

**RESOLUTION NO. 2021-113**

**A RESOLUTION OF  
THE BOARD OF DIRECTORS OF  
CUYAMA BASIN GROUNDWATER SUSTAINABILITY AGENCY  
ENACTING CORRECTIVE ACTIONS IN RESPONSE TO THE CALIFORNIA  
DEPARTMENT OF WATER RESOURCES' CONSULTATION LETTER  
DATED JUNE 3, 2021**

**WHEREAS**, the Sustainable Groundwater Management Act (SGMA) requires that a Groundwater Sustainability Agency overlying a high-priority groundwater basin adopt a Groundwater Sustainability Plan (GSP) by January 31, 2020; and

**WHEREAS**, on December 9, 2019, the Board of Directors of the Cuyama Basin Groundwater Sustainability Agency (CBGSA) adopted a GSP in accordance with SGMA; and

**WHEREAS**, on January 28, 2020, CBGSA submitted its adopted GSP to the California Department of Water Resources (DWR) for review; and

**WHEREAS**, on June 3, 2021, in advance of an official determination regarding CBGSA's GSP, DWR provided CBGSA with a consultation letter containing an informal review of and four potential corrective actions to CBGSA's GSP (Consultation Letter), a copy of which is attached as **Exhibit A** and incorporated herein by reference; and

**WHEREAS**, in response, CBGSA developed a technical memorandum addressing the four potential corrective actions contained in DWR's Consultation Letter (Technical Memorandum), a copy of which is attached as **Exhibit B** and incorporated herein by reference.


**NOW, THEREFORE, BE IT RESOLVED** by the Board of Directors of the Cuyama Basin Groundwater Sustainability Agency as follows:

1. The foregoing is true and correct.
2. The Technical Memorandum is approved and adopted.
3. The CBGSA Executive Director, or his designee, is authorized to submit the Technical Memorandum to DWR.

PASSED, APPROVED, AND ADOPTED this 3rd day of November 2021.

  
\_\_\_\_\_  
Derek Yurosek, Board Chair

ATTEST:

  
\_\_\_\_\_  
James M. Beck  
Executive Director



CALIFORNIA DEPARTMENT OF WATER RESOURCES

# SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

901 P Street, Room 313-B | Sacramento, CA 95814 | P.O. Box 942836 | Sacramento, CA 94236-0001

June 3, 2021

Mr. Taylor Blakslee  
Cuyama Basin GSA Project Coordinator  
4900 California Avenue, Tower B, 2nd Floor  
Bakersfield, CA. 93309

RE: Cuyama Valley - 2020 Groundwater Sustainability Plan

Dear Taylor Blakslee,

The Cuyama Basin Groundwater Sustainability Agency (GSA) submitted the Cuyama Valley Groundwater Basin (Basin) Groundwater Sustainability Plan (GSP) to the Department of Water Resources (Department) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA).<sup>1</sup> This letter is intended to initiate consultation between the Department and the GSA in advance of issuance of a determination described under the GSP Regulations.<sup>2</sup>

Department staff recognize the significant effort that went into development of the first GSP for the Basin and believe the aggressive approach toward demand management is a significant step toward achieving groundwater sustainability for the Basin.

Department staff have completed an initial review of the GSP and have identified deficiencies which may preclude the Department's approval.<sup>3</sup> Consistent with the GSP Regulations, Department staff are considering corrective actions<sup>4</sup> that the GSA should review to determine whether and how the deficiencies can be addressed. The deficiencies and corrective actions are generally related to the need to define sustainable management criteria in the manner required by SGMA and the GSP Regulations, further address water quality, and better explain how overdraft will be mitigated.

The Department has the authority to determine the GSP is incomplete and, if it does so, the deficiencies precluding approval will need to be addressed within a period of time not to exceed 180 days from the determination, which would be issued no later than January 28, 2022. Prior to making that determination, and after you review the contents of this letter, Department staff will contact you to discuss the deficiencies and consult

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

<sup>2</sup> 23 CCR Division 2, Chapter 1.5, Subchapter 2.

<sup>3</sup> 23 CCR § 355.2(e)(2).

