November 13, 2019

Ron Stefani, Chairperson
Members of the Board of Directors
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Subject: Comments on 180/400-foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Chair Stefani and Members of the Board of Directors:

LandWatch appreciates the opportunity to comment on the 180/400-Foot Subbasin Groundwater Sustainability Plan. Our comments are organized into three sections:

- Summary of comments
- Section 1 documents why the GSP does not meet the legal requirements of the Sustainable Groundwater Management Act ("SGMA")
- Section 2 recommends policy-based changes to the GSP

Summary of comments

The 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan ("GSP" or "Plan") fails to address the biggest threat to the groundwater resource – continued seawater intrusion. The Plan appears to have been designed to avoid the one measure that is most certain to address this threat: immediate mandatory reductions in groundwater extractions.

Each of the legal shortcomings in the Plan document can ultimately be traced to an unwillingness of the SVGBGSA to face the uncomfortable reality that mandatory pumping reductions are needed, and are needed now. As set out in detail in Section I, the Plan does not comply with SGMA for the following reasons:

- The GSP fails to adopt a conservative estimate of sustainable yield until resolution of data gaps and calibration of the groundwater model.
    - The groundwater model is not calibrated.
    - The minimum threshold for reduction in storage is improperly based on uncalibrated model projection of 2070 sustainable yield and improperly uses the least conservative estimate of sustainable yield.

- The minimum thresholds for groundwater levels and storage reduction are inconsistent with SGMA regulations because they fail to avoid the undesirable results for the seawater intrusion sustainability indicator.
    - The minimum threshold for groundwater levels, set at one foot above lowest historical groundwater levels, will not support the minimum threshold for seawater intrusion, set at existing line of seawater intrusion advance, because those groundwater levels will not halt seawater intrusion.
    - The minimum threshold for reduction in storage, set at the future long-term sustainable yield, will not support the minimum threshold for seawater intrusion, because halting seawater intrusion requires *replacement of depleted groundwater storage* by temporarily reducing extractions to below the sustainable yield.

- The GSP proposes inconsistent programs and management actions to attain the minimum threshold for seawater intrusion, and these remedies would not be timely.

- The Plan fails to include immediate pumping reductions, which are required in order to attain the identified minimum threshold for seawater intrusion.

- The Plan fails to mitigate overdraft: the water charges framework cannot reliably mitigate overdraft because pumping reductions remain voluntary and because price sensitivity and demand elasticity are unknown.
    - SGMA requires that a GSP identify projects or management actions, including demand reduction or other methods, that would be sufficient to mitigate overdraft.
    - Contrary to the Plan's claim, the water charges framework would not reduce demand or increase supply sufficiently to mitigate overdraft because it relies on voluntary pumping reductions and permits pumping in excess of sustainable pumping allocations.
    - Mitigation of overdraft requires mandated pumping restrictions that limit total pumping to current sustainable yield plus newly produced water.
    - The Plan fails to provide the mandatory quantification of the mitigation of overdraft: it fails to quantify the benefits of management actions, it assigns all of the Basin-wide Project benefits to the 180/400- Foot Aquifer Subbasin, it double counts some benefits, and it contains an arithmetic error.

- The implementation plan improperly delays substantive action for two years in order to accommodate the implementation schedule for the GSP for the rest of the Basin, which is not *critically* overdrafted.

- The Plan fails to identify project startup dates.

- The Plan fails to impose pumping restrictions pending startup of new water projects. Interim pumping restrictions are needed in order to restore and maintain the protective groundwater elevations to attain the minimum threshold for seawater intrusion.

- The GSP's multiple, inconsistent, incomplete, and deferred approaches to meeting the seawater intrusion minimum threshold – eventual temporary pumping reductions, a long-delayed $100+ million pumping barrier, or some eventual "agreed approach" from the Working Group – renders the GSP uncertain and inadequate as a plan.

In addition to these comments, LandWatch makes suggestions to revise and improve the Plan in Section II, below. LandWatch's detailed comments follow.

Section I: The GSP does not meet SGMA's requirements.

Set forth below in this section A through H are deficiencies in the Plan that preclude it from meeting SGMA's requirements. LandWatch has previously made many of these comments in letters submitted to the SVGBGSA Board as draft chapters have been released. However, the deficiencies remain.

A. The GSP fails to adopt a conservative estimate of sustainable yield until resolution of data gaps and calibration of the groundwater model.

1. The groundwater model is not calibrated.

Chapter 6 of the GSP presents three different and currently unreconciled sustainable yield calculations, one based on the historic water budget (95,700 AFY), one based on the projected 2030 water budget (107,200 AFY in 2030), and one based on the projected 2070 water budget (112,000 AFY in 2070).[1] (GSP, section 6.10.5, Table 6-31.) Chapter 6 admits that the historical and future water budgets "are developed using different approaches, and are therefore not directly comparable with each other" and are not "based on a consistent approach." (GSP, p. 6-1.) A fundamental problem is that the USGS model has not yet been calibrated with reference to the historic data and thus the projection of the future water balance is not based on a calibrated model. (GSP, p. 6-1.) SGMA requires that the model be calibrated. (23 CCR § 358.18(c)(2), (3).)

2. The minimum threshold for reduction in storage is improperly based on uncalibrated model projection of 2070 sustainable yield and improperly uses the least conservative estimate of sustainable yield.

Citing the section §354.28(c)(2) definition of the minimum threshold for reduction of groundwater storage as "a total volume of groundwater that can be withdrawn from the subbasin without causing conditions that may lead to undesirable results," the GSP sets the minimum threshold for the reduction in groundwater storage as the "the future long-term sustainable yield of the Subbasin under reasonable climate change assumptions," which Chapter 6 identifies as 112,000 AFY. (GSP, p. 8-27.)

Use of the conservative estimate of Sustainable Yield is mandated by the level of uncertainty. SGMA provides that "sustainable management criteria and projects and

[1] Unaccountably, the historical sustainable yield is stated at 95,700 AFY in Table 6-31, but as 97,200 AFY in Table 6-21.

management actions shall be commensurate with the level of understanding of the basin setting, based on the level of uncertainty and data gaps." (23 CCR § 350.4(d).) The minimum thresholds for sustainability indicators must be "qualified by uncertainty in the understanding of the basin setting." (23 CCR § 354.28(b)(1).) Measurable objectives must also "be commensurate with levels of uncertainty." (23 CCR § 354.30(c).) The SVGBGSA must "take into account the level of uncertainty associated with the basin setting when developing projects or management actions." (23 CCR § 354.44(d).) And in deciding whether to approve the Plan, DWR must consider "whether sustainable management criteria and projects and management actions are commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Plan." (23 CCR § 354.4(b)(3).)

Despite the mandate for conservative assumptions to reflect uncertainty, the Plan relies on the *least* conservative estimate of sustainable yield, the highest, uncalibrated, black-box model output for the 2070 Sustainable Yield of 112,000 AFY – a figure produced from a model not made available to the public. The Plan should instead rely on the lower Historical Sustainable Yield of 95,700 AFY, a figure that is based on past historic data and the analysis in publicly available reports. The only rationale the GSP offers for its choice of the least conservative figure for Sustainable Yield is the stakeholder "preference" not to reduce their pumping:

> Public and stakeholder input on the significant and unreasonable conditions for groundwater storage suggested a preference for increasing groundwater storage, but not a preference for restricting average year pumping. Therefore, the minimum threshold is set at the long-term future sustainable yield of 112,000 AFY.

