



CALIFORNIA DEPARTMENT OF WATER RESOURCES

# SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

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June 27, 2024

Brian Lockwood  
Pajaro Valley Water Management Agency GSA  
36 Brennan Street  
Watsonville, CA, 95076  
[lockwood@pvwater.org](mailto:lockwood@pvwater.org)

RE: Corralitos - Pajaro Valley Subbasin - Periodic Review of Alternative Groundwater Sustainability Plan

Dear Brian Lockwood,

The Department of Water Resources (Department) has evaluated the alternative to a groundwater sustainability plan (Alternative) submitted for the Corralitos - Pajaro Valley Subbasin and has determined the Alternative is approved. The approval is based on recommendations from the Staff Assessment, included as an exhibit to the attached Statement of Findings, which describes that the Corralitos - Pajaro Valley Subbasin Alternative satisfies the objectives of the Sustainable Groundwater Management Act (SGMA) and substantially complies with the Groundwater Sustainability Plan (GSP) Regulations. The Staff Assessment also proposes recommended corrective actions that will enhance the Alternative and facilitate future evaluation by the Department. The Department strongly encourages the recommended corrective actions be given due consideration and suggests incorporating all resulting changes to the Alternative in future updates.

Recognizing SGMA sets a long-term horizon for groundwater sustainability agencies (GSAs) to achieve their basin sustainability goals, monitoring progress is fundamental for successful implementation. GSAs are required to evaluate their Alternative at least every five years and whenever the Alternative is amended, and to provide a written assessment to the Department. Accordingly, the Department will evaluate approved Alternatives and issue an assessment at least every five years. The agencies are required to submit their second periodic review of the Corralitos - Pajaro Valley Subbasin Alternative no later than December 24, 2026.

Please contact Department Sustainable Groundwater Management staff by emailing [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov) if you have any questions related to the Department's assessment or implementation of your Alternative.

Thank You,

*Paul Gosselin*

Paul Gosselin  
Deputy Director  
Sustainable Groundwater Management

Attachment:

1. Statement of Findings Regarding the Periodic Review and Approval of the Corralitos - Pajaro Valley Subbasin Alternative Groundwater Sustainability Plan

**STATE OF CALIFORNIA  
DEPARTMENT OF WATER RESOURCES**

**STATEMENT OF FINDINGS REGARDING THE  
PERIODIC REVIEW AND APPROVAL OF THE  
CORRALITOS – PAJARO VALLEY SUBBASIN  
ALTERNATIVE GROUNDWATER SUSTAINABILITY PLAN  
JUNE 27, 2024**

Under the Sustainable Groundwater Management Act (SGMA), an alternative to a groundwater sustainability plan (Alternative) must be resubmitted every five years,<sup>1</sup> and the Department of Water Resources (Department) is required to review the Alternative to assess progress in achieving the sustainability goal within the basin and recommend corrective action to address any deficiencies.<sup>2</sup> The Department evaluates updates to Alternatives in accordance with the criteria used to evaluate Groundwater Sustainability Plans, as applicable.<sup>3</sup> This Statement of Findings explains the Department's determination regarding the Alternative submitted on December 24, 2021, by the Pajaro Valley Water Management Agency Groundwater Sustainability Agency (GSA) (referred to as the Agency) for the Corralitos – Pajaro Valley Subbasin (Basin No. 3-002.01), herein referred to as the Department's "Periodic Review" of the Alternative.

Department management have discussed the Alternative with staff and have reviewed the written assessment titled *Periodic Review of Alternative Groundwater Sustainability Plan, Staff Assessment*, Pajaro Valley Subbasin, attached as Exhibit A, and have incorporated the findings, which recommends approval of the Alternative. Department management is satisfied that staff have conducted a thorough evaluation and assessment of the Alternative and concurs with staff's recommendation. The Department therefore **APPROVES** the Alternative and makes the following findings:

- A. The Alternative satisfies the conditions listed in 23 CCR Section 358.4 on the grounds that:
1. The Alternative was submitted within five years of its initial submission date as required by Water Code Section 10733.6(c).
  2. The Department has confirmed that the Alternative is within a basin that is in compliance with Part 2.11 (commencing with Water Code Section 10920) as required by Water Code Section 10733.6(d).

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<sup>1</sup> Water Code § 10733.6(c)

<sup>2</sup> Water Code § 10733.8

<sup>3</sup> 23 CCR § 358.4(b)

3. The Alternative is complete and includes the applicable information required by SGMA for the type of alternative submitted.
  4. The Alternative covers the entire basin. The Department determined that the Alternative, as originally submitted, covered the entire basin, and those boundaries remain unchanged.
- B. In addition to the grounds listed above, the Department also finds that the Alternative remains consistent with SGMA and is being implemented in a manner that will likely achieve the sustainability goal for the basin because:
1. The exceedances of any minimum thresholds or failure to meet any interim milestones at this time do not appear likely to affect the ability of the Agency to achieve the sustainability goal for the basin within 20 years of implementation of the Alternative (23 CCR Section 355.6(c)(1)). However, the Department recommends that the Agency carefully evaluate such exceedances and take appropriate action to adjust management accordingly in order to ensure that the basin remains on track to achieve its sustainability goal.
  2. The Agency is implementing projects and management actions consistent with the Alternative (23 CCR Section 355.6(c)(2)).
  3. The Agency is addressing data gaps and reducing the levels of uncertainty identified in the Alternative (23 CCR Section 355.6(c)(3)).
  4. As explained in the attached Staff Assessment, the Alternative continues to satisfy the criteria described in 23 CCR Section 355.6(c)(4), as applicable.
- C. Furthermore, the Department also finds that the Alternative sufficiently demonstrates its ability to achieve the objectives of SGMA at this time because:
1. The Agency has demonstrated that the Alternative is functionally equivalent to the elements of a GSP; and
  2. The Agency has taken steps to improve the Alternative by considering the recommended actions previously provided by staff. To ensure that the Alternative continues to satisfy SGMA's objectives, staff have provided additional recommended corrective actions for the Agency to consider before the Alternative's next Periodic Evaluation.
- D. The Department also finds:
1. The Department developed its GSP Regulations consistent with and intending to further the State's human right to water policy through implementation of SGMA and the GSP Regulations, primarily by achieving sustainable groundwater management in a basin. By ensuring substantial

compliance with the GSP Regulations, the Department has considered the state policy regarding the human right to water in its evaluation of the Alternative (Water Code Section 106.3; 23 CCR Section 350.4(g)).

2. The California Environmental Quality Act (CEQA) (Public Resources Code Sections 21000 *et seq.*) does not apply to the Department's evaluation and assessment of Alternatives, and the Department's evaluation and assessment of Alternatives is statutorily or categorically exempt from CEQA.

Statement of Findings  
Corralitos – Pajaro Valley Subbasin (No. 3-002.01)

June 27, 2024

Accordingly, the 2022 Alternative submitted by the Agency for the Corralitos – Pajaro Valley Subbasin is hereby **APPROVED**. The recommended corrective actions identified in the attached Staff Assessment will assist the Department’s future review of the Alternative’s implementation for consistency with SGMA, and the Department, therefore, recommends the Agency address them in the next Periodic Evaluation, which is set to be submitted on December 24, 2026, as required by Water Code Section 10733.6(c). Department staff will continue to monitor and evaluate the progress toward achieving the basin’s sustainability goal through continued Annual Reporting and future revisions to the Alternative. Failure to address the Department’s recommended corrective actions before future, subsequent Alternative evaluations, may lead to the Alternative being determined incomplete or inadequate.

Signed:

  
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Karla Nemeth, Director  
Date: June 27, 2024

Exhibit A: Periodic Review of Alternative Groundwater Sustainability Plan, Staff Assessment, Corralitos – Pajaro Valley Subbasin

**State of California**  
**Department of Water Resources**  
**Sustainable Groundwater Management Program**  
**Periodic Review of**  
**Alternative Groundwater Sustainability Plan**  
**Staff Assessment**

Groundwater Basin Name:	Corralitos – Pajaro Valley Subbasin (No. 3-002.01)
Number of GSAs or Local Agencies:	One (1)
Basin Plan Manager:	Brian Lockwood
Type of Alternative:	Existing Basin Management Plan
Date Alternative First Submitted:	December 31, 2016
Date Alternative First Approved:	July 17, 2019
Date Periodic Evaluation Submitted:	December 24, 2021
Date Periodic Review Completed:	June 27, 2024
Staff Recommendation:	Approved

This assessment addresses the Department of Water Resources’ (Department) statutory and regulatory responsibility to periodically review and evaluate approved groundwater sustainability plans (GSPs) and approved alternatives to a GSP (Alternative) pursuant to the Sustainable Groundwater Management Act (SGMA)<sup>1</sup> and the GSP Regulations.<sup>2</sup> As stated in the GSP Regulations: “The Department shall periodically review an approved Plan to ensure the Plan, as implemented, remains consistent with the Act and in substantial compliance with this Subchapter, and is being implemented in a manner that will likely achieve the sustainability goal for the basin. The Department shall evaluate approved Plans and issue an assessment at least every five years. The Department review shall be based on information provided in the annual reports and the periodic evaluation of the Plan prepared and submitted by the Agency.”<sup>3</sup>

SGMA allows for basins to be managed under alternative groundwater management structures rather than a GSP.<sup>4</sup> An alternative can be based on an existing groundwater management plan or other law authorizing groundwater management, management pursuant to an adjudication action, or an analysis of basin conditions that demonstrates

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<sup>1</sup> Water Code § 10720 *et seq.*

<sup>2</sup> 23 CCR § 350 *et seq.*

<sup>3</sup> 23 CCR §§ 355.6(a) and 355.6(b). For the purposes of this Periodic Review, “Plan” refers to a groundwater sustainability plan as defined in SGMA and the GSP Regulations, while “Alternative” refers to an alternative to a groundwater sustainability plan described in Water Code § 10733.6.

<sup>4</sup> Water Code §10733.6; 23 CCR §§ 358.2 and 358.4.

the basin has operated within its sustainable yield over a period of at least ten years. Basins with approved alternatives are not explicitly subject to the Periodic Evaluation requirements like those basins with approved GSPs;<sup>5</sup> however, basins with approved alternatives must submit Annual Reports and the alternative must be submitted to the Department at least every five years for review and assessment.<sup>6</sup> Like GSPs, alternatives are subject to Periodic Reviews, in which the Department issues an assessment evaluating the progress toward achieving or maintaining the basin's sustainability goal.

If an alternative is not amended or is not in some other way materially changed, a Periodic Evaluation may be submitted in lieu of resubmission of the entire, identical alternative that was previously approved by the Department. A Periodic Evaluation, as it applies to alternatives, is a written assessment prepared by the local agency or groundwater sustainability agency (GSA) describing whether the implementation of the alternative, including implementation of projects and management actions, is meeting or maintaining the basin's sustainability goal. As indicated throughout this assessment, the Department's Periodic Review is based on information provided in Annual Reports and any available alternative or Periodic Evaluation submitted by local agencies or GSAs managing the basin for SGMA compliance.<sup>7</sup>

- ***Based on the current evaluation of the Alternative, Department staff recommend that it be approved with the recommended corrective actions described herein.***

This Periodic Review includes the following sections:

- **Section 1 – Alternative Summary**: A description of the basin's alternative submittal, an overview of the Department's responsibility to periodically review and evaluate approved alternatives, and a summary of the alternative's recommended actions.
- **Section 2 – Periodic Review Criteria**: Describes the applicable statutory and regulatory requirements and the Department's evaluation criteria for approved alternatives.
- **Section 3 – Periodic Review of Approved Alternative**: Summarizes the Department's evaluation of the basin's approved alternative and may recommend corrective actions to facilitate the Department's ongoing evaluation of the basin's existing groundwater management program.
- **Section 4 – Progress Towards Addressing 2019 Recommended Actions**: A discussion of whether the agencies in the basin have made progress towards

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<sup>5</sup> 23 CCR § 356.4.

<sup>6</sup> 23 CCR § 358.2(b).

<sup>7</sup> Water Code § 10733.8.



addressing the recommended actions identified by the Department in its previous assessment.

- **Section 5 – Staff Recommendation**: Includes the alternative’s recommended status for approval, and provides new recommended corrective actions, if necessary.

## 1 ALTERNATIVE SUMMARY

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In the Corralitos Groundwater Basin – Pajaro Valley Subbasin (Subbasin) a single alternative groundwater sustainability plan (GSP),<sup>8</sup> an alternative based on an existing basin management plan, was prepared and submitted to the Department by the Pajaro Valley Water Management Agency (PV Water) GSA. The *Pajaro Valley Water Management Agency Basin Management Plan Update February 2014* (BMP 2014), was first adopted as a basin management plan by the GSA’s Board of Directors on April 16, 2014, and was subsequently adopted as an alternative by the GSA’s Board on December 21, 2016, to meet SGMA’s statutory deadline (2017 Alternative).<sup>9</sup> The 2017 Alternative, which consists of the BMP 2014 as well as other related plans, technical reports, and documents, was approved by the Department on July 17, 2019, with recommended actions.<sup>10</sup>

The Department identified ten recommended actions to improve the 2017 Alternative that were designed to facilitate the Department’s ongoing evaluation of the Subbasin’s existing groundwater management program and more closely align the 2017 Alternative with the requirements of SGMA.<sup>11</sup> The recommended actions, which are discussed in Section 4 of this assessment, identified the following topics:

- Management and monitoring of the Subbasin located outside the jurisdiction of the GSA (Recommended Action 1)
- Sustainable management criteria associated with depletions of interconnected surface water (Recommended Actions 2 and 5)
- Identification of groundwater dependent ecosystems (Recommended Action 3)
- Incorporation of projects and management actions in the Subbasin’s water budget (Recommended Action 4)
- Establishment of quantitative criteria for groundwater levels (Recommended Action 5)

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<sup>8</sup> Water Code § 10733.6(b)(1); 23 CCR § 358.2.

