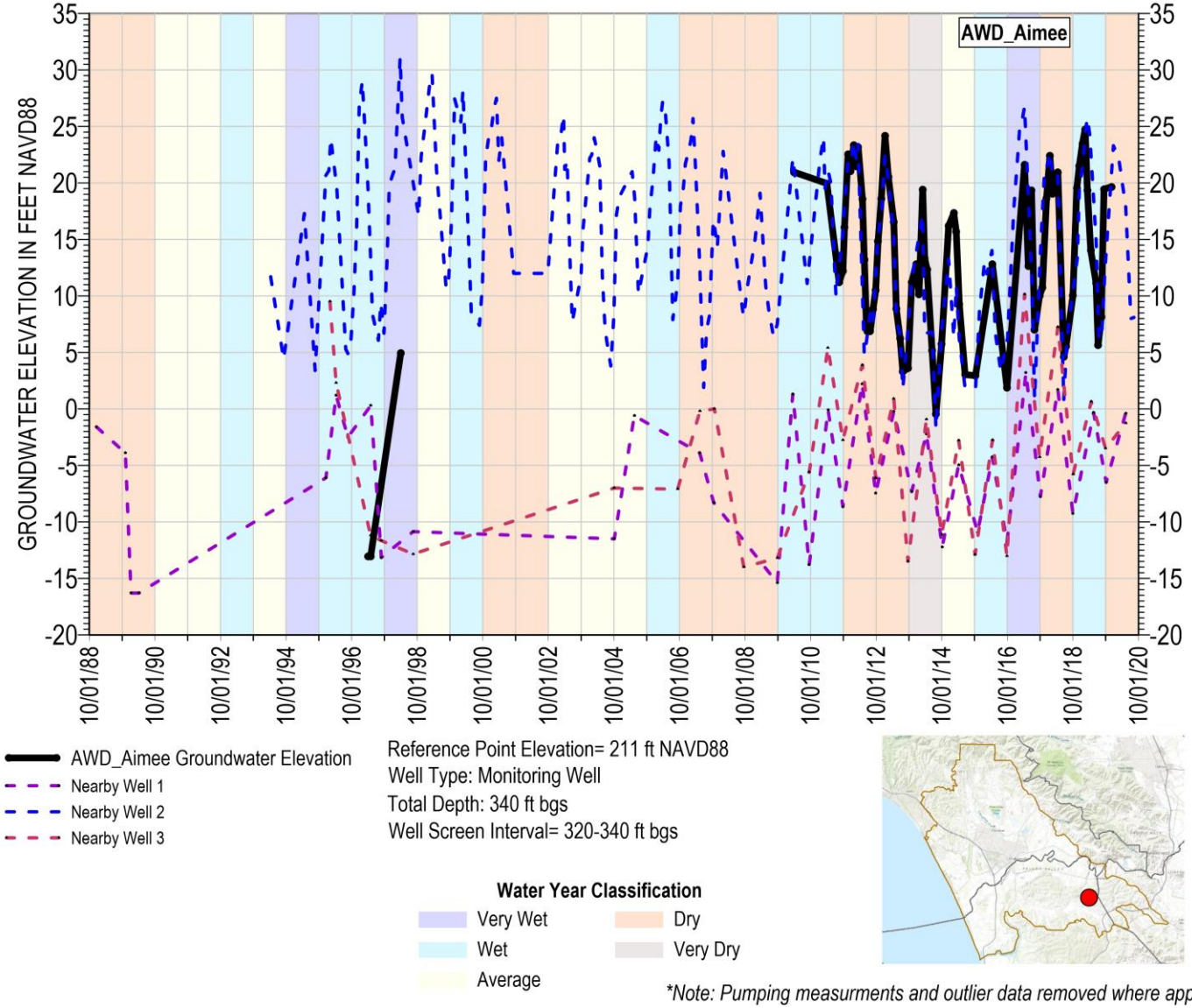

Figure 1. Groundwater Levels at Nearby Domestic Wells to AWD_Aimee RMP (Reference Point Elevation Updated to NAVD88 from Appendix B of GWL SMC Draft Technical Memo dated April 2, 2021)