(GSP, section 8.7.2, p. 8-27.)

SMGA requires that the analysis, management actions, and projects in a GSP incorporate "best management practices" (BMPs) and that they be supported by "best available information" and "best available science." (See, e.g., 23 CCR, §§ 351(h),(i); 354.16; 354.18(e) 354.44(c); 355.4(b)(1), Stakeholder preferences may not preempt these considerations.

The GSP states that the sustainable yield "values in Table 6-31 are estimates only" and that the "sustainable yield value will be modified and updated as more data are collected and more analyses are performed." (GSP, section 6.10.5, p. xi.) Regardless whether the values are changed after further analysis, the GSP must observe SGMA's mandate to use conservative estimates in the face of uncertainty.

B. The minimum thresholds for groundwater levels and storage reduction are inconsistent with SGMA regulations because they fail to avoid the undesirable results for the seawater intrusion sustainability indicator.

SGMA requires that each minimum threshold must avoid *each* undesirable result because it requires that "basin conditions at each minimum threshold will avoid undesirable results for *each of* the sustainability indicators." (23 CCR § 354.28(b)(2), emphasis added.) For example, the groundwater level minimum threshold must be "supported by" the "[p]otential effects on *other* sustainability indicators." (23 CCR 354.28(c)(1)(B), emphasis added.) This means that each minimum threshold, especially

the groundwater level minimum threshold, must be coordinated to ensure that *all* undesirable results are avoided.

1. **The minimum threshold for groundwater levels, set at one foot above lowest historical groundwater levels, will not support the minimum threshold for seawater intrusion, set at existing line of seawater intrusion advance, because those groundwater levels will not halt seawater intrusion.**

Chapter 8 adopts the 2017 line of advance of seawater intrusion as the minimum threshold for seawater intrusion:

> The 2017 extent of the 500 mg/L chloride concentration isocontour as mapped by MCWRA is adopted as the seawater intrusion minimum threshold for both the 180- and 400-Foot aquifers.

(Section 8.8.2, p. 8-33.)

Because each minimum threshold must avoid each undesirable result, the groundwater level minimum thresholds should be set at the levels that have been determined to be sufficient to prevent seawater intrusion. These levels should be determined based on the most current modeling or groundwater levels that are sufficient to prevent seawater intrusion. If currently modeling is not available, then the 2013 modeling prepared by Geoscience for MCWRA should be used. Regardless, the groundwater levels must clearly be higher than sea level.

Section 8.6.2 sets a minimum threshold for groundwater elevations at one foot above the 2015 groundwater levels. (GSP, section 8.6.2.1, p. 8-9.) This proposed level is equal to the 1991-1992 groundwater level, which was the lowest historical level that occurred in the 1967-1998 climatic cycle. (Ibid; see also Chapter 8, Figure 8-1.) Figures 8-2 and 8-3 show that the proposed minimum groundwater levels *would be well below sea levels in the northern end of the Salinas Valley*. This is consistent with the MCWRA groundwater contour maps for 2015, which show that 2015 elevations were in fact well below sea level in the northern Salinas Valley.[2] Seawater intrusion accelerated in 2015.[3]

Section 8.6.3 sets a measurable objective for chronic lowering of groundwater levels that "represent groundwater elevations that are higher than the minimum thresholds" in order to "provide operational flexibility to ensure that the Subbasin can be managed sustainably." This level was set at the 2003 groundwater levels, representing "an average groundwater level from the relatively recent past." Figures 8-4 and 8-5 show that the proposed measurable objective for groundwater levels would be *well below sea levels in the northern end of the Salinas Valley*. Again, this is consistent with the MCWRA groundwater contour maps for 2003, which show that 2003 elevations were

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[2] Maps available at https://www.co.monterey.ca.us/home/showdocument?id=31284 and https://www.co.monterey.ca.us/home/showdocument?id=31286.

[3] MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01, October 2017, pp. 4-5, available at https://www.co.monterey.ca.us/home/showdocument?id=57394.

well below sea level in the northern Salinas Valley.[4] Seawater intrusion continued in 2003.[5]

Seawater intrusion occurred throughout the 1967-1998 climatic cycle and has continued to date. It is caused by groundwater levels that are too low to hold back seawater. In its 2013 study for MCWRA, Geoscience reported the historic rate of seawater intrusion in various time intervals.[6] Intrusion accelerated over the period 1965 to 1999.[7] It has recently accelerated again.[8] Indeed, seawater has continued to steadily advance in both the 180 and 400 foot aquifers through 2017 -- the most recent year that Monterey County released seawater data – and now persists within half a mile or closer of the Salinas city boundary.

Geoscience explained that "historical pumping has lowered ground water levels in both the 180-Foot and 400-Foot aquifer systems such that there is a landward hydraulic gradient which has caused extensive sea water intrusion."[9] The report explains that control of sea water intrusion requires achieving and maintaining "protective elevations," which are defined as "those groundwater elevations which will keep the fresh/salt water interface from migrating inland. *In the northern portion of the Salinas Valley these elevations need to be above sea level and the flow of ground water toward the coast*."[10] The report explains that Geoscience quantified the protective elevations necessary to halt seawater intrusion using the SVIGSM model.

Geoscience's report sets out these necessary protective elevations in Figures 9 and 10 for the 180-Foot and 400-Foot Aquifers. These protective elevations necessary to prevent seawater intrusion are from *10 to 30 feet above sea level in the northern Salinas Valley*.[11]

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[4] Maps available at https://www.co.monterey.ca.us/home/showdocument?id=19538 and https://www.co.monterey.ca.us/home/showdocument?id=19554.

[5] MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01, October 2017, pp. 4-5.

[6] Geoscience, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, 2013, available at https://www.co.monterey.ca.us/home/showdocument?id=19642.

[7] Id., p. 5, Table 2.

[8] MCWRA, Recommendations to Address the Expansion of Seawater Intrusion in the Salinas Valley Groundwater Basin, Special Reports Series 17-01, October 2017, pp. 4-5.

[9] Id., p. 4.

[10] Id., p. 6, emphasis added.

[11] Geoscience determined that in order to achieve these protective elevations, additional recharge or “in lieu recharge,” i.e., coastal pumping reductions made possible by moving surface water from the south to the north, would be required:

> The amount, location and timing of groundwater recharge (direct and in lieu), needed to maintain protective elevations and a seaward hydraulic gradient was determined using the SVIGSM. Based on model results, and assuming 2030 land use conditions, 12,000 acre-ft/year will be required from the SVWP Phase I facilities and 48,000 acre-ft/year will

The fact that existing groundwater levels are far from the levels required to prevent further seawater intrusion is readily apparent from the technical study on which the GSP relies for the historic water budget in Chapter 6.[12] That study establishes that as of 2013 there was a cumulative storage deficit in the Pressure Subbasin, an MCWRA management area that includes the 180/400 Foot Aquifer Subbasin and the Monterey Subbasin, amounting to 110,000 acre-feet.[13] That study concludes that this cumulative storage deficit would increase by 10,000 to 20,000 AFY under continued dry conditions. Since the drought did not end until 2019, the cumulative deficit has grown. The relation between cumulative deficit, insufficiently protective groundwater levels, and seawater intrusion is also evident from the rapid advances of seawater intrusion through 2017.