<sup>9</sup> Water Code § 10733.6(c).

<sup>10</sup> <https://sgma.water.ca.gov/portal/alternative/print/22>.

<sup>11</sup> <https://sgma.water.ca.gov/portal/alternative/assessments/22>.

- Additional detail related to seawater intrusion (Recommended Actions 6 and 7)
- Finalization of the Subbasin’s Monitoring Network Review Memo (Recommended Action 8)
- Land subsidence information (Recommended Action 9)
- Actions to consider during periods of drought (Recommended Action 10)

Since the 2017 Alternative was first adopted, the Subbasin’s Plan Manager has been submitting Annual Reports to the Department and has been documenting the progress of the Subbasin’s groundwater sustainability program. At the time this Periodic Review was conducted by Department staff, the most recent Annual Report, which was submitted to the SGMA Portal on March 30, 2023, covered water year 2022.<sup>12</sup>

The GSA’s Board of Directors adopted an update to the 2017 Alternative on November 17, 2021, and submitted the *Pajaro Valley Basin Management Plan Groundwater Sustainability Update 2022* (2022 Alternative, may be referred to as GSU22 by the GSA) on December 24, 2021.<sup>13</sup> The GSA states that the purpose of the 2022 Alternative is to address the Department’s recommended actions, which Department staff note are intended to better align the approved 2017 Alternative with the regulatory requirements of a GSP.<sup>14</sup> The GSA states that the 2022 Alternative consists of a combination of documents including the BMP 2014, the 2017 Alternative as updated by the 2022 Alternative, as well as supporting documents including the Pajaro Valley Water Management Agency Act, the Pajaro Valley Hydrologic Model (PVHM) report, and the Salt Nutrient Management Plan (SNMP), as well as other technical resources.<sup>15</sup> Additionally, the GSA provided a detailed table explaining how aspects of the 2022 Alternative were functionally equivalent to the elements of a Periodic Evaluation and the elements of a GSP.<sup>16</sup>

## 1.1 Recommendation Summary

Department staff conclude that the 2017 Alternative and its update submitted in 2022 includes the components of a functionally equivalent GSP, demonstrates a thorough understanding of the Subbasin based on what appears to be the best available science and information, sets well-explained, supported, and reasonable sustainable management criteria to prevent undesirable results as defined in the 2022 Alternative, and proposes a set of projects and management actions that will likely achieve the sustainability goal defined for the Subbasin. Department staff will continue to monitor and evaluate the progress toward achieving the Subbasin’s sustainability goal through continued Annual Reporting and future revisions to the Alternative.

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<sup>12</sup> <https://sgma.water.ca.gov/portal/alternative/annualreport/65>.

<sup>13</sup> <https://sgma.water.ca.gov/portal/alternative/periodiceval/preview/5>.

<sup>14</sup> Pajaro Valley Alternative Update 2022, Section 1.1.2, pp. 33-35.

<sup>15</sup> Pajaro Valley Alternative Update 2022, Section ES 1.1, p. 15.

<sup>16</sup> 23 CCR § 358.2(d).

For reference, the sustainability goal of the Subbasin, as expressed by the Pajaro Valley Water Charter is:

“The charter establishes the objective of managing local groundwater resources toward the avoidance and eventual prevention of conditions of long-term overdraft, land subsidence, and water quality degradation, and should include reasonable measures to prevent further increases in the amount of long-term overdraft and to accomplish continuing reduction in long-term overdraft, realizing that an immediate reduction in long-term overdraft may cause severe economic loss and hardship, as the sustainability goal for the Pajaro Valley Subbasin.”<sup>17</sup>

Based on the current evaluation of the 2017 Alternative, and after considering information provided by the Subbasin’s GSA, Department staff recommend that the 2022 Alternative be approved with recommended corrective actions, which are related to the depletions of interconnected surface water sustainability indicator, consideration of adjacent basins, and alignment of monitoring networks. Additional evaluation details, implementation observations, and recommendations are provided herein.

## 2 PERIODIC REVIEW CRITERIA

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At least every five years after the initial submission of a plan prepared pursuant to Water Code Section 10733.4, the Department is required to review any available GSP, as well as any alternative<sup>18</sup> submitted in accordance with Water Code Section 10733.6.<sup>19</sup> The Department is required to periodically review an approved alternative to ensure it remains consistent with the objectives of SGMA and continues to substantially comply with the GSP Regulations.<sup>20</sup> The Department is also required to ensure that an approved alternative is being implemented in a manner that will likely achieve the basin’s sustainability goal.<sup>21</sup>

The Department’s Periodic Review is based on information provided in the Annual Reports as well as the alternative’s functionally equivalent Periodic Evaluation, which may be either a Periodic Evaluation prepared in accordance with Section 356.4 of the GSP Regulations or an amended version of its approved alternative.<sup>22</sup> In both cases, the entity submitting an alternative is required to explain how the elements of the alternative are functionally equivalent to the elements of a GSP.<sup>23</sup>

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<sup>17</sup> Pajaro Valley Alternative Update 2022, Section 1.1.1, p. 32-33.

<sup>18</sup> 23 CCR § 358.2.

<sup>19</sup> 23 CCR § 358.4. The Periodic Evaluation and Periodic Review requirements of an approved GSP are the same as those for an approved alternative.

<sup>20</sup> 23 CCR §§ 355.6 and 358.4.

<sup>21</sup> 23 CCR § 355.4(b).

<sup>22</sup> 23 CCR §§ 358.2(d) and (e).

<sup>23</sup> 23 CCR § 358.2(d).

The Department considers the following in determining whether an alternative and its implementation remains consistent with SGMA and the GSP Regulations:<sup>24</sup>

- Whether the exceedances of any minimum thresholds or failure to meet any interim milestones are likely to affect the ability of the local agencies and/or GSAs in the basin to achieve the basin’s sustainability goal.
- Whether the local agencies and/or GSAs in the basin are implementing projects and management actions consistent with the alternative, or that the local agencies and/or GSAs have demonstrated that actions described in the alternative have been rendered unnecessary based on changing basin conditions or an improved understanding of basin conditions.
- Whether the local agencies and/or GSAs are addressing data gaps in the basin and reducing the levels of uncertainty identified in the alternative.
- Whether the alternative continues to satisfy the evaluation criteria described in Section 355.4 of the GSP Regulations.

Following its Periodic Review of the approved alternative, the Department is required to issue a written assessment of its findings and potentially make a new determination of the alternative’s status, as follows: approved,<sup>25</sup> incomplete,<sup>26</sup> or inadequate.<sup>27</sup> The assessment may recommend corrective actions to address any new or remaining regulatory deficiencies identified by the Department.

As defined in the GSP Regulations, the Department may request any information it deems necessary to evaluate the progress toward achieving the basin’s sustainability goal and the potential for adverse effects on adjacent basins.<sup>28</sup> Additionally, the Department may evaluate the implementation of an alternative at any time to determine whether it is consistent with the objectives of SGMA and in substantial compliance with the GSP Regulations.<sup>29</sup>

### **3 PERIODIC REVIEW OF APPROVED ALTERNATIVE**

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Pursuant to the GSP Regulations, the Department is required to consider basin conditions and associated minimum thresholds, the status of projects and management actions, and efforts taken to address data gaps and uncertainty when determining whether an alternative remains consistent with SGMA and continues to substantially comply with the GSP Regulations.<sup>30</sup> The Department’s assessment of whether an alternative continues

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<sup>24</sup> 23 CCR § 355.6(c).

<sup>25</sup> 23 CCR § 355.6(d)(1).

<sup>26</sup> 23 CCR § 355.6(d)(2).

<sup>27</sup> 23 CCR § 355.6(d)(3).

<sup>28</sup> 23 CCR § 355.6(e).

<sup>29</sup> 23 CCR § 355.6(f).

<sup>30</sup> 23 CCR § 355.6.

to satisfy Section 355.4 of the GSP Regulations in a functionally equivalent manner is provided below in Section 5.

As part of its Periodic Review responsibilities, the Department must also assess whether the implementation of an alternative will adversely affect the ability of an adjacent basin to implement its alternative or its GSP, and Department staff must ensure that the monitoring network described in the alternative aligns with the data uploaded to the SGMA Portal Monitoring Network Module. Staff perspective regarding adjacent basins and monitoring networks is provided within this section.

### **3.1 Minimum Thresholds**

The GSP Regulations require that the description of minimum thresholds include the information and criteria relied upon to establish and justify the thresholds established for each sustainability indicator.<sup>31</sup> The numeric value used to define those thresholds should represent a point in the basin that, if exceeded, may cause undesirable results.<sup>32</sup> As part of its Periodic Review responsibility, the Department is required to consider whether the exceedances of any minimum thresholds or failure to meet any interim milestones are likely to affect the ability of the local agencies and/or GSAs to achieve the basin's sustainability goal.<sup>33</sup>

Below is information for each of the applicable sustainability indicators discussed in the 2022 Alternative.

#### **3.1.1 Chronic Lowering of Groundwater Levels**

Sustainable management criteria for the chronic lowering of groundwater levels were established in response to the Department's Recommended Action 5 (see Section 4.5 in this assessment).<sup>34</sup> Although the GSA determined that significant and unreasonable conditions for chronic lowering of groundwater levels were not occurring in the Subbasin, the new sustainable management criteria were based on historical groundwater levels and were evaluated in comparison to depths at which wells are screened across the Subbasin to avoid declines that would result in dewatering or reduced yield from water supply wells.<sup>35</sup>

The Subbasin's sustainable management criteria, including the sustainability status for chronic lowering of groundwater levels, are discussed in the GSA's 2022 Alternative in Section 7.8.<sup>36</sup> According to data presented in the 2022 Alternative, all of the water year 2017-2020 groundwater levels are above their respective minimum thresholds. As established by the GSA:

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<sup>31</sup> 23 CCR § 354.28(b)(1).

<sup>32</sup> 23 CCR § 354.28(a).

<sup>33</sup> 23 CCR § 355.6(c)(1).

<sup>34</sup> Pajaro Valley Alternative Update 2022, Section 3, pp. 69-113.

<sup>35</sup> Pajaro Valley Alternative Update 2022, Section 3.3, p. 71; Section 3.6, pp. 78-83.

<sup>36</sup> Pajaro Valley Alternative Update 2022, Section 7.8, pp. 162-168.

- “The minimum threshold for chronic lowering of groundwater levels [is] the average of the [two] lowest annual minimum groundwater elevations from [Water Year (WY)] 2000-2020 at each [representative monitoring point].”<sup>37</sup>

In the 2022 Alternative, Table 10 summarizes the trends in groundwater elevations at representative monitoring points (RMPs) relative to minimum thresholds and illustrates how seasonal low groundwater elevations have gradually increased.<sup>38</sup> Table 11 summarizes average annual highs in groundwater elevation at RMPs to illustrate trends in seasonal highs relative to measurable objectives and 2025 interim milestones.<sup>39</sup> The trends summarized in Table 11 reflect improvement in groundwater elevations over time.

Based on the information provided which shows groundwater levels have been improving during the last several years, Department staff concur with the GSA’s statement included in the 2022 Alternative, “Based on the analysis of observed data, implementation of the Basin Management Plan Update (2014) projects and management actions have improved Basin groundwater elevations to support groundwater supply.”<sup>40</sup>

Additionally, Department staff reviewed the Annual Reports covering water years ending on September 30 in 2021 and 2022, which were prepared after the 2022 Alternative was submitted. In the most recent Annual Report covering Water Year 2022, the sustainability status of all sustainability indicators is summarized in Figure 12, and minimum threshold information for groundwater levels is summarized in Table 6.<sup>41</sup> No RMP groundwater levels were below their respective minimum thresholds. With respect to the chronic lowering of groundwater levels, the Subbasin appears to be on track to achieve its sustainability goal.

### **3.1.2 Reduction of Groundwater Storage**

The sustainability status for reduction of groundwater storage is discussed in the 2022 Alternative in Section 7.7.<sup>42</sup> The minimum thresholds previously approved in the 2016 Alternative are defined as “the pre-SGMA rate of groundwater in storage depletion”<sup>43</sup> and the measurable objective “can be considered the elimination of annual overdraft or 100% reduction in the rate of groundwater in storage depletion.”<sup>44</sup> As stated, “The measurable objective for reduction of groundwater in storage has been achieved despite BMP 2014 projects and management actions in operation not meeting their planned yields and operational yields of 5,700 AFY [acre-feet per year] less than 50% of the overall yield goal of 12,100 AFY. However, groundwater pumping has decreased by 10,900 [acre-feet] from average pumping from 2006-2010 to 2016-2020. This number approaches the 12,100

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<sup>37</sup> Pajaro Valley Alternative Update 2022, Section 3.2, pp. 69-70.

<sup>38</sup> Pajaro Valley Alternative Update 2022, Table 10, p. 164.

<sup>39</sup> Pajaro Valley Alternative Update 2022, Table 11, p. 165.

<sup>40</sup> Pajaro Valley Alternative Update 2022, Section 7.8, p. 163.

