COMMUNITY WATER CENTER
EL CENTRO COMUNITARIO POR EL AGUA

UC Davis Aoki
Water Justice Clinic

July 10, 2019

Salinas Valley Basin Groundwater Sustainability Agency
Attn: Gary Peterson, General Manager
peterseng@svbgsa.org
VIA ELECTRONIC MAIL

Re: Comments on Draft Chapter 6 ("Water Budgets") for the 180/400-Foot Aquifer Subbasin Groundwater Sustainability Plan

Dear Salinas Valley Groundwater Sustainability Agency Board Directors, General Manager Peterson, and Advisory Committee:

We thank you for the opportunity to comment on draft chapters of the Groundwater Sustainability Plan ("GSP") for the 180/400-Foot Aquifer Subbasin of the Salinas Valley Basin.

Recommendation 1: For both practical and legal reasons, we strongly encourage you to revise your calculations of sustainable yield to include and abate all six undesirable results enumerated in the Sustainable Groundwater Management Act (SGMA).

As currently written, Chapter 6's definition of sustainable yield fails to comport with the statutory definition. SGMA defines sustainable yield as "the maximum quantity of water . . . that can be withdrawn annually from a groundwater supply without causing an undesirable result." Water Code § 10721(w). SGMA explicitly requires that groundwater be managed in a way that avoids negative impacts to beneficial users *and* all six undesirable results. Those undesirable results include: (1) chronic lowering of groundwater levels indicating a significant and unreasonable depletion of supply if continued over the planning and implementation horizon; (2) significant and unreasonable reduction of groundwater storage; (3) significant and unreasonable seawater intrusion; (4) significant and unreasonable degraded water quality, including the migration of contaminant plumes that impair water supplies; (5) significant and unreasonable land subsidence that substantially interferes with surface land uses; and (6) depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of that surface water. *Id.* § 10721(x). The undesirable results are cumulative, not disjunctive. GSPs must evaluate all six undesirable results, and any interactions between those results, to satisfy SGMA.

Despite SGMA's clear definition of sustainable yield and sustainable groundwater management, the current draft of Chapter 6 relies on only one indicator of sustainability and one undesirable result. The proposed draft defines sustainable yield as "an estimate of the quantity of groundwater that can be pumped on a long-term average annual basis without causing a net decrease in storage." *See* Draft Chapter 6 180/400-Foot Aquifer Subbasin GSP page 24, section 6.8.4 (June 17, 2019, included in advisory committee meeting packet). There is no legal or scientific basis for that definition of sustainable yield.

We are concerned that the current sustainable yield calculation fails to inform the public and GSA of the actual net amount of water that can be extracted from the subbasin while avoiding all six undesirable results. Establishing a sustainable yield that adequately takes into consideration all undesirable results is a foundational step for developing appropriate sustainable management criteria and for accurately planning for the management actions and projects necessary to meet sustainable management criteria. For example, during the project development phase, the GSA will need to understand the scale and size of recharge or other projects required to stop seawater intrusion. At a minimum, the sustainable yield calculation must adequately consider all undesirable results in order to provide a reliable foundation for setting and meeting minimum thresholds and measurable objectives, determining extraction and recharge levels, and monitoring.

The Department of Water Resources' (DWR) Draft Best Management Practices for Sustainable Management Criteria ("Draft BMP")[1] states that "[s]ustainable yield can only be reached if the basin is not experiencing undesirable results . . . [u]ndesirable results must be eliminated through the implementation of projects and management actions, and progress toward their elimination will be demonstrated with empirical data (e.g., measurements of groundwater levels or subsidence)." From a practical perspective, the 180/400-foot aquifer subbasin GSP already faces several undesirable results, and it will need to develop projects and regulations that rely on the sustainable yield measure to avoid exacerbating all six undesirable results. As currently drafted, the sustainable yield calculation does not provide the GSA with the information it needs to be able to prevent or improve groundwater conditions that cause those undesirable results.

Moreover, the Groundwater Sustainability Plan Regulations ("Regulations") do not recognize change in storage as an acceptable proxy for the other sustainability indicators or undesirable results. The Regulations clearly state that only groundwater elevation may be used as a proxy

[1]https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT.pdf

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metric for the sustainability indicators for minimum thresholds and measurable objectives. 23 CCR §§ 354.28(d) & 354.30(d). Groundwater elevation can only be used as a proxy metric if both of the following conditions are met:

> (1) Significant correlation exists between groundwater elevations and the sustainability indicators for which groundwater elevation measurements serve as a proxy. (2) Measurable objectives established for groundwater elevation shall include a reasonable margin of operational flexibility taking into consideration the basin setting to avoid undesirable results for the sustainability indicators for which groundwater elevation measurements serve as a proxy. 23 CCR § 354.36(b)).

By focusing solely on groundwater storage, draft Chapter 6 fails to identify the relationship between the water budget, current undesirable results, and the possibility of worsening all six undesirable results if the water budget is improperly calculated. As a result, the draft water budget reinforces current unsustainable groundwater uses, risks further degradation of groundwater supplies, and fails to adequately prioritize beneficial uses and protect groundwater stakeholders' interests.

The calculation of sustainable yield is at the heart of all Groundwater Sustainability Plans, and those Plans derive all other components from this important determination. Because the draft GSP ties sustainable yield to an improper metric that is not recognized by statute or regulation as acceptable, it is likely that DWR will find the draft 180/400-Foot Aquifer Subbasin GSP to be inadequate, creating the risk that the Basin will fall under probationary status.

Recommendation 2: We request that you release the data and assumptions underlying Chapter 6's sustainable yield calculations, water budget calculations, and groundwater model. We encourage the GSA to ensure compliance with SGMA and California administrative law by releasing the data, methodologies, technical appendices, model assumptions, model inputs/outputs, sources, and all other relevant model parameters when draft chapters are released to the public for review and comment. We request that the GSA ensure that all relevant data is released concurrently with draft chapters for all future draft chapters.

SGMA, California administrative law, and the Brown Act require GSAs to release to the public all data, research, sources, assumptions and inputs, outputs, the formulae applied to those inputs, and the ultimate results of a formula or model as part of the public comment process.

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23 CCR §§ 352.4(f) & 354.14. DWR's Draft BMP also encourages transparency in the use and disclosure of models used to support SGMA's requirements.

In the context of GSPs, the purpose of public comment is to allow the public to engage meaningfully in the public decision making process, which in turn will strengthen the reliability and accuracy of GSPs. That data must be publicly accessible and is a critical factor in gaining consensus on groundwater projects, groundwater pumping restrictions, potential groundwater fees, prioritization of beneficial uses, and other groundwater regulations. Draft Chapter 6 currently fails to provide the GSA and the public with sufficient background information to support the chapter's sustainable yield calculations and the groundwater model itself.

Timely disclosing source material and key assumptions is necessary to ensure the GSP is accurate and that the public is able to ground truth those assumptions. For example, during the June 20, 2019, advisory committee meeting, the GSA's consultant informed the public that the proposed "sustainable yield" calculation assumes that the Castroville Seawater Intrusion Project (CSIP) will function "perfectly." Many of those in attendance questioned that assumption, as it is impossible to ensure a project will operate perfectly. Failure to account for the reality that the project will not always operate "perfectly" introduces unquantified uncertainty into the sustainable yield calculation. As a result, the proposed calculation may be inaccurate, which may exacerbate undesirable results—including seawater intrusion—in the subbasin. At a minimum, the GSP must consider alternative calculations that account for the reasonable and foreseeable possibility that the project may operate below "perfect" performance in order to create an accurate accounting of sustainable yield. In fact, in its Draft BMP, DWR explicitly notes that GSPs must acknowledge uncertainty and address how the plan will address that uncertainty. By failing to disclose to the public the assumptions incorporated in draft Chapter 6, the GSP may rely on any number of faulty assumptions that undermine the reliability, reality, and accuracy of the sustainable yield calculation and groundwater model.

We are asking the GSA to make all assumptions transparent and clear in the plan itself, to engage stakeholders and the public in discussion of those parameters and assumptions, and to make decisions with knowledge of the limitations of whatever formulae or models are adopted. When DWR reviews plans, it will assess "[w]hether the projects and management actions are feasible and likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield." 23 CCR § 355.4(b)(5). Failure to account for and disclose the assumptions in the sustainable yield calculation places the basin at substantial risk of failing to pass DWR's evaluation or to ensure sustainable yield is met.

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It is challenging to provide feedback regarding Chapter 6's models and its sustainable yield calculation without publicly available supporting documentation on how calculations have been made. We request that the GSA immediately:

1. Disclose the technical appendix, supporting documentation and research, groundwater model,, sustainable yield formula, methodologies for the groundwater model and sustainable yield formula, and model assumptions and limitations at the time it releases draft Chapter 6 for public review and comment. Disclosure should be made by posting this information to the GSA website and contacting all interested parties.
2. Update its timeline to ensure technical appendices, supporting data and research, and all related information are released when public comment opens for each draft chapter and the final draft GSP;
3. Distribute a revised draft Chapter 6 that includes the Advisory Committee and stakeholders' requested changes.

We look forward to working with the Salinas Valley Basin GSA to ensure that the GSP complies with its legal obligations, that the GSP adequately addresses drinking water needs, and that stakeholders and the public have access to the information necessary to be able to engage in this process.

Sincerely,

Heather Lukacs
Community Water Center

Camille Pannu
Founding Director, UC Davis Aoki Water Justice Clinic

Thomas S.
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ATTORNEY AT LAW

10 July 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Board of Directors

Re: July 11, 2019 meeting

Agenda Item 4.a
ASGSA coordination

Agenda Item 4.b
Chapter 6 of 180/400 GSP

ASGSA Coordination

On behalf of the Orradre and Scheid interests -- both of which have interests and/or lands in or near the Arroyo Seco area, a coordination agreement for a management area under the jurisdiction of the Arroyo Seco GSA (ASGSA) appears premature. Any concern is borne of ignorance, not animosity. Several maps exist of the current, projected, and other configuration of the lands that may be the management area of the ASGSA, e.g., at the DWR portal and in ASGSA public documents. The maps tend to appear "ragged" or riddled with "holes." Such maps may not pass the "straight face" test with the public or DWR irrespective of whose/which lands constitute the holes or peculiar edges. If the "holes" or "ragged edges" impact a client, then there may be further reasons for concern around inconsistent approaches to overall management.

The public discussions and materials -- mostly from the ASGSA -- reflect that the ASGSA desires the input of the landowners that may be affected and would seek it out. "The Subcommittee suggested meetings be held with property owners that have not been included in the set of properties presented to DWR." ASGSA Advisory Committee minutes (draft) for June 2019. While (1) I have had discussions to set a time/place for meetings and (2) informal, i.e., not subject to public disclosure or verification, overtures have been made to my clients by individuals, the ASGSA has yet to present its proposal(s) to my clients. On behalf of my clients, I urge the SVBGSA to take no action on the ASGSA coordination agreement and allow further time for the ASGSA[1] to initiate and conclude discussion or negotiation with landowners with whom it chooses to

[1] I am aware of the subcommittees and staff at both the ASGSA and GSA that are working on coordination. Those subcommittees are the obvious vector for discussions, at least initially, rather than the full Boards of either entity.

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engage. As the ASGSA and/or GSA Plan for (parts of) the Forebay is not due until 2022, there appears is ample time for a thorough process.

Chapter 6 draft

Many commenters have provided input on the iterations of Chapter 6 that were before the Planning Committee and the Advisory Committee. The agenda packet contains a matrix of such comments. Pages 58-59. I have included my prior two letters for the sake of transparency and consistency, but also provide the below comments on (1) what has changed in the draft and (2) what should have changed, but has not.

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER STILL LACKS CURRENT SUSTAINABLE YIELD CALCULATION
The current sustainable yield calculation is still absent. That has not changed in any iteration to date. At 6.8.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. Table 6-20 at 25/42. (Note that the text right above the table uses a different figure of 97,300 AFY.)

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. 25/42[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values Table 6-19 (23/40), the current sustainable yield appears to be 40,600 AFY for the 180/400 (109,300 - 68,700 = 40,600). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is over 50%. While sustainable yield is not "sustainability" itself, the omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[3]

Also, whether the historical sustainable yield is itself accurate is undermined by the text which recites a total pumping figure of 86,5500 AFY but uses 108,300 in Tables 6-20 and 6-31. Cf 25/42 with 37/54 and 38/55.

[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" when calculating historical sustainable yield in Table 6-20 on 25/42.
[3] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets.

FUTURE SUSTAINABLE YIELD STILL BASED ON QUESTIONABLE ASSUMPTIONS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 37/54 and 18/35. Consultant Williams explained that the difference arose from the CSIP projects coming online, i.e., the projects were built and started performing during the historical period while the future projections assumed the projects were preforming at full capacity. My follow-up comment after the explanation was that it was unrealistic to assume the projects would perform perfectly (now and) in the future and not founded on the "best available" data. I and others noted that the Monterey County Resources Agency (MCWRA) has substantial data on the real-world efficiency/performance of the projects. The GSA can obtain that data, (1) disclose and (2) use it in its future projections of water needs. As it stands, the future projections of Chapter 6 are at best aspirational, when ready data exists that could support realistic projections.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. The current iterations of Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

SURFACE WATER EXTRACTIONS STILL UNRELIABLE

"Surface" water reports to the State are public, unlike "groundwater" reports to the MCWRA. Total surface water diversions are quantified but have not been cross-checked to eliminate double-counting. My letter of June 4, 2019 provided a real-world example of a state report from the 180/400 area that the GSA -- but not the public -- can check against the MCWRA data to find out if there is double-counting. Appendix 6A contains the data used to calculate the surface water diversions in draft Chapter 6, but the data is a mere aggregation. There is

no reason for the GSA to withhold the public data it obtained from the state database, eWRIMS, that it then aggregated.

The order of magnitude of surface pumping reported is not trivial, being around 7,900 AFY on average. 10/27. Changes of similar orders of magnitude have occurred between the initial version of Chapter 6 seen by the Planning Committee to the one before the Board. Updating the draft Chapter because of better data and analyses is good, but it begs the question of why those data command renewed attention while others, e.g., the real-world performance of the CSIP projects and the double-counting of surface/groundwater, do not. By way of example, Table 6-19 is set forth below as it appeared in the initial draft and as it appears now, with highlighting added to illustrate changes.

Table 6-19: Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
	Precipitation Percolation to Groundwater	11,600	5,000	6
	Irrigation Percolation to Groundwater	4,500	-9,500	15,500
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		67,200	43,800	105,700
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping -Total Subbasin	109,300	108,400	111,000
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	400	400	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	3,200	-9,500	9,500
TOTAL OUTFLOW		124,400	110,900	132,500
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-57,300	-88,700	-5,200

Table 6-19: Summary of Current Groundwater Budget

Inflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Net Percolation of Streamflow to Groundwater	31,100	3,300	80,000
	Precipitation Percolation to Groundwater	6,500	0	10,800
	Irrigation Percolation to Groundwater	4,500	-94001	15,500
	Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
TOTAL INFLOW		62,100	38,700	101,400
Outflow		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Pumping -Total Subbasin	109,300	108,400	111,000
	Agricultural	91,900	89,000	97,700
	Urban	17,000	12,900	19,000
	Rural Domestic	400	400	400
	Riparian Evapotranspiration	12,000	12,000	12,000
	Subsurface Outflows to Adjacent Subbasins/Basin	9,500	9,500	9,500
TOTAL OUTFLOW		130,800	129,900	132,600
Storage		Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
	Change in Storage	-68,700	-28,500	-93,800

Similar order of magnitude of changes or corrections can be seen in other data, e.g., Tables 6-18 and 6-29 (of questionable addition). But no similar updates exist about the surface/groundwater double-counting risk or the actual performance/efficiency of the CSIP projects.