As Chapter 8 admits in section 8.6.2.3, "the GSP must describe the relationship between the selected minimum threshold and minimum thresholds for other sustainability indicators (e.g., describe how a water level minimum threshold would not trigger an undesirable result for land subsidence)." (GSP, p. 8-17.) Chapter 8 discusses the relationship of seawater intrusion and the minimum threshold for groundwater levels as follows:

> Seawater intrusion. A significant and unreasonable condition for seawater intrusion is seawater intrusion in excess of the extent delineated by MCWRA in 2017. Lower groundwater elevations, particularly in the 180-and 400-Foot Aquifers, could cause seawater to advance inland. The groundwater elevation minimum thresholds are set at or above existing groundwater elevations. Therefore, the groundwater elevation minimum thresholds will not exacerbate, and may help control, seawater intrusion.

(GSP, section 8.6.2.3, p. 8-17.) The discussion is not accurate. The proposed groundwater minimum thresholds would cause seawater to advance, would exacerbate existing conditions, and would not help control seawater intrusion. The fact that the minimum thresholds are proposed to be one foot higher than the lowest historical groundwater elevations or that the measurable objectives are based on average conditions is insufficient.[14] Because historic groundwater levels have caused seawater

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> be required from the SVWP Phase II facilities. Given the hydrologic variability in the Salinas Valley area, in order to supply a total of 60,000 acre-ft/year (on average), to the SVWP, it will be necessary to have the right to divert up to 135,00 acre-ft/year from the Salinas River.

Id., p. 11.

[12] Brown and Caldwell, *State of the Salinas River Groundwater Basin*, January 2015, available at https://www.co.monterey.ca.us/home/showdocument?id=19586.

[13] Id., p. ES-11.

[14] The Chapter 8 discussion in sections 8.6.2.2 appears to justify the minimum thresholds and measurable objectives based on the percentage of wells that would still have 25 feet of water. However, setting minimum thresholds and measurable objectives for groundwater levels at this level would permit continued seawater intrusion because that level is demonstrably insufficient to prevent seawater intrusion.

intrusion, the minimum thresholds and measurable objectives cannot simply be based on historic minimums or averages.

Chapter 8 also discusses the relation of groundwater elevation minimum thresholds with changes in groundwater storage. That discussion concludes that because the proposed minimum thresholds are set above existing groundwater levels, they "will not result in long term significant or unreasonable change in groundwater storage." (GSP, section 8.6.2.3, p. 8-17.) This discussion is also not accurate. The GSP concludes that there has been an average loss of storage of 2,100 AFY during the historical period. (GSP, section 6.10.5, Table 6-31, page xii.) This conclusion is consistent with the calculated 2,000 average loss of storage in the Pressure Subarea during the period from 1944 to 2013.[15] If the *average* historic groundwater elevations are correlated with the continuous depletion of the aquifer, setting the minimum groundwater elevations at the *lowest* historic level cannot support maintenance of aquifer storage.

2. **The minimum threshold for reduction in storage, set at the future long-term sustainable yield, will not support the minimum threshold for seawater intrusion, because halting seawater intrusion requires *replacement of depleted groundwater storage* by temporarily reducing extractions to below the sustainable yield.**

As discussed above, the GSP sets the minimum threshold for storage reduction at 112,000 AFY, representing the "future long-term sustainable yield of the Subbasin under reasonable climate change assumption." (GSP, section 8.7.2, p. 8-27.) Also as discussed above, until SVGBGSA has a calibrated groundwater model that reconciles historic and modeled future conditions, it should adopt the most conservative estimate of the long-term sustainable yield for this minimum threshold, i.e., the 95,700 AFY estimated using the historic model. (GSP Table 6-31, p. xii.)

But even a conservative estimate of *long-term* sustainable yield is not an adequate basis to set the minimum threshold for storage depletion because the GSP proposes to use that minimum threshold as a target for sustainable pumping. *Until seawater intrusion is in fact halted, the GSP must adopt an even lower minimum threshold for annual storage reductions in order to replace the cumulative storage deficits and to restore the protective groundwater elevations that will halt seawater intrusion*. As noted in the previous section, there is an accumulated storage deficit in excess of 100,000 AF in the Pressure Subarea, which contains the 180/400-Foot Aquifer Subbasin.

In sum, adopting a conservative estimate of sustainable yield might be sufficient to maintain protective groundwater elevations *once those elevations are attained*, but the continued pumping of the long-term the sustainable yield will not *restore* protective groundwater elevations. The cumulative storage deficit from prior years of overdraft conditions must first be addressed through a program of temporary but substantial reductions in pumping to a level *below* long-term sustainable yield in order to reestablish protective groundwater elevations.

[15] Brown and Caldwell, *State of the Salinas River Groundwater Basin,* 2016, p. Table ES-3, available at https://www.co.monterey.ca.us/home/showdocument?id=19586.

C. The GSP proposes inconsistent programs and management actions to attain the minimum threshold for seawater intrusion, and these remedies would not be timely.

The GSP admits that continued pumping of the long-term sustainable yield is inconsistent with replacing depleted groundwater storage to attain protective elevations. However, the GSP improperly defers the needed pumping reductions to some indefinite time in the future *after* the SVGBGSA has determined the efficacy of proposed projects and management actions:

> While the sustainable yield calculated in chapter 6 assumes zero seawater intrusion, *it does not account for temporary pumping reductions that may be necessary to achieve the higher groundwater levels that help stop seawater intrusion*. Because the minimum thresholds represent long-term management criteria, any temporary pumping reductions needed to raise groundwater elevations are not explicitly incorporated into the thresholds. However, the SVBGSA recognizes that, dependent on the success of various proposed projects and management actions, there may be a number of years when pumping must be held below the minimum threshold to achieve necessary rises in groundwater elevation. *The actual amount of allowable pumping from the Subbasin will be adjusted in the future based on the success of projects designed to halt seawater intrusion*.

(GSP, section 8.7.2, pp. 8-27 to 8-28, emphasis added.) In short, the Plan defers the "temporary pumping reductions" to reestablish protective groundwater elevations even while admitting that these pumping reductions are essential.

The deferral would be for an indeterminate number of years. As discussed in section I.F below, the GSP's implementation chapter postpones even the *commitment* to projects and management actions for the critically overdrafted 180/400-Foot Aquifer Subbasin for two years to coordinate them with the GSP for the rest of the Basin. Chapter 9 indicates that the time required to implement projects and management actions *after* that commitment would run from 2 to 9+ years, although the GSP fails to specify the actual project startup dates. the proposal in Section 8.7.2 to postpone temporary pumping reductions until the GSA first determines whether the long-delayed projects and management actions are effective would result in many more years of seawater intrusion.