<sup>41</sup> Pajaro Valley Subbasin WY2022 Annual Report, Figure 12, pp. 39-40; Table 6, p. 46.

<sup>42</sup> Pajaro Valley Alternative Update 2022, Section 7.7, pp. 158-161.

<sup>43</sup> Pajaro Valley Alternative Update 2022, Section 7.7, p. 158.

<sup>44</sup> Pajaro Valley Alternative Update 2022, Section 7.7, p. 158.

AFY goal for the total volume of water needed to make up the average annual shortfall in the Basin even if only just over half can be attributed to BMP 2014 projects and management actions. This large decline in groundwater pumping helps explain why [sustainable management criteria] for reduction of storage are met.”<sup>45</sup>

Based on the information provided which indicates the Subbasin is meeting its storage goal and is pumping less groundwater, Department staff concur with the following statement included in the 2022 Alternative: “Based on the analysis of observed data, implementation of the Basin Management Plan Update 2014 has helped increase groundwater in storage.”<sup>46</sup>

Additionally, Department staff reviewed the Annual Reports covering water years ending on September 30 in 2021 and 2022, which were prepared after the 2022 Alternative was submitted. In the most recent Annual Report covering water year 2022, the sustainability status of all sustainability indicators is summarized in Figure 12, and annual groundwater use and change in storage estimates are summarized in Table 5 and shown in Figure 11.<sup>47</sup> According to the Annual Report, the cumulative change of groundwater in storage for water years 2015-2022 has been an increase of 19,324 acre-feet. As shown in Table 5, the annual groundwater use between 2015 and 2022 ranged between 42,268 acre-feet in 2019 (a wet year) and 50,974 acre-feet in 2021 (a dry year). With respect to the reduction of groundwater storage sustainability indicator, the Subbasin appears to be on track to achieve its sustainability goal.

### 3.1.3 Seawater Intrusion

In response to the Department’s Recommended Action 6 (see Section 4.6 in this assessment), the minimum threshold for seawater intrusion has been set as the 250 milligrams per liter (mg/L) chloride isocontour located 1,000 feet inland of the 250 mg/L chloride isocontour measured as of 2020, based on best available data. The recommended measurable objectives are chloride concentrations less than or equal to 100 mg/L, inland of the minimum threshold isocontour. A figure showing the chloride isocontours is shown in Figure 41 of the 2022 Alternative.<sup>48</sup>

The sustainability status for seawater intrusion is discussed in the 2022 Alternative in Section 7.6.<sup>49</sup> As stated, “In general, observed water quality data appear to indicate BMP 2014 implementation is decreasing the rate of seawater intrusion, especially within the [Delivered Water Zone (DWZ)]. Additional monitoring wells are likely needed to assess the extent of seawater intrusion outside the DWZ. Modeling of flows across the [sustainable management criteria] isocontour and the coastline will also inform on the effect of BMP 2014 implementation on seawater intrusion rates. Geophysical studies that

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<sup>45</sup> Pajaro Valley Alternative Update 2022, Section 7.7, p. 158.

<sup>46</sup> Pajaro Valley Alternative Update 2022, Section 7.7, p. 159.

<sup>47</sup> Pajaro Valley Subbasin WY2022 Annual Report, Figure 12, pp. 39-40; Table 5, p. 38; Figure 11, p. 37.

<sup>48</sup> Pajaro Valley Alternative Update 2022, Figure 41, p. 148.

<sup>49</sup> Pajaro Valley Alternative Update 2022, Section 7.6, pp. 145-157.

can identify the presence of saline water between wells should also be considered.”<sup>50</sup> Department staff recognize that the GSA identifies this as a data gap and will be working towards filling this data gap during the implementation of its Alternative.

The 2022 Alternative indicates that there are no minimum threshold exceedances in the Subbasin as of 2020. Within the DWZ, observed chloride concentrations adjacent to the 250 mg/L isocontour line are relatively stable or are declining. While some wells located outside of the DWZ show an increasing trend in chloride concentrations for 2017-2020 results compared to the data collected between 2008-2014, those chloride concentrations are below the established minimum threshold of 250 mg/L and are not undesirable results. The increasing chloride concentrations, based on information provided in the 2022 Alternative, indicate that groundwater pumping may be drawing brackish water from the Elkhorn Slough.

Based on the analytical data information provided by the GSA, Department staff concur with the following statement included in the 2022 Alternative: “Based on the analysis of observed data, implementation of the 2014 Basin Management Plan Update has helped reduce the rate of seawater intrusion.”<sup>51</sup>

Additionally, Department staff reviewed the Annual Reports covering water years ending on September 30 in 2021 and 2022, which were prepared after the 2022 Alternative was submitted. In the most recent Annual Report covering water year 2022, the sustainability status of all sustainability indicators is summarized in Figure 12, and seawater intrusion data are shown in Figure 13.<sup>52</sup> According to the Annual Report, “there were no minimum threshold exceedances for chloride concentration inland of the minimum threshold isocontour attributed to seawater intrusion and therefore are no current undesirable results for seawater intrusion in the Pajaro Valley Basin.”<sup>53</sup> With respect to seawater intrusion, the Subbasin appears to be on track to achieve its sustainability goal.

### **3.1.4 Degraded Water Quality**

The sustainability status for degraded water quality is discussed in the 2022 Alternative in Section 7.10.<sup>54</sup> As indicated in the 2022 Alternative, an undesirable result for nitrate exists in the Subbasin and is discussed in detail within this section of the assessment.

The Department accepted the GSA’s description of water quality sustainable management criteria as the assimilative capacity thresholds described in PV Water’s 2016 Salt and Nutrient Management Plan (SNMP), and the GSA continues to use that metric to track sustainability.<sup>55</sup> Assimilative capacity, as described in the 2022 Alternative, represents the capacity for a volume of water to receive inputs of certain constituents

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<sup>50</sup> Pajaro Valley Alternative Update 2022, Section 7.6, p. 147.

<sup>51</sup> Pajaro Valley Alternative Update 2022, Section 7.6, p. 147.

<sup>52</sup> Pajaro Valley Subbasin WY2022 Annual Report, Figure 12, pp. 39-40; Figure 13, p. 43.

<sup>53</sup> Pajaro Valley Subbasin WY2022 Annual Report, p. 41.

<sup>54</sup> Pajaro Valley Alternative Update 2022, Section 7.10, pp. 174-185.

<sup>55</sup> Pajaro Valley Alternative Update 2022, pp. 2200-2331.



without exceeding a determined water quality objective. In the Subbasin, assimilative capacities are calculated based on the average concentrations of total dissolved solids (TDS), chloride, and nitrate. The SNMP describes how groundwater quality will be monitored and assessed as the projects described in the BMP 2014 are implemented and quantifies the assimilative capacity for TDS, chloride, and nitrate in two sub-zones (inland and coastal) within the Subbasin. The assimilative capacity zones, referred to as Zone 1 Inland and Zone 2 Coastal, are shown in Figure 59 in the 2022 Alternative.<sup>56</sup>

The minimum thresholds for degraded water quality, as presented in Table 13 of the 2022 Alternative, for TDS, chloride, and nitrate, are 1,000 mg/L, 150 mg/L, and 45 mg/L, respectively.<sup>57</sup> The Department's 2019 Staff Report, as well as the 2022 Alternative, states that these assimilative capacity thresholds are comparable to minimum thresholds defined by SGMA and that the measurable objective is a "100 percent reduction of assimilative capacity decreases"<sup>58</sup> (i.e., to not reduce the assimilative capacity further). The 2022 Alternative further states that if an average concentration for any of the three constituents exceeds the assimilative capacity threshold concentration for the constituent in either SNMP zone there would be a minimum threshold exceedance and an undesirable result for water quality. To achieve the measurable objectives of not further reducing assimilative capacities, average concentrations must be stable or decreasing.<sup>59</sup>

As indicated in the 2022 Alternative, the 2002-2011 average chloride concentration for the Coastal Zone (198 mg/L) was already above the chloride minimum threshold of 150 mg/L when the SNMP was finalized in 2016. However, the SNMP identified that this exceedance was due to seawater intrusion, and the seawater intrusion sustainable management criteria, established by a chloride isocontour, was recently assigned a minimum threshold of 250 mg/L in the 2022 Alternative. Department staff agree that the minimum threshold for seawater intrusion in the Coastal Zone supersedes the water quality minimum threshold. For comparison, the average chloride concentration in the Inland Zone during this time was 46 mg/L, which was well below the established minimum threshold.

The 2022 Alternative provides average concentrations of TDS, chloride, and nitrate for the two monitoring zones for 2016-2020 on Table 14 and includes a water quality sustainability status for the past five years since the 2016 Alternative was initially submitted and approved. As stated in the 2022 Alternative, the past five years "represents a period following PV Water's adoption of its BMP 2014 that describes PV Water's projects and management actions to achieve sustainability."<sup>60</sup>

The average concentrations for the three water quality constituents during the 2016-2020 period indicate that an undesirable result has occurred in the Coastal Zone but not in the

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<sup>56</sup> Pajaro Valley Alternative Update 2022, Figure 59, p. 176.

<sup>57</sup> Pajaro Valley Alternative Update 2022, Table 13, p. 177.

<sup>58</sup> Pajaro Valley Alternative Update 2022, Section 7.10.2, p. 174.

<sup>59</sup> Pajaro Valley Alternative Update 2022, Section 7.10.2, pp. 174-175.

<sup>60</sup> Pajaro Valley Alternative Update 2022, Table 14, p. 180; Section 7.10.3, pp. 177-178.

Inland Zone. In the Inland Zone, the 2016-2020 average concentrations for TDS, chloride, and nitrate were 475 mg/L, 61 mg/L, and 24 mg/L, respectively, and were below the accepted minimum thresholds of 1,000 mg/L, 150 mg/L, and 45 mg/L. In the Coastal Zone, however, the average concentrations were 816 mg/L, 273 mg/L, and 52 mg/L, respectively, with the average concentration of nitrate considered to be an undesirable result. Department staff note that the chloride concentration in the Coastal Zone does exceed the minimum threshold of 150 mg/L; however, as previously discussed, the sustainable management criteria for seawater intrusion applies to this area and, relative to the 250 mg/L chloride isocontour, an undesirable result associated with seawater intrusion has not occurred.

Based on the information provided, Department staff concur with the following statement included in the 2022 Alternative: “Based on the analysis of observed data, current groundwater conditions show a water quality undesirable result for nitrate in the coastal zone as defined by the Salt and Nutrient Management Plan (SNMP). There is no undesirable result for nitrate in the Basin inland of the SNMP coastal zone, nor are there water quality undesirable results for TDS and chloride in the Basin.”<sup>61</sup>

With respect to the undesirable result associated with nitrate, the GSA explains that, as part of its Master Reclamation Permit, nitrogen inputs in the Coastal Zone are monitored through delivered water and by grower application, and it additionally performs an annual analysis assessing if nutrient application exceeds estimated crop demands based on land use surveys. The GSA’s analyses have demonstrated that current management practices in the Delivered Water Zone are not adding excessive nitrogen into the system and that the high nitrate concentrations may not be the result of current land and water use but may be a result of previously high nitrate applications leaching through the soil and reaching the groundwater.<sup>62</sup> The 2022 Alternative explains that coupled with continued monitoring and evaluation, nitrate management should continue to improve in the Subbasin. However, Department staff reviewed the Annual Reports covering water years 2021 and 2022, which were prepared after the 2022 Alternative was submitted, and the 2018-2022 average concentration of nitrate in the Coastal Zone slightly increased from 52 mg/L to 55 mg/L.<sup>63</sup>

Nitrate concentrations continue to meet the definition of an undesirable result in the Subbasin based on data presented in the water year 2022 Annual Report. In the water year 2022 Annual Report, the sustainability status of all sustainability indicators is summarized in Figure 12, and water quality data are shown in Figures 13 through 17 and in Table 10.<sup>64</sup> Other than the average concentration of nitrate in the Coastal Zone, the Subbasin appears to be on track to achieve its sustainability goal related to degraded water quality. To ensure that the Subbasin reaches and maintains sustainable conditions

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<sup>61</sup> Pajaro Valley Alternative Update 2022, Section 7.10.7, p. 185.

<sup>62</sup> Pajaro Valley Alternative Update 2022, Section 7.10.6, p. 184.

<sup>63</sup> Pajaro Valley Subbasin WY2022 Annual Report, Table 10, p. 56.

<sup>64</sup> Pajaro Valley Subbasin WY2022 Annual Report, Figure 12, pp. 39-40; Figures 13-17, pp. 52-55; Table 10, p. 56.

for all water quality constituents of concern, Department staff encourage the following items:

- Consider in the assessment of undesirable results the exceedances of water quality minimum thresholds caused by groundwater extraction, whether they are a direct result of groundwater management activities or not.
- Collaborate and coordinate with the appropriate groundwater users, water quality regulatory agencies, and existing programs in the basin to understand and develop a process for determining if groundwater management and extraction is resulting in degraded water quality.