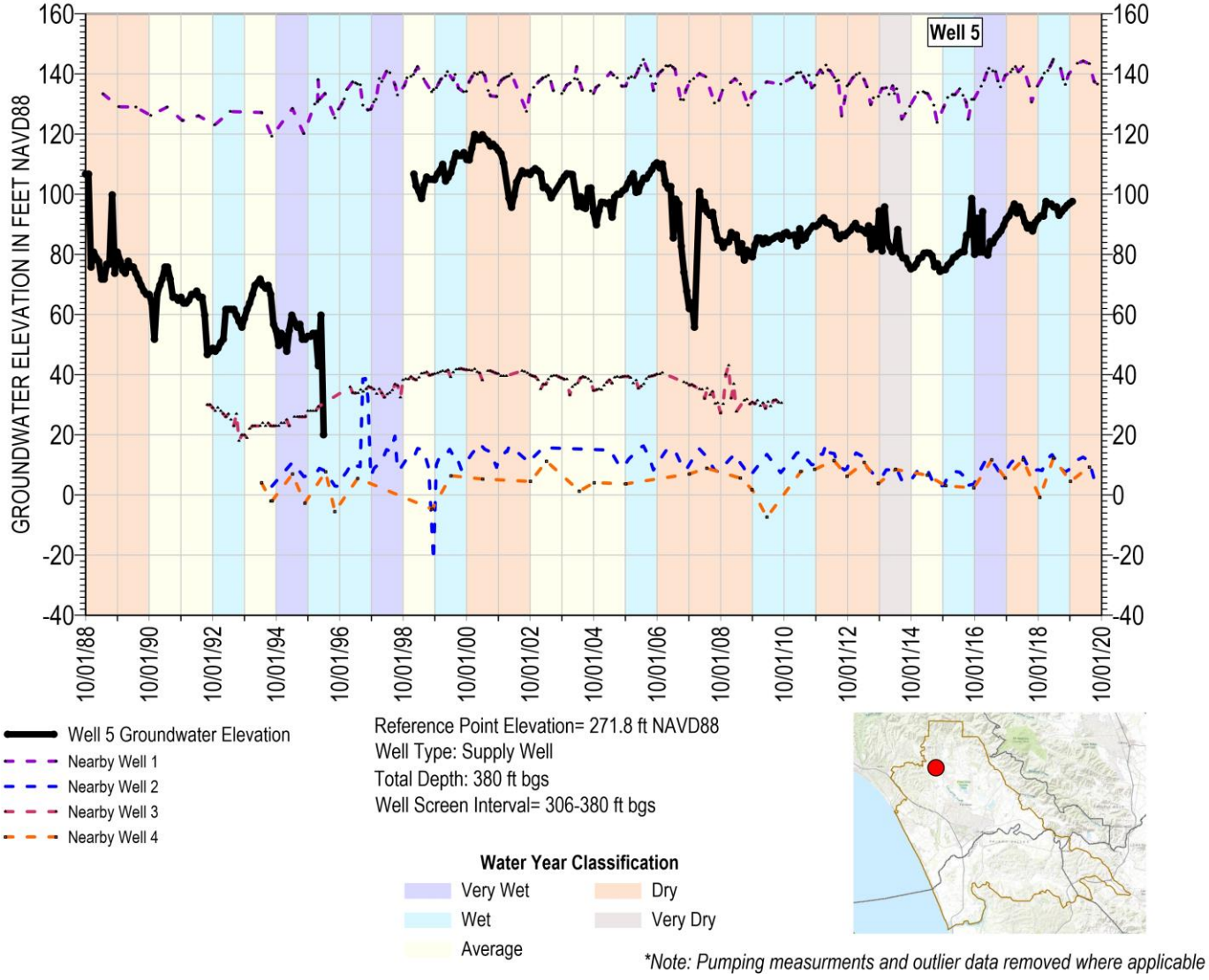

Figure 2. Groundwater Levels at Nearby Domestic Wells to Well 5 RMP (Reference Point Elevation Updated to NAVD88 from Appendix B of GWL SMC Draft Technical Memo dated April 2, 2021)