CONCLUSION

Iterating the data and analyses is good in general, but not when the effort is selectively applied. In its third iteration, draft Chapter 6 still fails (1) to address a key regulatory requirement (explicitly calculating and disclosing overdraft and the current sustainable yield), (2) report and use MCWRA data about the CSIP projects' on-the-ground efficiency and performance, and (3) address double-counting from surface and groundwater reports.

Very truly yours,

Thomas S. Virsik

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Encl.

6 June 2019 comment letter to GSA Planning Committee
18 June 2019 comment letter to GSA Advisory Committee

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4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

[1] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets. Whether the next Chapter revision is one of editing (e.g., a change of terminology) or of arithmetic (e.g., add an extra calculation labelled "overdraft" in certain tables) is a matter for the GSA and its consultant.
[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" in the charts on 19/38 and 20/39 (last entry in both).

omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other.

The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

DATA REFERENCES CONFUSING

Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and

when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?

CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

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18 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Advisory Committee

Re: Agenda Item 4.c
Chapter 6 of 180/400 GSP

Enclosed are: (1) the June 4, 2019 letter to the Planning Committee on Chapter 6 and (2) a copy of an email to the SVBGSA of June 11, 2019, including its enclosures. This letter supplements the prior comment letter based on comments and feedback from the consultant and others at the June 6 and June 10 Planning and Board of Directors meetings, respectively. *Page references are to the internal numbering of the Chapter as posted on June 17, 2019 [a different version of the Chapter was posted on June 14, 2019].*

EWRIMS (SURFACE WATER DIVERSION) DATA NOT VETTED
The enclosed email explains the simple process the GSA has available to it to determine if the surface water diversions used in the water budgets are "double counting" water. To put it starkly, the publically available statements of water diversion near Speckles sent along with the email claims that the surface water diversion reported to the State is -- in the view of the filer -- actually groundwater. See response to "Additional Remarks" of the State form (enclosed with email). Presumably, the filer (an affiliate/proxy for the well-regarded local ag interest Tanimura & Antle) is also following local requirements and providing the exact same water extraction numbers to the MCWRA per local Ordinance.

Unless the GSA compares the (limited) set of eWRIMS data for the 180/400 with the MCWRA groundwater pumping reports for the nearly identical zone (the "Pressure"), the water budget numbers will erroneously assume water users in the 180/400 draw from two separate sources and hence their reduction to meet "sustainable yield" may be inaccurate. SGMA requires the "best available" data and transparency, which would not be met and the Plan may fail at DWR if the GSA continues to ignore the data and simple analytical approach[1] at its fingertips.

[1] The MCWRA reports are tied to wells while the State reports are tied to land, but both require monthly extraction numbers, which can be directly compared. For example, a diversion for water use near Speckles that reports surface water diversions in succeeding calendar months of 115.2, 229.4, and 425.7 AF and a MCWRA report for a well near Speckles that reports groundwater extractions in succeeding calendar months of 115.2, 229.4, and 425.7 AF must be the same water. It should not be included twice in the water budget analyses.

The historical water budget reports surface water diversions on the order of nearly 10,000 AFY, which is a magnitude material to projecting a reliable sustainable yield. Chapter 6 at Tables 6-5 and 6-16, pages 10 and 18.

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS ABOUT CURRENT PROJECTS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15, pages 36 and 17. Consultant Williams explained that the delta is due (1) to the seawater intrusion projects (CSIP, SRDF) coming online during the historical period and (2) an assumed current and future "100%" level of performance of the. Again, what does the "best available" data show about the efficiency or performance of the MCWRA projects? If the data compiled by the MCWRA for its projects reflect a 50% or a 25% level of efficiency, then the model should use that metric instead of assuming the projects will magically perform far better than they have to date.

CONCLUSION

As noted in my prior letter and email and above, prior to further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality such as surface water diversions and project performance reality. The real danger for the Salinas Valley lies not in whether DWR accepts or approves the GSP, but in intelligently considering and selecting programs and management actions (a later chapter of the GSP) based on factious assumptions and projections about current project efficiency and wet water use/availability (whether labeled ground or surface). It is preferable to proceed with care than risk committing to projects or management actions that will either not lead to or perhaps even make the attainment of sustainability less likely.

Very truly yours,

Thomas S. Virsik

Thomas S. Virsik

Encl.
June 4, 2019 letter to GSA Planning Committee
June 11, 2019 email to GSA re eWRIMS and MCWRA

Thomas S. Virsik
ATTORNEY AT LAW
510-508-1530 | thomasvirsiklaw@gmail.com

4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

[1] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets. Whether the next Chapter revision is one of editing (e.g., a change of terminology) or of arithmetic (e.g., add an extra calculation labelled "overdraft" in certain tables) is a matter for the GSA and its consultant.
[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" in the charts on 19/38 and 20/39 (last entry in both).

omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other.

The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

DATA REFERENCES CONFUSING

Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and

when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?

CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

Gmail Thomas S. Virsik <thomasvirsiklaw@gmail.com>

EWRIMS and MCWRA reports

Thomas S. Virsik <thomasvirsiklaw@gmail.com> Tue, Jun 11, 2019 at 2:10 PM
To: Gary Petersen <peterseng@svbgsa.org>

Gary,

For Williams' attention per his remarks yesterday that the nature of the reporting to (1) eWRIMS and (2) the MCWRA on water extractions was dissimilar (and hence could not be readily cross-checked for double counting). I vehemently disagree.

I have attached a T&A state report (three years, including the map showing location -- all from eWRIMS). I selected it at random. It claims to be using groundwater, by the way, at "Additional Comments." [I think the word "fights" is supposed to be "rights"]

One can make a direct comparison of the monthly amounts reported in the MCWRA and State databases. If any two reports (one from eWRIMS and the other from MCWRA) arguably within the same sub-basin reflect the exact same amounts for 1/17, 2/17, 3/17 etc. then there is double counting that skews (Ms. Isakson's word) the calculation of sustainable yield and pumping reductions. One need not correlate precise APN's or well codes. I can -- for my own clients whose MCWRA reports I possess-- do such a month by month comparison (none of which relate to the 180/400). I have made this comment in public before, but perhaps it was not understood.

Given the GSA has access to the MCWRA records, it can and must do the same comparison for the limited number of 180/400 eWRIMS statements. Chapter 8 draft Table 8-9. It's simple, yet necessary to meet the "best available" standard. And it leads to a better and more reliable real-world outcome based on accurate water use / yield numbers. No part of the comparison involves determining any "water right" or claim thereto.
--
Thomas S. Virsik
Attorney at Law

4 attachments

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2015.pdf
73K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2016.pdf
80K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2017.pdf
80K

Maps from S014885.pdf
85K

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2015

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 05/31/2016

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3-4. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used

Month	Rate of diversion	Amount directly diverted (Acre-Feet)	Amount diverted or collected to storage (Acre-Feet)	Amount beneficially used (Acre-Feet)
January		3.017	0	3.017
February		2.637	0	2.637
March		14.177	0	14.177
April		9.469	0	9.469
May		8.465	0	8.465
June		13.554	0	13.554
July		14.954	0	14.954
August		4.292	0	4.292
September		0	0	0
October		0	0	0
November		0	0	0
December		0	0	0
Total		70.565	0	70.565
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
8e. Water transfered	No
8f. Quantity transfered (Acre-Feet)	
8g. Dates which transfer occurred	/ to /
8h. Transfer approved by	

Water Supply Contracts

8i. Water supply contract	No
8j. Contract with	
8k. Other provider	
8l. Contract number	
8m. Source from which contract water was diverted	
8n. Point of diversion same as identified water right	
8o. Amount (Acre-Feet) authorized to divert under this contract	
8p. Amount (Acre-Feet) authorized to be diverted in 2015	
8q. Amount (Acre-Feet) projected for 2016	
8r. Exchange or settlement of prior rights	
8s. All monthly reported diversion claimed under the prior rights	
8t. Amount (Acre-Feet) of reported diversion solely under contract	

5. Water Diversion Measurement		
a.	Measurement	Water directly diverted and/or diverted to storage was measured
b.	Types of measuring devices used	Propeller Meter
c.	Additional technology used	Flow Totalizer
	Description of additional technology used	
d.	Who installed your measuring device(s)	Representative using manufacturer's recommendations
e.	Make, model number, and last calibration date of your measuring device(s)	Water Specialties, Propeller meter
f.	Why direct measurement using a device listed in Section 1 is "not locally cost effective"	
	Explanation of why use of devices and technologies listed in Section 1 are "not locally cost effective"	
g.	Method(s) used as an alternative to direct measurement	
	Explanation of method(s) used as an alternative to direct measurement	

6. Purpose of Use	
Irrigation	661.90 Acres Vegetables

7. Changes in Method of Diversion

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes

	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	Acre-Feet
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

11a. Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Ron
Last Name	Yokota
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2016

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0	0	0
March		0	0	0
April		5.059	0	5.059
May		11.164	0	11.164
June		19.857	0	19.857
July		25.109	0	25.109
August		23.773	0	23.773
September		19.856	0	19.856
October		16.781	0	16.781
November		0	0	0

December		0	0	0
Total		121.599	0	121.599
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2016	
6p. Amount (Acre-Feet) projected for 2017	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0.476	0	0.476
March		6.191	0	6.191
April		8.05	0	8.05
May		27.526	0	27.526
June		27.296	0	27.296
July		24.129	0	24.129
August		0.762	0	0.762
September		3.002	0	3.002
October		41.776	0	41.776
November		0.003	0	0.003

December		1.233	0	1.233
Total		140.444	0	140.444
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2017	
6p. Amount (Acre-Feet) projected for 2018	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	Yes
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M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
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M5. Serial number	932573-8

M6. Model number	
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M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
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M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

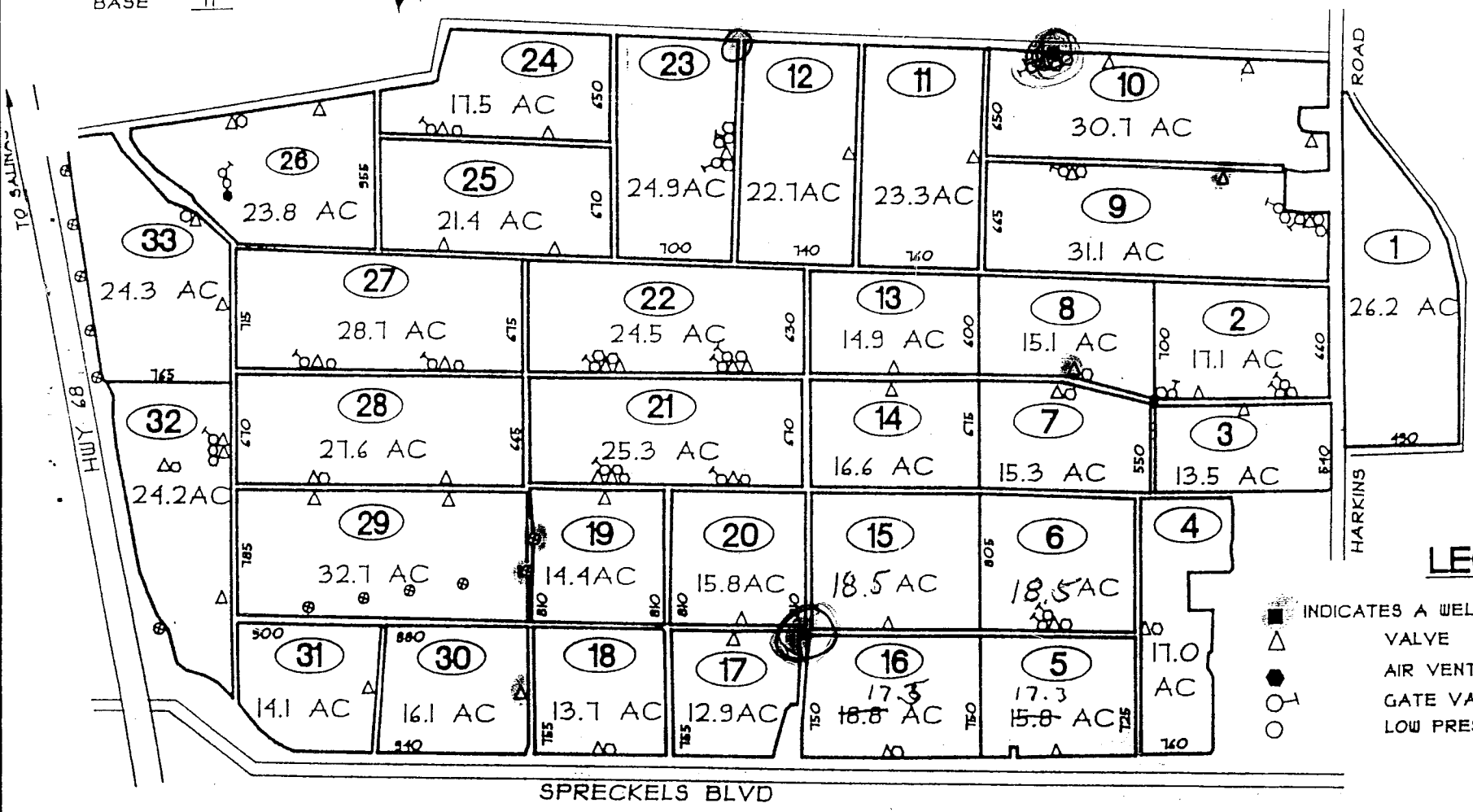
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

SO14885

SPRECKELS RANCH
TANIMURA & ANTLE, INC.

SURVEYED 1982, REVISED 1986 & 1988
MAPPED APRIL 1995
FILE: TASPRECK.DWG 1"=700'

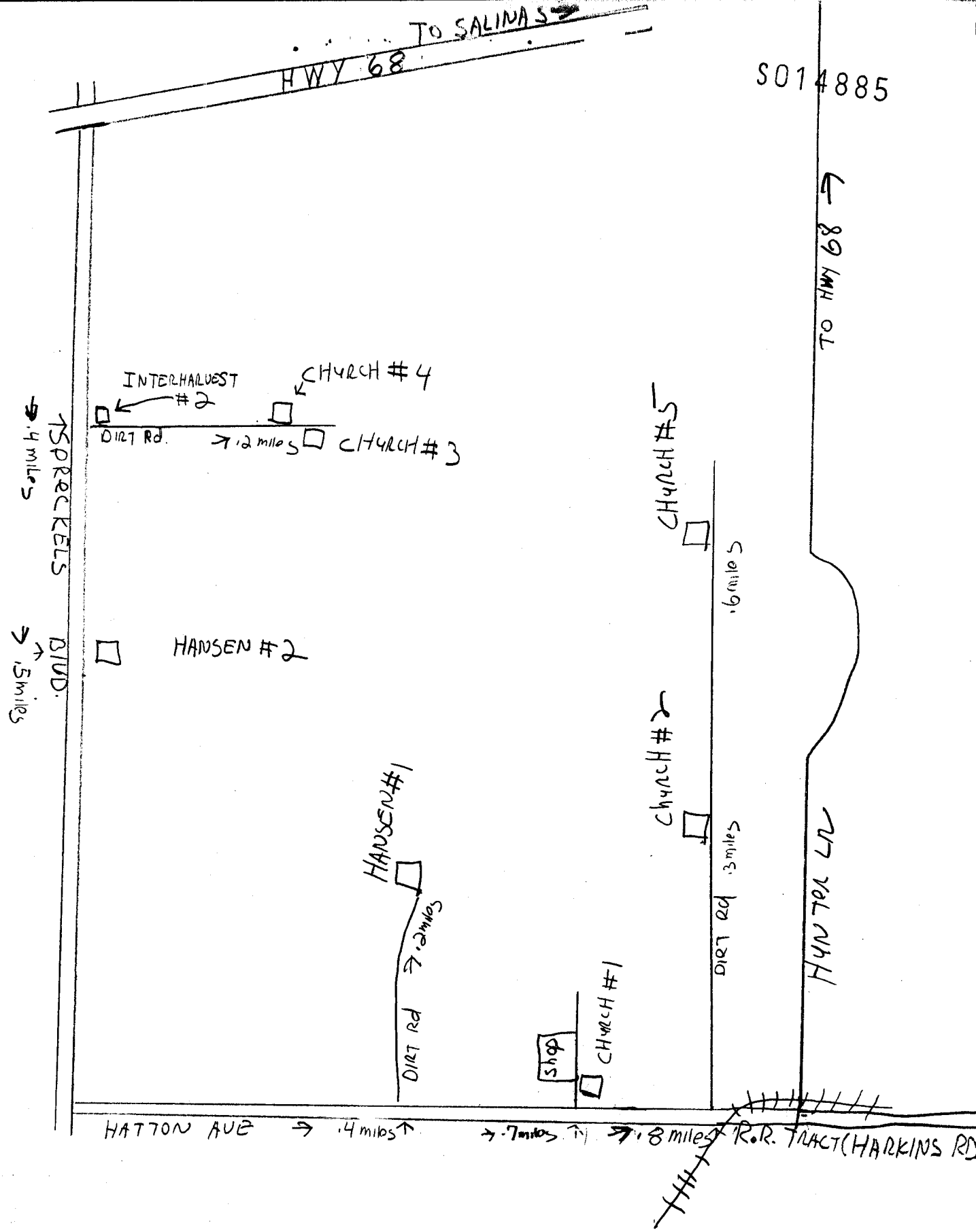
COUNTY 27
TOWNSHIP 15S
RANGE 3E
SECTION 20
BASE M