### 3.1.5 Land Subsidence

No current land subsidence conditions relative to measurable objectives, interim milestones, and minimum thresholds were provided in the 2022 Alternative. The 2022 Alternative explains that “[sustainable management criteria] for subsidence are not warranted because subsidence is unlikely due to groundwater levels historically being above the pre-consolidation stress threshold for the aquifer system of the Basin. The PV GSP Alternative also states that significant and unreasonable reduction of storage and seawater intrusion would occur before subsidence, and that PV Water would act to address those conditions in advance of subsidence occurring.”<sup>65</sup>

In response to the Department’s Recommended Action 9 (see Section 4.9 of this assessment), the GSA contracted with the United States Geological Survey (USGS) to perform an evaluation of land subsidence in the Subbasin.<sup>66</sup> As stated in the 2022 Alternative, “The findings of the USGS evaluation...confirm the lack of observed permanent subsidence in the Basin and further support the determination that subsidence SMC are not required for the Basin.”<sup>67</sup> The GSA’s Board additionally stated, “It is reaffirmed that sustainable management criteria for subsidence are not needed for the Basin based on the preliminary results of the [USGS] evaluation of subsidence presented to the GSU22 Committee meeting on December 15, 2020 confirming the lack of observed permanent subsidence in the Pajaro Valley Subbasin (Basin).”<sup>68</sup>

The 2022 Alternative further states, “Even though the indicator is not currently considered applicable, permanent land subsidence caused by lowering of groundwater levels occurring in the Basin would be considered significant and unreasonable. The identification of active permanent land subsidence will trigger the need for dedicated subsidence monitoring, and an update to the PV GSP Alternative would then need to include SMC for the land subsidence sustainability indicator.”<sup>69</sup> Department staff reviewed the most recent Annual Report covering water year 2022, which was prepared after the

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<sup>65</sup> Pajaro Valley Alternative Update 2022, Section 6.1, p. 132.

<sup>66</sup> Pajaro Valley Alternative Update 2022, Appendix 6A, pp. 492-518.

<sup>67</sup> Pajaro Valley Alternative Update 2022, Section 6.1, pp. 132-133.

<sup>68</sup> Pajaro Valley Alternative Update 2022, Section 6.1, p. 132.

<sup>69</sup> Pajaro Valley Alternative Update 2022, Section 6.6, p. 134.

2022 Alternative was submitted. In that report, the GSA continues its assertion that sustainable management criteria for subsidence are not needed for the Subbasin.<sup>70</sup>

Based on the information provided by the GSA in its 2022 Alternative, which indicated land subsidence in the Subbasin is not occurring at this time, Department staff concur that sustainable management criteria for land subsidence are not immediately needed in the Subbasin and encourage the GSA to continue to coordinate regionally, and especially with adjacent basins, to ensure that land subsidence related to groundwater extraction does not occur. Should land subsidence be observed in the Subbasin, Department staff encourage the GSA to consider the following:

- Identify land uses and property interests that are likely to be affected by land subsidence in the basin and identify a cumulative amount of tolerable subsidence that, if exceeded, would substantially interfere with groundwater and land surface beneficial uses and users in the basin.
- Establish a monitoring network for land subsidence that directly measures land elevation change such as remote sensing data, survey monuments, or global positioning system stations. Collect data at a minimum of every five years from the network.

### **3.1.6 Depletions of Interconnected Surface Water**

The 2016 Alternative, based largely on the *Pajaro Valley Water Management Agency Basin Management Plan Update February 2014* (BMP 2014), did not directly address the depletions of interconnected surface water sustainability indicator. However, Department staff noted in its 2019 Staff Report that the GSA claimed the numerical model for the Subbasin was able to quantify streamflow depletions, and that the January 1, 2015, depletion values would be used as a minimum threshold, and streamflow depletion in excess of the January 1, 2015, value would constitute an undesirable result.<sup>71</sup>

At the time of its review, Department staff noted that, although the 2016 Alternative had not established quantitative criteria related to depletions of interconnected surface water, it had quantified the overdraft and had expressed the view that correcting the Subbasin's overdraft would also improve conditions related to the depletions of interconnected surface water. As a result, Department staff concluded that the lack of quantitative criteria related to interconnected surface water did not preclude a finding that the 2016 Alternative was likely to achieve the sustainability goal for the Subbasin, and the 2016 Alternative was approved.<sup>72</sup> However, Department staff recommended that the GSA establish those criteria, and those recommendations were endorsed in the *Statement of Findings Regarding the Approval of the Pajaro Valley Subbasin Alternative*. Recommended Action 2 of the 2019 Staff Report encouraged the GSA to, "...quantify depletions of

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<sup>70</sup> Pajaro Valley Subbasin WY2022 Annual Report, p. 15.

<sup>71</sup> Pajaro Valley Alternative 2019 Staff Report, p. 20.

<sup>72</sup> Pajaro Valley Alternative 2019 Staff Report, p. 24.

interconnected surface waters occurring as of January 1, 2015, which the Agency intends to use the threshold beyond which undesirable results occur, or other thresholds as defined and justified by the Agency.”<sup>73</sup> Recommended Action 5 of the 2019 Staff Report additionally encouraged the GSA to, “define specific, quantitative criteria for...depletion of interconnected surface water that can be used to objectively determine compliance of the Plan with the objectives of SGMA on an ongoing basis.”<sup>74</sup>

In response to Recommended Actions 2 and 5 (see Sections 4.2 and 4.5 in this assessment), the 2022 Alternative included a technical memorandum titled “*Quantify Depletions of Interconnected Surface Waters, Basin Management Plan: Groundwater Sustainability Update 2022.*”<sup>75</sup> The technical memorandum concluded that there are no instances of hydraulic connection between Corralitos and Carneros Creek and the Aromas aquifer, and only select locations along the Pajaro River where monitoring data indicate only intermittent hydraulic connection. The 2022 Alternative states that “Areas of interconnected surface water along the Pajaro River occur at an area downstream of Watsonville...and upstream at Murphy Crossing.... Interconnected surface water conditions only develop at these sites during winter high river flow periods and do not persist beyond the duration of the high flow events. During these periods [of non-high river flows], the surface water bodies are losing reaches.”<sup>76</sup> The memorandum indicates the interconnected surface water conditions are only present during winter high river flow periods when groundwater is not being pumped. The 2022 Alternative further states, “Because of the limited spatial and temporal extent of interconnected surface water conditions, there are no depletions of interconnected surface water to quantify. Thus, without evidence of depletions of interconnected surface water due to pumping from the Aromas, there is no potential to generate undesirable results. In turn, there is no need to define minimum thresholds for depletions of interconnected surface water.”<sup>77</sup>

The most recent Annual Report covering water year 2022 was reviewed by Department staff. In the 2022 Annual Report, the GSA again states that, based on its analysis of best available information, there was no potential for significant and unreasonable conditions for interconnected surface water in the Subbasin and that minimum thresholds and undesirable results for depletion of interconnected surface water are not necessary.<sup>78</sup>

As indicated in the GSP Regulations, a groundwater sustainability agency that is able to demonstrate that undesirable results related to one or more sustainability indicators are not present and are not likely to occur in a basin shall not be required to establish criteria for undesirable results related to those sustainability indicators.<sup>79</sup> Accordingly, if a groundwater sustainability agency is able to demonstrate that groundwater and surface

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<sup>73</sup> Pajaro Valley Alternative 2019 Staff Report, p. 26.

<sup>74</sup> Pajaro Valley Alternative 2019 Staff Report, p. 27.

<sup>75</sup> Pajaro Valley Alternative Update 2022, Appendix 5A, pp. 446-491.

<sup>76</sup> Pajaro Valley Alternative Update 2022, Section 5.3, p. 124.

<sup>77</sup> Pajaro Valley Alternative Update 2022, Section 5.5, p. 125.

<sup>78</sup> Pajaro Valley Subbasin WY2022 Annual Report, p. 15.

<sup>79</sup> 23 CCR § 354.26(d).

water are not interconnected in a basin, or groundwater conditions occurring throughout the basin would not cause depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water, and consequently no potential for undesirable results associated with that sustainability indicator, then no sustainable management criteria for that sustainability indicator are necessary.<sup>80</sup>

Although the GSA provided new information documenting the extent and nature of surface water and groundwater relationships in the Subbasin, that information does not demonstrate a complete absence of interconnectivity, and the 2022 Alternative does not explain why the intermittent hydraulic connection described in the technical memorandum does not constitute interconnected surface water for purposes of SGMA. The technical memorandum, in its Recommendations section, indicated that “there may be an indirect connection to [interconnected surface water] via the intervening alluvium”<sup>81</sup> and recommended five actions to be integrated into the 2022 Alternative as “next steps in addressing data gaps necessary to develop sustainable management criteria that are protective of the beneficial uses of surface waters.”<sup>82</sup>

Based on the information provided in the 2022 Alternative, Department staff cannot conclude that the GSA has met the burden of demonstrating that interconnected surface waters are not present, and depletions of interconnected surface water are not likely to occur in the Subbasin. Consequently, Department staff recommend that the GSA either: 1) establish sustainable management criteria for depletions of interconnected surface water as recommended in the 2019 Staff Report; or 2) provide additional information regarding the nature of surface water and groundwater interactions, including a thorough discussion and analysis explaining that any interconnected surface waters in the Subbasin are not depleted as a result of groundwater conditions occurring throughout the basin (see [Recommended Corrective Action 1](#)).

Although the GSA claims that minimum thresholds and undesirable results for depletions of interconnected surface water are not necessary, the GSA’s Board established what would be considered “significant and unreasonable”<sup>83</sup> conditions related to depletions of interconnected surface water and qualitatively set measurable objectives. Consistent with the 2016 Alternative, the 2022 Alternative states that “significant and unreasonable depletions of interconnected surface waters occur when pumping groundwater in the Aromas aquifer causes depletions of interconnected surface waters greater than what occurred during Water Years 2000-2015 in surface waters typically interconnected with groundwater in the Aromas aquifer during Water Years 2000-2015.”<sup>84</sup> Provided that the GSA manages the Subbasin to meet these standards, Department staff believe the lack

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<sup>80</sup> 23 CCR § 351(o); Water Code § 10721(x)(6).

<sup>81</sup> Pajaro Valley Alternative Update 2022, Appendix 5A, Section 6.0, p. 459.

<sup>82</sup> Pajaro Valley Alternative Update 2022, Appendix 5A, Section 6.0, p. 459.

<sup>83</sup> Pajaro Valley Alternative Update 2022, Section 5.4, p. 124.

<sup>84</sup> Pajaro Valley Alternative Update 2022, Section 5.2, p. 123; Section 5.4, p. 124.

of finality on the issue of interconnected surface waters would not materially affect the ability of the GSA to achieve the sustainability goal for the basin.

### 3.2 Projects and Management Actions

The GSP Regulations require a description of the projects and management actions the local agencies and/or GSAs in the basin have determined will achieve the established sustainability goal, including projects and management actions to respond to changing conditions.<sup>85</sup> As part of its Periodic Review responsibility, the Department is required to determine whether the local agencies and/or GSAs in the basin are implementing projects and management actions consistent with the alternative, or whether the local agencies and/or GSAs have demonstrated that actions described in the alternative have been rendered unnecessary based on changing basin conditions or an improved understanding of basin conditions.<sup>86</sup>

Section 7 of the 2022 Alternative presents the sustainability status of the Subbasin, which includes an update on the implementation of the projects and management actions included in the 2016 Alternative (BMP 2014), the effect on groundwater conditions of those projects and management actions, and a description of current groundwater conditions for each sustainability indicator relative to sustainable management criteria.<sup>87</sup> With respect to the implementation of projects and management actions, the Subbasin appears to be on track to achieve its sustainability goal.

The following BMP 2014 Phase 1 projects and management actions are reported to be operational.<sup>88</sup>

- Conservation Program
- Increased Recycled Water Storage at the Recycled Water Facility (now referred to as the Recycled Water Facility Optimization Project)
- Increased Recycled Water Deliveries (including the Coastal Distribution System Expansion Project)

As summarized in the 2022 Alternative, the following BMP 2014 Phase 1 projects are in the process of being implemented but not yet operational.<sup>89</sup> BMP 2014 also includes the Murphy Crossing with Recharge Basins project but describes the project as a Phase 2 project. Phase 2 will only proceed if Phase 1 projects and management actions are evaluated to be insufficient to achieve sustainability.

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<sup>85</sup> 23 CCR § 354.44(a).

<sup>86</sup> 23 CCR § 355.6(c)(2).

<sup>87</sup> Pajaro Valley Alternative Update 2022, Section 7, pp. 135-185.

<sup>88</sup> Pajaro Valley Alternative Update 2022, Section 7.3, pp. 138-141.

<sup>89</sup> Pajaro Valley Alternative Update 2022, Section 7.4, pp. 141-143.

- College Lake with Inland Pipeline to Coastal Distribution System (now referred to as the College Lake Integrated Resources Management Project)
- Harkins Slough Recharge Facilities Upgrades & Watsonville Slough with Recharge Basins (now referred to as the Watsonville Slough System Managed Aquifer Recharge and Recovery Projects)

In addition to the projects originally included in the 2016 Alternative, the GSA has implemented, or is in the process of implementing, the following projects and programs:<sup>90</sup>

- Recharge Net Metering
- Coastal Distribution System F-Pipeline Expansion Project
- Pajaro Valley Hydrologic Model Update, Data Collection, and Analysis for Sustainability

Details about each of the operational projects and management actions and those that are being implemented are included in the 2022 Alternative. As stated, a primary assessment of the projects and management actions is whether they collectively achieve the total goal of 12,100 acre-feet per year (AFY) documented in the BMP 2014. The currently projected average annual yield is approximated at 10,740 to 11,240 AFY.<sup>91</sup>

Department staff also reviewed the Annual Reports covering water years ending on September 30 in 2021 and 2022, which were prepared after the 2022 Alternative was submitted. In the most recent Annual Report, the status of the projects and management actions are comprehensively presented in the Basin Management Planning section.<sup>92</sup> Department staff encourage the GSA to continue to describe progress towards implementing its Alternative in its Annual Reports. Department staff concur with the GSA's assessment that projects and management actions are being implemented as planned and are on track toward reaching the Subbasin's sustainability goal.

