MCWRA Comments on Draft Groundwater Sustainability Plan for the Marina GSA Area of the 180/400-Foot Aquifer Subbasin

Global Comments

- It is of the opinion of the Monterey County Water Resources Agency (MCWRA) that conflict exists between this Draft Groundwater Sustainability Plan and the Draft Groundwater Sustainability Plan released for review by the Salinas Valley Basin Groundwater Sustainability Agency. The development of Groundwater Sustainability Plans is addressed in California Code of Regulations; Title 23 (Waters); Division 2 (Department of Water Resources); Chapter 1.5 (Groundwater Management); Subchapter 2 (Groundwater Sustainability Plans); Article 1 (Introductory Provisions). Within Article 1 the following subsections define areas the MCWRA believes may indicate a deficiency in the City of Marina Groundwater Sustainability Agency's Groundwater Sustainability Plan regarding elements of plan principles, criteria and interbasin coordination:
 - O 350.4 General Principles (f) 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.
 - 354.28 Minimum Thresholds GSP must address (3) How minimum thresholds have been selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.
 - 355.4 Criteria for Plan Evaluation (7; Referring to what DWR will consider when evaluating a GSP...) - Whether the Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal.
 - 357.2 Interbasin Agreements Interbasin agreements may be included in the Plan to support a finding that implementation of the Plan will not adversely affect an adjacent basin's ability to implement its Plan or impede the ability to achieve its sustainability goal.

MCWRA 2 I

MCWRA 1

Document organization is difficult to follow. GSP contains frequently repeated language.

MCWRA 3

GSP omits information on the Return Water Agreement – part of the MPWSP is the requirement to make available for delivery to the Salinas Valley Basin a volume of water equal to the percentage of Salinas Valley Basin groundwater in the total MPWSP source water production, as determined by the Monterey County Water Resources Agency.

MCWRA 4

• Chapters 4 & 5 overstate the "resolution/fine-scale detail" that can be determined from AEM work to quantify the "thickness", the "lateral or vertical migration", or concentration changes in the saline water intrusion wedge and the overlying TDS zone. AEM work is best suited to determining qualitive changes not quantifying changes.

MCWRA 5

 The GSP contains misleading statements about the potential beneficial uses (municipal or domestic supply) for water exceeding 3,000 mg/L TDS. The water would first have to be treated to meet Drinking Water Standards; this would include desalination.

MCWRA 6

 There is no discussion of nitrate in groundwater quality as a degraded groundwater quality issue that could cause an Undesirable Result.

MCWRA 7

• The Dune Sand "is not considered a principal aquifer because it is thin, laterally discontinuous, and a minor source of water." (from SVBGSA GSP Executive Summary p.4) How can the MGSA GSP be reconciled with the treatment of the Dune Sand by the SVBGSA?

MCWRA 8

Definition of water quality standards: Specify that the standards repeatedly called out as 1,000 mg/L TDS and 500 mg/L Chloride are California's upper limit for secondary drinking water standards. The EPA's and California's recommended maximum secondary limits are 500 mg/L TDS and 250 mg/L Chloride.

MCWRA 9

• Groundwater Dependent Ecosystems: The GDEs mentioned near the MGSA area are outside of the jurisdiction area for the MGSA. These exist in the SVBGSA area, whose GSP recognizes might exist, but need to be field mapped to confirm they exist. Even if they do, SVBGSA's GSP doesn't mention the concern of decreasing groundwater levels negatively affecting GDEs.

Comments on Chapter 3 - Basin Setting

MCWRA 10

 Section 3.1.9, page 3-17, second paragraph: "MCWRA uses a standard of 500 milligrams per liter (mg/L) to define the areas affected by seawater intrusion and inform its management decisions."
 Should specify that this refers to 500 milligrams per liter (mg/L) chloride.

MCWRA 11

• Section 3.1.9, page 3-17 third paragraph: GSP states ... "chloride islands" have formed in the 400-ft aquifer beyond the main intrusion front as a result of downward migration of groundwater... in areas where the aquitard separating the two aquifers is thin or absent...". This vertical movement can also be caused by wells with screens across multiple aquifer units, improperly constructed or abandoned wells, wells in poor condition or from a vertical hydraulic gradient wherein groundwater levels are deeper in the underlying aquifer.

MCWRA 12

Section 3.1.9, page 3-18: GSP states "The Federal Clean Water Act defines groundwater containing less than 10,000 mg/L as an Underground Sources of Drinking Water." Suggest clarifying that this refers to 10,000 mg/L TDS.

Section 3.1.11.1, second paragraph

- The Ag areas east and northeast of the MGSA boundary receive CSIP water. ...it is assumed that any applied irrigation water that is not consumptively used by crops recharges the underlying aquifers
- The area of CSIP is not in the Recharge Areas Mapped by Monterey County, as shown in Figure 3-19.