LEGEND

- INDICATES A WELL
- VALVE
- AIR VENT/STANDPIPE
- GATE VALVE
- LOW PRESSURE VALVE

677.2± ACRES NET CROP


S014885
TO SALINAS
HWY 68
TO HWY 68
INTERHARVEST #2
CHURCH #4
DIRT Rd.
.2 miles S
CHURCH #3
.4 miles
SPRECKELS BLVD.
.5 miles
HANSEN #2
CHURCH #5
.6 miles S
CHURCH #2
HANSEN #1
.2 miles
DIRT Rd
.3 miles
shop
CHURCH #1
HUNTER LN
HATTON AVE
.4 miles
.7 miles
.8 miles
R.R. TRACT (HARKINS RD)

MARINA COAST WATER DISTRICT

11 RESERVATION ROAD, MARINA, CA 93933-2099
Home Page: www.mcwd.org
TEL: (831) 384-6131 FAX: (831) 883-5995

2 July 2019

Mr. Gary Peterson
General Manager
Salinas Valley Basin Groundwater Sustainability Agency
1441 Shilling Place
Salinas, CA 93901

Mr. Derrik Williams
Montgomery & Associates
1232 Park Street, Suite 201B
Paso Robles, CA 93446

Dear Mr. Peterson and Mr. Williams,

Thank you for taking the time to meet with us and our SGMA consultant EKI Environment & Water Inc. regarding Draft Chapter 6 (Water Budgets) of the 180/400 Foot Aquifer Subbasin Groundwater Sustainability Plan (180/400 Subbasin GSP) on June 19, 2019. This letter provides a written summary of our comments on Draft Chapter 6. These comments incorporate information discussed during our meeting and provide suggested draft language for inclusion in Chapter 6, based upon our discussions.

MAJOR COMMENTS

1. **Estimated Sustainable Yield Inconsistent with Sustainable Groundwater Management Act ('SGMA")**

The term "sustainable yield" is defined under Sustainable Groundwater Management Act (SGMA) as "the maximum quantity of water, calculated over a base period representative of long-term conditions in the basin and including any temporary surplus, that can be withdrawn annually from a groundwater supply without causing an undesirable result."

Additionally, on Page 24 of Department of Water Resources' Best Management Practices for the Sustainable Management of Groundwater states the following:

> "[w]ater budget accounting information should directly support the estimate of sustainable yield for the basin and include an explanation of how the estimate of sustainable yield will allow the basin to be operated to avoid locally defined undesirable results. The explanation should include a discussion of the relationship or linkage between the estimated sustainable yield for the basin and local determination of the sustainable management criteria (sustainability goal, undesirable results, minimum thresholds, and measurable objectives)."

However, as discussed during our meeting, we understand that due to modeling limitations, data gaps, and uncertainties regarding future projects and management actions, the GSP will not attempt to estimate the "sustainable yield" of the 180/400 Subbasin, as defined under SGMA. Rather, the GSP will provide a gross estimate of the total current and future fresh groundwater inflows[1], in the absence of any additional groundwater augmentation project (defined herein as the "GSP Sustainable Yield"). The GSP Sustainable Yield effectively provides an "upper bound" on the sustainable yield of the basin (i.e., assuming no water is added to the basin), but it does not represent the actual amount of groundwater that can be extracted without creating undesirable results within the 180/400 Subbasin. The GSP Sustainable Yield will also not meet all of the sustainable management criteria identified in Chapter 8, and does not address inland gradients that will limit the Monterey Subbasins to achieve sustainability. For example, the information presented in Chapter 6 indicates that seawater intrusion will continue to occur under the identified sustainable yield, the management objective for seawater intrusion identified in Chapter 8 is the 500 milligrams per liter (mg/L) chloride contour at Highway 1.

We understand that SVBGSA intends to propose projects to halt seawater intrusion (e.g., groundwater extraction/injection barriers) and that such projects will affect the Sustainable Yield of the basin. Given that such projects will affect the sustainable yield, we understand that these values cannot be finalized before completing the project and management actions analyses, and selecting which projects will ultimately be implemented. As such we recommend that, the draft water budget chapter include additional language that stresses the difference between the estimated GSP Sustainable Yield and the quantity of groundwater that can be withdrawn without causing undesirable results and meeting sustainable management criteria.

We recommend that the following language be included:

The "sustainable yield estimate" presented in the draft Water Budget chapter does not consider all of the sustainability indicators or sustainable management criteria. As such, it is not equivalent to the quantity of groundwater that can be extracted without causing undesirable results. The plan for achieving sustainability in the basin will be addressed through projects and management actions, where SVBGSA will compare the projected and actual outcomes of project and management actions against sustainable management criteria and ultimately evaluate how much groundwater can be extracted, based upon the projects and management actions that are selected and implemented.

2. The 180/400 Subbasin GSP must not preclude the Monterey Subbasin from Achieving Sustainability

A summary of the historical, current, and future water budget calculations presented in Chapter 6 is included in Attachment A. As shown in Attachment A, net groundwater inflows from the Monterey Subbasin to the 180/400 Subbasin were assumed to be 3,000 acre-feet per year (AFY) in the historical and current water budgets, and estimated to be 5,500 to 6,200 AFY in the projected water budgets. The historical net groundwater inflow estimates appear to be based upon data collected from 1970 to 1994. Review of current data indicates that these values likely underestimate cross-boundary flows from the Monterey Subbasin, and likely do not include flows in the Deep Aquifer where inland gradients exist.

[1] These inflows represent the amount of groundwater that can be withdrawn without decreasing the overall groundwater storage in the basin.

As stated in our comments to draft Chapter 8, the 180/400 Subbasin GSP must address inland gradients and cross-boundary groundwater flows from the Monterey Subbasin into the 180/400 Subbasin. The GSP fails to mention that current and projected increases in groundwater extraction in the 180/400 Subbasin are being sustained, in part, by cross-boundary groundwater flows from the Monterey Subbasin, where seawater intrusion is already occurring. The GSP for the 180/400 Subbasin may not create conditions that preclude the Monterey Subbasin from reaching sustainability.

As stated in our comments to draft Chapter 8, unless alternative water supplies are provided by SVBGSA to the Monterey Subbasin, groundwater inflows to the Monterey Subbasin must be adequate to sustain groundwater extraction by Marina Coast Water District (MCWD) from its water production wells.

We recommend that the following language be added to the GSP*:*

Pursuant to GSP Regulation 350.4 (f), the 180/400 Subbasin GSP will consider the effects of its implementation on the adjacent Monterey Subbasin, and its ability to achieve and maintain sustainability.

> *"A Plan will be evaluated, and its implementation assessed, consistent with the objective that a basin be sustainably managed within 20 years of Plan implementation without adversely affecting the ability of an adjacent basin to implement its Plan or achieve and maintain its sustainability goal over the planning and implementation horizon."*

The Monterey and 180/400 Subbasins are hydraulically connected. Therefore, the sustainable yield and sustainable management criteria for the 180/400 Subbasin and the Monterey Subbasin must consider the effects of cross-boundary groundwater flows between subbasins and/or the provision of alternative water supplies. The Monterey Subbasin GSP will also include projects and management actions that could benefit both subbasins.

In addition, we recommend that the following information/language be added to the GSP regarding:

(a) the 1993 Fort Ord Annexation Agreement[2] and the 1996 Marina Lands Annexation Agreement[3]

(b) groundwater use by MCWD and others within the Monterey Subbasin.

1993 Fort Ord Annexation Agreement

Under the 1993 Fort Ord Annexation Agreement the MCWRA annexed the Fort Ord lands into Zones 2 and 2A and allocated to the Army 6,600 acre-feet per year of potable groundwater from the Salinas Valley Groundwater Basin. The Army paid an annexation fee of $7.4 million to be used by MCWRA to complete the design of the Castroville Seawater Intrusion Project (CSIP). In addition, the Army received a $400,000 credit for money spent on planning and information for the EIR/EIS for CSIP, the Salinas Valley Reclamation Project, and the Fort Ord Annexation. The September 10, 1993 "Annexation Assembly and Evaluation Report for the Annexation of Fort Ord by the Monterey County Water Resources Agency,"

[2] "Agreement between the United States of America and the Monterey County Water Resources Agency concerning Annexation of Fort Ord into Zones 2 and 2A of the Monterey County Water Resources Agency, Agreement No. A-06404", dated September 21, 1993,

[3] "Annexation Agreement and Groundwater Mitigation Framework for Marina Area Lands" dated March 1996 (1996 Annexation Agreement), among the MCWRA, the Marina Coast Water District, J.G. Armstrong Family Members, RMC Lonestar (now CEMEX), and the City of Marina,

which was incorporated as Appendix D to the 1993 Annexation Agreement, provides the background and justification for the annexation. The Executive Summary to that report states in part the following:

> The purpose of this annexation by [MCWRA] is to provide the basis for a long term, reliable, potable water supply to supply the Army's residual mission at Fort Ord after it is realigned per the Base Closure and Realignment Act of 1990. Annexation will also facilitate the disposal and reuse of the portions of Fort Ord not needed to support the Army's residual mission.

Section 4, Terms and Conditions of the 1993 Annexation Agreement state the following:

> 4.c. After execution of this agreement and until Project Implementation[4], Fort Ord/POM Annex/RC may withdraw a maximum of 6,600 acre-feet of water per year from the Salinas Basin, provided no more than 5,200 acre-feet per year are withdrawn from the 180-foot aquifer and 400-foot aquifer. The 6,600 and 5,200 acre-feet thresholds correspond to the annual peak (1984) and recent average (1988-1992) amounts of potable water Fort Ord has withdrawn from the Salinas Basin (does not-include pumpage-from the-non-potable golf course well in the Seaside Basin). …The MCWRA agrees not to object to any Fort Ord/POM Annex/RC withdrawal under 6,600 acre-feet per year, except in compliance with California Water Code Appendix, Chapter 52, Section 22.
>
> 4.g. Should future litigation, regulation or other unforeseen action diminish the total water supply available to the MCWRA, the MCWRA agrees that it will consult with the Fort Ord/POM Annex Commander. Also, in such an event, the MCWRA agrees to exercise its powers in a manner such that Fort Ord/POM Annex/RC shall be no more severely affected in a proportional sense than the other members of the Zones.
>
> 4.h. If prior to Project Implementation, any Fort Ord/POM Annex well (including any located in the Seaside Basin) becomes contaminated with seawater, or is adversely affected by regulatory or legal action, the MCWRA: shall cooperate with the Government in finding an interim water supply; shall assist the Government in any permit processes necessary to obtain such an interim water supply; and shall provide the same services to the Government as it would to any other municipal water supplier in the Zones under similar circumstances. The Government will bear the costs of obtaining such an interim water supply. Such costs will not include the cost of MCWRA staff time in providing services to the Government hereunder. The MCWRA will continue to monitor the rate of seawater intrusion, and will keep the Fort Ord/POM Annex Commander informed as to: the rate of seawater intrusion; the progress of plans for its Project; and the estimated remaining life of the Fort Ord/POM Annex wells. The MCWRA shall pass to the Fort Ord/POM Annex Commander

[4] As defined in paragraphs 2.j. and 2.k. of the Agreement:

> 2.j. Project: A future, long term, reliable, potable water system for the POM Annex/RC and other areas; the Project will provide at least 6,600 acre-feet per year which will permit all Salinas Basin wells on Fort Ord Lands to be shut down except during emergencies; stopping all pumping from the Salinas Basin on Fort Ord Lands is necessary to mitigate seawater intrusion; the MCWRA is currently developing such a Project to supply water to the Fort Ord Lands, Marina, Salinas, Toro Park, and perhaps other areas in north Monterey County; it is also possible that another water agency, district, utility, or purveyor could develop a smaller scale Project to supply water for just the Fort Ord Lands;
> 2.k. Project Implementation: The potable water system cited in paragraph 2.j. shall be considered "implemented" upon both the completion of construction and the deli very of potable water to POM Annex/RC from the completed water system;

any information they may obtain related to the continuing yield of Fort Ord/POM Annex wells located in the Seaside Basin.

1996 Marina Lands Annexation Agreement

Under the 1996 Marina Lands Annexation agreement the MCWRA annexed MCWD's Central Marina service area into Zones 2 and 2A and allocated to MCWD 3,020 AFY from the Salinas Valley Groundwater Basin for use in the Central Marina service area. MCWD paid a net annexation fee of $2,449,410 after receiving a $400,000 credit against the annexation fee. Section 1.1, Purpose, of the 1996 Annexation Agreement states:

> The purpose of this Agreement and Framework is to help reduce seawater intrusion and protect the groundwater resource and preserve the environment of the Salinas River Groundwater Basin through voluntary commitments by the Parties to limit, conserve and manage the use of groundwater from the Salinas River groundwater basin, and to provide the terms and conditions for the annexation of certain territory in the Marina area to the [MCWRA's] benefit assessment Zones 2 and 2A as a financing mechanism providing additional revenues to the [MCWRA] to manage and protect the groundwater resource in the Salinas River Groundwater Basin and to reduce seawater intrusion.