### 3.3 Data Gaps

Data gaps can relate to information about the physical setting and characteristics of a basin, a basin's current conditions, its hydrogeologic conceptual model, or its monitoring network.<sup>93</sup> As part of its Periodic Review responsibility, the Department is required to determine whether the local agencies and/or GSAs are addressing the basin's data gaps and are reducing the levels of uncertainty identified in the approved alternative.<sup>94</sup>

Data gaps are discussed in several sections of the 2022 Alternative. The Periodic Evaluation Elements Guide provided by the GSA indicates data gaps are discussed in

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<sup>90</sup> Pajaro Valley Alternative Update 2022, Section 7.5, pp. 143-145.

<sup>91</sup> Pajaro Valley Alternative Update 2022, Table 9, p. 137.

<sup>92</sup> Pajaro Valley Subbasin WY2022 Annual Report, pp. 17-24.

<sup>93</sup> 23 CCR §§ 354.12; 354.15(b)(5); 354.38.

<sup>94</sup> 23 CCR § 355.6(c)(3).



Sections 2.7 (seawater intrusion), 3.11 (groundwater levels), 4.3 and 4.5 (groundwater dependent ecosystems), 5.9 (interconnected surface water), and 10.6 (monitoring networks). Based on the information presented in the 2022 Alternative, the GSA appears to be on track to achieve the Subbasin’s sustainability goal by addressing the existing data gaps, identifying new data gaps, and reducing the levels of management uncertainty.

To evaluate seawater intrusion, two data gaps along the seawater intrusion minimum threshold chloride isocontour were identified.<sup>95</sup> The GSA acknowledges that addressing these data gaps could provide important data for evaluating the seawater intrusion sustainability indicator, including potentially revising the location of the seawater intrusion minimum threshold chloride isocontour, and should be prioritized. The data gaps are:

- The area inland of monitoring well SC-A4A and the seawater intrusion minimum threshold chloride isocontour; and
- Along the seawater intrusion minimum threshold chloride isocontour between monitoring wells PV6SM and HudsonS.

Data gaps associated with groundwater level RMPs are evaluated in the 2022 Alternative for several areas of the Subbasin; however, the GSA indicates that these areas are primarily a result of confidentiality limitations and do not necessarily reflect data gaps in the Subbasin’s monitoring network.<sup>96</sup> Figure 29 in the 2022 Alternative delineates eight areas where an existing RMP is not located within one mile.<sup>97</sup> As summarized in the 2022 Alternative, areas recommended for new RMPs include the Las Lomas Hills, areas south of Watsonville, and areas east of Watsonville.

The 2014 BMP did not identify groundwater dependent ecosystems (GDE), so Department staff provided Recommended Action 3, which was to “provide an identification of groundwater dependent ecosystems in the Subbasin.”<sup>98</sup> In response to Recommended Action 3, the GSA’s consultant used aerial imagery to verify the existence of GDEs; however, there appears to be some inconsistency with image sources. According to the 2022 Alternative: “These areas are labeled as ‘Potential Additional GDE (to be verified)’ on Figure 36 and should be considered data gaps, requiring additional investigation to determine their inclusion as possible GDEs.”<sup>99</sup> The recommendations for additional evaluation of GDEs include the following.

- Complete a field reconnaissance to evaluate if Potential Additional GDEs warrant inclusion in the final GDE mapping; and

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<sup>95</sup> Pajaro Valley Alternative Update 2022, Section 2.7, p. 62.

<sup>96</sup> Pajaro Valley Alternative Update 2022, Section 3.11, pp. 101-109.

<sup>97</sup> Pajaro Valley Alternative Update 2022, Figure 29, p. 103.

<sup>98</sup> Pajaro Valley Alternative Update 2022, Section 4.3, p. 117; Figure 36, p. 116; Section 4.5, p. 121.

<sup>99</sup> Pajaro Valley Alternative Update 2022, Section 4.3, p. 117.

- Where GDEs are influenced by groundwater in the principal aquifer, better define the ecological value of the GDE with priority given to legally protected species or habitat.

As it pertains to depletions of interconnected surface water, the 2022 Alternative states, “RMPs are identified in the Alluvium for ongoing evaluation of the relationship between groundwater levels in the Aromas and Alluvium aquifers and how that may affect potential interconnected surface water. Co-located wells where one is screened in the Aromas aquifer, and another screened in the Alluvium are prioritized for this ongoing evaluation.”<sup>100</sup> The locations of the new RMPs are described in the 2022 Alternative and recommendations for gathering new data are provided.<sup>101</sup>

In 2016, a study to inventory, classify, and evaluate the GSA’s groundwater monitoring network adequacy to develop data to understand and effectively manage the Subbasin’s groundwater resources was completed.<sup>102</sup> As indicated in the 2022 Alternative, recommendations were made to improve the network’s overall effectiveness and comply with the requirements of SGMA, and shortcomings to the network were identified, with the most prominent of these being a lack of spatial coverage within the city limits of Watsonville. To address this data gap, the GSA constructed the PV20 nested monitoring wells comprising four wells in two boreholes targeting the Alluvium, Upper Aromas, Lower Aromas, and Purisima formations.

A comprehensive discussion of monitoring data gaps is provided in Section 10.6.3 of the 2022 Alternative and the data gaps are shown in Figure 86.<sup>103</sup> Data gaps primarily focus on the Aromas Red Sands aquifer, the principal aquifer of the Subbasin, and numerous recommendations for groundwater monitoring improvements are included in Section 10.6.4. Monitoring improvements specific to interconnected surface water and groundwater dependent ecosystems are included in Section 10.6.5 and summarized in Table 30.<sup>104</sup>

### **3.4 Consideration of Adjacent Basins**

SGMA requires the Department to “...evaluate whether a groundwater sustainability plan adversely affects the ability of an adjacent basin to implement their groundwater sustainability plan or impedes the achievement of sustainability goals in an adjacent basin.”<sup>105</sup> Furthermore, the GSP Regulations state that minimum thresholds defined in each GSP be selected to avoid causing undesirable results in adjacent basins or affecting the ability of adjacent basins to achieve sustainability goals.<sup>106</sup>

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<sup>100</sup> Pajaro Valley Alternative Update 2022, Section 5.7, p. 127.

<sup>101</sup> Pajaro Valley Alternative Update 2022, Section 4.5, p. 130.

<sup>102</sup> Pajaro Valley Alternative Update 2022, Section 10.6, p. 265.

<sup>103</sup> Pajaro Valley Alternative Update 2022, Figure 86, p. 269.

<sup>104</sup> Pajaro Valley Alternative Update 2022, Table 30, p. 279.

<sup>105</sup> Water Code § 10733(c).

<sup>106</sup> 23 CCR § 354.28(b)(3).

The Corralitos-Pajaro Valley Subbasin has four adjacent basins. The Santa Cruz Mid-County Basin and Corralitos-Purisima Highlands Subbasin are located to the north and the Salinas Valley-180/400 Foot Aquifer Subbasin and Salinas Valley-Langley Area Subbasin are located to the south. The Purisima Highlands Subbasin is designated by the Department as a very low priority and is not required by SGMA to be managed under a GSP. The other three adjacent basins, however, are designated as high priority and have approved GSPs with established sustainability goals.

The GSA should be aware of the adjacent basins' sustainability goals and actively coordinate with the respective Plan Managers to ensure the Pajaro Valley Subbasin's groundwater sustainability program is not affecting the adjacent basins. Furthermore, the GSA should be aware of the recommended corrective actions that adjacent basins are actively working to address. Department staff recommend the GSA provide an explanation in future updates or Periodic Evaluations of its Alternative how inter-basin items, such as: thresholds across basin boundaries; monitoring networks; hydrogeologic conceptual models, including principal aquifer designations; water budgets; and management of interconnected surface water have been coordinated (see [Recommended Corrective Action 2](#)).

The 2022 Alternative, at this time, does not anticipate any negative impacts to the adjacent basins resulting from the minimum thresholds defined for the Pajaro Valley Subbasin, and the Department is not aware of any information, at this time, suggesting or claiming that adjacent basins' implementation of plans have been, or will be, negatively impacted by implementation of the Subbasin's 2022 Alternative. While Department staff are not aware of any information that would refute this position, additional information related to coordination with adjacent basins may be warranted. Department staff will continue to review the GSA's Periodic Evaluations to assess whether the implementation of the Pajaro Valley Subbasin Alternative is potentially impacting GSPs in the adjacent basins.

### **3.5 Alignment of Monitoring Network**

The GSP Regulations describe the monitoring network that must be developed for each sustainability indicator including monitoring objectives, monitoring protocols, and data reporting requirements. Collecting monitoring data of sufficient quality and quantity is necessary for the successful implementation of an alternative or a GSP. The GSP Regulations require a monitoring network of sufficient quality, frequency, and distribution to characterize groundwater and related surface water conditions in the basin and evaluate changing conditions that occur through the implementation of the alternative or GSP.<sup>107</sup> Specifically, a monitoring network must be able to monitor impacts to beneficial uses and users,<sup>108</sup> monitor changes in groundwater conditions relative to measurable

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<sup>107</sup> 23 CCR § 354.32.

<sup>108</sup> 23 CCR § 354.34(b)(2).

objectives and minimum thresholds,<sup>109</sup> capture seasonal low and high conditions,<sup>110</sup> include required information such as location and well construction, and include maps and tables clearly showing the monitoring site type, location, and frequency.<sup>111</sup>

Department staff encourage local agencies and GSAs to collect monitoring data as specified in their respective plans, follow SGMA data and reporting standards,<sup>112</sup> fill data gaps,<sup>113</sup> update monitoring network information as needed, follow monitoring best management practices, and submit all monitoring data to the Department's Monitoring Network Module immediately after collection, including any additional groundwater monitoring data that is collected within the respective plan area that is used for making groundwater management decisions. Department staff note that if agencies do not fill their identified data gaps, the agencies' understanding of the basin may not represent the best available science for use in monitoring basin conditions.

Department staff recommend the GSA ensure the monitoring network details included in its Alternative are consistent with the information contained in the SGMA Portal Monitoring Network Module (see [Recommended Corrective Action 3](#)).

### 3.6 Consideration of Climate Change and Future Conditions

Since the 2022 Alternative was adopted and submitted, climate change conditions have advanced faster and more dramatically. It is anticipated that the hotter, drier conditions will result in a loss of ten percent of California's water supply. As California adapts to a hotter, drier climate, local agencies and GSAs should be preparing for these changing conditions as they work to sustainably manage groundwater within their jurisdictional areas. Specifically, the Department encourages local agencies and GSAs to:

- Explore how their proposed groundwater level thresholds have been established in consideration of groundwater level conditions in the basin based on current and future drought conditions.
- Explore how groundwater level data from the existing monitoring network will be used to make progress towards sustainable management of the basin given increasing aridification and effects of climate change, such as prolonged drought.
- Take into consideration changes to surface water reliability and the potential impact on groundwater conditions.
- Evaluate updated watershed studies that may modify assumed frequency and magnitude of recharge projects, if applicable.

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<sup>109</sup> 23 CCR § 354.34(b)(3).

<sup>110</sup> 23 CCR § 354.34(c)(1)(B).

<sup>111</sup> 23 CCR §§ 354.34(g-h).

<sup>112</sup> 23 CCR § 352.4 *et seq.*

<sup>113</sup> 23 CCR § 354.38(d).

- Continually coordinate with the appropriate groundwater users, including but not limited to domestic well owners and state small water systems, as well as the appropriate overlying county jurisdictions developing drought plans and establishing local drought task forces, to evaluate how their respective groundwater management strategy aligns with drought planning, response, and mitigation efforts within the basin.

## 4 PROGRESS TOWARDS ADDRESSING 2019 RECOMMENDED ACTIONS

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The July 17, 2019, *Statement of Findings Regarding the Approval of the Pajaro Valley Subbasin Alternative* explains the Department’s decision to initially review and approve the GSA’s Alternative. As stated in the Statement of Findings, “Based on its review of the Staff Report, Department management is satisfied that [Department] staff have conducted a thorough evaluation and assessment of the Alternative and concurs with staff’s recommendation and all the recommended actions and thus hereby approves the Alternative [on the following grounds:].”<sup>114</sup> The Statement of Findings further states, “Recommended actions identified in the Staff Report will assist the Department’s review of the Alternative’s implementation for consistency with SGMA and are thus recommended to be included in the resubmitted Alternative, due on January 1, 2022, as required by Water Code Section 10733.6(c).”<sup>115</sup> The GSA’s efforts to address the Department’s recommended actions are summarized below. New recommended corrective actions and considerations for improvement of the Alternative are provided in Section 5.

### 4.1 Recommended Action 1

*Recommended Action 1. Staff recommend that the Agency define how it will assess, on an ongoing basis, the non-jurisdictional portion of the Subbasin and demonstrate that activities in that area are not adversely impacting successful implementation of the Plan within the Agency’s jurisdictional area, or adversely affected by implementation of the Plan or by groundwater use in the area not subject to that Plan. That assessment may include, but is not limited to, additional monitoring in the non-jurisdictional areas and agreements with other entities.*

The 2022 Alternative includes a plan that will assess, on an ongoing basis, adverse effects of groundwater conditions in the jurisdictional area from activities in the non-jurisdictional area, as well as adverse effects of the non-jurisdictional area from activities in the jurisdictional area (see 2022 Alternative Section 11).<sup>116</sup> The plan includes additional

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<sup>114</sup> <https://sgma.water.ca.gov/portal/alternative/assessments/22>.