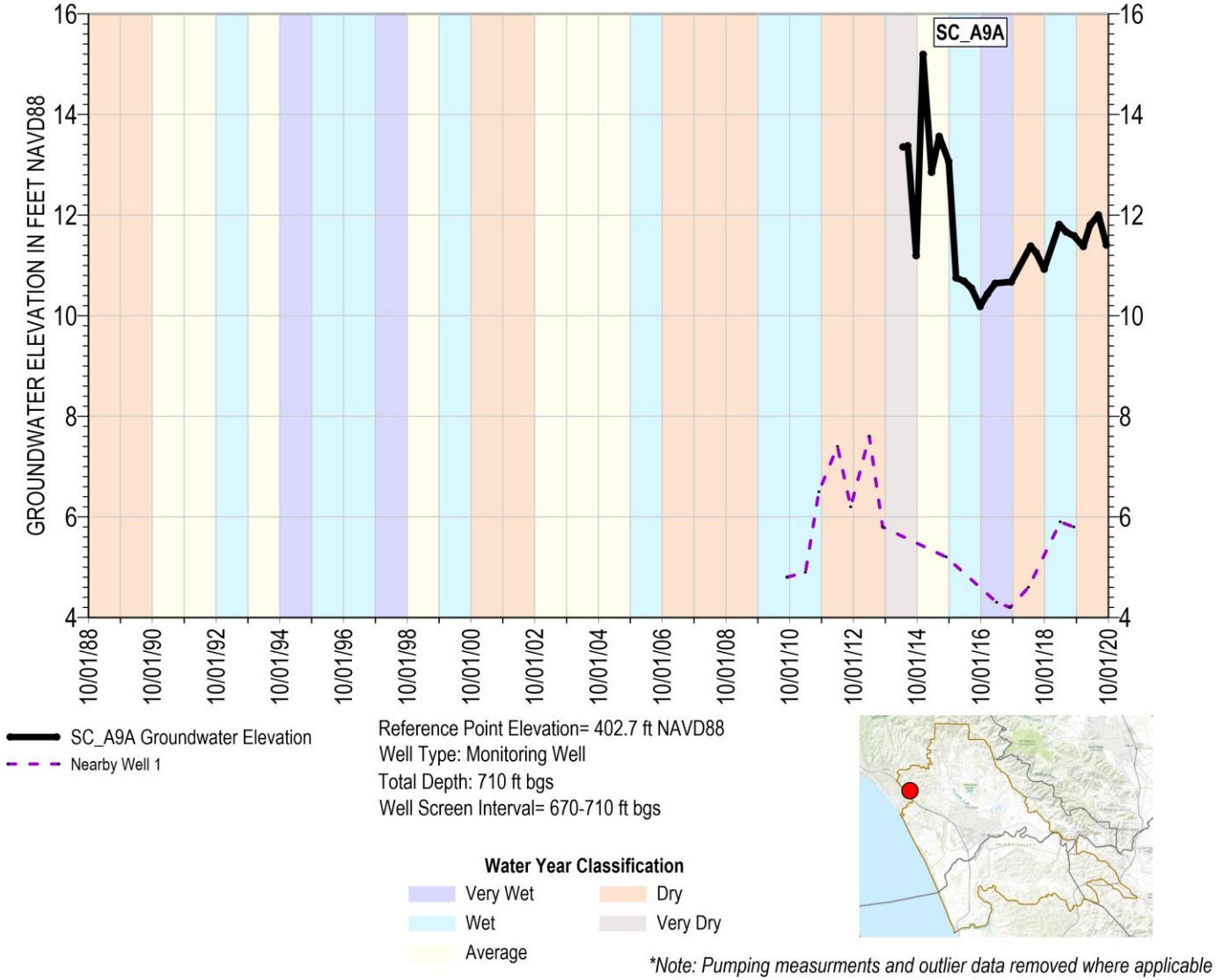

Figure 3. Groundwater Levels at Nearby Domestic Wells to SC-A9A RMP (Reference Point Elevation Updated to NAVD88 from Appendix B of GWL SMC Draft Technical Memo dated April 2, 2021)

Groundwater elevations at unmonitored wells near RMPs may have different groundwater elevations from what is observed at the RMP because of local differences in aquifer properties, topographic variability, and well screen depth. As shown on slides 3, 6, and 7, well screen elevations for domestic wells near each RMP show a wide variation of elevations with ranges of over 300 feet. When a well is drilled and constructed, well screens are constructed below the groundwater level in the well. The domestic well screen data plotted on slides 3, 6, and 7 indicate likely variation in groundwater levels over the area. RRW marked the screens of a number of wells with pink and purple dots that have elevations above or intersecting with the range of GWLs at the RMPs. Although GWLs **are not** monitored at the domestic wells plotted, GWLs are most likely higher than at the nearby RMP. Otherwise, these wells' screens would have been dewatered and the wells unable to support supply over the last 20 years, and likely before that as well. To reiterate, the MT at the RMPs were defined to support the beneficial uses reliant on the groundwater supply over the last 20 years.

Responses to RRW's questions (*in italics*) and statements on slides 2, 3, 6, and 7 are as follows:

1. *Slide 2: Wells with TOSs in this GWL range (between purple and red dash lines) will cascade or fail (10 wells)?*

   As described above, the GWL range shown on the hydrograph is for the AWD_Aimee RMP groundwater elevations and **not nearby** wells. Wells with top of screen (TOS) as high as the 95th percentile (purple line) either have higher groundwater elevations or have been able to provide supply with groundwater elevations below the TOS. It is incorrect to conclude that the MT (red dash line) at the AWD_Aimee RMP will lead to cascading or failure of wells with TOS in this range.

2. *Slide 2: At blue line, 95% of wells with BOS in this GWL range (between blue & red dash line) will fail . . .7 wells?*

   5% of wells have bottom of screen (BOS) above the 95th percentile (blue line). 14% of wells have BOS above the MT (red dash line). Wells with these high BOS elevations must have higher groundwater elevations than AWD_Aimee RMP or already have not been able to consistently provide supply over the last 20 years. It is incorrect to conclude that the MT at the AWD_Aimee RMP will lead to failure of wells with BOS in this range.

3. *Slide 3: These 22% of domestic wells (10 pink dots) will partially to fully fail and these 15% (7 purple dots) will fully fail near the Aimee well.*

   Slide 6: 55% of domestic wells (18 pink dots) will partially to fully fail and 33% (11 purple dots) will fully fail near Well #5.

   Slide 7: 22% of domestic wells (11 pink dots) will partially to fully fail and 8% (4 purple dots) will fully fail near Well #5.

> The wells marked with pink and purple dots on slides 3, 6, and 7 have well screen elevations that indicate groundwater elevations at these wells are either higher than the nearby RMP or these wells have not been able to consistently provide groundwater supply over the last 20 years. It is incorrect to conclude that the MT at the RMPs will increase the risk of failure at these wells.

Additional statements on slides 4, 9, and 11 are also based on the incorrect premise that the MT at the RMPs will increase the risk of failure at nearby wells. The MT maintains groundwater levels supportive of supply over the last 20 years at both the RMP and at nearby wells. Slide 4 identifies the AWD_Aimee, Well 5, and SC-A9A as the only RMP areas outside the Delivered Water Zone with domestic wells nearby and being the first to fail. However, Well 9 has nearby agricultural wells with a similar issue and the 2 Hudson well RMPs also are outside the Delivered Water Zone with nearby domestic wells. As described above, these RMP areas have highly variable screen elevations and likely different groundwater elevations compared to nearby RMPs. The MT elevation applies only to the RMP in each corresponding area and not the nearby wells.