Permitting the advancement of the seawater intrusion front for an indeterminate period would be inconsistent with the proposed minimum threshold for seawater intrusion, which requires halting it at the 2017 line of advancement. The fact that SGMA allows SVGBGSA 20 years to attain overall sustainability cannot cure the failure to take immediate action to address seawater intrusion because *the Plan provides no evidence that seawater intrusion can be reversed* once it has occurred. Indeed, the Plan does not provide any discussion of the issue. If reversal of seawater intrusion beyond the 2017 line of advancement were possible at all, it may require heroic measures that are not discussed in the Plan and that would not have been necessary if the intrusion were halted at the 2017 line. In the absence of any discussion of this question, there is no evidence that the Plan can in fact meet the seawater intrusion minimum threshold.

Even though Chapter 8 states that temporary pumping reductions are needed to meet the seawater intrusion minimum threshold, Chapter 9 proposes an entirely inconsistent approach. In Appendix 11E, comment 8-78 asks why the groundwater elevation measurable objectives were not set to stop seawater intrusion. The "DW Response" is that "intrusion could be stopped by pumping water out as well as by raising water levels." The response in effect argues that the Plan is *not* committed to the temporary reductions in pumping to restore protective elevations that are mentioned in section 8.7.2, but is instead committed to the "Seawater Intrusion Pumping Barrier" identified as "Preferred Project 6." (GSP, section 9.4.3.7, pp. 9-50 to 9-52.)

This $100 million+ capital project calls for 18 barrier wells continuously pumping 30,000 AFY along an 8.5 mile stretch of the coast. There is no indication that the project has been determined to be feasible, either technically, environmentally, or financially. For example, it is not clear that the Proposition 218 beneficiaries of the project would be willing or able to shoulder its cost. And, the Plan provides no evidence that there is a beneficial use for 30,000 AF of brackish water removed from the basin annually or, if not, that the water could be disposed of somewhere without unacceptable environmental impacts.

Furthermore, unless immediate pumping reductions were implemented to restore protective groundwater elevations, seawater intrusion would continue until the Seawater Intrusion Pumping Barrier is implemented, a period of time that section 9.4.3.7.5 identifies as at least 5 years from project commitment, without allowing any time for the required Proposition 218 process. During that time seawater intrusion would continue to advance past the 2017 line of advancement, which is identified as the minimum threshold. That 2017 line of advancement is already more than six miles inland.[16] The Plan provides no evidence that the proposed Seawater Intrusion Pumping Barrier along the coast could reverse seawater intrusion that has occurred more than six miles inland.

Furthermore, the inclusion of the Seawater Intrusion Pumping Barrier in the list of preferred projects begs the question to be addressed by the "Seawater Intrusion Working Group," which is supposed to be convened as "Priority Management Action 6." (GSP, section 9.3.7, pp. 9-20 to 9-21.) This Working Group is supposed to determine "an agreed approach for managing seawater intrusion." (Id., p. 9-21.) The implication is that there *is in fact no agreed approach* and that the Seawater Intrusion Pumping Barrier is at best an uncertain remedy.

Finally, Priority Management Action 6, the Seawater Intrusion Working Group, is in essence a proposal to *postpone* the development of management actions and projects to halt seawater intrusion. This violates SGMA's requirement that the *Plan itself* identify the management actions and projects that will mitigate overdraft and provide specified information about these management actions and projects. (23 CCR § 354.44.) For example, SGMA requires that the Plan identify the permits and regulatory process, the status and timetable, and the expected benefits of each project and management action and explain how it will be accomplished. (23 CCR § 354.44(b).) A plan that defers this information does not comply with SGMA because it is incomplete. DWR certainly cannot

[16] MCWRA, Presentation to Special Joint Meeting, 2017 Salinas Valley Groundwater Level Contours & Seawater intrusion Maps, April 24, 2018, available at https://www.co.monterey.ca.us/home/showdocument?id=63777.

find that a plan that defers the identification of management actions and projects by delegating this task to a working group is “sufficiently detailed,” or that it will in fact attain sustainability, or that it meets SGMA’s plan evaluation criteria,. (23 CCR § 350.4(b), (f); § 355.4.) Nor does the delegation of the approach to mitigation of seawater intrusion to a working group meet SGMA’s public participation requirements. (23 CCR § 354.10.)

The GSP’s multiple, inconsistent, incomplete, and deferred approaches to meeting the seawater intrusion minimum threshold – eventual temporary pumping reductions, a long-delayed $100+ million pumping barrier, or some eventual “agreed approach” from the Working Group – renders the GSP uncertain and inadequate as a plan.

D. The Plan fails to include immediate pumping reductions, which are required in order to attain the identified minimum threshold for seawater intrusion.

In its October, 2019 meeting to consider policy choices, the SVGBGSA Board discussed the possibility of establishing a buffer to permit further advance of seawater intrusion. However, SVGBGSA does not have the option to allow seawater intrusion to move further inland unless it is prepared to permit the further loss of the land overlying newly seawater-intruded portions of the aquifer for groundwater-based activity, e.g., agriculture. As noted, the Plan does not present any evidence that seawater intrusion can feasibly be reversed; and if it cannot be feasibly reversed, this loss of productive land may be permanent.

If the SVGBGSA were to adopt a minimum threshold for seawater intrusion that permits any further advancement, it would also have to adopt interim milestones in increments of five years, as required by 23 CCR § 354.30. Thus, SVGBGSA would have to decide how much longer it going to let seawater intrusion advance (if it adopts a time-based "buffer") and/or whose land it would allow to be subjected to seawater intrusion (if it adopts a spatial "buffer"). Because the Board has not made this choice, it must adopt a plan that will in fact halt seawater intrusion at the 2017 line of advancement.

The only apparently feasible option to halt seawater intrusion at the 2017 line is immediate pumping reductions. The Plan does not identify pumping reductions that would adequately mitigate overdraft as a management action, even though the regulations require this:

> If overdraft conditions are identified through the analysis required by Section 354.18, *the Plan shall describe* projects or management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft.

(23 CCR § 354.44(b)(2).) Proposed priority management action number 4 calls for an *eventual* pumping ban in the CSIP area, but only after such time as replacement water projects are implemented. Furthermore, the Plan fails to include the required quantification of the demand reduction this management action would attain. (GSP, section 9.3.9, pp. 9-16 to 9-18.) Proposed priority management actions number 1 and 2 *might* result in pumping reductions through voluntary land retirements or BMPs, but these reductions are neither assured nor quantified. (GSP, section 9.3.2, 9.3.3, pp. 9-10 to 9-14.)

More problematically, the Plan does not quantify the demand reduction that is *needed* to halt seawater intrusion at the 2017 line of advancement. As discussed, there is available modeling that has determined that a pumping reduction of 60,000 AFY in coastal pumping would be required in order to reestablish protective elevations.[17] This modeling should be updated as necessary in order to specify a management action that would mandate the needed immediate coastal pumping reductions to halt seawater intrusion.

E. The Plan fails to mitigate overdraft: the water charges framework cannot reliably mitigate overdraft because pumping reductions remain voluntary.