<sup>115</sup> <https://sgma.water.ca.gov/portal/alternative/assessments/22>.

<sup>116</sup> Pajaro Valley Alternative Update 2022, Section 11, pp. 281-288.

groundwater level monitoring, land use monitoring, and groundwater model assessments, as summarized below.

- Groundwater level monitoring. If it is indicated that groundwater use within the jurisdictional area may be having an adverse effect on the non-jurisdictional area, the GSA will evaluate changes to its groundwater management to reduce the adverse effect.
- Groundwater level monitoring. If it is indicated that groundwater use in the non-jurisdictional area may be having an adverse effect on the non-jurisdictional area or the jurisdictional area, the GSA will communicate with the land use authorities (San Benito County and Monterey County), well permitting agencies for the non-jurisdictional area (San Benito County Water District and Monterey County Health Department), and the water supply district (Aromas Water District) near the non-jurisdictional area to evaluate how groundwater use may have changed and develop options to reduce the potential for adverse effects.
- Land use monitoring. The GSA will request that the land use authorities for the non-jurisdictional area of the Subbasin inform the GSA of any proposed changes to land use in the area and will request the receipt of well drilling permits from the well permitting agencies. If the GSA identifies a change that may have an adverse effect on Subbasin groundwater management, the GSA will communicate with the relevant local agencies and the Aromas Water District to develop options to limit the potential adverse effects.
- Groundwater model assessment. The GSA will evaluate potential changes to groundwater use that may have adverse effects across the jurisdictional boundary with the Pajaro Valley Hydrologic Model (PVHM). Substantial changes to the GSA's Basin Management Plan (BMP) 2014 project and management actions will be simulated with the PVHM and effects across the jurisdictional boundary will be evaluated.
- Groundwater model assessment. As part of Recommended Action 4, the GSA improved upon its detailed water budget and provided new information related to groundwater flow between the jurisdictional and non-jurisdictional areas of the Subbasin.<sup>117</sup> As indicated in the 2022 Alternative, a consistent flow of roughly 2,500 to 2,900 acre-feet crosses from the non-jurisdictional area into the jurisdictional area annually. Most of this flow occurs in the Aromas and Purisima aquifers.

#### **4.1.1 Staff Assessment of Agency's Response to Recommended Action 1**

Based on the information provided in the 2022 Alternative, Department staff believe that Recommended Action 1 has been sufficiently addressed. The 2022 Alternative includes

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<sup>117</sup> Pajaro Valley Alternative Update 2022, Section 9.4.4, p. 222.

a plan that will assess, on an ongoing basis, adverse effects of groundwater conditions in the jurisdictional area from activities in the non-jurisdictional area, as well as adverse effects of the non-jurisdictional area from activities in the jurisdictional area. Along with additional monitoring, modeling evaluations will be part of how the GSA states it will assess the non-jurisdictional area going forward as recommended by the Department.

## 4.2 Recommended Action 2

*Recommended Action 2. Staff recommend that the Agency quantify depletions of interconnected surface waters occurring as of January 1, 2015, which the Agency intends to use the threshold beyond which undesirable results occur, or other thresholds as defined and justified by the Agency.*

Recommended Action 2, as well as Recommended Action 5, addresses sustainable management criteria associated with interconnected surface water (see 2022 Alternative Section 5).<sup>118</sup> As indicated in the 2022 Alternative, the GSA has not quantified depletions of surface water in the Subbasin as recommended, but instead developed a “qualitative statement of significant and unreasonable conditions that justifies how the GSU22 is protective of beneficial uses.”<sup>119</sup> The 2022 Alternative states, “This statement of significant and unreasonable conditions updates the definition of what is significant and unreasonable to be based on typical conditions occurring over multiple years, not just 2015 as initially stated in the PV GSP Alternative. The statement also clarifies that depletions of surface waters after they are connected due to future improvements would not be considered significant and unreasonable.”<sup>120</sup> Details related to the GSA’s response to Recommended Action 2 are summarized below.

- The GSA’s consultant prepared a technical memorandum titled *Quantify Depletions of Interconnected Surface Waters, Basin Management Plan: Groundwater Sustainability Update 2022*. The technical memorandum concluded that there are no instances of hydraulic connection between Corralitos and Carneros Creek and the Aromas aquifer, and only select locations along the Pajaro River where monitoring data indicate only intermittent hydraulic connection. The memorandum indicates there is a significant vadose zone (i.e., lack of hydraulic connection) present between surface waters and the Aromas aquifer.
- The 2022 Alternative states, “Because of the limited spatial and temporal extent of interconnected surface water conditions, there are no depletions of interconnected surface water to quantify. Thus, without evidence of depletions of interconnected surface water due to pumping from the Aromas, there is no potential to generate undesirable results. In turn, there is no need to define minimum thresholds for depletions of interconnected surface water.”<sup>121</sup>

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<sup>118</sup> Pajaro Valley Alternative Update 2022, Section 5, pp. 122-131.

<sup>119</sup> Pajaro Valley Alternative Update 2022, Section 5.4, p. 124.

<sup>120</sup> Pajaro Valley Alternative Update 2022, Section 5.4, p. 124.

<sup>121</sup> Pajaro Valley Alternative Update 2022, Section 5.5, p. 125.

- In response to the Department’s Recommended Action 2, the GSA’s Board established what would be considered “significant and unreasonable”<sup>122</sup> conditions related to depletions of interconnected surface water and qualitatively set measurable objectives; however, the GSA’s Board declined to establish minimum thresholds or define undesirable results as the Board considered them “not necessary”.<sup>123</sup>
  - Significant and Unreasonable: Significant and unreasonable depletions of interconnected surface waters occur when pumping groundwater in the Aromas aquifer causes depletions of interconnected surface waters greater than what occurred during Water Years 2000-2015 in surface waters typically interconnected with groundwater in the Aromas aquifer during Water Years 2000-2015.
  - Measurable Objectives: Measurable objectives are set to raise groundwater to the adjacent channel bed elevations to increase the frequency and duration of interconnected surface water between the Aromas aquifer and surface water in the Basin where reasonably achievable with implementation of BMP 2014.

#### **4.2.1 Staff Assessment of Agency’s Response to Recommended Action 2**

Based on the information provided in the 2022 Alternative, Department staff believe that Recommended Action 2 has not been sufficiently addressed (see Section 3.1.6 of this assessment). Department staff reiterate its 2019 recommendation that quantifying estimated volumes and establishing sustainable management criteria for depletions of interconnected surface water will help facilitate its objective evaluation of whether the Alternative is achieving its sustainability goal moving forward. Department staff recommend that the GSA work towards better addressing Recommended Action 2 (as well as Recommended Action 5) and additionally, Recommended Corrective Action 2 provided in Section 5.1 of this assessment as it continues to implement its Alternative. The establishment of minimum thresholds and measurable objectives associated with the depletion of interconnected surface water will help the Department track the sustainability status of the Subbasin and ensure that implementation of the Subbasin’s Alternative will not impact the beneficial uses and users of groundwater or the ability of the adjacent basins to implement those GSPs.

### **4.3 Recommended Action 3**

*Recommended Action 3. Staff recommend that the Agency provide an identification of groundwater dependent ecosystems in the Subbasin.*

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<sup>122</sup> Pajaro Valley Alternative Update 2022, Section 5.5, p. 125.

<sup>123</sup> Pajaro Valley Alternative Update 2022, Section 5.2, pp. 122-123.



In response to Recommended Action 3 (see 2022 Alternative Section 4),<sup>124</sup> the GSA's consultant prepared a technical memorandum titled "*Identification of Groundwater Dependent Ecosystems (GDEs) Basin Management Plan: Groundwater Sustainability Update 2022 (GSU22)*".<sup>125</sup> Potential groundwater dependent ecosystems (GDEs) have been identified along the Pajaro River and in the Harkins, Struve, McClusky, and Watsonville Sloughs. Potential GDEs are also identified in the Elkhorn Slough Preserve area near Las Lomas.

- The GSA relied upon the Natural Communities Commonly Associated with Groundwater (NCCAG) database and an independent mapping analysis conducted by its consultant to identify wetland and vegetation areas where groundwater levels are shallower than 30 feet below ground surface (bgs) and greater than 30 feet bgs.
- The GDE analysis included in the 2022 Alternative identified discrepancies in the maps of GDEs, so the following actions are recommended by the GSA as next steps:
- Complete a field reconnaissance to evaluate if "potential additional GDEs"<sup>126</sup> warrant inclusion in the final GDE mapping.
- Where GDEs are influenced by groundwater in the principal aquifer, better define the ecological value of the GDE with priority given to legally protected species or habitat.

#### **4.3.1 Staff Assessment of Agency's Response to Recommended Action 3**

Based on the information provided in the 2022 Alternative, Department staff believe that Recommended Action 3 has been sufficiently addressed. Figure 36 in the 2022 Alternative identifies potential GDEs, and groundwater levels have been considered in the establishment of sustainable management criteria for chronic lowering of groundwater levels.<sup>127</sup>

#### **4.4 Recommended Action 4**

*Recommended Action 4. Staff recommend that the Agency update the Basin Management Plan to include a projected water budget that demonstrates the anticipated response to Plan implementation (for guidance, see 23 CCR Section 354.18(c)(3)). This recommendation is based on Department staff's understanding that modeling scenarios documented in the Alternative, including those projecting conditions into the future, include infrastructure and projects existing at the time of Alternative submittal, and that the results of those scenarios were used to develop the projects identified in the Basin*

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<sup>124</sup> Pajaro Valley Alternative Update 2022, Section 4, pp. 114-121.

<sup>125</sup> Pajaro Valley Alternative Update 2022, Appendix 4A and 4B pp. 417-445.

<sup>126</sup> Pajaro Valley Alternative Update 2022, Section 4.5, p. 121.

<sup>127</sup> Pajaro Valley Alternative Update 2022, Figure 36, p. 116.

*Management Plan. Staff recommend that the Agency incorporate the proposed projects into the analysis of its projected water budget to provide an increased level of confidence that those projects are likely to have the intended effects on the water budget and groundwater conditions.*

In response to Recommended Action 4 (see 2022 Alternative Section 9),<sup>128</sup> the GSA provided the following statement regarding water budgets, “The projected water budget results from the Pajaro Valley Hydrologic Model (PVHM), updated in 2021, demonstrate that the Basin Management Plan Update (2014) projects and management actions are likely to achieve their intended effects, increasing groundwater in storage and reducing the rate of seawater intrusion, through 2040.”<sup>129</sup> In addition to incorporating projects and management actions, the projected water budgets incorporate climate change and sea level rise.<sup>130</sup> Details specific to Recommended Action 4 are provided below.

- The United States Geological Survey (USGS) updated and refined the PVHM as part of the 2022 Alternative and incorporated multiple climate change and sea level rise scenarios. The projected water budgets presented in the 2022 Alternative represent average change in projected climate and sea level rise under a high emissions scenario (Representative Concentration Pathway or RCP 8.5). The model scenario used to develop the projected water budgets simulates the implementation of existing and planned groundwater sustainability projects within the Subbasin.
- The 2022 Alternative states that “The BMP 2014 projects and management actions have intended effects of increasing groundwater in storage and reducing the rate of seawater intrusion to help achieve Basin sustainability. The BMP 2014 projects and management actions are designed to achieve these intended effects primarily by reducing agricultural groundwater pumping. Projects also provide supplemental recharge of the Basin.”<sup>131</sup> The PVHM update incorporates and analyzes five projects and management actions initially described in the Alternative.<sup>132</sup>
- The 2022 Alternative provided seven key findings derived from analysis of the historical, current, and projected groundwater budgets and stated, “Continued investment in implementing current and planned BMP 2014 projects, and potentially the addition of new groundwater sustainability projects or project improvements, may be required to maintain Basin sustainability through 2070.”<sup>133</sup>

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<sup>128</sup> Pajaro Valley Alternative Update 2022, Section 9, pp. 193-236.

<sup>129</sup> Pajaro Valley Alternative Update 2022, Section 9.2, pp. 193-194.

<sup>130</sup> Pajaro Valley Alternative Update 2022, Section 9.3, p. 194.

<sup>131</sup> Pajaro Valley Alternative Update 2022, Section 9.3.4, p. 201.

<sup>132</sup> Pajaro Valley Alternative Update 2022, Section 9.3.4, pp. 201-202.

<sup>133</sup> Pajaro Valley Alternative Update 2022, Section 9.6, p. 236.

#### 4.4.1 Staff Assessment of Agency’s Response to Recommended Action 4

Based on the information provided in the 2022 Alternative, Department staff believe that Recommended Action 4 has been sufficiently addressed. This 2022 Alternative presents historical, current, and projected water budgets in response to Recommended Action 4, and the water budgets are based on the results of simulations prepared by the USGS using the updated PVHM. In addition to incorporating projects and management actions as recommended, the projected water budgets incorporate climate change and sea level rise. Staff acknowledge that implementation of the Alternative is intended to reach sustainable conditions by 2040 and encourage the GSA to ensure that those conditions are maintained throughout SGMA’s 50-year planning and implementation horizon.