Slide 8 asks questions related to drought impacts. Figure 1 through Figure 3 show groundwater levels have been relatively stable since 2000. There are some declines during droughts but the drop in annual lows is not much greater than 10 feet. Groundwater levels throughout the Basin were significantly lower in the 1990s, but the MT are based on the groundwater levels after 2000 and not on the lower elevations in the 1990s. In general, chloride chemographs included in Appendix A of the seawater intrusion SMC draft technical memorandum dated March 9, 2021, show stable trends overall that were maintained during drought period. Area F shows a slight increase in chloride concentrations over the WY 2012-2015 drought[2], but remain below 100 mg/L. The larger increase in chloride concentrations at the Hudson Shallow well occurred after the drought and may have been a delayed response to the drought.

As part of comments on the monitoring network, slide 14 states that "PV Water should be much more conservative and set the MTs for the Aimee, Well 5, SCA9A wells and future monitoring wells in domestic areas to a significantly higher GWL." A significantly higher MT would be above groundwater levels historically observed at these RMPs and is therefore higher than necessary to support the groundwater supply that has occurred in the Basin. For example, setting MT at 95th percentile of domestic top of screen (purple line on slide 2) or bottom of screen (blue line on slide 3) at AWD_Aimee would exceed all its observed groundwater levels. Using 2017 levels as suggested by the petition received from rural residents in May 2021 would be

[2] Water year type classifications are incorrect in Appendix A of the seawater intrusion SMC draft technical memorandum dated March 9, 2021 and will be corrected in GSU22 submittal.

higher than what has been observed most years. Utilizing 2017, which was a very wet year, for MTs would result in MT exceedances in 2018 and 2019 that do not represent a long-term reduction in groundwater supply.

Undesirable Results

RRW's slide 15 states that "Exceedances leading to undesirable results are excessive. They undermine the concept of a Minimum Threshold by allowing the exceedances to continue for as many as 4 years. The proposed exceedances are far out of line with other GSAs." This opinion that the number of MT exceedances defining GWL undesirable results is excessive is noted and has been shared with the GSU22 Committee for consideration. However, the definition of undesirable results is consistent with the significant and unreasonable conditions defined for the Basin by the GSU22 Committee, the basin-wide focus of SGMA and DWR guidance, and is within the range of what other GSAs are proposing.

Multiple years of MT exceedances define undesirable results in order to quantify the long-term reduction in groundwater supply that is defined as a significant and unreasonable condition for the Basin. This definition of undesirable results based on long-term conditions is also consistent with the SGMA legislation definition of this undesirable result (10721(w)(1)):

> *Chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon. Overdraft during a period of drought is not sufficient to establish a chronic lowering of groundwater levels if extractions and recharge are managed as necessary to ensure that reductions in groundwater levels or storage during a period of drought are offset by increases in groundwater levels or storage during other periods.*

Undesirable results for GWL are defined to address basin-wide sustainability that meet SGMA requirements. DWR summarizes the basin-wide focus of SGMA in its regulations for undesirable results: "Undesirable results occur when significant and unreasonable effects for any of the sustainability indicators are caused by groundwater conditions occurring throughout the basin (354.26(a))." The regulations also expressly allow for defining undesirable results based on minimum threshold exceedances at multiple RMPs: "The determination that undesirable results are occurring may depend upon measurements from multiple monitoring sites, rather than a single monitoring site (354.26(c))."

Based on this basin-wide focus of its regulations, DWR presents an example for GWL undesirable results in its Best Management Practice for SMC (DWR, 2017). This example defines undesirable results as minimum threshold exceedances in 3 of 8 or 37.5% of RMPs (Figure 4). In this example, ongoing minimum threshold exceedances in 2 of 8, or 25% RMPs,

would not be consider an undesirable result. PV Water has defined GWL undesirable results based on minimum threshold exceedances at 15-25% of RMPs, below the percentages presented in DWR's example.

DWR's Best Management Practice for SMC also states that "GSAs have significant flexibility in defining the combinations of minimum threshold exceedances that constitute an undesirable result." This flexibility is reflected in the wide range of undesirable results being proposed by various GSAs. Table 1 shows a sample of the variety of undesirable results proposed by different GSAs. Although PV Water's definition of undesirable results are not as conservative as some basins, the definition does fit within the range shown on Table 1. It should be noted that PV Water's use of 2, 3, and 4 of 5 consecutive years may be more conservative than use of consecutive years, consecutive non-dry years, or numbers of semi-annual events.

Under SGMA, PV Water retains the option to define more conservative undesirable results. However, the GSU22 team did propose less conservative undesirable results to reduce the risk of state intervention in management and allow PV Water time to address MT exceedances before they result in state intervention. The GSU22 Committee accepted the proposal for undesirable results with only 1 dissenting vote.

RRW slide 14 also suggests that "exceedances should not be established until the number and locations of monitoring wells in the revised monitoring network is approved." Percentages of RMPs define the undesirable results to represent basin-wide conditions. These percentages are meant to be applicable even as RMPs are added to the monitoring network but also in advance of adding them to the network.