Terms and conditions in Sections 5 and 8 of the Agreement states:

> 5.1.1 Commencing on the effective date of this Agreement and Framework and continuing until Mitigation Plan Implementation, MCWD will limit its withdrawal of potable groundwater from the Basin for land in the Marina area and outside the former Fort Ord Military Reservation to 3,020 afy of potable groundwater, and only such additional quantities as are permitted by this paragraph 5.1. MCWRA's groundwater resource planning for the existing MCWD service area will be based on the latest information and projections contained in the MCWD Water Plans, using 3,020 afy as a planning guideline for potable water use.
>
> 5.1.1.1 After Compliance with all applicable requirements of law, including but not limited to CEQA, MCWD may improve the interconnection between the MCWD water system and the water system serving Fort Ord, to provide for join, conjunctive and concurrent use of all system facilities to serve Fort Ord and other areas served by MCWD, and the other Parties will cooperate on MCWD's increased withdrawal of potable groundwater by up to 1,400 afy from the 900-foot aquifer to enable the increased withdrawals from 5200 afy to 6600 afy for use on Fort Ord, as provided in paragraph 4.c. of the September 1993 Agreement between the The United States of America and the MCWRA.
>
> 5.2. No objection by MCWRA to MCWD withdrawals except pursuant to section 22 of Agency Act. The MCWRA shall not object to any withdrawal by MCWD which is mentioned in section 5.1 above, except in compliance with section 22 of the Agency Act. All groundwater withdrawn from the Basin by MCWD may be used only within the Basin.
>
> 8.1. Equal treatment by MCWRA and MCWD. If future litigation, regulation or other unforeseen action diminishes the total water supply available to MCWRA, MCWRA agrees that it will exercise its powers so that MCWD, Armstrong and Lonestar shall be no more severely affected in a proportional sense than other lawful users of water from the Zones, based on the right before the imposition of any uniform and generally applicable restrictions as described in paragraph 8.2 to use

> at least the quantities of water from the Basin described in paragraphs 5.1., 6.9., and 7.2. MCWRA shall not at any time seek to impose greater restrictions on water use from the Basin by MCWD, Armstrong or Lonestar than are imposed on users either supplying water for use or using water within the city limits of the City of Salinas. MCWD, Armstrong and Lonestar will comply with any basin-wide or area-wide water allocation plans established by the MCWRA which include MCWD, Armstrong and Lonestar, and which do not impose on use of water on the lands described in Exhibits "B", "C", and "D" restrictions greater than are imposed on users either supplying water for use or using water within the City of Salinas, and which satisfy the requirement of paragraph 5.2 of this Agreement and Framework.

G***roundwater Use by MCWD within the Monterey Subbasin for Fort Ord Lands and Marina Lands***

On October 23, 2001, the U.S. Government through the Secretary of the Army made an economic development conveyance by quitclaiming the following assets to FORA and the next day on October 24, 2001, FORA deeded those very same assets to MCWD: (1) all of Fort Ord's water and sewer infrastructure; (2) under the 1993 Fort Ord Annexation Agreement, 4,871 AFY of the Army's 6,600 AFY of MCWRA groundwater allocation with the Army reserving 1,729 AFY; and (3) 2.22 MGD of the Army's prepaid wastewater treatment capacity under the Army-MRWPCA Agreement. The Army and MCWD have a long-term water supply contract whereby MCWD is authorized to use the Army's reserved groundwater allocation to serve Federal activities within the former Fort Ord. Consequently, MCWD either owns or manages the 9,620 AFY of the MCWRA groundwater allocations for the benefit of both Fort Ord Lands and Marina Lands.

MCWD has produced 4,300 AFY of groundwater, on average, over the 15 years prior to the historic drought of 2014-2017. Approximately, 1,300 AFY has been produced from the lower 180-foot and 400-foot aquifers, and 2,000 AFY has been extracted from the deep aquifers. Total groundwater extraction from the Monterey Subbasin over the 5 years prior to the historical drought is estimated to be approximately 4,500 AFY on average[5]. Annual production by MCWD for the period between 2000 and 2018 are provided in Attachment B.

3. Uncertainty in Water Budget Estimate of Groundwater Inflow Components

As part of the groundwater inflow components of the water budget, three components entail percolation of water from the land surface down to groundwater, including Streamflow Percolation (Section 6.5.1), Deep Percolation of Precipitation (Section 6.5.2), and Deep Percolation of Excess Applied Irrigation (Section 6.5.3). The fourth source of groundwater inflows included in the groundwater budget is Subsurface Inflows from Adjacent Subbasins (Section 6.5.4), which come from the Forebay Subbasin and the Monterey Subbasin.

There appears to be significant uncertainty in the quantity of each of these inflows as evidenced by the variability in the estimate of deep percolation between the Historical (97,300 AFY) and Future Projected (148,000 to 153,000 AFY) water budgets (see Attachment A). Further, the conceptualization of sources of inflow to the groundwater system is at odds with the description of recharge sources in the Draft Chapter 4. Specifically, Chapter 4 (Section 4.4.3) describes recharge in the 180/400 Subbasin as follows:

[5] Estimated based on Public Water Systems Statistic Survey (i.e. Form 38) data obtained from the Department of Water Resources.

> "Although Figure 4-9 shows some areas of good potential recharge in the 180/400-Foot Aquifer Subbasin, recharge to the productive zones of the Subbasin is very limited because of the low permeability Salinas Valley Aquitard. It is unlikely that any significant surficial recharge in the 180/400-Foot Aquifer Subbasin reaches the productive 180-Foot Aquifer or the 400-Foot Aquifer."

The amount of recharge stated to occur from the deep percolation sources (97,300 AFY) far outweighs the amount coming from subsurface inflow (20,000 AFY total), which is inconsistent with the description of the recharge sources in Chapter 4.

We understand that there is insufficient information currently available to accurately assess these inflow components. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess both deep percolation and other basin inflow components. Doing so may reveal significantly different recharge sources for the shallow unconfined aquifer system versus the deeper aquifer system which could have important management implications and be critical for evaluating the effectiveness of potential recharge projects.

4. Water budget Information Should be Developed for each Principal aquifer

Water budget information for each principal aquifer is necessary to verify that proposed future operations of the basin, including implementation of projects and management actions, will not lead to undesirable results in each principal aquifer. Seawater intrusion is occurring in both the 180 Foot Aquifer and the 400 Foot Aquifer, and inland gradients exist within the Deep Aquifer. In order to reach sustainability, hydraulic gradients in each of these aquifers will need to be reversed either through decreasing groundwater extraction and/or future supply augmentation projects. As such, water budgets for each aquifer must be established to verify that undesirable effects do not occur.

We understand that information related to groundwater extraction within individual aquifer zones is currently limited and that water budgets cannot be developed for each principal aquifer zone. As such, we recommend that the GSP acknowledge this uncertainty and identify it as a data gap. The GSP should provide a plan to further assess rates of extraction and inflows within principal aquifer zones so undesirable results, such as seawater intrusion can be mitigated. This information is critical, as achieving sustainability in the basin requires implementation of projects and management actions, which will need to be evaluated against sustainable management criteria in each principal aquifer.

5. Inclusion of "Baseline Condition" Projected Water Budget

Historic and projected water budgets presented in the GSP are summarized in attached Attachment A. As shown on this attachment, there is significant variability between groundwater inflow components estimated on the basis of historical versus projected future conditions. It is our understanding based upon our discussion, that this discrepancy is related to the method of analysis versus actual projected change in climate[6]. As such, we recommend that the GSP include a future water budget assuming historical "baseline hydrologic conditions" in addition to the 2030 and 2070 climate change scenarios. This information is critical to understanding how much climate change uncertainties affect the basin's projected sustainable

[6] Historical conditions are estimated on the basis of an analytical model and projected future water budgets are estimated utilizing the SVIHM Operational Model.

yield, given the significant differences in the methods of analysis and the dramatic increase in estimated deep percolation in future water budget, as discussed above.

Inclusion of this scenario is consistent with GSP Regulations 354.18, (c) (3), which state:

> "Projected water budgets shall be used to estimate future baseline conditions of supply, demand, and aquifer response to Plan implementation, and to identify the uncertainties of these projected water budget components. The projected water budget shall utilize the following methodologies and assumptions to estimate future baseline conditions concerning hydrology, water demand and surface water supply availability or reliability over the planning and implementation horizon:
>
> (A) Projected hydrology shall utilize 50 years of historical precipitation, evapotranspiration, and streamflow information as the baseline condition for estimating future hydrology. The projected hydrology information shall also be applied as the baseline condition used to evaluate future scenarios of hydrologic uncertainty associated with projections of climate change and sea level rise."

6. Qualification of Data Gaps and Uncertainty

It is understandable that a GSP due January 31, 2020, will have data gaps and will be subject to modeling limitations, which create uncertainty. The District understands that SVBGSA intends to prepare this GSP based on the current best available science and information, per the State policy of sustainable, local groundwater management (Water Code § 113). It is important that each data gap, the scope of the resulting uncertainty caused by the data gap specific to the decisions being made in this GSP, and the steps to close the data gap be identified in the GSP. MCWD will work with the SVBGSA to help close the data gaps for adaptive, sustainable management of the 180/400 and Monterey Subbasins.

OTHER COMMENTS AND QUESTIONS

Section 6.2

It appears that in the historical water budget, the surface water budget is limited to just the river channels (i.e., Salinas River, other tributaries, and agricultural drains). It seems that there should be a land surface balance, like there is in the SVIHM-based Projected Water Budget, that estimates precipitation and irrigation percolation based on evapotranspiration (ET) and land use.

Section 6.6.2

Riparian ET rates were described to be 20 AFY/acre per personal communications with Rhode, whose detailed information was not provided in the Chapter's references. The rates were then assumed to be 16 AFY/acre in the water budget calculation without further justification. Riparian ET rates should be better substantiated, especially since the resulting riparian ET values are significant compared to the average change in storage over the historical period.

In addition, it is unclear why riparian ET is considered as an outflow from groundwater, rather than from surface water.

Sections 6.8.4, 6.9, 6.10.5, 6.10.6 and associated tables

Estimated annual seawater water intrusion inflows and annual changes in storage are subtracted from total groundwater pumping to estimate the sustainable yield. This methodology is somewhat confusing to the reader, as it presumes that the change in storage is negative. To avoid confusion, we recommend that changes in storage and seawater intrusion be identified as negative in throughout the chapter, or further clarifying language be included. For example:

- Tables 6-20 and 6-31: We recommend that these tables show the change in storage and seawater intrusion as negative values.
- Table 6-22: A note should be added to Table 6-22 indicating that although seawater intrusion is identified as an inflow to quantify the overall basin water budget, it is not considered part of the sustainable yield.
- Tables 6-27 and 6-28: It is unclear why seawater intrusion is not shown as an inflow component on these tables, given that it is shown as an inflow component in Table 6-25. These tables should be made consistent and clarify that although seawater intrusion is an inflow, it is not considered part of the usable groundwater or sustainable yield.
- Section 6.10.5 and Table 6-30: We suggest clarifying that change in groundwater storage discussed here are decreases in groundwater storage.

Table 6-22

Table 6-22 shows a decrease of only 600 AFY, on average, of groundwater in storage based on water level declines during the "current period" (2015-2017). This implies no real decline in water levels – is that what is seen?

Sincerely,

Keith Van Der Maaten

General Manager, Marina Coast Water District

Attachment A: Summary of SVBGSA 180/400 Foot Aquifer Subbasin Draft Groundwater Budget Calculations

Attachment B: MCWD Groundwater Production by Aquifer, 2000 - 2018

Attachment A. Summary of SVBGSA 180/400 Foot Aquifer Subbasin Draft Groundwater Budget Calculations

Groundwater Budget in Average Years		Historical	Current (a) (Table 6-19)	Current (a) (Table 6-22)	Future	Future
	Budget Period	***1995-2014***	***2015-2017***	***2015-2017***	***2030***	***2070***
Streamflow Deep Percolation	I-1	73,300	31,100	NR	71,541	71,706
Precipitation Deep Percolation	I-2	12,300	11,600	NR	76,333	81,777
Irrigation Deep Percolation	I-3	11,700	4,500	NR	-	-
Subsurface Inflows	I-4	20,000	20,000	NR	30,411	31,706
Total Freshwater Inflow	**I = sum I-1 to I-4**	**117,200**	**67,200**	**67,100**	**178,285**	**185,189**
Pumping	O-1	108,300	109,300	NR	115,349 (b)	120,644 (b)
Riparian Evapotranspiration	O-2	12,000	12,000	NR	-	-
Drain Flows	O-3	-	-	-	7,100	8,024
Flow to Streams	O-4	-	-	-	1,833	1,921
Groundwater ET	O-5	-	-	-	35,127	36,652
Subsurface Outflows	O-6	9,500	3,200	NR	25,440	24,887
Total Freshwater Outflow	**O = sum O-1 to O-5**	**129,800**	**124,400**	**130,800**	**184,849**	**192,128**
Seawater Intrusion	SI	-10,500	-10,500	-10,500	-3,465	-3,852
Change in Storage	DS = DFS - SI	-2,100	-46,800	-53,200	-4,584	-4,653
Change in Freshwater Storage	**DFS = I - O**	**-12,600**	**-57,300**	**-63,700**	**-8,049**	**-8,505**
Sustainable Yield	SY = O-1 + SC	95,700	52,000	NR	107,300	112,139
Error (c)		*1%*	*NR*	*40%*	*1%*	*1%*
Net flow from Monterey (d)		*3,000*	*3,000*	*NR*	*5,502*	*6,208*

Notes:
- = Items not applicable to the specific calculation method
NR = not reported
(a) Values are reported differently on Tables 6-19 and 6-22.
(b) This summary shows values from Table 6-27 and after. Values are reported differently on Table 6-26 .
(c) Calculated as the water budget imbalance as a percentage of outflow. For the current water budget, change in storage estimated from water levels were -600 AFY compared to -53,200 AFY as estimated by balancing the water budget.
(d) Net subsurface flow from the Monterey Subbasin as assumed or estimated in the analyses.

Attachment B. MCWD Groundwater Production by Aquifer, 2000 - 2018

Year	Groundwater Production (AFY)		
	180-Foot and 400-Foot Aquifers	Deep Aquifer	Total
1999	2,396	2,021	4,417
2000	2,371	2,194	4,565
2001	2,228	2,150	4,378
2002	2,137	2,239	4,376
2003	2,144	2,162	4,306
2004	2,423	2,261	4,684
2005	1,994	2,194	4,188
2006	2,509	1,786	4,295
2007	2,941	1,622	4,563
2008	2,269	1,833	4,102
2009	2,076	1,962	4,038
2010	2,389	1,744	4,133
2011	2,348	1,698	4,047
2012	2,345	1,829	4,174
2013	2,420	2,011	4,431
2014	1,658	2,368	4,026
2015	1,258	1,970	3,228
2016	1,195	1,830	3,025
2017	1,159	2,079	3,239
2018	1,129	2,276	3,405
Pre-drought Average, 2000-2014	*2,283*	*2,004*	*4,287*

August 5, 2019

Steve McIntyre, Chair
Salinas Valley Basin Groundwater Sustainability Agency
P.O. Box 1350
Carmel Valley, CA 93924
Via email peterseng@svbgsa.org, camela@svbgsa.org

Subject: Comments on Groundwater Sustainability Plan (GSP) 180/400 foot
Chapter 6 Water Budget

Dear Chair McIntyre and members of the Board of Directors:

LandWatch appreciates the opportunity to comment on the GSP 180/400-foot Subbasin Chapter 6 Water Budgets.

As noted in the introduction to Chapter 6, many data gaps exist. These gaps include the unavailability of the USGS Historic Groundwater Model, double counting of annual groundwater and surface water pumping, lack of verifiable groundwater pumping data as addressed in our letter on GSP Chapter 7, and lack of data from the deep aquifer. Moreover, assumptions about climate change and average annual rainfall appear especially problematic in light of apparent discrepancies with California's Fourth Climate Change Assessment.

Given these uncertainties, to achieve sustainable yield—whatever that yield turns out to be—it may be necessary to significantly reduce groundwater pumping more than the 7% reduction contemplated in Chapter 6. It is therefore incumbent on the Agency to adopt a robust adaptive management strategy that establishes a conservative baseline reduction in pumping and adjusts pumping limits as data become available.

We offer these further comments:

Substantial uncertainty mandates a conservative estimate of sustainable yield.

The regulations provide that "uncertainty refers to a lack of understanding of the basin setting that significantly affects an Agency's ability to develop sustainable management criteria and appropriate projects and management actions in a Plan, or to evaluate the efficacy of Plan implementation, and therefore may limit the ability to assess whether a basin is being sustainably managed." (23 CCR § 351(ai).) We are concerned that the extensive data gaps and high level of uncertainty are inconsistent with the general principle that "groundwater conditions must be adequately defined and monitored to demonstrate that a Plan is achieving the sustainability goal for the basin." (23 CCR § 350.4(a).)