#### 4.5 Recommended Action 5

*Recommended Action 5. Staff recommend that the Agency define specific, quantitative criteria for groundwater levels and depletion of interconnected surface water that can be used to objectively determine compliance of the Plan with the objectives of SGMA on an ongoing basis.*

In response to the Department’s Recommended Action 5 (see 2022 Alternative Section 3 and Section 5),<sup>134</sup> the GSA’s Board approved sustainable management criteria for chronic lowering of groundwater levels but not for depletions of interconnected surface water (see Section 3.1.6 in this assessment as well as response to Recommended Action 2 in Section 4.2). The 2022 Alternative states, “Because of the limited spatial and temporal extent of interconnected surface water conditions, there are no depletions of interconnected surface water to quantify. Thus, without evidence of depletions of interconnected surface water due to pumping from the Aromas, there is no potential to generate undesirable results. In turn, there is no need to define minimum thresholds for depletions of interconnected surface water.”<sup>135</sup>

The GSA’s Board did agree with the Department’s recommendation that sustainable management criteria should be established for chronic lowering of groundwater levels, despite the premise made in the 2016 Alternative that simply raising groundwater levels to prevent seawater intrusion, which would also prevent a depletion of supply, would be sufficient.<sup>136</sup> The following reflects the sustainable management criteria established for chronic lowering of groundwater levels. A map showing the locations of groundwater level representative monitoring points (RMP) wells is provided as Figure 13 in the 2022 Alternative and a table indicating the minimum thresholds, measurable objectives, and interim milestones of those wells is provided as Table 6.<sup>137</sup>

- **Significant and Unreasonable:** Significant and unreasonable chronic lowering of groundwater levels occurs when groundwater levels decline such that a significant

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<sup>134</sup> Pajaro Valley Alternative Update 2022, Section 3, pp. 69-113; Section 5, pp. 122-131.

<sup>135</sup> Pajaro Valley Alternative Update 2022, Section 5.5, p. 125.

<sup>136</sup> Pajaro Valley Alternative Update 2022, Section 3.1, p. 69.

<sup>137</sup> Pajaro Valley Alternative Update 2022, Figure 13, p. 74; Table 6, p. 100.

number of domestic, agricultural, or municipal wells, experience a long-term reduction in groundwater supply.

- **Undesirable Result:** Undesirable results for chronic lowering of groundwater levels occur when any of the below occurs in either the area within 1,000 feet of the delivered water zone or in the area outside 1,000 feet of the delivered water zone:
  - More than 15% of RMP wells experience a drop in groundwater elevations below minimum threshold during 4 out of 5 consecutive years, or
  - More than 20% of RMP wells experience a drop in groundwater elevations below minimum threshold during 3 out of 5 consecutive years, or
  - More than 25% of RMP wells experience a drop in groundwater elevations below minimum threshold during 2 out of 5 consecutive years.
- **Minimum Threshold:** The minimum threshold for chronic lowering of groundwater levels is the average of the [two] lowest annual minimum groundwater elevations from [Water Year] 2000-2020.<sup>138</sup>
- **Measurable Objective:** The measurable objective for chronic lowering of groundwater levels is the average of 2016-2020 spring (March-May) groundwater measurements, plus the projected rise in average spring elevations between 2015-2018 and 2035-2040 as simulated by the Pajaro Valley Hydrologic Model (PVHM) in simulations of the Basin Management Plan (BMP) Update.
- **Interim Milestones:** The interim milestones for the chronic lowering of groundwater levels incorporate increases simulated by the PVHM for the BMP 2014 over the following time frames:
  - 2025 Interim Milestone: The average of 2016-2020 spring groundwater elevations plus simulated average recovery in spring groundwater elevations between 2015-2018 and 2020-2025.
  - 2030 Interim Milestone: The average of 2016-2020 spring groundwater elevations plus simulated average recovery in spring groundwater elevations between 2015-2018 and 2025-2030.
  - 2035 Interim Milestone: The average of 2016-2020 spring groundwater elevations plus simulated average recovery in spring groundwater elevations between 2015-2018 and 2030-2035.

Although the GSA determined that significant and unreasonable conditions for chronic lowering of groundwater levels were not occurring in the Subbasin, the sustainable management criteria were based on historical groundwater levels and evaluated in comparison to depths at which wells are screened across the Subbasin to avoid declines

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<sup>138</sup> Pajaro Valley Alternative Update 2022, Section 3.7, pp. 84-92.

that would result in dewatering or reduced yield from water supply wells.<sup>139</sup> Additionally, the GSA provided justification for its selection of RMPs to show that they had the following characteristics: long-term reliable record and consistent sampling access; represents the Subbasin both spatially and vertically; representative of nearby wells screened in the same aquifer; and preferably a dedicated monitoring well located a sufficient distance from pumping wells to minimize influences from pumping cycles.<sup>140</sup>

#### **4.5.1 Staff Assessment of Agency’s Response to Recommended Action 5**

Based on the information provided in the 2022 Alternative related to the establishment of sustainable management criteria for chronic lowering of groundwater levels, Department staff believe that Recommended Action 5 has been sufficiently addressed. The sustainable management criteria established for chronic lowering of groundwater levels seems reasonable.

Based on the information provided in the 2022 Alternative related to the establishment of sustainable management criteria for depletions of interconnected surface water, however, Department staff believe that Recommended Action 5 has not been sufficiently addressed. Department staff recommend that the GSA work towards better addressing Recommended Action 5 (as well as Recommended Action 2) and additionally, Recommended Corrective Action 2 provided in Section 5.1 of this assessment as it continues to implement the Alternative. The establishment of minimum thresholds associated with the depletions of interconnected surface water will help the Department track the sustainability status of the Subbasin and ensure that implementation of the Subbasin’s Alternative will not impact the beneficial uses and users of groundwater or the ability of the adjacent basins to implement those GSPs.

#### **4.6 Recommended Action 6**

*Recommended Action 6. Staff recommend that the Agency should define a specific location of an isoconcentration contour or some other equivalent method that can be used on an ongoing basis to assess progress toward eliminating undesirable results associated with seawater intrusion to assess the goal of eliminating seawater intrusion through implementation of projects and management actions as described in the Plan.*

As stated in the 2022 Alternative (see 2022 Alternative Section 2),<sup>141</sup> “The minimum threshold chloride isocontour is 1,000 feet inland of the [250 mg/L] seawater intrusion isocontour as of 2020. To evaluate the location of the seawater intrusion isocontour as of 2020, Figure 2 and Figure 3 show maps of chloride concentrations observed in the Aromas aquifer, the principal aquifer for the Basin over different periods. Figure 2 shows historical maximums of chloride concentrations and Figure 3 shows chloride concentration maximums for 2018-2020. These data are compared to the seawater

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<sup>139</sup> Pajaro Valley Alternative Update 2022, Section 3.3, p. 71; Section 3.6, pp. 78-83.

<sup>140</sup> Pajaro Valley Alternative Update 2022, Section 3.4, p. 72.

<sup>141</sup> Pajaro Valley Alternative Update 2022, Section 2, pp. 43-68.

intruded area defined by PV Water based on chloride concentrations greater than 100 [milligrams per liter (mg/L)] through 2017.”<sup>142</sup>

The 2022 Alternative justifies the approach of setting the minimum threshold of 250 mg/L at 1,000 feet inland of the 2020 chloride isocontour by identifying the beneficial uses potentially affected by this sustainability indicator. Figures provided in the document illustrate that only a limited number of agricultural and domestic wells would be affected.<sup>143</sup> Additionally, because seawater intrusion is considered the “primary adverse effect of historical overdraft”<sup>144</sup> in the Subbasin, the 2022 Alternative has considered the potential effects on the neighboring coastal basins.<sup>145</sup> Additional information is included in the 2022 Alternative that provides a technical explanation related to seawater intrusion. The sustainable management criteria established for seawater intrusion is further discussed in the GSA’s response to Recommended Action 7 below.

#### **4.6.1 Staff Assessment of Agency’s Response to Recommended Action 6**

Based on the information provided in the 2022 Alternative, Department staff believe that Recommended Action 6 has been sufficiently addressed. Additional information related to the seawater intrusion sustainability indicator is provided below as it relates to Recommended Action 7.

#### **4.7 Recommended Action 7**

*Recommended Action 7. Staff recommend that the Alternative should be updated to set objective criteria consistent with achieving the stated goal that a 100 percent reduction in annual seawater intrusion rate is the operational goal for the Basin or to quantify the extent to which additional seawater intrusion would not be significant and unreasonable.*

In response to the Department’s Recommended Action 7, the GSA’s Board established the following sustainable management criteria for seawater intrusion (see 2022 Alternative Section 2).<sup>146</sup>

- **Significant and Unreasonable:** The 2014 Basin Management Plan Update sets a goal of reducing the rate of seawater intrusion by 90% to be achieved with the successful implementation of the Phase 1 projects by 2025. Therefore, it would be significant and unreasonable for seawater to intrude into the Aromas aquifer, the principal aquifer of the Basin, beyond 1,000 feet inland of seawater intrusion as of 2020.
- **Undesirable Result:** Undesirable results for seawater intrusion occur when the minimum threshold is exceeded in any 3 of 5 years.

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<sup>142</sup> Pajaro Valley Alternative Update 2022, Section 2.4.1, p. 45.

<sup>143</sup> Pajaro Valley Alternative Update 2022, Section 2.4.2, p. 52; Section 2.8, p. 65.

<sup>144</sup> Pajaro Valley Alternative Update 2022, Section 2.1, p. 43.

<sup>145</sup> Pajaro Valley Alternative Update 2022, Section 2.8, pp. 65-68.

<sup>146</sup> Pajaro Valley Alternative Update 2022, Section 2, pp. 43-68.

- **Minimum Threshold:** The minimum threshold for seawater intrusion is defined as the 250 mg/L chloride isocontour located 1,000 feet inland of the 250 mg/L chloride isocontour as of 2020, per the best estimates of all available data.
- **Measurable Objective:** The measurable objective for seawater intrusion is groundwater chloride concentrations less than or equal to 100 mg/L chloride inland of the minimum threshold isocontour.

As indicated in the 2022 Alternative, “The statement of significant and unreasonable conditions recognizes that the BMP 2014 Phase 1 projects have a goal to reduce the rate of seawater intrusion by 90% by 2025.”<sup>147</sup> Acknowledging that 90 percent is not a complete elimination of ongoing seawater intrusion by 2025, the GSA set the minimum threshold 1,000 feet inland of the 2020 250 mg/L intrusion line, stating that this isocontour provides more management certainty and the sustainable management criteria should not need to be revised based on future conditions.<sup>148</sup> The GSA also understands that preventing undesirable results in the Subbasin due to seawater intrusion should contribute to meeting the sustainable management criteria established for the other applicable sustainability indicators.

The GSA identified two data gaps related to evaluating seawater intrusion and listed them as: the area inland of monitoring well SC-A4A and the seawater intrusion minimum threshold chloride isocontour; and along the seawater intrusion minimum threshold chloride isocontour between monitoring wells PV6SM and HudsonS. The 2022 Alternative states addressing these data gaps could provide important data for evaluating the seawater intrusion sustainability indicator, including potentially revising the location of the seawater intrusion minimum threshold chloride isocontour, and should be prioritized.

#### **4.7.1 Staff Assessment of Agency’s Response to Recommended Action 7**

Based on the information provided in the 2022 Alternative related to the establishment of sustainable management criteria for seawater intrusion, Department staff believe that Recommended Action 7 has been sufficiently addressed. The GSA has established functionally equivalent sustainable management criteria for seawater intrusion in a reasonable manner.

### **4.8 Recommended Action 8**

*Recommended Action 8. Staff recommend that the Agency finalize information contained in the Draft Monitoring Network Review Memo, which is an assessment of the monitoring network in the Subbasin; and incorporate those findings into a monitoring plan for the Pajaro Valley Subbasin that identified the timing and frequency of data collection. The monitoring plan should describe steps that will be taken to fill data gaps identified in the Monitoring Network Review Memo. As new information is acquired, the plan should be updated with the improved understanding, e.g., to provide seawater intrusion conditions*

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<sup>147</sup> Pajaro Valley Alternative Update 2022, Section 2.3, p. 44.

<sup>148</sup> Pajaro Valley Alternative Update 2022, Section 2.3, pp. 44-45.

*for the Basin in the form of maps and cross-sections illustrating the seawater intrusion front for each principal aquifer (see 23 CCR Section 354.16(c)).*

In response to Recommended Action 8 (see 2022 Alternative Section 10),<sup>149</sup> the 2022 Alternative states, “To address this recommended action, the monitoring network description has been prepared in accordance with SGMA regulations §354.34 (establish monitoring network criteria) to include monitoring objectives, monitoring protocols, and data reporting requirements. Assessment and recommendations to improve the existing monitoring network have been prepared in accordance with the SGMA regulations §354.38 (assessment and improvement of monitoring network) to comply with 5-year update requirements pertaining to SGMA regulations §356.4 (periodic evaluation by agency).”<sup>150</sup> The GSA’s Board approved the following related to monitoring in the Subbasin.