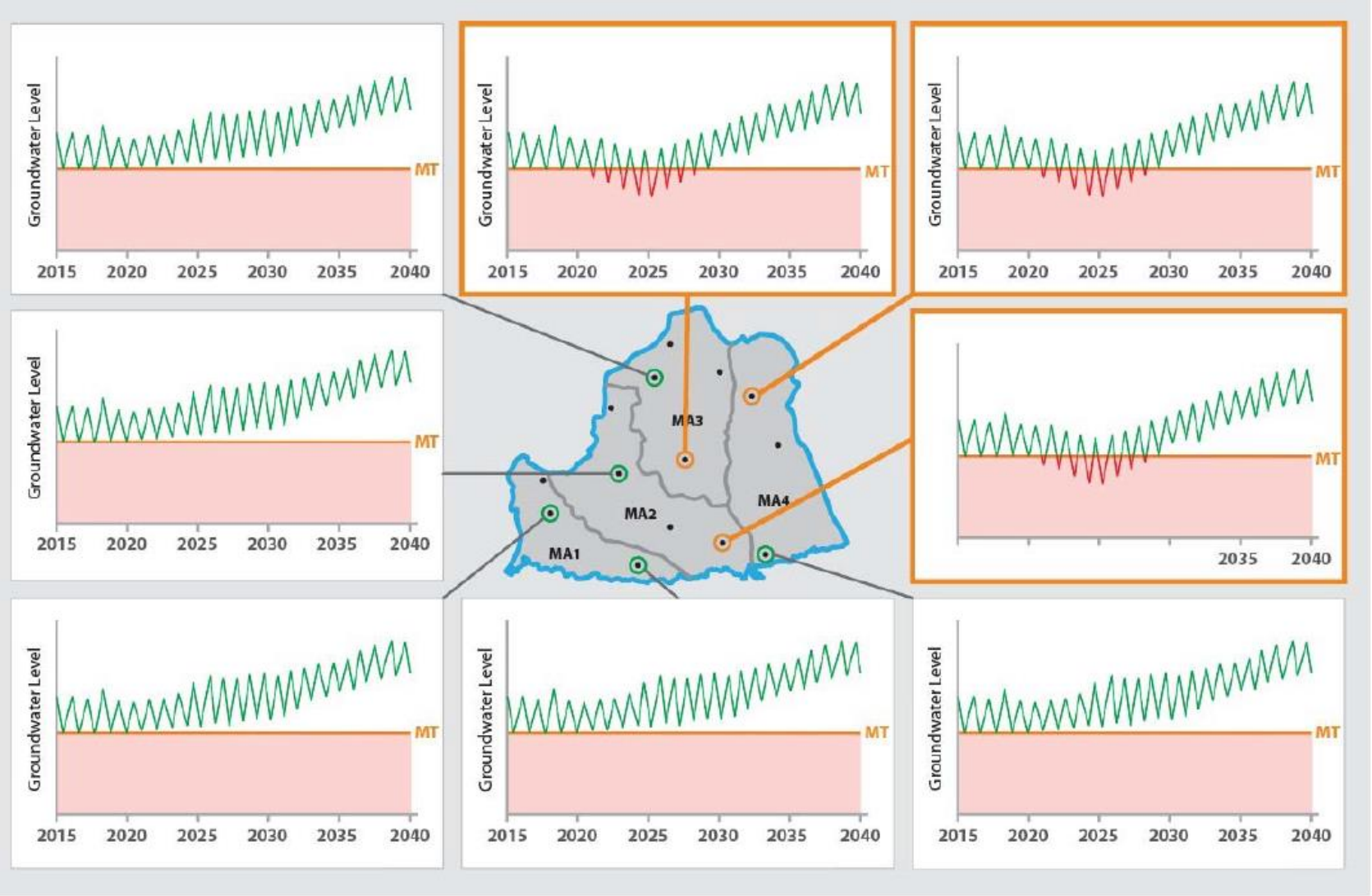

Figure 4. Example from DWR Best Management Practice Defining GWL Undesirable Results Based on Minimum Threshold Exceedances at 3 of 8 Wells (DWR, 2017)

Table 1. Examples of GWL Undesirable Results from Other Basins

Basin (Year GSP Due)	Undesirable Result	Comparison to PV Water
Salinas Valley 2022 (anticipate 180/400 update to be consistent)	More than 15% of the groundwater elevation MT are exceeded in any single aquifer over the course of a year.	More conservative than PV Water
Santa Cruz Mid-County (2020)	Any average monthly RMP's groundwater elevation falls below its MT	More conservative than PV Water
Santa Margarita (2022)	GWL below MT in 2 or more consecutive non-drought years	On balance, more conservative than PV Water, but MT exceedances in multiple RMPs over multiple drought years not considered a UR.
Paso Robles (2020)	More than 2 exceedances of MT occur within a 5-mile radius or within a defined area of the Basin for any single aquifer over the course of 2 years OR a single RMP exceeds MT for 2 consecutive years	More conservative than PV Water
Eastern San Joaquin (2020)	At least 25% of RMPs fall below their MT for 2 consecutive non-dry water years	Less conservative than PV Water
Pleasant Valley and Oxnard (2020)	>40% RMPs are below MT in one monitoring event OR groundwater elevations at any key well exceed historical low elevations OR any RMP is below MT for 3 monitoring events out of 5 consecutive semiannual monitoring events.	On balance, more conservative than PV Water, but URs based on single monitoring event based on very high percentage of RMPs or very low GWL. 3 monitoring events out of 5 consecutive semiannual events could require 3 consecutive years with annual lows with MT exceedances. MT exceedances by annual lows in multiple RMPs in non-consecutive years wouldn't be UR.
Corning (2022)	>20% RMPs are below MT in 2 consecutive years	On balance, less conservative than PV Water. >20% RMPs below MT in 3 of 5 consecutive years comparable to 2 of 2 consecutive years. PV Water has additional combinations of RMPs and non-consecutive years.
Castac Lake Valley (2020)	2 RMPs are below MT in 4 consecutive semi-annual monitoring events	On balance, less conservative than PV Water. If annual highs are above MT, then wouldn't be UR. Annual lows could be below MT every year without being an UR.