1. SGMA requires that a GSP identify projects or management actions, including demand reduction or other methods, that would be sufficient to mitigate overdraft.

Mitigation of overdraft conditions is central to meeting the minimum thresholds for groundwater levels, storage reduction, and seawater intrusion. SGMA requires quantification of the "demand reduction or other methods" needed to mitigate overdraft. (23 CCR § 354.44(b)(2).) *Simply put, the SVGBGSA must either reduce pumping or take management actions and implement projects that would generate new water.*

The Plan includes projects, management actions, and an overarching "water charges framework" that are supposed to mitigate overdraft conditions and attain sustainability. (GSP, Chapter 9; see section 9.6, p. 9-85.) However, the Plan does not propose the one obvious and effective management action to ensure that pumping does not exceed sustainable yield: mandatory limits on pumping through water allocations.

As discussed in section I.D above, immediate pumping reductions are needed to attain the minimum threshold for seawater intrusion. But even if pumping reductions were not needed immediately, the Plan is not designed to ensure that pumping remains within the long-term sustainable yield of the 180/400-Foot Aquifer Subbasin. As discussed below, the Plan fails to implement an enforceable or quantifiable demand reduction and fails to show that the management actions and projects will effectively reduce demand or augment supply to avoid overdraft conditions.

2. Contrary to the Plan's claim, the water charges framework would not reduce demand or increase supply sufficiently to mitigate overdraft

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[17] Geoscience determined that in order to achieve these protective elevations, additional recharge or "in lieu recharge," i.e., coastal pumping reductions made possible by moving water from the south to the north, would be required:

> The amount, location and timing of groundwater recharge (direct and in lieu), needed to maintain protective elevations and a seaward hydraulic gradient was determined using the SVIGSM. Based on model results, and assuming 2030 land use conditions, 12,000 acre-ft/year will be required from the SVWP Phase I facilities and 48,000 acre-ft/year will be required from the SVWP Phase II facilities. Given the hydrologic variability in the Salinas Valley area, in order to supply a total of 60,000 acre-ft/year (on average), to the SVWP, it will be necessary to have the right to divert up to 135,00 acre-ft/year from the Salinas River.

Geoscience, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, 2013, p. 11.

because it relies on voluntary pumping reductions and permits pumping in excess of sustainable pumping allocations.

The Plan proposes an overarching water charges framework *that it claims will mitigate overdraft*:

> The water charges framework is specifically designed to promote pumping reductions. Should adequate pumping reductions not be achieved to mitigate all overdraft, funds collected through the water charges framework will support recharge of imported water, either through direct recharge or in-lieu means. Therefore, the water charges framework in association with the projects and management actions listed in this chapter will mitigate overdraft through a combination of pumping reduction and enhanced recharge.

(GSP, section 9.6, p. 9-85.)

The water charges framework is based on based on different fees for pumping at three different levels. It distinguishes three levels of fees:

- A "regulatory" fee for pumping a user's "sustainable pumping allowance,"
- A "surcharge" for a user's "transitional pumping allowance," where the transitional pumping allowance is based initially on current pumping and then declines to zero over a period of time, and
- A "supplementary fee" for "supplemental pumping," i.e., pumping in excess of the sustainable and transitional allowance.

This water charge framework is "designed to achieve" two objectives: "to promote voluntary pumping reductions" and "to fund water supply projects." (Chapter 9, § 9.2, p. 9-2.)

However, there is no evidence that the fees can or will be set at a level that attains sustainability as long as pumping reductions remain voluntary. A purely voluntary scheme can only work to attain sustainability if (1) the fees are set at a level that pays for water projects that make additional water available in excess of sustainable yield ("new water") and (2) that fee level is just high enough to incent users to limit their cumulative pumping to an amount equal to current sustainable yield plus that new water. Setting this Goldilocks fee would require SVGBGSA to know the incremental cost of new water from a suite of potential projects and management actions, to know the elasticity of demand, and to know the point at which the marginal cost of new water equals its marginal benefit to users.

In short, reliance on voluntary reductions in response to price signals would not work unless the SVGBGSA has a lot more information to set water prices than it can possibly generate before this Plan must be implemented.

Furthermore, the Plan admits that most of the details of the water charges framework must be deferred due to lack of information. (GSP, section 9.2.7, "Details to be Developed.") For example, there is no estimate of costs and benefits per acre/foot of new water for some of the management actions. There is no allocation of the estimated Basin-wide benefits of the proposed management actions and projects to users of the 180/400- Foot Aquifer Subbasin. There is no information as to the elasticity of demand

that would enable the SVGBGSA to determine what feasible projects and management actions, priced to users at an equitably determined cost per acre/foot, should be implemented in order to satisfy demand. However, if pumping reductions remain voluntary, establishing the supplementary charges for new water that would limit pumping to sustainable levels would require this cost/benefit information and a determination as to when the supplementary water charges will become so high that users will not be willing to buy more water.

Development of the water charge framework will also require critical compromises about technical matters and benefit allocation among affected parties, with vastly different interests by subbasin and by the type of user. This information will not be available by 2020 or perhaps for many years thereafter.

In sum, there is no prospect to get to an agreement, especially any time soon, on the amount of a supplementary water charge that would pay for needed projects and induce users to keep total pumping within the level of sustainable yield plus new water. Even if the SVGBGSA can determine the precise cost per acre/foot of new water, it is unlikely to know the point at which the benefits and costs of that next acre-foot of new water are equal. As long as pumping reductions remain voluntary, there is a significant probability that pumping will exceed sustainable yield.

Accordingly, as a practical matter, the Plan cannot rely on voluntary pumping reductions to ensure that pumping does not exceed sustainable yield. There is insufficient information to develop price signals as an effective incentive for voluntary pumping reductions, and the water charges framework is too uncertain to meet SGMA's requirements. (23 CCR § 354.44(c), (d) ["projects and management actions shall be supported by best available information and best available science;" and "agency shall take into account the level of uncertainty with the basin setting when developing projects and management actions"].)

3. Mitigation of overdraft requires mandatory pumping restrictions that limit total pumping to current sustainable yield plus newly produced water.

In light of the fact that the SVGBGSA cannot determine prices that would attain the needed voluntary pumping reductions, the obvious and essential way to mitigate overdraft is through mandatory reductions. The SVGBGSA must determine each user's share of the sustainable yield, and then mandate that pumping may not exceed this level. There are many methods to allocate shares of sustainable yield.[18]

Furthermore, as LandWatch has proposed in previous comments on a draft of Chapter 9, the SVGBGSA must restrict pumping in excess of the user's allowance of sustainable yield unless and until there is an actual committed, funded management action or project that will deliver new water. When new water is produced, the SVGBGSA should continue to restrict total pumping to the total of current sustainable yield plus that new water. To

[18] Environmental Defense Fund and New Current Water and Land, LLC, Groundwater Pumping Allocations under California's Sustainable Groundwater Management Act, July 2018, available at https://www.edf.org/sites/default/files/documents/edf_california_sgma_allocations.pdf.

ensure this, when a management action or project is committed and funded, the SVGBGSA could distribute the new water by selling specific allowances of the new water to users.[19]

If demand for new water exceeds supply, the SVGBGSA could allocate the new water allowances through several means. For example, it could sell the new water by auction, e.g., a French auction in which the supply is sold at the lowest bid price above the cost of production that would clear the market. Alternatively, the right to purchase new water at the cost of production could be assigned to users according to some pre-determined formula, e.g. pro-rata, based on their initial allowances of the current sustainable yield.[20] There are other equitable ways to allocate new water. Regardless, the objective of the allocation system should be to recover at least its production cost, to dispose of all of the new water, and to prevent pumping in excess of the sustainable yield plus the amount of new water.