In light of the uncertainty and data gaps, we urge that the GSA adopt a conservative estimate of the sustainable yield in developing sustainable management criteria, projects, and management actions. For example, as between the two different and currently unreconciled sustainable yield calculations in Chapter 6, one based on the historic water budget (95,700 AFY) and one based on the projected water budget (107,200 AFY in 2030), we recommend that the GSA use the lower estimate of sustainable yield, at least until the historic and projected sustainable yields have been reconciled with a historic groundwater model.

We also recommend that the GSA further reduce that lower estimate with reference to some quantification of its uncertainty. For example, until the effect of double counting has been resolved, the 95,700 AFY historical budget sustainable yield should be reduced by the best estimate of this double counting error.

A conservative estimate of sustainable yield here is mandated by the requirement that "sustainable management criteria and projects and 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).) We note that 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).)

Uncertainty must be quantified.

As drafted, Chapter 6 discusses the uncertainty of the historic and current water budgets in section 6.9 and then separately discusses the uncertainty of the projected future water budget in section 6.10.8.

The quantitative discussion of the uncertainty of the historic and current water budgets in section 6.9 only assesses "net uncertainty." The "net uncertainty" concept is in effect limited to a comparison of calculated versus estimated change in storage. The discussion acknowledges that there has been no effort to determine the uncertainty of each historic water budget component. It is not clear that the "net uncertainty" concept adequately reflects the uncertainty that may be caused by data gaps.

For example, Chapter 6 now acknowledges as a data gap some amount of unresolved double counting of extractions caused by the practice of reporting extractions as both groundwater pumping and as surface water diversion. Such duplicate reporting would clearly bias the calculated change in storage, tending to minimize it. If this error also biases the estimated change in storage, then the "net uncertainty" concept is an insufficiently robust assessment of uncertainty because it would not account for the duplicate reporting error.[1] Alternatively, if the

[1] Estimated change in storage is based on groundwater levels and the storage coefficient. (Chap. 6, p. 17.) If the storage coefficient is determined with reference to the historic extraction data, then the double counting would infect both estimated and calculated change in storage.

estimated change in storage is independent of historic extraction data, then the relatively small reported "net uncertainty" of the historic budget masks the fact that the calculated storage change actually differs from the estimated storage. Similar considerations would apply to any water budget components for which there are data gaps, depending on whether and how they bias the change in storage determinations.

In sum, the "net uncertainty" concept in section 6.9 used to evaluate the historical water budge is an inadequate quantitative measure of uncertainty. Accordingly, it is not clear that the "net uncertainty" calculations actually support the conclusion that the historical budget is "reasonably reliable." (Chap. 6, p. 28.)

There is no quantitative assessment of the uncertainty of the projected water budget in Chapter 6. Section 6.10.8 merely offers the truism that models inherently contain some uncertainty.

The projected future water budget cannot be used to manage the basin without some quantitative assessment of its uncertainty. That assessment of uncertainty requires calibration of the model for the projected future water budget based on the historic water budget. In particular, the regulations require that the historical water budget include information that is "sufficient to calibrate and reduce the uncertainty of the tools and methods used to estimate and project future water budget information and future aquifer response to proposed sustainable groundwater management practices over the planning and implementation horizon." (23 CCR § 354.18(c)(2)(B).) However, we understand that because the USGS has not yet completed the historic model, the modeling of a future water budget has not yet been calibrated with reference to historic data.

Chapter 6 acknowledges this fundamental source of uncertainty by explaining that the projected water budget and the historical water budget are not "comparable" because they were developed using different approaches. (Chap. 6, p. 1.) The historical budget is based on compilation of past reports and the projected budget is based on the USGS model. The USGS model is not complete because it still lacks the historic model component. As Table 6-31 shows, there is a substantial variance in the sustainable yield determined with reference to the historical budget (95,700 AFY) and the sustainable yield determined through the projected future water budget (107,200). The difference may be increased to the extent that the historical budget overstates sustainable yield on the basis of double counting.

In sum, the major source of uncertainty is the substantial and unexplained variance between the sustainable yield derived from historical budget and the sustainable yield derived from the future budget. The mere acknowledgement that the historical and future water budgets are not "comparable" is not sufficient to justify any reliance on the projected future water budget. If the basin is to be managed on the basis of any consideration of a projected future water budget, then it is critical that there be some quantitative estimate of the uncertainty of the modeling of that projected water budget.

Assumptions regarding efficacy of future projects and management actions to address seawater intrusion in 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." (Chap. 6, p. 30.) However, it is not clear that this assumption is warranted in light of the withdrawal of NOAA's Biological Opinion for the SVWP on February 20, 2019. Or for example, it is not clear whether and how the projected future water budget reflected the recent actions by the County to restrict pumping in the Area of Impact within the 180/400 Subbasin. The fact that the model projects that net pumping in 2030 and 2070 will be substantially greater than historical pumping suggests that the 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.

The increased reduction in groundwater levels in the projected future budget, compared to historic conditions, appears inconsistent with the projected lower levels of seawater intrusion.

Chapter 6 explains that "change in groundwater storage has two components in the Subbasin: change in groundwater elevation and seawater intrusion." (Chapter 6, section 6.2.3.) The historic water budget's 12,600 AFY change in storage consists of 2,100 AFY due to falling groundwater levels and 10,500 AFY due to seawater intrusion. (Table 6-20.) The 2030 projected future water budget's 8,100 AFY change in storage consists of 4,600 AFY due to falling groundwater levels and 3,500 AFY due to seawater intrusion. (Tables 6-30 and 6-31.)

Falling groundwater levels cause seawater intrusion.[2] Accordingly, it is difficult to understand how, compared to historic conditions, the future water budget can project reduced seawater intrusion at the same time that it projects greater decreases in groundwater levels. This anomalous result should be explained.

The concept of "net pumping" is unexplained, and the Chapter includes inconsistent statements of historical pumping.

Chapter 6 uses the term "net pumping" in its discussion of the projected future water budget. (Chapter 6, p. 29; p. 30, Table 6-31.) By contrast, the discussion of historical and current pumping uses the term "total pumping." (Chapter 6, pp. 15-16, Table 6-11 and 6-12.) What is being netted out in the discussion of future pumping?

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

What is the reference intended by the asterisk after “Total Pumping” in Table 6-11 for historical pumping?

We note that despite Mr. Virsik’s June 4, 2019 letter, Chapter 6 still inexplicably reports total pumping for the historic period inconsistently. In the comparison of historic and future pumping assumptions used in sustained yield determination, Chapter 6 reports total pumping used to historical sustained yield as 86,500 AFY. (Chap. 6, p. 37). However, in its actual determination of historical sustained yield, Chapter 6 reports historic pumping as 108,300 AFY. (Chap. 6, Tables 6-11, 6-18, and 6-20.)

Transport of water out of subbasin is unaccounted.

Section 6.2.2 identifies groundwater pumping and subsurface outflows to adjacent subbasins as elements of the groundwater budget outflows. Chapter 6 does not appear to address the transport of water out of the subbasin by overlying landowners. We have seen documentation that suggests very substantial pumping of groundwater for irrigation outside the groundwater basin. If such pumping is occurring, it should be accounted for separately. It should also be determined if pumping groundwater for use that is not on overlying land is consistent with the Agency Act and with principles of groundwater law, and the GSP updated on whether and how to accommodate this pumping in the future.

Surface water inflows from Toro Creek is unaccounted.

No separate inflow is determined from El Toro Creek. Is this because El Tor Creek joins the Salinas River in the Monterey Subbasin? If so, then the model needs to reflect that the Salinas River exits the 180/400 Subbasin north of Highway 68, receives some augmentation from El Toro Creek, and then reenters 180/400 Subbasin. Otherwise there is no accounting for the El Toro Creek inflow.

Double counting of water withdrawals is unresolved.

In a June 18, 2019 letter, Thomas Virsik proposed a relatively straightforward method to identify or at least estimate 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 at least estimates this potential error and reduce the historic sustainable yield calculation by that estimate.

We note that Chapter 6 states that the modeling of the future water budget does not double count extractions. (Chap. 6, p. 27.) 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.

Climate change assumptions appear inconsistent with California's Fourth Climate Change Assessment.

Chapter 6 notes that "projections are based on the available climate change data provided by DWR (2018)." (pg. 29). Table 6-1 estimates the average historical (1995-2014) water budget from precipitation at 100,400 AFY (pg. 6). Table 6-23 shows a projected water budget from precipitation of 135,700 AFY in 2030 and 141,200 AFY in 2070, increases of 35% and 41% respectively from historic averages (pg. 33).

The Chapter doesn't explain how DWR's projections reconcile with those in California's Fourth Climate Change Assessment Central Coast Region Report. Table 6 in the Fourth Assessment shows historical average annual precipitation (1961-1990) of 19.3" increasing to 21.1-21.4" or ~20% by 2070 – much less than what DWR projects (pg. 16).

More importantly, the Fourth Assessment also notes:

- Average precipitation is expected to increase by a relatively small amount, but the annual variability increases substantially by the end of the century. (pg. 17)
- Projected future droughts are likely to be a serious challenge to the region's already stressed water supplies. (pg. 6)
- 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. (pg. 7)
- Climate change projections of future extreme and prolonged droughts will exacerbate the region's water supply challenges. (pg. 21)

Chapter 6 should reconcile the apparent data discrepancies with the Fourth Assessment and also discuss how uncertainties in future precipitation patterns will impact groundwater budgets.

Finally, 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.

Future updates

Finally, we support updating the water budgets as soon as possible after data become available. Updating this Chapter is critically important to the overall planning effort to achieve groundwater sustainability in the 180/400-foot subbasin.

Thank you for your consideration of our comments.

Sincerely,

Michael DeLapa
Executive Director

7-11-19 public comments MCCOW

Comments: Marla Anderson, Representative of Monterey County Water Systems
Date: July 10, 2019

Problems/ Inconsistencies in Chapter 6

I). The Future Model is unrealistic, based on unsound projections, promotes further expansion of high use water operations (farms) does not encourage responsible water conservation practices, and does not factor in urban growth

A). Precipitation- Future projections show the ave. annual precipitation in the 180/400 basin to be 35% higher in year 2030 **ONLY 13 YEARS AWAY** from the current budget and 41% higher in 2070. These number are not reasonable projections. There is no evidence that average precipitation will ever increase to the projected levels. Historical data should provide the basis for future precipitation projections.

Table 6-1: Runoff from Precipitation	**Average for the Current Water Budget (AF/yr.)**	
Average for the Historical Water Budget (AF/yr.)		Historical
Precipitation	100,400	67,800
Runoff from Precipitation	7,400	2,000

Table 6-23: Average Land Surface Water Budget Inflows (AF/yr.). **Projected Climate Change Timeframe**	**2030 (AF/yr.)**	**2070 (AF/yr.)**
Precipitation	135,700	141,200
Recycled Water Deliveries	4,400	4,400
Surface Water Deliveries	8,300	8,500
Agricultural Pumping	94,800	99,500
Evaporation from Groundwater	6,500	6,800
Transpiration from Groundwater	29,600	30,800
Total Inflows	279,300	291,200

Future Projections

TOO HIGH

B). Why does agricultural pumping increase in 2030 and 2070 by 6.5% and 11.8% respectively over historical average pumping amount? **HOW IS THIS CONSISTENT WITH RAISING GROUNDWATER TO 2003 LEVELS, MINIMIZING EXPANSION OF HIGH WATER USING ACTIVITIES LIKE FARMING AND IMPLEMENTATING RESPONSIBLE WATER CONSERVATION PRACTICES?**

Table 6-11: Historical Annual Groundwater Pumping by Water Use Sector **Water Use Sector**	**Average (AF/yr.)**	**Minimum (AF/yr.)**	**Maximum (AF/yr.)**
	Historical		
Agricultural	**89,000**	76,200	110,800
Urban	19,000	14,000	27,500
Rural-Domestic	400	300	400
Total Pumping*	108,300	93,100	131,000

Table 6-23: Average Land Surface Water Budget Inflows (AF/yr.). **Projected Climate Change Timeframe**	**2030 (AF/yr.)**	**2070 (AF/yr.)**
Precipitation	135,700	141,200
Recycled Water Deliveries	4,400	4,400
Surface Water Deliveries	8,300	8,500
Agricultural Pumping	**94,800**	**99,500**
Evaporation from Groundwater	6,500	6,800
Transpiration from Groundwater	29,600	30,800
Total Inflows	279,300	291,200

Future Projections

C). Why do the models say that land use is assumed to be static and that no urban growth is included in the model simulation? Future urban growth according to LAFCO projections are contained in Chapter 1 of the draft SVBGSA PLAN.

6.10.1.2 SVIHM Assumptions and Modifications to Simulate Future Conditions

The assumptions incorporated into the SVIHM for the projected water budget simulations include:

- Land Use: **The land use is assumed to be static**, aside from a semi-annual change to represent crop seasonality. The annual pattern is repeated every year in the model. Land use in the model reflects the 2014 land use. **THIS IS TOTALLY UNREALISTIC!!**

- **No urban growth is included in this simulation to remain consistent with the USGS assumptions.** If urban growth is infill, this assumption may result in an underestimate of net pumping increases and an underestimate of the Subbasin's future overdraft. If urban growth replaces agricultural irrigation, the impact may be minimal.

USGS ASSUMPTIONS ARE TOTALLY UNREALISTIC. INFILL WILL OCCUR AND IS PROJECTED IN EVERY GENERAL PLAN. REPLACEMENT OF SOME AGRICULTURE ADJACENT TO URBAN BOUNDARIES IS CONTAINED IN GENERAL PLANS FOR SALINAS AND EVERY SOUTH COUNTY CITY.

D). If no urban growth is included in the model, why does the model project a 7.9% to 11% increase in pumping for urban purposes?

Table 6-11: Historical Annual Groundwater Pumping by Water Use Sector Water Use Sector	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	89,000	76,200	110,800
Urban	**19,000**	**14,000**	**27,500**
Rural-Domestic	400	300	400
Total Pumping*	108,300	93,100	131,000

Historical

Table 6-29: Projected Annual Groundwater Pumping by Water Use Sector Water Use Sector	2030 Average	2070 Average
Agricultural	94,800	99,500
Urban (total pumping minus agricultural)	**20,500**	**21,100**
Rural-Domestic (not simulated in model, considered minimal)	0	0
Total Pumping	135,800	141,600

Future

E). The blue inflow numbers in the table below are unrealistic and based on unreasonable precipitation projections

Table 6-24: Average Land Surface Water Budget Outflows (AF/yr.). **Projected Climate Change Timeframe**	**2030 (AF/yr.)**	**2070 (AF/yr.)**
Evaporation from Irrigation	14,100	14,800
Evaporation from Precipitation	38,700	38,600
Evaporation from Groundwater	6,500	6,800
Transpiration from Irrigation	64,300	67,200
Transpiration from Precipitation	32,500	32,300
Transpiration from Groundwater	29,600	30,800
Overland Runoff	25,200	27,500
Deep Percolation	**77,000**	**82,300**
Surface Water Returns	500	400
Total Outflows	**288,400**	**300,700**

Table 6-25: Average Groundwater Inflow Components for Projected Climate Change Conditions (acre-ft/year) **Projected Climate Change Timeframe**	**2030 (AF/yr.)**	**2070 (AF/yr.)**
Stream leakage	**71,500**	**71,700**
Deep Percolation	**76,300**	**81,800**
Seawater Intrusion	**3,500**	**3,900**
Underflow from Monterey Subbasin	**10,900**	**11,500**
Underflow from Eastside Subbasin	**9,800**	**10,400**
Underflow from Forebay Subbasin	**5,300**	**5,300**
Underflow from Langley Subbasin	**1,800**	**1,800**
Mountain front recharge	**2,600**	**2,700**
Underflow from Pajaro	**100**	**100**
TOTAL	**181,800**	**189,200**

F. See Sea Water Intrusion numbers in Table 6-25 above. Why does sea water intrusion increase from 3,500 AF/yr in 2030 to 3,900 in 2070 AF.yr if sustainability is in the process of being achieved during that timeframe?