Section 3.1.11.1, page 3-19: GSP states: "Measured river loses range from 4.5 cubic feet per second to 12.2 cubic feet per second per river mile. Assuming these measurements are representative of river losses over typical year..."

MCWRA 14

MCWRA 13

These are calculated losses for the Salinas River from below the reservoirs to Spreckels. Loss from Chualar to Spreckels is 5.3 cfs, and from T&S to Spreckels is 4.5 cfs. 2017 and 2018 river series also showed higher loss rates in all subareas compared to long-term averages. These years also followed a 5-year drought.

MCWRA 15

 Section 3.1.12, first paragraph: "Migration of Salinas groundwater may be occurring downward through caps in the 180/400 Ft Aquitard". Other factors may have contributed to this including wells screened in multiple aquifers, wells with poor casings, etc.

MCWRA 16

Section 3.2.1.3, second paragraph (Regional Hydrographs): Discussion of where data from wells is compiled should refer to quarterly, not annual, reports from MCWRA

MCWRA 17

Section 3.2.1.3, third paragraph (below Table 3-2): Appendix 3.C is not available. Can't confirm hydrographs or trends inferring from hydrographs

MCWRA 18

Section 3.2.1.3, bullet points: Appendix 3.D is not available. Can't confirm hydrographs or trends discussed in bullet points

MCWRA 19

• Figure 3-20 has the shapefile for the "Area of Impact" from the "Recommendations Report" but the Area of Impact in Ord 5302 is a different extent. Which is the text referring to? The Ordinance or the Recommendations report?

MCWRA 20

Figure 3-35 is the wrong graph. The GSP shows the East Side annual groundwater level change graph. The figure, and text describing it, should be corrected. Text is on page 3-34, Section 2.2

MCWRA 21

Section 3.2.2, page 3-35: MW-5 is not in the MGSA. Data for MW-7 should be included in the discussion.

MCWRA 22

Section 3.2.2, page 3-35: GSP mischaracterizes/overstates the AEM work and the information that can be interpreted from the data. For example, nowhere is there a description of how resistivity

data is converted first to conductivity and the what conversion factor is used to convert conductivity to TDS.

MCWRA 23

• Section 3.2.3.2, last paragraph on page 3-37: Confirm if SVBGSA and/or MCWD GSA are considering direct recharge into the Dune Sands rather than just the 180/400 Foot Aquifers.

MCWRA 24

 Section 3.2.3.1, first paragraph: Discussion of duration of seawater intrusion in 180/400 Foot Aquifers should be corrected to indicate that the 180-Foot has been subject to SWI for 75 years and the 400-Foot has been subjected to SWI for 60 years.

MCWRA 25

Section 3.2.3.1, bullet points: Prior paragraph references the 500 m/L of chloride used by MCWRA to draw seawater intrusion lines. Standards referenced are all for TDS which is confusing after talking about chloride. State of California has adopted an upper Secondary Maximum Contaminant Level (SMCL) of 500 mg/L chloride and short-term maximum SMCL of 600 mg/L chloride. (NOTE: Recommended maximum level is 250 mg/L chloride).

MCWRA 26

Section 3.2.3.1, first paragraph after bullet points: GSP states "An important consideration is that
the salt concentration at which seawater intrusion is defined in the Subbasin is much lower than
the TDS concentration in seawater which is approximately 35,000 mg/L..." The typical chloride
concentration of seawater (19,000 mg/L chloride) is part of the dissolved solids measured by TDS.
Chloride is one of the most abundant ions in seawater, making up about 54% of the dissolved ions
concentration.

MCWRA 27

Section 3.2.3.2, second paragraph on page 3-38: Where is the 8,300 acre-area number derived from?

MCWRA 28

• Figure 3-36 and 3-35: The low-TDS groundwater zone outlines (from Gottschalk et al., 2018) are outside of the MGSA boundary. Most of the measurable objectives mention detecting changes in the thickness of this low-TDS zone, however this is in SVBGSA's boundary.

Г

MCWRA 29

Figure 3-38 – None of the GDE locations mapped are within the MGSA area. These locations
would be addressed by SVBGSA GSP. An agreement between the SVBGSA & MGSA should include
this concern.

Comments on Chapter 4 - Sustainable Management Criteria

MCWRA 30

Section 4.2, page 4-4: Reference to the 1996 Annexation Agreement – include copy as an appendix.

MCWRA 31

• Section 4.4.1, page 4-8, 1st paragraph under the blue box, 2nd to last sentence: Text reads ",with the depth to groundwater increasing toward the Salinas River." This is incorrect, depth to groundwater <u>decreases</u> towards the Salinas River.