4. The Plan fails to provide the mandated quantification of the mitigation of overdraft: it fails to quantify the benefits of management actions, it assigns all of the Basin-wide project benefits to the 180/400- Foot Aquifer Subbasin, it double counts some benefits, and it contains an arithmetic error.

SGMA requires that if overdraft conditions are identified in the Water Budget, the Plan must "describe projects and management actions, including a quantification of demand reduction or other methods, for the mitigation of overdraft." (23 CCR § 354.44(b)(2).) Section 9.6 purports to provide this quantification. However, the quantification has four flaws that must be corrected.

First, Section 9.6 fails to quantify the benefits of management actions. SGMA mandates quantification of the benefits of projects *and management actions*. (23 CCR § 354.44(b)(2).) The discussion in Section 9.6 and Table 9-5 address only the benefits of proposed projects, based on the estimated quantification of benefits of each proposed project in the discussion of projects in Section 9.4. There are no such quantified estimates of the benefits of the proposed management actions in Section 9.3. It is likely that the benefits of some of the proposed management actions could in fact be estimated. For example, the benefit of a pumping ban in the CSIP area would presumably be equal to current pumping in that area, which should be ascertainable.

Unless the SVGBGSA is prepared to supply at least an estimate of the benefits of proposed management actions, it is not clear that there is adequate evidence that they would have any meaningful or reliable benefits or that there is any way to evaluate those benefits, as required by 23 CCR § 354.44(b)(5). For example, the benefits of reservoir

[19] A management action or project should not be deemed funded and committed until it has been approved by the implementing agency and until all needed funding is in place, including fee ordinances and Proposition 218 votes as needed.

[20] Users with an allowance of the existing sustainable water supply or an allowance of new water could be permitted to sell an allowance to other users. This secondary market in water allowances would ensure the water goes to the most valued use and would establish price signals that would inform SVGBGSA of users' willingness to pay for future new water supply projects.

reoperations may be too speculative to include at this point in light of the federal agency revocation of the Biological Opinion controlling environmental flows and the unfunded obligation for dam safety repairs, estimated to cost $145 million.[21] (GSP, section 9.3.4, pp. 9-14 to 9-16, Priority Management Action 3: Reservoir Reoperation.").

Second, Chapter 9 states that the proposed management actions and projects "constitute an integrated management program for the entire Valley," not just the 180/400 Aquifer Subbasin. (Chapter 9, sections 9.3.1, 9.4.2.) Despite this, Section 9.6 only discloses the overdraft for the 180/400 Aquifer Subbasin and then concludes that the *benefits of projects intended to mitigate the entire Basin's overdraft* is sufficient because it is greater than the overdraft in the 180/400 Foot Aquifer Subbasin. It is erroneous to allocate the entire benefit of Basin-wide mitigation to a single subbasin.

Third, Table 5 double counts the benefits of the proposed projects #2, 3, 4, and 5, all of which are intended to "work together to improve and expand the performance of the CSIP system" and are identified as "part of an integrated CSIP strategy." (Chapter 9, page 31, "CSIP Projects."). For example, the discussion of the benefits of Project # 5, Maximize Existing SRDF Diversion, states that the "estimated project yield is 11,600 AF/year. *The yield for this project is the same yield that is identified in Project #2 and a portion of the yield identified in Priority Project #3.*" (GSP, section 9.4.3.6.2, p. 9-49, emphasis added.) Despite this, Table 9-5 lists 11,600 AF/year as *additional* potential yield for Project #5, over and above the yield for Projects # 2 and #3. (GSP, Section 9.6, Table 9-5, p. 9-86.)

Fourth, Table 9-5 is not added correctly. The "total" for Table 9-5 is stated as "-58,201." However, the sum of the elements listed in the table is 40,800 acre-feet per year of potential water available for mitigating overdraft. Eliminating the double counted 11,600 acre-feet per year for Project # 5, the total would be 29,200 AF/year.

F. The implementation plan improperly delays substantive action for two years in order to accommodate the implementation schedule for the GSP for the rest of the Basin, which is not *critically* overdrafted.

SGMA requires more urgent action for *critically* overdrafted basins than for other overdrafted basins: plans for critically overdrafted basins are due two years sooner than plans for other overdrafted basins. The Chapter 10 GSP Implementation proposal fails to recognize this urgency because it defers substantive action for the critically overdrafted 180/400 Foot Aquifer Subbasin until the SVGBGSA is prepared to implement the GSP for the rest of the Salinas Valley Groundwater Basin (SVGB). Because the remainder of the Basin is merely overdrafted rather than critically overdrafted, its GSP is not due until 2022.

In particular, section 10.7 postpones implementation of projects and management actions in order to coordinate with the timetable for the rest of the Basin:

[21] Monterey Herald, "Reservoirs bond measure gets water agency support," Oct. 23, 2019, available at https://www.montereyherald.com/2019/10/23/reservoirs-bond-measure-gets-water-agency-support/.

> The projects and management actions identified in Chapter 9 are sufficient for attaining sustainability in the 180/400-Foot Aquifer Subbasin as well as the other five subbasins in the Salinas Valley. The projects and actions will be implemented in a coordinated fashion across the entire Salinas Valley to ensure Valley-wide sustainability. Because five of the subbasins in the Valley will not complete GSPs until January 31, 2022, many of the projects and actions will be implemented only after this time.

(GSP, section 10.7, p. 10-10.) Indeed, the only activities proposed for projects and management actions prior to completion of the GSP for the rest of the SVGB in 2023 are some water rights applications, cost refinement, preliminary design ("if projects adequately defined"), and some initiation of environmental permitting. (GSP section 10.7, p. 10-10.)

Figure 10-1, "General Schedule of 5-year Startup Plan," represents that the SVGBGSA will "Implement Prioritized Projects" between 2023 and 2025. (GSP, section 10-9, p. 10-15.) However, the implication that the nine "Preferred" projects identified in Chapter 9 will actually start up in 2026 is inconsistent with the detailed project timelines in Chapter 9, which call for 2 to 9+ years to implement projects *after the SVGBGSA has committed itself to them*.

Furthermore, there is no reason to suppose that the SVGBGSA can or will commit itself to the basin-wide projects in 2023, the moment the SVGBGSA submits the GSP for the rest of the SVGB. First, DWR may not approve the Basin-wide GSP for several years, and the SVGBGSA may not be able to commit to a Basin-wide project without an approved Basin-wide GSP.