<sup>4</sup> 23 CCR § 355.2(e)(2)(B).

with you regarding the amount of time needed by the GSA to address the potential corrective actions detailed in Attachment 1.

If you have any questions, please don't hesitate to contact the Sustainable Groundwater Management Office staff by emailing [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov).

Thank you,

A handwritten signature in black ink, appearing to read "Craig Altare". The signature is fluid and cursive, with the first name "Craig" being more prominent than the last name "Altare".

Craig Altare, P.G.  
Supervising Engineering Geologist  
Groundwater Sustainability Plan Review Section Chief

Attachment:

1. Potential Corrective Actions

## Potential Corrective Actions

Department staff have identified deficiencies in the GSP which may preclude the Department's approval. Consistent with the GSP Regulations, Department staff are considering corrective actions that the GSA should review to determine how the deficiencies can be addressed. The deficiencies and corrective actions are explained below, including an explanation of the general regulatory background, the specific deficiency identified in the GSP, and the specific actions to address the deficiency. The specific actions identified are potential corrective actions until a final determination is made by the Department.

### **Potential Corrective Action 1. Provide justification for, and effects associated with, the sustainable management criteria**

The first potential corrective action relates to the GSP's lack of justification for the established sustainable management criteria and the effects of those criteria on the interests of beneficial uses and users in the Basin.

#### **Background**

The Department's GSP Regulations collect several required elements of a GSP under the heading of "Sustainable Management Criteria," including undesirable results along with the sustainability goal, minimum thresholds, and measurable objectives. Except for the sustainability goal, the components of sustainable management criteria must be quantified so that progress towards sustainability can be monitored and evaluated consistently and objectively.

A GSA relies on, among other factors, local experience, public outreach and involvement, and information about the basin it has described in its basin setting—the hydrogeologic conceptual model, the description of current and historical groundwater conditions, and the water budget—to develop criteria for defining undesirable results and setting minimum thresholds and measurable objectives.<sup>5</sup>

SGMA defines sustainable groundwater management as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.<sup>6</sup> The avoidance of undesirable results is thus explicitly part of sustainable groundwater management as established by SGMA and critical to the success of a GSP. Accordingly, managing a basin solely to eliminate overdraft within 20 years does not necessarily mean that GSAs in the basin have done

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<sup>5</sup> Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT). California Department of Water Resources, November 2017, [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT\\_ay\\_19.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf).

<sup>6</sup> Water Code § 10721(v).

all that is required to achieve sustainable groundwater management. To achieve sustainable groundwater management under SGMA, the basin must experience no undesirable results by the end of the 20-year GSP implementation period and be able to demonstrate an ability to maintain those defined sustainable conditions over the 50-year planning and implementation horizon.

The definition of undesirable results is thus critical to the establishment of an objective method to define and measure sustainability for a basin. As an initial matter, SGMA provides a qualitative definition of undesirable results as “one or more” of six specific “effects caused by groundwater conditions occurring throughout the basin.”<sup>7</sup>

It is up to GSAs to define in their GSPs the specific significant and unreasonable effects that would constitute undesirable results and to define the groundwater conditions that would produce those results in their basins.<sup>8</sup> The GSA’s definition needs to include a description of the processes and criteria relied upon to define undesirable results and must describe the effect of undesirable results on the beneficial uses and users of groundwater. From this definition, the GSA establishes minimum thresholds, which are quantitative values that represent groundwater conditions at representative monitoring sites that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause the basin to experience undesirable results.<sup>9</sup>

SGMA leaves the task of establishing undesirable results and setting thresholds largely to the discretion of the GSA, subject to review by the Department. In its review, the Department requires a thorough and reasonable analysis of the groundwater conditions the GSA is trying to avoid, and the GSA’s stated rationale for setting objective and quantitative sustainable management criteria to prevent those conditions from occurring. If a Plan does not meet this requirement, the Department is unable to evaluate the likelihood of the Plan in achieving its sustainability goal. This does not necessarily mean that the GSP or its objectives are inherently unreasonable; however, it is unclear which conditions the GSA seeks to avoid, making it difficult for the Department to monitor whether the GSA will be successful in that effort when implementing its GSP.