MONITORING NETWORK

RRW's slide 14 states "PV Water's proposed monitoring network is not adequate… a). A minimum of 4 more monitoring wells need to be added to monitor groundwater levels in higher elevation areas where domestic wells are located and 2 in the Elkhorn Slough/Carneros Creek subbasin." Our presumption is the statement references the proposed RMPs as slide 12 shows RMPs for GWL, not all wells monitored by PV Water. In addition to the wells shown on slide 12, PV Water also monitors the wells screened in the Aromas aquifer, the principal aquifer of the Basin, shown as aqua dots on Figure 5. These wells are labeled "Confidential Aromas Wells" because PV Water does not have permission to publicly disclose information specific to these wells, which DWR has stated is necessary for inclusion as RMPs. Part of the effort to improve the monitoring network will be contacting private well owners to ask permission to monitor their wells and publicly share the information. Small water systems have already been contacted with this request and PV Water appreciates the support offered by RRW for this effort. Otherwise, dedicated monitoring wells will need to be constructed to add recommended RMPs.

In developing the draft monitoring plan, we considered RRW's comment about adding 6 RMPs. We are recommending 3 areas for additional RMPs for GWL as shown as purple areas in Figure 5 and adding wells along Carneros Creek as interconnected surface water RMPs. The monitoring plan evaluates other areas (pink and yellow areas) similar to those suggested by RRW's comment. Although the monitoring network can be improved in these areas, RMPs are not recommended for these areas at this time as described in the draft monitoring plan. The draft monitoring plan is available online and will be presented at the September 9, 2021, GSU22 Committee meeting.

The draft monitoring plan also identifies data gap areas for monitoring seawater intrusion (SWI). As PV Water already monitors private confidential wells inland of the seawater intrusion MT isocontour (see Area F on Figure 1 and Figure 2 of the SWI SMC technical memorandum where chloride concentrations are less than 100 mg/L), additional wells near Elkhorn Slough to evaluate seawater intrusion, as suggested on RRW slide 19, may be redundant. Our understanding is potential movement of seawater intrusion past the MT isocontour can be evaluated based on private confidential wells without identifying them as RMPs requiring information to be made public. If seawater intrusion causes chloride concentrations to rise above the measurable objective of 100 mg/L inland of the MT isocontour, that would be an appropriate time for PV Water to consider developing a management plan to prevent chloride concentrations rising above the minimum threshold of 250 mg/L and causing undesirable results.