Second, many of the projects will require complex Proposition 218 compliance, undertaken only *after* SVGBGSA decides to pursue the projects, in order to determine whether fees can be assessed to actually build them.[22] (Water Code, § 10730.2(c)). The Proposition 218 compliance process, requiring engineering studies and benefit allocations based on a completed design and hydrological assessment, followed by balloting and protest procedures, may add years to each major project. The SVGBGSA cannot actually commit itself to commence a project until it has confirmed that it may make assessments to finance the project through a completed Proposition 218 process. The implementation schedule does not include any time for this critical process.

Finally, section 10.2 defers the implementation of a financing method for projects and management actions to coordinate with the timetable for financing for the rest of the Basin:

> Details of the GSP implementing finance framework for all six subbasins will be developed during the first three years of this GSP's implementation through a

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[22] The GSP identifies a proposed "Groundwater Sustainability Fee" (also termed a "regulatory fee" and a "Tier 1 – Sustainable Pumping Charge") for pumping a "Sustainable allowance" and an "interim base fee" pending completion of the "GSP financing framework." (GSP, sections 9.2 and 10.2, pp. 9-1 to 9-3, 10-4 to 10-5.) However, before Proposition 218 compliance, those fees could not be used for projects but only for the activities related to developing and managing the GSP. (Compare Water Code, §§ 10730 and 10730.2.)

> facilitated, Valley-wide process. This process will be similar to the successful facilitated process that resulted in the SVBGSA serving as the GSA for some or all parts of all six subbasins. The result of this facilitated process will be an agreement on the financing method approved by the SVBGSA. The facilitation will be complete by January 31, 2023, and the financing method will be implemented in all six subbasins immediately following.

(GSP section 10.2, pp. 10-4 to 10-5.) Here, the Plan is apparently describing the adoption of a financing "framework" or "method," *not an actual financing plan or capital budget*. As noted, the actual budget and financing plan will require the completion of Proposition 218 processes for the projects.

In effect, the proposed GSP Implementation improperly treats the actual management of the critically overdrafted 180/400 Foot Aquifer Subbasin as if it were on the same timetable as the rest of the SVGB. This does not meet the mandate of SGMA, which requires more than a plan by 2020. SGMA requires that critically overdrafted basins "shall be *managed* under a groundwater sustainability plan" by January 31, 2020. (Water Code, § 10720.7(a)(1), emphasis added.)

If the development and financing of projects must await completion of the GSP for the remainder of the SVGB, and because substantial delay will inevitably be required to negotiate financing and develop projects, the SVGBGSA should implement all feasible interim measures to manage the 180/400 Foot Aquifer Subbasin pending the implementation of basin-wide projects and financing. As discussed in section I.D above and in section I.H below, that must include immediate pumping reductions.

G. The Plan fails to identify project startup dates.

The Plan identifies various timelines for the nine identified priority water projects in Chapter 9 that include necessary actions in a necessary sequence, such as studies and preliminary engineering, obtaining agreements and right of way, CEQA, permitting, design, bid and construction, and startup. Some projects might be implemented in 2 years from commitment; but most are projected to take from 5 to 9 years from commitment to startup. As noted above, Chapters 9 and 10 do not include estimates of the additional time required for Proposition 218 compliance.

Chapter 9 does not disclose when the timelines for each project would commence running, so it is impossible to determine when these projects would actually deliver results. The Chapter 10 implementation schedule proposes that no projects commence "implementation" before the adoption of the GSP for the remainder of the SVGB in 2023 so that the projects can be coordinated on a basin-wide basis. However, Chapter 10 does not even purport to identify project start up dates. This violates SGMA. (23 CCR, § 354.44(b)(2).) As discussed above, contrary to Figure 10-1 it is not reasonable to assume that the SVGBGSA will be able to "implement" all nine projects between 2023 and 2025. (GSP, p. 10-15.)

Chapter 10 should be revised to reflect realistic timelines for each project and management action that provide a best current estimate of startup that considers all necessary activity before startup, including the Proposition 218 process.

H. The Plan fails to impose pumping restrictions pending startup of new water projects. Interim pumping restrictions are needed in order to restore and maintain the protective groundwater elevations to attain the minimum threshold for seawater intrusion.

The development, permitting, and financing of water projects to replace reliance on current levels of groundwater pumping will take years. It is unlikely that any actual or substantial results toward halting seawater intrusion can be expected from the proposed projects and management actions by 2025, when Figure 10-1 indicates that the projects will be implemented. Projects may not deliver any substantial results before 2030. Interim management measures are required pending completion of projects. Interim measures must either provide additional water supplies or require mandatory pumping restrictions that will (1) actually ensure that pumping remains within the sustainable yield and (2) replace the cumulative storage deficit in order to restore groundwater levels to protective elevations.

Immediate pumping restrictions are feasible and would not require extensive data acquisition.

Pumping restrictions are legally feasible because they could be imposed based on the regulatory authority of GSAs to "control groundwater extractions by regulating, limiting, or suspending extractions from individual groundwater wells or extractions from groundwater wells in the aggregate, construction of new groundwater wells, enlargement of existing groundwater wells, or reactivation of abandoned groundwater wells, or otherwise establishing groundwater extraction allocations." (Water Code, § 10726.4(a)(2).)

SVGBGSA could adopt pumping restrictions much more quickly than it could actually complete a project. In particular, SVGBGSA would not need to complete the proposed three-year negotiation of a water charge framework and would not need to conduct a potentially multi-year Proposition 218 process. And it is likely that pumping restrictions would be exempt from CEQA as a measure to protect natural resources and the environment. (14 CCR §§ 15307, 15308.) And if the SVGBGSA could not or would not adopt needed pumping restrictions through such a CEQA exemption, then the SWRCB could do so under a statutory exemption. (Water Code, § 10736.2.)

Pumping restrictions could be imposed on the basis of readily available information. For example, the Brown and Caldwell report has already been used to in Chapter 6 to identify the historic sustainable yield of 95,700 AFY. (GSP, Table 6-31, p. xii.) The Brown and Caldwell Report also provides an estimate of the cumulative storage deficit, which should be retired through pumping reductions. In its 2013 study for MCWRA, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, Geoscience quantified the needed reductions in groundwater pumping (via in lieu recharge) to control seawater intrusion in the northern Salinas Valley.[23]

Although more precise data may eventually be available to closely calibrate the needed pumping reductions, there is no reason not to estimate and implement needed

[23] Geoscience, Protective Elevations to Control Seawater Intrusion in the Salinas Valley, 2013, p. 11.

reductions in pumping immediately. *There is simply no question that some pumping reductions are essential to halt seawater intrusion.*

Again, the only rationale advanced in the GSP for avoiding a pumping restriction is that stakeholders did not express a "preference for restricting average year pumping." (GSP, section 8.7.2, p. 8-27.) SGMA neither requires nor permits the SVGBGSA to honor a mere preference when that precludes meeting the mandates to meet the minimum thresholds, including the minimum threshold for seawater intrusion.

The GSP already proposes some pumping restrictions in the form of an immediate moratorium on new wells in the Deep Aquifer and an eventual restriction of pumping in the CSIP areas. (GSP, sections 9.3.5 and 9.3.6, pp. 9-16 to 9-20.) There is no reason that the GSP should not also address the need for immediate measures to address seawater intrusion.