### **GSP-Specific Deficiency**

Based on its initial review, Department staff are concerned that although the GSP appears to realistically quantify the water budget and identify the extent of overdraft in the Basin, and while the GSP proposes projects and management actions that appear likely to eventually eliminate overdraft in portions of the Basin, the GSP has not defined

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<sup>7</sup> Water Code § 10721(x).

<sup>8</sup> 23 CCR § 354.26.

<sup>9</sup> 23 CCR § 354.28, Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT). California Department of Water Resources, November 2017, [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT\\_ay\\_19.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf).

sustainable management criteria in the manner required by SGMA and the GSP Regulations.

### *Undesirable Results*

The GSP provides quantitative values for the minimum thresholds and includes a combination of those minimum threshold exceedances that the GSA considers causing an undesirable result. However, the GSP does not discuss, or appear to address, the critical first step of identifying the specific significant and unreasonable effects that would constitute undesirable results. The GSP provides general statements about undesirable results (e.g., “The Undesirable Result for the chronic lowering of groundwater levels is a result that causes significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP.”<sup>10</sup>) and generic descriptions of the effects of undesirable results (e.g., “...the Undesirable Results could cause potential de-watering of existing groundwater infrastructure, starting with the shallowest wells...”<sup>11</sup>), but does not provide an explanation for the specific significant and unreasonable condition(s) that the GSA intends to avoid in the Basin through implementation of the GSP (e.g., a level of impact to well infrastructure or to environmental uses).

The GSP states undesirable results for chronic lowering of groundwater levels would occur when groundwater level minimum thresholds are exceeded in 30 percent of monitoring wells for two consecutive years. (The same 30 percent for two consecutive years criterion is used for reduction in storage, degradation of groundwater quality, land subsidence, and depletion of interconnected surface water.) However, the GSP does not provide any explanation for why the criterion is consistent with avoiding significant and unreasonable effects that constitute undesirable results.

### *Minimum Thresholds.*

The GSP lacks explanation of the justification for setting its minimum thresholds and also lacks explanation of the anticipated effects of groundwater conditions at those thresholds on the interests of the beneficial uses and users of groundwater in nearly all threshold regions. The GSP describes that each threshold region has its own formula to determine the quantitative minimum threshold (e.g., in the Central threshold region it is determined by subtracting 20 percent of the historical range in groundwater levels from the groundwater level observed in early 2015). While it is acceptable to set minimum thresholds differently in portions of a basin, all minimum thresholds must, by the definition of that term in the GSP Regulations, relate to the conditions that could cause undesirable results.

This lack of information is particularly notable in the Northwestern threshold region. The GSP states that the intention of the sustainable management criteria for the Northwestern

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<sup>10</sup> Cuyama Basin GSP, Section 3.2.1, p. 260.

<sup>11</sup> *Ibid.*

region is to “...protect the water levels from declining significantly, while allowing beneficial land surface uses (including domestic and agricultural uses) and using the storage capacity of this region.”<sup>12</sup> However, the Northwestern region is the only region in the Basin where the sustainable management criteria indicate a plan to substantially lower groundwater levels, relative to conditions at the time of GSP preparation (i.e., the minimum thresholds for groundwater levels are up to 140 to 160 feet lower<sup>13</sup>), in an area with the highest concentration of potential GDEs<sup>14</sup> in Cuyama Valley and with interconnected surface water, which is evidenced by a gaining reach of the river.<sup>15</sup> The GSP did not quantify the expected depletions of surface water over time or assess or disclose the anticipated effects of the established minimum thresholds on beneficial uses and users of groundwater, which, based on Department staff’s review, appear to include nearby domestic users, potential GDEs, and users of the interconnected surface water.

The absence of this information and related discussion precludes meaningful disclosure to, and participation by, interested parties and residents in the Basin. In addition, without this discussion it is difficult for Department staff to determine whether it is appropriate or reasonable for the GSA to conclude that undesirable results in the Basin would not occur unless nearly a third of representative monitoring points exceed their minimum thresholds for two consecutive years.