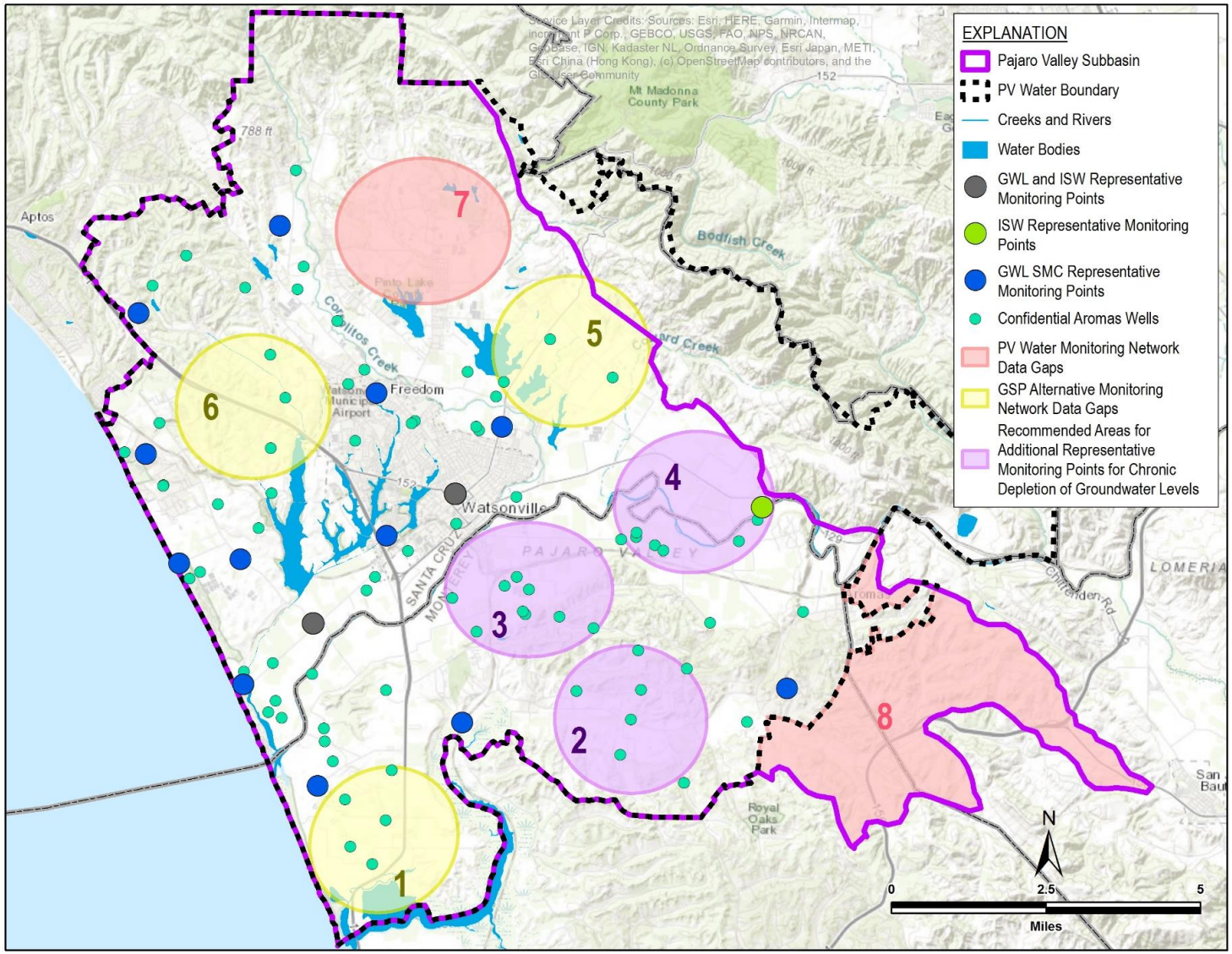

Figure 5. Aromas Wells in Groundwater Level Monitoring Network and Data Gap Areas Evaluated in Draft Monitoring Plan

BASIN MANAGEMENT PLAN PROJECTS AND MANAGEMENT ACTIONS

RRW's slide 18 states "PV Water is not extending its 'cushion of protection' to the most vulnerable monitoring well areas" and appears to ask why PV Water's BMP 2014 projects and management actions do not address inland areas with rural residential pumping. The BMP 2014 was developed to address long-term Basin overdraft and seawater intrusion. The projects and management actions will not provide excess protection that we interpret is meant by "cushion of protection" but were selected to efficiently and economically eliminate overdraft and reduce 90 percent of seawater intrusion. In approving PV Water's GSP Alternative, DWR concluded that "Management actions and projects described in the Basin Management Plan present a feasible approach to achieving the sustainability goal for the Basin."

Many of the BMP 2014 projects target reducing groundwater pumping in the coastal area where it provides the greatest benefit in reducing seawater intrusion and eliminating overdraft on a basin-wide scale. PV Water's BMP 2014 Conservation program supports reducing groundwater production across the Basin. In addition, PV Water has approved a Recharge Net Metering program and is working with partners and program participants to augment basin recharge through the operation of stormwater infiltration systems, all of which are located inland thus far. If the Phase I projects of the BMP 2014 are determined to fall short of the objectives, PV Water will consider implementation the Phase II projects as described in the BMP 2014.

RRW appears to question the efficacy of the projects and management actions by comparing groundwater level contours between 1992 and 2015. Groundwater levels through 2020 shown in the latest annual report depict higher groundwater levels achieved over the last 5 years with further implementation of projects and management actions. Groundwater levels in 2020 also show a reduced area along Monterey Bay and sloughs impacted by groundwater levels below sea level.

The Projected Water Budget TM (M&A, 2021) describes model simulations of BMP 2014 projects and management actions and the resulting projected water budgets. These simulations show that BMP 2014 projects and management actions increase Basin groundwater sustainability as evidenced by reductions in groundwater pumping, increases of groundwater in storage, reductions of flows from offshore into the Basin, and establishment of flows to help prevent seawater intrusion inland of the SMC chloride isocontour, prior to the sustainability deadline of 2040. These results demonstrate that projects and management actions are likely to have the intended effects described in BMP 2014.

GROUNDWATER QUALITY

RRW's August 10, 2021, memorandum primarily provides concerns about the Salt and Nutrient Management Plan (SNMP, 2016) submitted by PV Water to the Central Coast Regional Water Quality Board. Addressing these concerns is not within the scope of GSU22 and under SGMA as DWR accepted the use of SNMP's assimilative capacity thresholds as water quality SMC for PV Water's GSP Alternative. However, the concept of defining assimilative capacities based on average concentrations for the Basin is standard practice for salt and nutrient management plans. The concept behind assimilative capacity is that average concentrations below the water quality objectives for the Basin allows for concentration increases to support development of recycled and stormwater water supply projects. The water quality objectives and the methodology to evaluate average concentrations were developed as part of the SNMP stakeholder driven process as requested by and with participation from Central Coast Regional Water Quality Control Board staff (https://www.pvwater.org/salt-nutrient).

Two comments in RRW's memorandum are relevant to reporting sustainability status of groundwater quality for GSU22: the lack of consistency in data sets used between SNMP and GSU22 and questions about the lack of observed increase in inland concentrations of nitrate.