Section II: The GSP should be revised.

Set forth in this section II are suggestions to improve the Plan.

A. Requested revisions to Chapter 6

1. Assumptions regarding efficacy of future projects and management actions to address seawater intrusion in the projected future sustainable yield should be spelled out.

We concur with Thomas Virsik's concerns about the projected future sustainable yield. (June 4, 2019 letter from Thomas Virsik to the Planning Committee.) In particular, Chapter 6 does not explain its assumption that seawater intrusion will be reduced from 10,500 AFY to 3,500 AFY by 2030, despite an increase in pumping and an increase in the change in storage. If this assumption is based on the assumed efficacy of existing or future management actions and projects, then Chapter 6 should identify them and the basis for their assumed efficacy.

Future operations of existing projects may in fact be subject to substantial changes. For example, Chapter 6 states that the modeling of the projected future water budget assumes "the current approach to reservoir management taken by MCWRA." (GSP, section 6.10.1.2, p. iv.) However, it is not clear that this assumption is warranted in light of the withdrawal of NOAA's Biological Opinion for the Salinas Valley Water Project on February 20, 2019. Or for example, it is not clear whether and how the projected future water budget reflects the recent actions by the County to restrict pumping in the Area of Impact within the 180/400 Subbasin.[24] The fact that the model projects that net pumping in 2030 and 2070 will be substantially *greater* than historical pumping suggests that the

[24] Monterey County, Urgency Ordinance # 5302, available at https://www.co.monterey.ca.us/government/departments-a-h/health/environmental-health/wells/interim-urgency-ordinance-5302.

model assumes that the County's recent well moratorium in portions of the 180/400 Subbasin will not have any lasting effect on pumping amounts.

The purpose of the water budget is to inform decisions about what projects and management actions the SVGBGSA should implement to control undesirable effects, including seawater intrusion. Assuming a partial solution in the projected future water budget is unjustified unless the projects or management actions responsible for that partial solution are (1) outside the control of the SVGBGSA and (2) certain to be implemented by other parties. If projects or management actions responsible for that partial solution are within the control of the SVGBGSA, then they should be weighed against SVGBGSA's *other* options rather than being hard-wired into the water budget. If projects or management actions responsible for that partial solution are uncertain, then their uncertainty should be disclosed.

2. **Double counting of water withdrawals should be resolved**.

A number of previous comments have objected that the water budget overstates historic pumping, and therefore overstates future sustainable yield, because the historic data double counts groundwater pumping as surface water diversions. The Plan admits this problem. (GSP, section 8.11.2.1, p. 8-64.) In a June 18, 2019 letter, Thomas Virsik proposed a relatively straightforward method to identify or at least estimate this double counting by identifying identical extraction numbers in the eWRIMS data and the MCWRA groundwater pumping submissions. Resolution of double counting may materially affect the sustainable yield calculation in the historic water budget, and can only tend to reduce it. Conservative management under uncertainty requires that, before the GSA relies on the historic sustainable yield calculation, it should at least estimate this potential error and reduce the historic sustainable yield calculation by that estimate.

Chapter 6 states that the modeling of the *future* water budget does not double count extractions. (Section 6.9, p. 6-35.) This means that only the historical water budget's determination of sustainable yield has been overstated by double counting. This is not reassuring because it follows that the actual variance between the projected future sustainable yield determined by the USGS model (107,200 AFY in 2020 per Table 6-31) and the sustainable yield determined historically (95,700 AFY per Table 6-20) is even greater than disclosed by Chapter 6.

3. **Sustainable yield determinations should incorporate climate change-caused variability in precipitation**.

Chapter 6 notes that "projections are based on the available climate change data provided by DWR (2018)." (Section 6.10, p. iii.) The Chapter does not explain whether and how DWR's projections are reconciled with those in California's Fourth Climate Change Assessment Central Coast Region Report.

The Fourth Assessment notes:

- Average precipitation is expected to increase by a relatively small amount, but the annual variability increases substantially by the end of the century.
- Projected future droughts are likely to be a serious challenge to the region's already stressed water supplies.

- Water supply shortages, already common during drought, will be exacerbated. Higher temperatures may result in increases in water demand for agriculture and landscaping. Reduced surface water will lead to increases in groundwater extractions that may result in increased saltwater intrusion. Lower surface flows will lead to higher pollutant concentrations and will impact aquatic species.
- Climate change projections of future extreme and prolonged droughts will exacerbate the region's water supply challenges. [25]

Chapter 6 should discuss how variability and uncertainties in future precipitation patterns will impact groundwater budgets. It is not clear that climate variability effects have been modeled. Increased peak precipitation years may not proportionately benefit the groundwater basin as much as increased drought years harm the basin. Peak precipitation may occur in large storm events discharged down the river and out to sea without resulting in proportionately higher basin recharge. However, it is clear that drought years do result in falling groundwater levels.

B. Chapter 7 should require that pumping be monitored by flowmeters.

Chapter 7 does not provide for an adequate system of monitoring annual groundwater extractions. LandWatch strongly recommends that the Salinas Valley Groundwater Basin Groundwater Sustainability Agency adopt an ordinance that requires

1) Independently calibrated and monitored flowmeters on agricultural pumps throughout the Salinas Valley Groundwater Basin; and
2) Annual pumping reports that are independently validated for accuracy.

The ordinance should also include strict enforcement provisions that help assure full compliance. The proposed use of the existing monitoring program to monitor annual groundwater pumping is not adequate because it will generate inaccurate results and potentially lead to unfair cost allocations.

As LandWatch's previous comments on Chapter 7 explain, Monterey County Water Resource Agency does not enforce Monterey County Ordinance No. 3717 which requires installation of flowmeters meeting MCWRA specifications for all groundwater extraction facilities with a discharge pipe of 3 inches or greater. Many wells report extraction based on electricity consumption instead of the mandated reporting based on flowmeters. However, electricity consumption is a demonstrably inaccurate basis to estimate groundwater pumped.[26] Many wells do not report at all.

The Plan does not require enforcement of the MCWRA flowmeter ordinance, but instead would permit continued reliance on the same methods used in the past. (GSP, section 7.3, p. 7-16.) The Plan does not even require annual reporting by all agricultural users, instead providing for estimates of such pumping using crop data and crop duty

[25] Langridge, Ruth. (University of California, Santa Cruz), California's Fourth Climate Change Assessment Central Coast Region Report, 2018, pp. 17, 6, 7, 21, available at https://www.energy.ca.gov/sites/default/files/2019-07/Reg%20Report-%20SUM-CCCA4-2018-006%20CentralCoast.pdf.

[26] Irrigation Training and Research Center, California Polytechnic State University, ITRC Paper No. P 17-001, May 2017 available at http://www.itre.org/papers/wellrecords.htm.

estimates. The Plan should be revised to mandate use of flowmeters for all wells with discharge pipes of 3 inches or greater, with annual verification in accordance with Ordinance No. 3717. A monitoring plan that fails to require accurate measurement of groundwater extractions fails to meet SGMA's mandate to rely on best management practices and best available science to obtain the best available information.

Thank you for the opportunity to comment.

Sincerely,

Michael DeLapa
Executive Director