G). See red colored numbers above. 2030 and 2070 projected outflows are above and beyond the historical outflow of 129,800 AF/yr. by 40% and 46% respectively which is even more than the unrealistic projected increase in rain. Why is this?

H).Why is total pumping (both agricultural and non-agricultural) projected to go up by 25% in 2030 and 31% in 2070 ? HOW WILL THIS ENABLE GROUNDWATER LEVELS TO BE INCREASED TO 2003 LEVELS AND SALT WATER INTRUSION AREAS TO BE PUSHED BACK TO HIGHWAY 1?

Table 6-11: Historical Annual Groundwater Pumping by Water Use Sector **Water Use Sector**	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	**89,000**	76,200	110,800
Urban	19,000	14,000	27,500
Rural-Domestic	400	300	400
Total Pumping*	**108,300**	93,100	131,000

Historical

Table 6-26: Average Groundwater Outflow Components for Projected Climate Change Conditions (acre-ft/year) **Projected Climate Change Timeframe**	2030 (AF/yr.)	2070 (AF/yr.)
Pumping	**135,800**	**141,600**
Drain Flows	7,100	8,000
Flow to Streams	1,800	1,900
Groundwater ET	35,100	36,700
Underflow to Ocean	800	700
Underflow to Monterey Subbasin	5,400	5,300
Underflow to Eastside Subbasin	17,000	16,600
Underflow to Forebay Subbasin	300	300
Underflow to Langley Subbasin	100	100
Underflow to Upland Areas	900	900
Underflow to Pajaro	1,000	1,000
TOTAL	**205,300**	**213,100**

Future

I. Why are the Groundwater Extraction figures in table 6-27 different from the pumping figures in table 6- 26?

Table 6-27: Average Annual Groundwater Budget for Projected Climate Change Conditions (acre-ft/year) **Projected Climate Change Timeframe**	2030 (AF/yr.)	2070 (AF/yr.)
Net GW Extraction	**-115,000**	**-120,600**

Table 6-26: Average Groundwater Outflow Components for Projected Climate Change Conditions (acre-ft/year) Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Pumping	135,800	141,600

J. The Model projects 588% to 636% increase in deep percolation above historical deep percolation levels

Table 6-8: Deep Percolation from Precipitation for Historical and Current Water Budget Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)	
Total precipitation	100,400	67,800
Runoff	7,400	2,000
Evapotranspiration	81,800	59,300
Deep percolation	11,200	6,500

Historical

Table 6-24: Average Land Surface Water Budget Outflows (AF/yr.). Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Evaporation from Irrigation	14,100	14,800
Evaporation from Precipitation	38,700	38,600
Evaporation from Groundwater	6,500	6,800
Transpiration from Irrigation	64,300	67,200
Transpiration from Precipitation	32,500	32,300
Transpiration from Groundwater	29,600	30,800
Overland Runoff	25,200	27,500
Deep Percolation	77,000	82,300
Surface Water Returns	500	400
Total Outflows	**288,400**	**300,700**

Future - 588%-636% increase??

2). Why is the "Minimum Threshold" in Chapter 8 (Table 8-1) for long-term sustainability of groundwater storage based on the Model's over-inflated 2070 precipitation projection instead of the more realistic historical sustainability projection of 95,700 AF/ yr? 112,000 AF/ yr is 17 % higher than the historical sustainability yield of 95,700 AF/yr. identified in Chapter 6, Table 6-20. **WHY IS THAT??** 112 AF/Yr. based should not be considered the sustainable yield in Chapter 8. Chapter 8 matrix needs to be changed to the yield to 95,700 AF/ yr.

Table 6-20: Estimated Historical Sustainable Yield for the 180/400-Foot Aquifer Subbasin Average

(AF/yr.)	
Total Subbasin Pumping	108,300
Change in Storage (Groundwater Levels)	2,100
Seawater Intrusion	10,500
Estimated Historical Sustainable Yield	**95,700**

Table 8-1: Sustainable Management Criteria Summary

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
Chronic lowering of groundwater levels	Water level minimum thresholds set to 1 foot above 2015 groundwater elevations. See Table 8-2for wells in the 180- and 400- Foot aquifers	Measured through monitoring well network.	Water level measurable objectives set to 2003 groundwater elevations	Over the course of any one year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded in any single aquifer and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the 180-Foot aquifer and two exceedances in the 400-Foot aquifer	To be developed
Reduction in groundwater storage	Minimum threshold set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	M… groundwater extractions. Municipal users and small systems report groundwater extractions to the state. Agricultural pumping will either be collected by MCWRA, or estimated based on crop data	…tive is Identical to the minimum threshold. Set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	During average hydrogeologic conditions, and as a long-term average over all hydrogeologic conditions, the total groundwater pumping shall not exceed the minimum threshold.	Set to 112,000 acre-feet per year
Seawater intrusion	Minimum threshold is the 2017 extent of 500 mg/L chloride isocontour is developed by MCWRA for the 180- and 400- Foot aquifers. The minimum threshold is the line defined by Highway one for the deep aquifer.	Seawater intrusion maps developed by MCWRA	Measurable objective is the line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep aquifers	On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.	To be developed
Degraded groundwater quality	Minimum threshold is zero additional exceedances of groundwater quality	Groundwater quality data downloaded annually from state and local sources.	Measurable objective is Identical to the minimum threshold.	On average during any one year, no groundwater quality minimum threshold shall be exceeded as a	Identical to current conditions

Should 95,700 AF/yr

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18 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Advisory Committee

Re: Agenda Item 4.c
Chapter 6 of 180/400 GSP

Enclosed are: (1) the June 4, 2019 letter to the Planning Committee on Chapter 6 and (2) a copy of an email to the SVBGSA of June 11, 2019, including its enclosures. This letter supplements the prior comment letter based on comments and feedback from the consultant and others at the June 6 and June 10 Planning and Board of Directors meetings, respectively. *Page references are to the internal numbering of the Chapter as posted on June 17, 2019 [a different version of the Chapter was posted on June 14, 2019].*

EWRIMS (SURFACE WATER DIVERSION) DATA NOT VETTED
The enclosed email explains the simple process the GSA has available to it to determine if the surface water diversions used in the water budgets are "double counting" water. To put it starkly, the publically available statements of water diversion near Speckles sent along with the email claims that the surface water diversion reported to the State is -- in the view of the filer -- actually groundwater. See response to "Additional Remarks" of the State form (enclosed with email). Presumably, the filer (an affiliate/proxy for the well-regarded local ag interest Tanimura & Antle) is also following local requirements and providing the exact same water extraction numbers to the MCWRA per local Ordinance.

Unless the GSA compares the (limited) set of eWRIMS data for the 180/400 with the MCWRA groundwater pumping reports for the nearly identical zone (the "Pressure"), the water budget numbers will erroneously assume water users in the 180/400 draw from two separate sources and hence their reduction to meet "sustainable yield" may be inaccurate. SGMA requires the "best available" data and transparency, which would not be met and the Plan may fail at DWR if the GSA continues to ignore the data and simple analytical approach[1] at its fingertips.

[1] The MCWRA reports are tied to wells while the State reports are tied to land, but both require monthly extraction numbers, which can be directly compared. For example, a diversion for water use near Speckles that reports surface water diversions in succeeding calendar months of 115.2, 229.4, and 425.7 AF and a MCWRA report for a well near Speckles that reports groundwater extractions in succeeding calendar months of 115.2, 229.4, and 425.7 AF must be the same water. It should not be included twice in the water budget analyses.

The historical water budget reports surface water diversions on the order of nearly 10,000 AFY, which is a magnitude material to projecting a reliable sustainable yield. Chapter 6 at Tables 6-5 and 6-16, pages 10 and 18.

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS ABOUT CURRENT PROJECTS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15, pages 36 and 17. Consultant Williams explained that the delta is due (1) to the seawater intrusion projects (CSIP, SRDF) coming online during the historical period and (2) an assumed current and future "100%" level of performance of the. Again, what does the "best available" data show about the efficiency or performance of the MCWRA projects? If the data compiled by the MCWRA for its projects reflect a 50% or a 25% level of efficiency, then the model should use that metric instead of assuming the projects will magically perform far better than they have to date.

CONCLUSION

As noted in my prior letter and email and above, prior to further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality such as surface water diversions and project performance reality. The real danger for the Salinas Valley lies not in whether DWR accepts or approves the GSP, but in intelligently considering and selecting programs and management actions (a later chapter of the GSP) based on factious assumptions and projections about current project efficiency and wet water use/availability (whether labeled ground or surface). It is preferable to proceed with care than risk committing to projects or management actions that will either not lead to or perhaps even make the attainment of sustainability less likely.

Very truly yours,

Thomas S. Virsik

Thomas S. Virsik

Encl.
June 4, 2019 letter to GSA Planning Committee
June 11, 2019 email to GSA re eWRIMS and MCWRA

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4 June 2019

To: Salinas Valley Basin Groundwater Sustainability Agency (GSA) Planning Committee

Re: Agenda Item 4.b
Chapter 6 of 180/400 GSP

The below are comments and suggestions for the draft Chapter 6 of the 180/400 GSP. As presented, the draft Chapter fails to meet the minimum requirements of SGMA, lacking literally the word "overdraft" in its text. Emergency GSP Reg. 354.18(b)(5) (the historic, current, and projected water budgets must include quantification of overdraft when basin deemed in overdraft per Bulletin 118).[1]

NOTE ON REFERENCES
For ease of tracking (given the content will eventually be in other agenda packets), the following format is used: xx/yy, in which xx is the page of the Chapter and yy is the page of the paginated packet. Both numbers are found on the right-hand corner of the page.

CHAPTER SKIRTS AROUND IMPORTANT SUSTAINABLE YIELD CALCULATION
Chapter 8 revealed that the future sustainable yield of the entire Valley is estimated at 494,000 AFY. Chapter 8 19/196 (at Planning Committee). What is the current sustainable yield for the 180/400? That specific query does not appear addressed in draft Chapter 6. At 8.6.4 the draft Chapter purports to address "sustainable yield" but the text confines itself to the historical sustainable yield, being 95,700 AFY. 22/41. The text equates that to a 10% reduction in pumping from the historical average.

The sustainable yield calculation is achieved by subtracting the sum of seawater intrusion and change in storage from the total pumping. Those values come from the chart for the historical groundwater budget. 19/38[2]. Applying the same formula as that used to calculate historical sustainable yield to calculate current sustainable yield from the parallel values in the parallel summary chart (20/39), the current sustainable yield appears to be 52,000 AFY for the 180/400. I.e., delta between inflows and outflows at Tables 6-18, 6-19, and 6-20 (109,300 - 57,300 = 52,000). The reduction in pumping needed to achieve current sustainable yield based on the data in Chapter 6 through section 6.8.4, is near 50%. While sustainable yield is not "sustainability" itself, the

[1] That "overdraft" may be calculated from the figures and values presented does not obviate the GSP regulatory requirement of quantifying "overdraft" for the several water budgets. Whether the next Chapter revision is one of editing (e.g., a change of terminology) or of arithmetic (e.g., add an extra calculation labelled "overdraft" in certain tables) is a matter for the GSA and its consultant.
[2] Seawater intrusion and groundwater level changes are apparently lumped together as "change in storage" in the charts on 19/38 and 20/39 (last entry in both).

omission of the current sustainable yield is troubling, pointing to a failure to meet a core regulatory requirement. Reg. 354.18(b)(5).

FUTURE SUSTAINABLE YIELD BASED ON QUESTIONABLE ASSUMPTIONS

The latter portion of draft Chapter 6 -- using the SVIHM, not reported data -- calculates the future sustainable yield. The assumptions include a two-thirds reduction in seawater intrusion from 10,500 to around 3,500 AFY. Cf. Table 6-30 with Table 6-15. 34/53 and 15/34. How that significant reduction occurs while projected pumping increases beyond historical levels is not explained. 34/53 (pumping of 86,500 AFY for historical sustainable yield v. pumping of 115,300 to 120,600 AFY for projected). Moreover, the calculated historical sustainable yield in Chapter 6 did not use a total pumping value of 86,500 AFY, but 108,300. Table 6-20 at 22/41. Clearly the two halves of Chapter 6 have not been checked against each other.

The "black box" quality of the SVIHM -- at least in its current state when it cannot be publicly peer reviewed by third parties -- undermines the credibility of the 180/400 GSP. A GSP based on assuming seawater intrusion radically decreases while pumping increases strains credulity. It is possible that the model is "correct" per its myriad assumptions and interconnections used to project results, if only one could review and reality test all of them. But at least as recited in draft Chapter 6, its calculation of a 7% reduction in pumping to balance the 180/400 comes across as far-fetched and unrealistic.

On the ground reality is not simply preferable, but required under SGMA. As my March 2017 letter noted early on, for a basin in overdraft like the 180/400, SGMA requires calculating the "demand reduction" or other methods to mitigate overdraft.

> If overdraft is an issue (i.e., overdraft that causes seawater intrusion near the coast), then SGMA requires projecting a reduction of water use that mitigates overdraft. § 354.44(b)(2). For the Salinas Valley, the projection would entail a reduction of localized pumping (the 180/400 sub basin), as reduction of pumping in the other areas have little or no effect. . . . That option must be explored for the GSP to meet SGMA standards. Whether that simple and tailored approach is preferable to other potential ones (given political, fiscal, economic, environmental, etc. factors) is unknown, but SGMA mandates such an approach be included in the GSP.

March 2017 letter, pages 6-7. Lacking specific quantification of overdraft in the several water budgets, draft Chapter 6 may not be a sufficient basis for later chapters that address how much pumping reductions, in what areas and at what times, mitigates overdraft (a must-be-included potential "management action" in SGMA nomenclature).

DATA REFERENCES CONFUSING

Draft Chapter 6 states that the 180/400 basin accounts for 7% of the surface water extractions per eWRIMS. 7/26 The data relied upon is listed in Appendix 6-A. ??/58, 62. Data on eWRIMS has always been public and in the current era can be downloaded. 7/26 Yet, the Appendix does not contain the public information on who, where, and

when the diversions are occurring. If the omission is due to convenience or time pressures, the next iteration of the chapter should make such data available in the sprit (if not requirement) of transparency. The relevance of the data from eWRIMS is less "who," but where (the intruded area?) and when (winter rains or parched river?), which may impact the mandatory demand reduction analysis, i.e., assuming a 7% reduction, when and in what areas of the 180/400 does one curtail pumping?

CONCLUSION
As noted above, prior to any further review, the draft Chapter requires revisions to (1) track regulatory requirements and (2) harmonize the SVIHM projections with data-based reality.

Very truly yours,

Thomas S. Virsik
Thomas S. Virsik

Gmail Thomas S. Virsik <thomasvirsiklaw@gmail.com>

EWRIMS and MCWRA reports

Thomas S. Virsik <thomasvirsiklaw@gmail.com> Tue, Jun 11, 2019 at 2:10 PM
To: Gary Petersen <peterseng@svbgsa.org>

Gary,

For Williams' attention per his remarks yesterday that the nature of the reporting to (1) eWRIMS and (2) the MCWRA on water extractions was dissimilar (and hence could not be readily cross-checked for double counting). I vehemently disagree.

I have attached a T&A state report (three years, including the map showing location -- all from eWRIMS). I selected it at random. It claims to be using groundwater, by the way, at "Additional Comments." [I think the word "fights" is supposed to be "rights"]

One can make a direct comparison of the monthly amounts reported in the MCWRA and State databases. If any two reports (one from eWRIMS and the other from MCWRA) arguably within the same sub-basin reflect the exact same amounts for 1/17, 2/17, 3/17 etc. then there is double counting that skews (Ms. Isakson's word) the calculation of sustainable yield and pumping reductions. One need not correlate precise APN's or well codes. I can -- for my own clients whose MCWRA reports I possess-- do such a month by month comparison (none of which relate to the 180/400). I have made this comment in public before, but perhaps it was not understood.