### **Addressing the Deficiency**

The GSA must provide more detailed information, as required in the GSP Regulations, regarding undesirable results and minimum thresholds for all applicable threshold regions.<sup>16</sup> The GSA should describe the anticipated effects of the established minimum thresholds and undesirable results on the interests of beneficial uses and users and how the GSA determined that those thresholds would avoid undesirable results in the Basin. Department staff suggest that the following issues be considered and addressed:

1. The GSA should describe the specific undesirable results they aim to avoid through implementing the GSP. For example, if the long-term viability of domestic, agricultural, municipal, or environmental uses is a concern with respect to lowering of groundwater levels, then the GSA should describe the specific effects on those users that the GSA considers significant and unreasonable and define groundwater conditions that would lead to those effects. Clarify how the criteria defining when undesirable results occur in the Basin (i.e., 30 percent exceedance of minimum thresholds for two consecutive years) was established, the rationale

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<sup>12</sup> Cuyama Basin GSP, Section 5.2.2, p. 352.

<sup>13</sup> Cuyama Basin GSP, Chapter 5 Appendix A, p. 1505-1509.

<sup>14</sup> Cuyama Basin GSP, Section 2.2.9, p. 227, Figures 2-63 and 2-64, p. 230-231, Chapter 2-Appendix D, p. 1258-1279.

<sup>15</sup> Cuyama Basin GSP, Section 2.2.8, p. 222, Figure 2-61, p. 223.

<sup>16</sup> 23 CCR §§ 354.26, 354.28.



behind the approach, and why it is consistent with avoiding the significant and unreasonable effects identified by the GSA.

2. The GSA should either explain how the existing minimum threshold groundwater levels are consistent with avoiding undesirable results or they should establish minimum thresholds at the representative monitoring wells that account for the specific undesirable results the GSA aims to avoid. For each threshold region, the GSA should evaluate and disclose the anticipated effects of the GSP's minimum thresholds and undesirable results on:

- a. Well infrastructure, including domestic wells, community and public water supply wells, and agricultural wells. The GSA may utilize the Department's well completion report dataset<sup>17</sup> or other similar data to estimate the number and kinds of wells expected to be impacted at the minimum thresholds identified in the GSP. Public water system well locations and water quality data can currently be obtained using the State Water Resource Control Board's (State Water Board) Geotracker website.<sup>18</sup> Administrative contact information for public water systems and well locations and contacts for state small water systems and domestic wells can be obtained by contacting the State Water Board's Needs Analysis staff.<sup>19</sup> The State Water Board is currently developing a database to allow for more streamlined access to this data in the future.

If the GSA identifies potential impacts to drinking water wells, including de minimis users and disadvantaged communities, those impacts should be described in the GSP. By the first five-year update, the GSA should inventory and better define the location of active wells in the Basin. The GSA should document known impacts to drinking water users caused by groundwater management, should they occur, in annual reports and subsequent periodic updates.

- b. Environmental uses and users of groundwater. If data are not available to support evaluation of the effects of established minimum thresholds on environmental uses and users, the GSA should clarify the strategy, mechanism, and timeline for acquiring that data and incorporating that data into management of the Basin.<sup>20</sup>

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<sup>17</sup> Well Completion Report Map Application. California Department of Water Resources, <https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37>.

<sup>18</sup> GeoTracker Application. California State Water Resources Control Board, <https://geotracker.waterboards.ca.gov/map/#>; select "Public Water Wells" under the "Other Sites" option and navigate to the area of interest.

<sup>19</sup> [DDW-SAFER-NAU@Waterboards.ca.gov](mailto:DDW-SAFER-NAU@Waterboards.ca.gov).

<sup>20</sup> 23 CCR §§ 355.4(b)(2), 355.4(b)(3).

## **Potential Corrective Action 2. Use of groundwater levels as a proxy for depletion of interconnected surface water**

The second potential corrective action relates to the GSP's lack of explanation and justification for the use of groundwater levels as a proxy for depletions of interconnected surface water.