Following SGMA guidance, the calculation of average groundwater quality uses the best available information. The dataset, expanded from the SNMP dataset, includes data available the Groundwater Ambient Monitoring and Assessment Program (GAMA) program. Average concentrations of total dissolved solid, chlorides, and nitrates can then be compared to the assimilative capacity thresholds accepted as minimum thresholds for these 3 constituents. We acknowledge that changes in groundwater quality, and therefore the measurable objective to have no concentration increases, cannot be assessed using inconsistent data sets. Going forward, the groundwater quality sustainability indicator will be evaluated in annual reports to DWR and this should allow for annual evaluation of changes in concentrations using consistent data sets.

A question on page 4 of the memo compares Figure 4 from the water quality draft TM dated August 7, 2021, to Figure 4.8 and questions the result that the average nitrate concentration (as nitrate) across Inland Zone 1 for 2016-2021 is 24 mg/L, the same value as 2002-2011. The 2016-2021 value is the average for the entire area within the Basin inland of coastal Zone 2. The 2002-2011 value is the average for an area that extends past the Basin but excludes the non-jurisdictional area of the Basin. Table 2 shows the areas by concentration range for an equivalent area: inland Zone 1 used in the SNMP within the Basin such that the non-jurisdictional area is excluded. For the equivalent area, 2016-2020 shows a slightly higher value than 2002-2011, but still substantially below the minimum threshold of 45 mg/L. RRW may be perceiving larger areas with higher nitrate concentrations in water quality draft TM Figure 4 because darker colors

are used in Figure 4 than SNMP Figure 4.8. Figure 6 below shows the maps with equivalent color schemes.

Table 2. Total Areas by Concentration Range and Average Nitrate (as NO3) Concentrations for SNMP Inland Zone 1 within Basin

Nitrate (as NO3)	2002-2011	2016-2020
0-10 mg/L	20,100 acres	23,100 acres
11-45 mg/L	20,900 acres	16,900 acres
46-100 mg/L	5,500 acres	5,100 acres
>100 mg/L	1.500 acres	2,800 acres
Total	48,100 aces	48,000 acres
Average	23 mg/L	26 mg/L

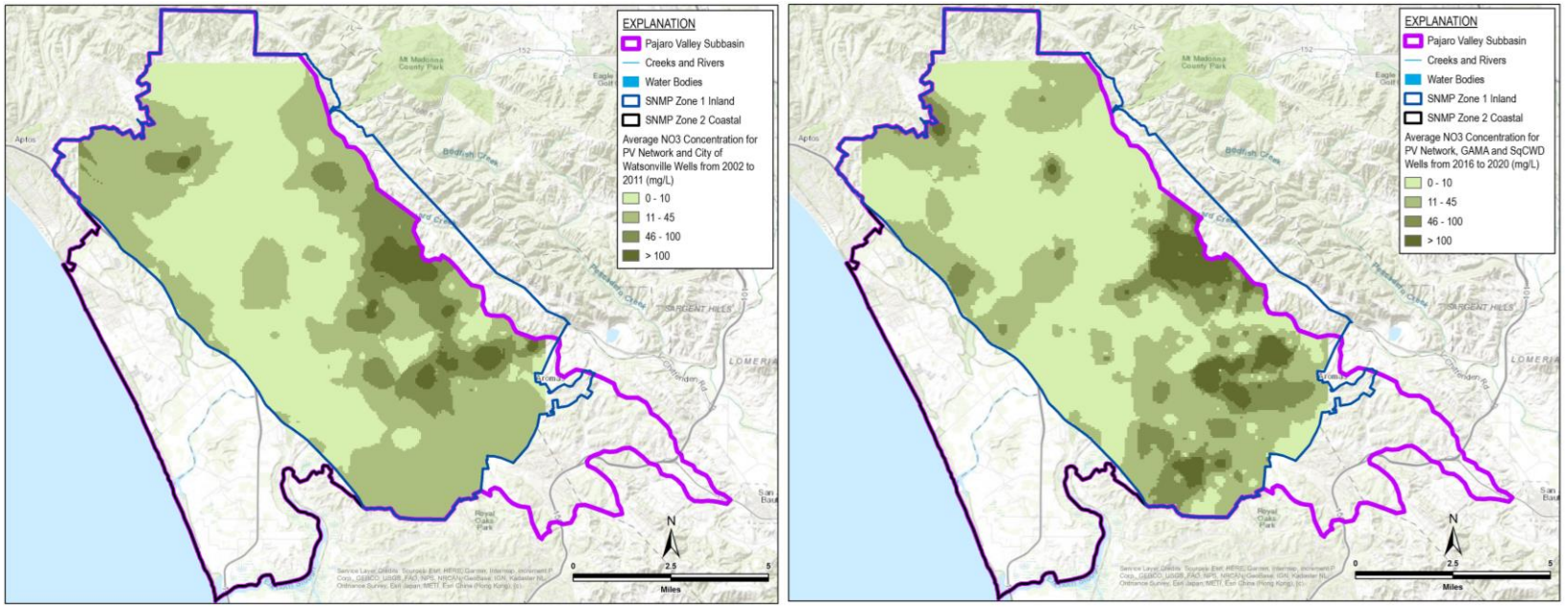

Figure 6. 2002-2011 (left) and 2016-2020 (right) Nitrate (as NO3) Concentrations for SNMP Inland Zone 1 within Basin

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