Given the GSA has access to the MCWRA records, it can and must do the same comparison for the limited number of 180/400 eWRIMS statements. Chapter 8 draft Table 8-9. It's simple, yet necessary to meet the "best available" standard. And it leads to a better and more reliable real-world outcome based on accurate water use / yield numbers. No part of the comparison involves determining any "water right" or claim thereto.
--
Thomas S. Virsik
Attorney at Law

4 attachments

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2015.pdf
73K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2016.pdf
80K

S014885 T&A SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE 2017.pdf
80K

Maps from S014885.pdf
85K

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2015

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 05/31/2016

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3-4. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used

Month	Rate of diversion	Amount directly diverted (Acre-Feet)	Amount diverted or collected to storage (Acre-Feet)	Amount beneficially used (Acre-Feet)
January		3.017	0	3.017
February		2.637	0	2.637
March		14.177	0	14.177
April		9.469	0	9.469
May		8.465	0	8.465
June		13.554	0	13.554
July		14.954	0	14.954
August		4.292	0	4.292
September		0	0	0
October		0	0	0
November		0	0	0
December		0	0	0
Total		70.565	0	70.565
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
8e. Water transfered	No
8f. Quantity transfered (Acre-Feet)	
8g. Dates which transfer occurred	/ to /
8h. Transfer approved by	

Water Supply Contracts

8i. Water supply contract	No
8j. Contract with	
8k. Other provider	
8l. Contract number	
8m. Source from which contract water was diverted	
8n. Point of diversion same as identified water right	
8o. Amount (Acre-Feet) authorized to divert under this contract	
8p. Amount (Acre-Feet) authorized to be diverted in 2015	
8q. Amount (Acre-Feet) projected for 2016	
8r. Exchange or settlement of prior rights	
8s. All monthly reported diversion claimed under the prior rights	
8t. Amount (Acre-Feet) of reported diversion solely under contract	

5. Water Diversion Measurement		
a.	Measurement	Water directly diverted and/or diverted to storage was measured
b.	Types of measuring devices used	Propeller Meter
c.	Additional technology used	Flow Totalizer
	Description of additional technology used	
d.	Who installed your measuring device(s)	Representative using manufacturer's recommendations
e.	Make, model number, and last calibration date of your measuring device(s)	Water Specialties, Propeller meter
f.	Why direct measurement using a device listed in Section 1 is "not locally cost effective"	
	Explanation of why use of devices and technologies listed in Section 1 are "not locally cost effective"	
g.	Method(s) used as an alternative to direct measurement	
	Explanation of method(s) used as an alternative to direct measurement	

6. Purpose of Use	
Irrigation	661.90 Acres Vegetables

7. Changes in Method of Diversion

8. Conservation of Water		
a.	Are you now employing water conservation efforts?	Yes

	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	Acre-Feet
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

11a. Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Ron
Last Name	Yokota
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2016

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0	0	0
March		0	0	0
April		5.059	0	5.059
May		11.164	0	11.164
June		19.857	0	19.857
July		25.109	0	25.109
August		23.773	0	23.773
September		19.856	0	19.856
October		16.781	0	16.781
November		0	0	0

December		0	0	0
Total		121.599	0	121.599
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2016	
6p. Amount (Acre-Feet) projected for 2017	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

[SUMMARY OF FINAL SUBMITTED VERSION]

SUPPLEMENTAL STATEMENT OF WATER DIVERSION AND USE FOR 2017

Primary Owner: TANIMURA LAND COMPANY LLC
Statement Number: S014885
Date Submitted: 08/03/2018

1. Water is used under	Riparian Claim Pre-1914 Claim
2. Year diversion commenced	1984

3. Purpose of Use	
Irrigation	

Irrigated Crops			
	Multiple Crops	**Area Irrigated (Acres)**	**Primary Irrigation Method**
Vegetables	Yes	661.90	Sprinkler

4. Changes in Method of Diversion

Special Use Categories	
C1. Are you using any water diverted under this right for the cultivation of cannabis?	No

5-6. Maximum Rate of Diversion for each Month and Amount of Water Diverted and Used				
Month	**Rate of diversion**	**Amount directly diverted (Acre-Feet)**	**Amount diverted or collected to storage (Acre-Feet)**	**Amount beneficially used (Acre-Feet)**
January		0	0	0
February		0.476	0	0.476
March		6.191	0	6.191
April		8.05	0	8.05
May		27.526	0	27.526
June		27.296	0	27.296
July		24.129	0	24.129
August		0.762	0	0.762
September		3.002	0	3.002
October		41.776	0	41.776
November		0.003	0	0.003

December		1.233	0	1.233
Total		140.444	0	140.444
Type of Diversion	Direct Diversion Only			
Comments				

Water Transfers	
6d. Water transfered	No
6e. Quantity transfered (Acre-Feet)	
6f. Dates which transfer occurred	/ to /
6g. Transfer approved by	

Water Supply Contracts	
6h. Water supply contract	No
6i. Contract with	
6j. Other provider	
6k. Contract number	
6l. Source from which contract water was diverted	
6m. Point of diversion same as identified water right	
6n. Amount (Acre-Feet) authorized to divert under this contract	
6o. Amount (Acre-Feet) authorized to be diverted in 2017	
6p. Amount (Acre-Feet) projected for 2018	
6q. Exchange or settlement of prior rights	
6r. All monthly reported diversion claimed under the prior rights	
6s. Amount (Acre-Feet) of reported diversion solely under contract	

7. Water Diversion Measurement	
a. Required to measure as of the date this report is submitted	Yes
b. Is diversion measured?	Yes
c. An alternative compliance plan was submitted to the division of water rights on	
d. A request for additional time was submitted to the division of water rights on	

Measurement ID number	M010336
This Device/Method was used to measure water during the current reporting period	Yes
M1. Briefly describe the measurement device or method	propellor meter
M2. Nickname	
M3. Type of device / method	Flow meter (propeller)
M4. Device make	McCrometer
M5. Serial number	932573-8

M6. Model number	
M7. Approximate date of installation	04/13/2016
M8. Additional info	
M9. Approximate date the measuring device was last calibrated or the measurement method was updated	11/01/2015
M10. Estimated accuracy of measurement	5%
M11. Description of calibration method	Calibrated to manufaturers specifications before installation manufacturer representative
M12. Describe the maintenance schedule for the device/method	
Information for the person who last calibrated the device or designed the measurement method	
M13. Name	
M14. Phone number	
M15. Email	
M16. Qualifications of the individual	California-licensed contractor authorized by the State License Board for C-57 well drilling or C-61 Limited Specialty/D-21 Machinery and Pumps
M17. License number and type for the qualified individual above and/or any other relevant explanation	
M18. Type of data recorder device / method	
M19. Data recorder device make	
M20. Data recorder serial number	
M21. Data recorder model number	
M22. Data recorder units of measurement	
M23. Frequency of data recording	
M24. Additional data recorder info	
M25. I am required to report my diversion or storage data by telemetry as of the date this report is submitted	
M26. I report my diversion or storage date by telemetry to the following website	
M27. I have attached additional information on the method I used to calculate the volume of water	
M28. Describe any documents related to this measurement device or method that are attached to this water use report	

8. Conservation of Water

a.	Are you now employing water conservation efforts?	Yes
	Describe any water conservation efforts you have initiated	Drip irrigation. Off wind irrigation. Weather Forecast monitoring for optimal irrigation timing. Flow meter and time clock on pump. Transplants when possible. Soil moisture sensors System maintenance and monitoring to minimize leaks and maximize distribution uniformity. Laser land leveling. Select sprinkler heads, nozzles and drip tape emitters with application rates that match the system layout, system pressure and infiltration rates.
b.	Amount of water conserved	
	I have data to support the above surface water use reductions due to conservation efforts.	

9. Water Quality and Wastewater Reclamation		
a.	Are you now or have you been using reclaimed water from a wastewater treatment facility, desalination facility, or water polluted by waste to a degree which unreasonably affects such water for other beneficial causes?	No
b.	Amount of reduced diversion	
	Type of substitute water supply	
	Amount of substitute water supply used	
	I have data to support the above surface water use reductions due to the use of a substitute water supply	

10. Conjuctive Use of Surface Water and Groundwater		
a.	Are you now using groundwater in lieu of surface water?	No
b.	Amount of groundwater used	
	I have data to support the above surface water use reductions due to the use of groundwater.	

Additional Remarks
Tanimura & Antle ("T&A") believes that the water it diverts is percolation ground water which T&A uses pursuant to overlying groundwater fights; if, however, it is finally determined by a court of competent jurisdiction or the State Water Resources Control Board that the water T&A diverts is underflow, a subterranean stream, or any other water that is characterized as surface water subject to State Water Resources Control Board jurisdiction, T&A will be deemed to have been exercising riparian and/or pre-1914 water rights.

Attachments		
File Name	**Description**	**Size**
No Attachments		

Contact Information of the Person Submitting the Form	
First Name	Anthony
Last Name	Duttle

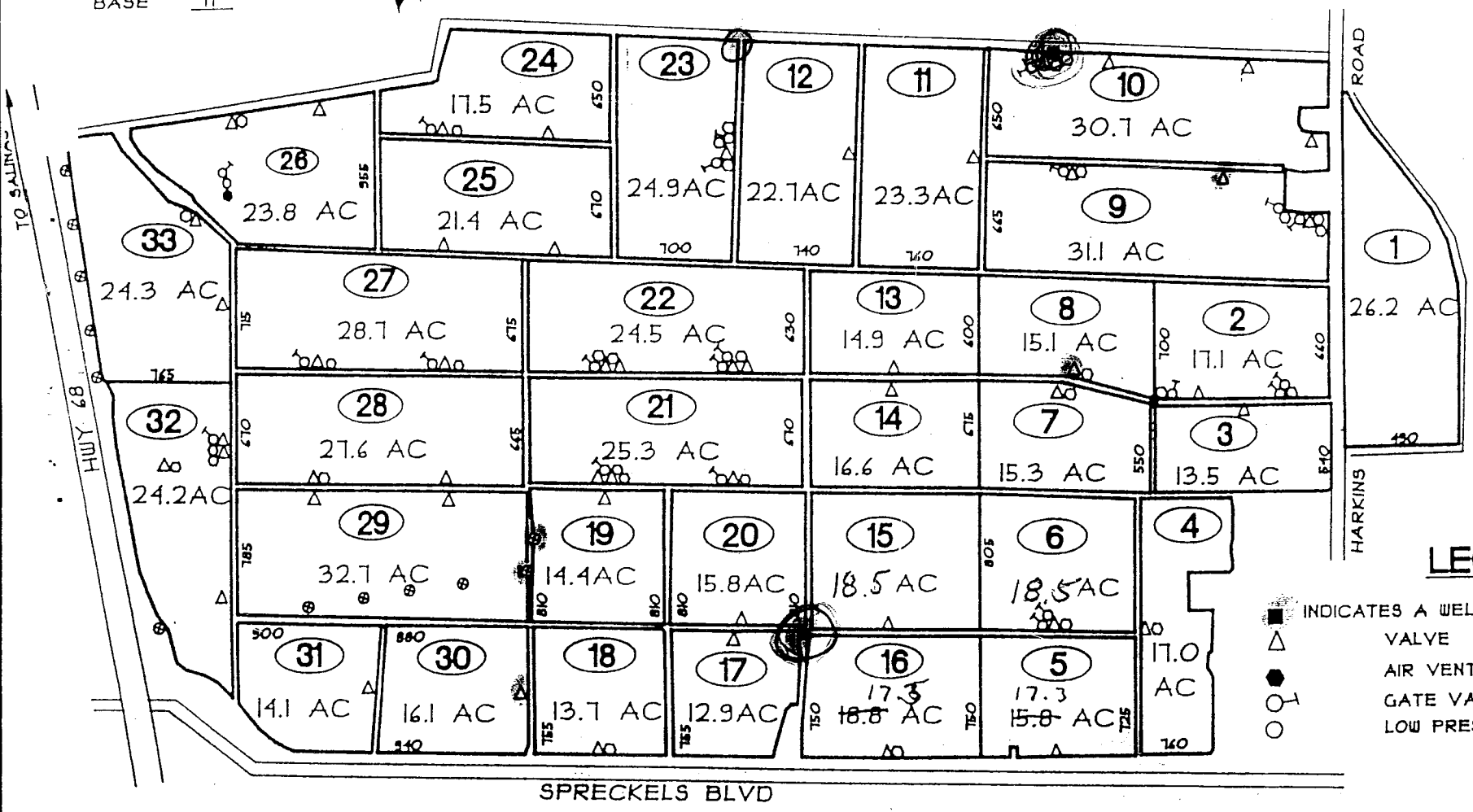
Relation to Water Right	Diverter of Record
The information in the report is true to the best of his/her knowledge and belief	Yes

SO14885

SPRECKELS RANCH
TANIMURA & ANTLE, INC.

SURVEYED 1982, REVISED 1986 & 1988
MAPPED APRIL 1995
FILE: TASPRECK.DWG 1"=700'

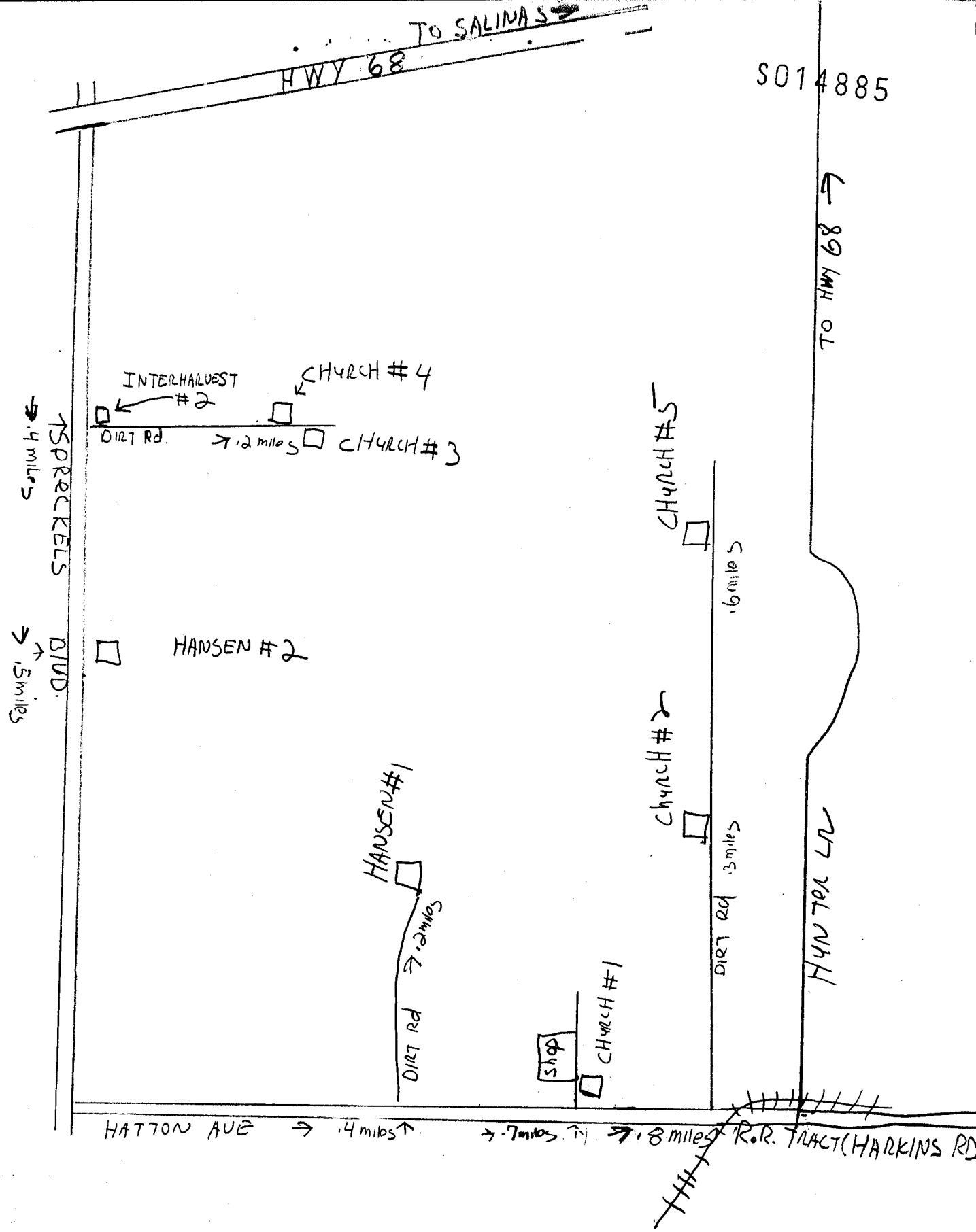
COUNTY 27
TOWNSHIP 15S
RANGE 3E
SECTION 20
BASE M