“The Monitoring Plan represents PV Water’s most current monitoring networks and protocols. It describes future improvements to the network to facilitate improved basin management as the PV GSP Alternative is implemented. The priorities for future improvements to the network are improvements that will be directly used to assess conditions with respect to sustainable management criteria (SMC):

- Wells added to the water quality monitoring network along the seawater intrusion SMC chloride isocontour inland of SC-A4A and between PV6 and the Hudson wells.
- Representative monitoring points for chronic lowering of groundwater levels in the south of Watsonville, Las Lomas, and east of Watsonville areas.
- A representative monitoring point for depletions interconnected surface water along Carneros Creek.”<sup>151</sup>

The 2022 Alternative further states, “The groundwater monitoring program is designed to measure changes in storage and quality within the Basin through the collection and analysis of metered groundwater extractions, groundwater levels, and groundwater quality. Data collected from this program enable PV Water staff to track the effects of groundwater extraction and water resource management activities, which include water supply facility operations and conservation programs.”<sup>152</sup>

The 2022 Alternative provides a thorough description of the groundwater and surface water monitoring network in the Subbasin and states that the Department, in its 2019 Staff Report, concluded that “the PV Water monitoring network generally has a sufficient density of monitoring wells, measured at sufficient intervals, to capture the spatial and

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<sup>149</sup> Pajaro Valley Alternative Update 2022, Section 10, pp. 237-280.

<sup>150</sup> Pajaro Valley Alternative Update 2022, Section 10, p. 237.

<sup>151</sup> Pajaro Valley Alternative Update 2022, Section 10, p. 238.

<sup>152</sup> Pajaro Valley Alternative Update 2022, Section 10.4, p. 240.



temporal variability of groundwater levels and storage changes in the Basin.”<sup>153</sup> A summary of the number of wells, and the local agencies contributing to the GSA’s groundwater monitoring network, is included in Table 27 in the 2022 Alternative.<sup>154</sup>

#### **4.8.1 Staff Assessment of Agency’s Response to Recommended Action 8**

Based on the information provided in the 2022 Alternative related to the monitoring network, Department staff believe that Recommended Action 8 has been sufficiently addressed. The GSA has included in its 2022 Alternative sufficient information regarding monitoring locations, frequency and timing of data collection, and monitoring protocols. Additionally, data gaps for the applicable sustainability indicators are identified and suggestions for monitoring network improvements are provided.<sup>155</sup>

#### **4.9 Recommended Action 9**

*Recommended Action 9. Staff recommend that the Agency determine a means by which the Subbasin may be assessed to confirm that no significant land subsidence has occurred. This can be accomplished by incorporating subsidence monitoring information from statewide or local studies into the monitoring program for the Basin.*

In response to Recommended Action 9 (see 2022 Alternative Section 6),<sup>156</sup> the 2022 Alternative states, “[sustainable management criteria] for subsidence are not warranted because subsidence is unlikely due to groundwater levels historically being above the pre-consolidation stress threshold for the aquifer system of the Basin. The PV GSP Alternative also states that significant and unreasonable reduction of storage and seawater intrusion would occur before subsidence and that PV Water would act to address those conditions in advance of subsidence occurring.”<sup>157</sup>

To support its determination related to subsidence, the GSA, in 2018, amended its ongoing contract with the USGS to evaluate subsidence in the Subbasin. As stated in the 2022 Alternative, “The USGS conducted an evaluation of land subsidence for the Basin for a period between 2015 and 2018 (Brandt *et al.*, 2020). The goal of the study was to collect and analyze land subsidence data for the Basin with the purpose of detecting any clear correlation between groundwater levels and subsidence. The duration of the study was intended to include both wet and dry years in an attempt to capture the greatest variance in land subsidence.”<sup>158</sup> The following information briefly addresses the GSA’s efforts to assess subsidence in the Subbasin and confirm that no significant subsidence has occurred.<sup>159</sup>

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<sup>153</sup> Pajaro Valley Alternative Update 2022, Section 10.4, p. 240.

<sup>154</sup> Pajaro Valley Alternative Update 2022, Table 27, p. 241.

<sup>155</sup> Pajaro Valley Alternative Update 2022, Section 10.6.3, pp. 266-279.

<sup>156</sup> Pajaro Valley Alternative Update 2022, Section 6, pp. 132-134.

<sup>157</sup> Pajaro Valley Alternative Update 2022, Section 6.1, p. 132.

<sup>158</sup> Pajaro Valley Alternative Update 2022, Sections 6.4, p. 133.

<sup>159</sup> Pajaro Valley Alternative Update 2022, Sections 6.5 and 6.6, pp. 134-135.

- “Four of five selected InSAR time series locations do not exhibit deformation outside of the expected resolution of InSAR measurements. The fifth selected InSAR time series location at Watsonville North showed subsidence of approximately 2 inches, but that amount of deformation is likely recoverable.”<sup>160</sup>
- “The findings of the USGS evaluation...confirm the lack of observed permanent subsidence in the Basin and further support the determination that subsidence SMC are not required for the Basin.”<sup>161</sup>
- “The USGS evaluation demonstrates that measurable permanent land subsidence is not taking place in the Basin. Based on these results, the subsidence sustainability indicator is not applicable in the Basin. The PV GSP Alternative’s determination is appropriate: SMC for subsidence is unnecessary.”<sup>162</sup>

The GSA does acknowledge in its 2022 Alternative that permanent land subsidence caused by lowering of groundwater levels in the Subbasin would be considered significant and unreasonable, and states that should active permanent subsidence be identified in the future it would trigger the need for a dedicated monitoring program. Brief details describing the Subbasin’s existing land subsidence monitoring network are presented in the 2022 Alternative, which includes vertical displacement estimates derived from InSAR, as well as three continuous global positioning system stations.<sup>163</sup> The 2022 Alternative states the subsidence data, “will be used by PV Water for every 5-year Update to compare measured land subsidence with groundwater extraction and groundwater elevations to confirm the land subsidence due to groundwater extraction is not occurring in the Basin.”<sup>164</sup>

#### **4.9.1 Staff Assessment of Agency’s Response to Recommended Action 9**

Based on the information provided in the 2022 Alternative related to land subsidence, Department staff believe that Recommended Action 9 has been sufficiently addressed. The GSA confirmed that subsidence is not an applicable sustainability indicator in the Subbasin and pledged to monitor data points within the Subbasin every five years to confirm it is not present.

#### **4.10 Recommended Action 10**

*Recommended Action 10. Staff recommend that the Agency update its Plan to describe actions the Agency may take in periods of drought to ensure resiliency of the Plan to achieve the sustainability goal for the Subbasin.*

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<sup>160</sup> Pajaro Valley Alternative Update 2022, Sections 6.5, p. 134.

<sup>161</sup> Pajaro Valley Alternative Update 2022, Sections 6.2, p. 132.

<sup>162</sup> Pajaro Valley Alternative Update 2022, Sections 6.6, p. 134.

<sup>163</sup> Pajaro Valley Alternative Update 2022, Section 10.4.4, p. 256.

<sup>164</sup> Pajaro Valley Alternative Update 2022, Section 10.4.4, p. 256.

In response to Recommended Action 10 (see 2022 Alternative Section 8),<sup>165</sup> the GSA acknowledges that the Alternative submitted in 2017 did not provide an Alternative Elements Guide response to the regulatory requirement listed as “a description of the management of groundwater extractions and recharge to ensure that chronic lowering of groundwater levels or depletion of supply during periods of drought is offset by increases in groundwater levels or storage during other periods.”<sup>166</sup> In response to Recommended Action 10, the 2022 Alternative states, “The Basin Management Plan Update 2014 includes drought resiliency actions that have provided resiliency for achieving the sustainability goal of the Pajaro Valley Subbasin”<sup>167</sup> and indicates that much of the information has been included in its annual reports. The information below supports the GSA’s response to Recommended Action 10.

- Several projects and management actions are referenced in the 2022 Alternative and the GSA states, “The above projects and management actions with the highest potential for ongoing drought resiliency are conservation and increased recycled water deliveries supported by both the Recycled Water Facility Optimization Project and Coastal Distribution System Expansion Project. Both of these actions have the potential to reduce groundwater extraction during drought periods. Conservation consistently reduces irrigation demand, including during drought. Wastewater from the City of Watsonville and surrounding communities such as Pajaro and Salsipuedes Sanitary District will continue to be a drought tolerant supply of water for recycling and reuse.”<sup>168</sup>
  - Conservation consistently reduces irrigation demand, including during drought.
  - Wastewater from the City of Watsonville and surrounding communities such as Pajaro and Salsipuedes Sanitary District will continue to be a drought tolerant supply of water for recycling and reuse.
  - The Watsonville Slough System Managed Aquifer Recharge and Recovery Projects may have drought resiliency benefits if recharge in wet years can support recovery during drought years.
  - The College Lake Integrated Resources Management Project is a surface water supply project that will have reduced supply during drought periods.
  - The Murphy Crossing with Recharge Basins project should provide drought resiliency if implemented by recharging water during wet periods that can support increased pumping in drought periods.

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<sup>165</sup> Pajaro Valley Alternative Update 2022, Section 8, pp. 186-192.

<sup>166</sup> Pajaro Valley Alternative Update 2022, Section 8.1, p. 182.

<sup>167</sup> Pajaro Valley Alternative Update 2022, Section 8.2, p. 187.

<sup>168</sup> Pajaro Valley Alternative Update 2022, Section 8.3, pp. 187-188.

- The pilot Recharge Net Metering Program, which incentivizes stormwater recharge projects by providing rebates based on acre-feet of water infiltrated, began in October 2016.

#### **4.10.1 Staff Assessment of Agency’s Response to Recommended Action 10**

Based on the information provided in the 2022 Alternative, Department staff believe that Recommended Action 10 has been sufficiently addressed. Staff concur with the following conclusion made by the GSA, “Data from implementation of these projects and management actions show that they help manage groundwater extraction during dry periods such that groundwater levels and storage declines are limited and should be more than offset during normal and wet periods.”<sup>169</sup>

## **5 STAFF RECOMMENDATION**

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The Department previously approved the 2016 Alternative submitted for the Subbasin based on the grounds presented in the July 17, 2019, *Statement of Findings Regarding the Approval of the Pajaro Valley Subbasin Alternative*. As part of its ongoing Periodic Review responsibility, the Department is required to assess whether the approved 2016 Alternative continues to satisfy the evaluation criteria described in Section 355.4 of the GSP Regulations and determine whether the 2022 Alternative should be considered approved, incomplete, or inadequate.<sup>170</sup>

Based on the current evaluation of the 2016 Alternative, and after considering information provided by the Subbasin’s GSA, Department staff recommend that the 2022 Alternative for the Pajaro Valley Subbasin be approved with recommended corrective actions. Department staff conclude that the 2022 Alternative includes the components of a functionally equivalent GSP, demonstrates a thorough understanding of the Subbasin based on what appears to be the best available science and information, sets well-explained, supported, and reasonable sustainable management criteria to prevent undesirable results, and proposes a set of projects and management actions that will likely achieve the sustainability goal defined for the Subbasin.

### **5.1 Recommended Corrective Actions**

Although Department staff believe that the 2022 Alternative continues to comply with the objectives of SGMA and substantially complies with the GSP Regulations, new corrective actions have been recommended.<sup>171</sup> Although the issues addressed by the recommended corrective actions do not, at this time, preclude approval of the 2022 Alternative, they are intended to facilitate progress in achieving the Subbasin’s sustainability goal and guide the Department’s ongoing evaluation process. Additionally, the new recommended corrective actions will allow the Department to better evaluate

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<sup>169</sup> Pajaro Valley Alternative Update 2022, Section 8.7, p. 192.

<sup>170</sup> 23 CCR §§ 355.6(c)(4) and 355.6(d).

<sup>171</sup> Water Code § 10733.8.

whether implementation of the 2022 Alternative could adversely affect an adjacent basin from reaching its sustainability goal. As with GSPs, the failure to address the Department's recommended corrective actions could potentially lead to an alternative being determined incomplete or inadequate.

### **Recommended Corrective Action 1**

Department staff understand that estimating the location, quantity, and timing of stream depletion due to ongoing, basin-wide pumping is a complex task and that developing suitable tools may take additional time; however, this information is critical for the Department's ongoing and future evaluations of whether implementation of a basin's groundwater sustainability program is on track to achieve sustainable groundwater management. The Department plans to provide guidance on methods and approaches to evaluate the rate, timing, and volume of depletions of interconnected surface water and support for establishing specific sustainable management criteria in the near future. This guidance is intended to assist GSAs and local agencies in sustainably managing depletions of interconnected surface water.

The GSA should work to address the following items by the next update to its Alternative:

- Consider the five recommendations provided by its consultant in the technical memorandum *Quantify Depletions of Interconnected Surface Waters, Basin Management Plan: Groundwater Sustainability Update 2022*.
- Consider utilizing the interconnected surface water guidance, as appropriate, when issued by the Department to establish quantifiable minimum thresholds, measurable objectives, and management actions.
- Continue to fill data gaps, collect additional monitoring data, and implement the current strategy to manage depletions of interconnected surface water and define segments of interconnectivity and timing.
- Prioritize collaborating and coordinating with local, state, and federal regulatory agencies as well as interested parties to better understand the full suite of beneficial uses and users that may be impacted within the basin.

### **Recommended Corrective Action 2**

Provide an explanation in future Alternative updates on how inter-basin items, such as: thresholds across basin boundaries; monitoring networks; hydrogeologic conceptual models, including principal aquifer designations; water budgets; and management of interconnected surface water along basin boundaries have been coordinated.

### **Recommended Corrective Action 3**

Ensure the monitoring network details included in the Alternative are consistent with the information contained in the Department's SGMA Portal Monitoring Network Module.