MCWRA 32

- Section 4.4.2.1, page 4-13, first full paragraph: Discussion about hydrographs omits any discussion of the role of precipitation and water year type on the hydrographs.
- Section 4.5.1, page 4-19: The GSP's assertion of "a substantial zone of low-TDS groundwater (TDS < 3,000 mg/L) extending vertically from the DSA into the 180-Foot Aquifer and the 400-Foot Aquifer Sections 3.1.12 and 3.2.2." is from Hopkins' interpretation of the AEM work. The GSP should include the lab data for MW clusters. TDS at MW-1, MW-3, MW-4, TSW and the CEMEX well(s) at all depths exceed 3,000 mg/L. These are all the wells in the MGSA area. The location of low-TDS zone that is referred to, if it exists at all, would appear to be located outside of the MGSA area.

MCWRA 33

- O MCWRA first contoured seawater intrusion (e.g. ≥ 500 mg/L chloride) at this area in both the 180-Foot & 400-Foot Aquifers in 1975. During the last 45 years the seawater intrusion front has continued to advance inland and to increase in chloride concentration in this area.
- Estimating TDS for EC: Quality of groundwater, for each Zone, is tied to how AEM resistivity data that is converted to conductivity is then converted to TDS. A site-specific factor is needed to reliably convert EC to TDS. This is developed from laboratory analysis. What is the factor MGSA and Gottschalk (AEM work) are using?

These "low-TDS" waters are referred to in multiple places as "a higher quality groundwater zone"

or "substantial storage of groundwater with designated potential beneficial use as a municipal or domestic supply". All the water quality data collected at the Test Slant Well, MW-1, MW-3, and MW-4, the MPWSP monitoring wells on the site at the MGSA area have chloride and TDS concentrations that exceed the Secondary Drinking Water Standards and is well above Agricultural Suitability for Irrigation Water, Class III – Injurious to Unsatisfactory. Additionally, statements about the "significant" or "substantial" quantity of this water is misleading, there is a

MCWRA 34

lack of applicable data to determine volume.

MCWRA 35 •

Section 4.5.1, page 4-20: There is a partial sentence at the end of the last paragraph on this page.

MCWRA 36

Section 4.5.2, page 4-21, 2nd bullet point: States "Seasonal fluctuations in groundwater elevations in the Dune Sand Aquifer range from approximately 1 to 2 feet." Where are the data? Suggest including a hydrograph. This page goes on to say, "The range of fluctuation in the low-TDS zone of thickness is not known. These factors limit the ability...distinguishable from natural background fluctuations." What methodology will be used measure the thickness? How can a change of 1 foot be distinguishable when it states that the range of fluctuations is not known and that there is a limited ability to reliably detect very small changes in the thickness?

MCWRA 37

Section 4.6.2, page 4-28, 4th bullet point: Not sure that AEM and induction logging have the capability to distinguish the small/fine-scale changes stated in the minimum thresholds.

MCWRA 38

Section 4.8.3, first bullet point: GSP refers to "A groundwater elevation in the 180- Foot or 400-Ft Aquifers that is 2 feet above historic low groundwater elevations measured in 2015...". Should this be 1 foot?

MCWRA 39

Section 4.9.1, page 4-47, 2nd bullet point, last sentence: "Therefore, the Salinas River is managed...the existing depletions are neither significant nor unreasonable." MCWRA does not agree with this and it over-simplifies the operations of the Salinas River.

MCWRA 40

Section 4.9.1, page 4-47, 3rd bullet point: What about riparian rights? Groundwater pumpers don't have to hold "water rights".

Comments on Chapter 5 - Monitoring Network

MCWRA 41

Global to chapter 5: Monitoring Network and Objectives are all taken from Agency's Programs and the possible development of the Integrated Coastal Monitoring Program, but there currently is no agreement in place between MGSA and MCWRA.

MCWRA 42

- P 5-9, Last paragraph, 1st sentence: Appears to be an incomplete quotation. Suggest confirming, as we believe the 17,400 AFY includes water from DSA and 180-Foot Aguifer, but also the ocean water extracted through the seafloor.
- Section 5.3.1, second bullet point under Dune Sand, 180-Foot and 400-Foot Aquifers (pg 5-15); also referenced in second bullet point on page 5-21
- "Spatial distribution of groundwater level decline that indicates the logged changes identified above occur within the zone of drawdown influence of groundwater extraction MCWRA 43 in the MGSA area"

What is the "zone of drawdown influence"? How is this defined, what is this derived from?
 Is this referring to the model predicted drawdown in the Integrated Coastal Monitoring
 Program and Plan?