LEGEND

- INDICATES A WELL
- VALVE
- AIR VENT/STANDPIPE
- GATE VALVE
- LOW PRESSURE VALVE

677.2± ACRES NET CROP


S014885
TO SALINAS
HWY 68
TO HWY 68
INTERHARVEST #2
CHURCH #4
DIRT Rd.
.2 miles S
CHURCH #3
.4 miles
SPRECKELS BLVD.
.5 miles
HANSEN #2
CHURCH #5
.6 miles S
CHURCH #2
HANSEN #1
.2 miles
DIRT Rd
.3 miles
shop
CHURCH #1
HUNTER LN
HATTON AVE
.4 miles
.7 miles
.8 miles
R.R. TRACT (HARKINS RD)

Addressees: board@svbgsa and peterseng@svbgsa.org

Dear Board Members and Mr. Petersen:

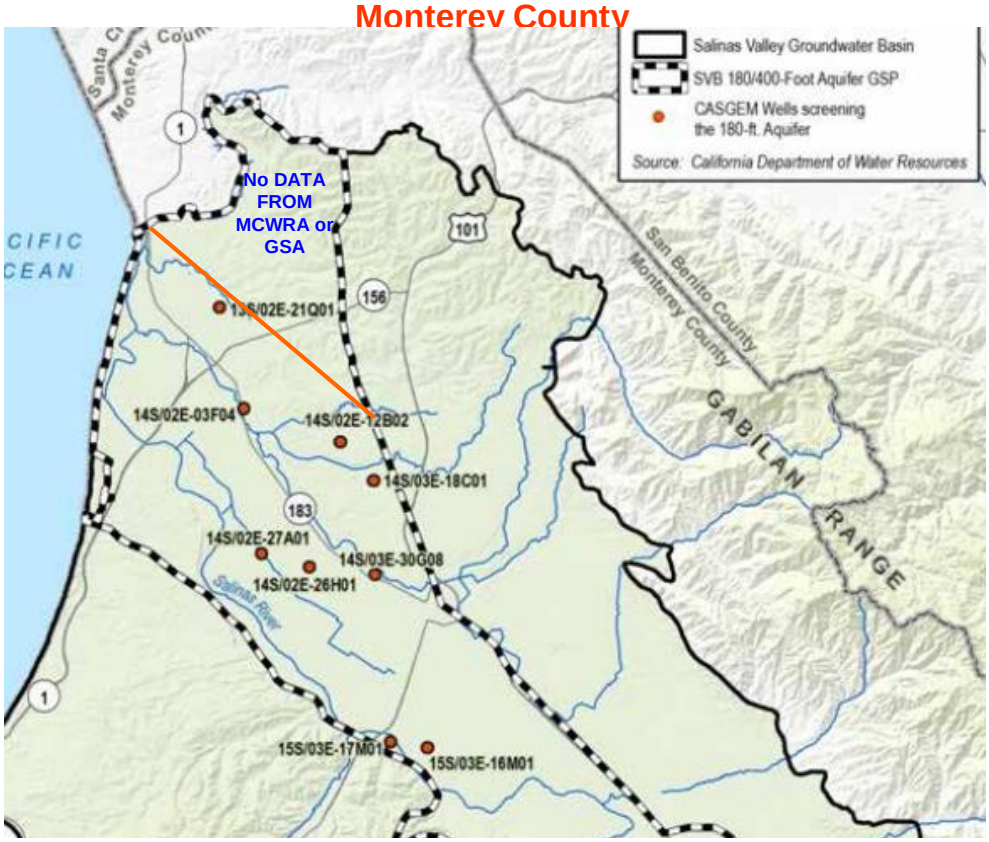
The Salinas Valley Basin Groundwater Sustainability Plan does not adequately address groundwater sustainability or sea water intrusion. There are dozens of reasons why this Plan should not be adopted as a viable document to guide water use in our area. It needs to be vastly improved before it should be submitted to the State Department of Water Resources as representing a meaningful starting point for the Salinas Valley Basin and groundwater sustainability.

1). There needs to be language added in the implementation chapter that does the following:

Commit that by 2021 the GSA (or MCWRA) will do the studies that SHOULD HAVE BEEN DONE **before** the "sustainability" criteria was developed. There is absolutely no monitoring well data from the hill areas in the northern part of the 180/400 ft. aquifer. The monitoring wells are located on the flatland areas only. SVBGSA has NO IDEA what the condition of wells are in the hill areas where thousands of rural residents live. They do not know how many wells are already at risk in terms of groundwater level and how the proposed projects and continued high pumping rates could exacerbate those low levels.

No Data in the Plan for North Monterey County

#1



2). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area where sea water encroachment is intruding, whether the encroachment exceeds state standards or not, based on increases in chloride and total dissolved solids occurring between 1995 throughjcurrent time.

3). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will be notified if their well is located in an area ground levels have dropped below the minimum threshold or similar criteria that indicates potential at-risk of sanding or failing.

4). In the chapter regarding implementation, there needs to be a commitment that by 2022 private well owners and small water system managers will receive either in conjunction with #2 and #2 above, or independent of it, notification of funding and/or programs available for water testing, water impurity removal systems and funding for improvements to wells that are in jeopardy of well failure.

5). In Chapter 8, Table 8.1, is unrealistic in the minimum threshold criteria for chronic lowering of groundwater levels. The level needs to be raised to the groundwater average level for the year 2007. This change is needed because the 2015 level is too close to the lowest gw level in 74 years of history records. Is it not reasonable to "Freeze" the minimum at the bottom during drought periods where well failures were know to occur. It is clear that severe over-drafting has been occurring for decades as evidenced by massive sea water intrusion. It is not a reasonable "floor" to prevent continued over-draft / sea water intrusion. The need for a higher minimum threshold is especially true considering the stated intent from GSA officials that measurable objectives do not necessarily need to met. They are just "goals".

6). The proposed undesirable result for chronic lowering of groundwater levels in Table 8.1 of 15% exceedance for 2 consecutive years IS MUCH TOO GREAT OF AN EXCEEDANCE. This is especially true because the positive impacts of projects may not be known for decades.

7). Reduction in Storage

a). The sustainable yield figure of 112,000 AF/yr shown in Table 8.1 is absolutely not a realistic figure and needs to be drastically reduced. This figure is based on SVBGSA projections from an erroneous future model with unrealistic assumptions and inaccurately executed calculations. Until a realistic model is developed , **the sustainable yield in Table 8.1 should be lowered from 112,000 AF/yr to 95,700 Af/yr which is historical sustainability as shown in Table 6-20 as 95,700 AF/yr.** Attachment A shows some of the several errors in the Future model used by SVBGSA in calculating future sustainability to

arrive at a figure of 112,000 AF/yr. The fact that the model was approved by the Department of Water Resources as a temporary model doesn't mean that is was executed properly or that GSA was required to use it . . . . . b). The current measurable objective for pumping SHOULD BE SET TO THE HISTORICAL SUSTAINABLE YIELD of 95,700 AF/yr UNTIL IT IS DEMONSTRATED THAT PROGRESS IS BEING MADE TOWARDS ACHIEVING ALL 6 OF THE SUSTAINABILITY GOALS.

8). Sea Water Intrusion- Exceedances

There should be NO EXCEEDANCES ALLOWED beyond the 2017 500 mg//L chloride boundary. NOT ON AVERAGE!!. Immediate pumping reductions need to occur immediately upon any intrusion beyond the 2017 line. The plan needs to clearly state that there will not be a "buffer" that allows further intrusion until projects are put into place. Future projects should be devoted to pushing the intrusion back to the measurable objective line.

Table 8.1- Sustainability Criteria

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
Chronic lowering of groundwater levels	Water level minimum thresholds set to 1 foot above 2015 groundwater elevation[illegible] Table 8-2 for wells in the 180- and 400- Foot aquifers	Measured through monitoring well network	Water level measurable objectives set to 2003 groundwater elevations	Over the course of any one year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded in any single aquifer and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the 180-Foot aquifer and two exceedances in the 400-Foot aquifer.	[illegible]
Reduction in groundwater storage	Minimum threshold set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	Measured through total groundwater extractions. Municipal users and small [illegible]ems report groundwater ext[illegible] Agr[illegible] be [illegible] esti[illegible]	Measurable objective is Identical to the minimum threshold. Set to the estimated long-term [illegible]ainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	During average hydrogeologic conditions, and as a long-term average over all [illegible] conditions, the total groundwater pumping shall not exceed the minimum threshold.	Set to 112,000 acre-feet per year
Seawater intrusion	Minimum threshold is the 2017 extent of the 500 mg/L chloride isocontour as developed by MCWRA for the 180- and 400-Foot aquifers. The minimum threshold is the line defined by Highway 1 for the deep aquifer.	Seawater intrusion maps developed by MCWRA	Measurable objective is the line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep aquifers	On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.	5-Year: identical to current conditions 10-year: one-third of the way to the measurable objective 15-year: two-thirds of the way to the

#1- Change to 2007 for all [illegible]

#2-15% is much too high for exceedances

#3-Should be 95,700 AF/yr [illegible]

#4- 1). No further intrusion to be allowed beyond current 500 CL contour line 2). Pumping reductions to begin immediately if 2017 min. and milestones are not met.

9). Language needs to be added to the Chapter for Stakeholder Engagement and Public Outreach that more specifically identifies strategies that will be used to inform and engage the public. The existing language is very vague. In addition, not all of the outreach described in the Consensus Building document was carried out. The chapter needs to identify specific data bases that will be used to contact the public, such as the Environmental Health Bureau's small water system list, Monterey County Water Resource Agency's well owner list, and Monterey Resource Agency home owner association lists. The chapter needs to list identified social media that are known by local community organizations such as Prunedale Preservation Alliance, Monterey County Water Systems, Next Door, Prunedale Community Neighborhood Watch, and several others.

Thank you for revising the GSA Plan to reflect thresholds and objectives that will attain true groundwater sustainability.

Sincerely,

Attachment A

Over-zealous, Unrealistic, and Unstated assumptions of the Future "Sustainable" Yield Model

Table 6-13: Current Annual Groundwater Pumping by Water Use Sector

Water Use Sector	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Agricultural	91,900	89,000	97,700
Urban	17,000	12,900	19,000
Rural-Domestic	200	200	200
Total Pumping	109,100	108,200	110,900

Table 6-30: Projected Annual Groundwater Pumping by Water Use Sector

Water Use Sector	2030 Average	2070 Average
Agricultural	94,800	99,500
Urban (total pumping minus agricultural)	20,500	21,100
Rural-Domestic (not simulated in model, considered minima	0	0
Total Pumping	135,800	141,600

141,600
- 112,000
29,600 = Unstated Assumptions!!

#1 Rural residential groundwater use in not included in the future model

#2 Even with rural residential not being included in the future budget, the overall pumping is still projected to go up by 25% and 30% respectively by 2030 and 2070. How can this accomplish groundwater sustainability when we are already in severe over-draft and increasing sea water intrusion?

3). The future model projects a 35% increase in ave. rainfall by 2030 and 41% increase by 2070

4). The model assumes a 640 % increase in 2030 and 691 % increase in 2070 in deep percolation of rain to ground water above current levels.

Table 6-20: Summary of Current Groundwater Budget

	Average (AF/yr.)	Minimum (AF/yr.)	Maximum (AF/yr.)
Net Percolation of Streamflow to Groundwater	30,000	0	90,000
Deep Percolation of Precipitation and Excess Irrigation	10,400	-6,400	18,900
Subsurface Inflows from Adjacent Subbasins	20,000	20,000	20,000
FLOW	60,400	38,800	103,600

Table 6-25: Average Land Surface Water Budget Outflows

Projected Climate Change Timeframe	2030 (AF/yr.)	2070 (AF/yr.)
Deep Percolation	77,000	82,300

	2030 Projected Sustainable Yield	2070 Projected Sustainable Yield	Historical Sustainable Yield
Net Pumping	115,300	120,600	108,300
Seawater Intrusion	-3,500	-3,900	-10,500
Change in Storage	-4,600	-4,700	-2,100
Projected Sustainable Yield	107,200	112,000	95,700
% Pumping Reduction	7.0%	7.1%	11.6%

2070 "Sustainable"yield- 17% ABOVE THE HISTORICAL YIELD??!

#6

#5

These figure assume 7,000 and 6,600 AF/yr is "projects" that have not been approved or funded

	Average for the Historical Water Budget (AF/yr.)	Average for the Current Water Budget (AF/yr.)
Total Agricultural Applied Water	107,200	112,100
Crop Consumptive Use	85,800	89,700
Deep Percolation (groundwater recharge and flow to agricultural drains)	21,400	22,400

#7

It is interesting that the future "sustainable" water budget of 112,000 happens to coincide almost precisely with the "current" water budget

Sustainability Indicator	Minimum Threshold	Measurement	Measurable Objective	Undesirable Result	Interim Milestones
Chronic lowering of groundwater levels	Water level minimum thresholds set to 1 foot above 2015 groundwater elevation[illegible] Table 8-2 for wells in the 180- and 400- Foot aquifers	Measured through monitoring well network	Water level measurable objectives set to 2003 groundwater elevations	Over the course of any one year, no more than 15% of groundwater elevation minimum thresholds shall be exceeded in any single aquifer and no one well shall exceed its minimum threshold for more than two consecutive years. Allows two exceedances in the 180-Foot aquifer and two exceedances in the 400-Foot aquifer.	[illegible]
Reduction in groundwater storage	Minimum threshold set to the estimated long-term future sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	Measured through total groundwater extractions. Municipal users and small [illegible]ems report groundwater ext[illegible] Agr[illegible] be [illegible] esti[illegible]	Measurable objective is Identical to the minimum threshold. Set to the estimated long-term [illegible]sustainable yield of 112,000 acre-feet/year for the entire 180/400-Foot Aquifer Subbasin	During average hydrogeologic conditions, and as a long-term average over all [illegible]ogic conditions, the total groundwater pumping shall not exceed the minimum threshold.	Set to 112,000 acre-feet per year
Seawater intrusion	Minimum threshold is the 2017 extent of the 500 mg/L chloride isocontour as developed by MCWRA for the 180- and 400-Foot aquifers. The minimum threshold is the line defined by Highway 1 for the deep aquifer.	Seawater intrusion maps developed by MCWRA	Measurable objective is the line defined by Highway 1 for the 180-Foot, 400-Foot, and Deep aquifers	On average in any one year there shall be no mapped seawater intrusion beyond the 2017 extent of the 500 mg/L chloride isocontour.	5-Year: identical to current conditions 10-year: one-third of the way to the measurable objective 15-year: two-thirds of the way to the

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