### **Background**

The GSP Regulations allow for a GSP to establish representative groundwater level thresholds that serve as minimum thresholds for other sustainability indicators if the GSA can demonstrate the representative groundwater level value is a reasonable proxy, supported by adequate evidence.

### **GSP-Specific Deficiency**

The GSP lacks a demonstration, with supporting evidence, of the reasonableness of using groundwater level thresholds as a proxy for depletion of interconnected surface water. The GSP states that “[b]y setting minimum thresholds on shallow groundwater wells near surface water, the [GSA] can to (*sic*) monitor and manage [the hydraulic gradient between surface water and groundwater], and in turn, manage potential changes in depletions of interconnected surface [water].”<sup>21</sup> However, in defining the groundwater level proxies for depletion of interconnected surface water, the GSA appears to have used all the groundwater level thresholds it defined for chronic lowering of groundwater levels regardless of depth of the well or proximity to surface water. It is not obvious to Department staff why managing the Basin to the complete set of chronic lowering of groundwater level thresholds is sufficient to avoid undesirable results for depletion of interconnected surface water, especially since many of those groundwater level thresholds represent conditions that are lower than current conditions.

### **Addressing the Deficiency**

The GSA should provide a demonstration, with supporting evidence, for why using the basinwide groundwater level minimum thresholds is a reasonable proxy for thresholds for depletion of interconnected surface water.

## **Potential Corrective Action 3. Further address degraded water quality**

The third potential corrective action relates to the GSP's apparent lack of consideration of the best available information and data regarding water quality, and the resultant effects on the GSP's description of water quality conditions, water quality sustainable management criteria, and monitoring for certain water quality constituents.

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<sup>21</sup> Cuyama Basin GSP, Section 3.2.6, p. 263.

## Background

SGMA and the GSP Regulations do not require a GSP to address undesirable results associated with degraded water quality that occurred before, and have not been corrected by, January 1, 2015. However, management of a basin pursuant to an adopted GSP should not result in further water quality degradation that is significant and unreasonable, either due to routine groundwater use or as a result of implementing projects or management actions called for in the GSP.<sup>22</sup> SGMA provides GSAs with legal authority to regulate and affect pumping and groundwater levels, which have the potential to affect the concentration or migration of water quality constituents and result in degradation of water quality. Additionally, the GSP Regulations state that GSAs should consider local, state, and federal water quality standards when establishing sustainable management criteria,<sup>23</sup> and SGMA provides GSAs with the authority to manage and control polluted water and use authorities under existing laws to implement its GSP.<sup>24</sup> Thus, establishing sustainable management criteria and performing routine monitoring of water quality constituents known to affect beneficial uses and users is within the purview of a GSA.

## GSP-Specific Deficiency

Department staff believe the GSA's decision to not set sustainable management criteria for arsenic and nitrates may not be reasonable because the findings were not supported by the best available information.<sup>25</sup> The GSP focused on total dissolved solids (TDS), nitrates, and arsenic as a result of public comments received during GSP development.<sup>26</sup> The GSP includes sustainable management criteria for TDS but, despite acknowledging that nitrate and arsenic have exceeded maximum contaminant levels (MCL) prescribed by the State Water Board, the GSP did not establish sustainable management criteria for those constituents. Furthermore, the GSA does not intend to perform routine monitoring for nitrates and arsenic on the basis that they determined there is no "causal nexus" between the GSA's authority to implement projects and management actions and concentrations of arsenic or nitrate.<sup>27</sup>

In its justification for the lack of sustainable management criteria for nitrates and arsenic, the GSP explains that there were relatively few detections of those constituents above drinking water regulatory limits—two nitrate samples and three arsenic samples.<sup>28</sup> Regarding arsenic, the GSP states that the three arsenic detections above the MCL came

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<sup>22</sup> Water Code § 10721(x)(4); 23 CCR § 354.28(c)(4).

<sup>23</sup> 23 CCR § 354.28(c)(4).

<sup>24</sup> Water Code §§ 10726.2(e), 10726.8(a).

<sup>25</sup> While there is no definition of best available information, the GSP Regulations define best available science as the use of sufficient and credible information and data, specific to the decision being made and the time frame available for making that decision, that is consistent with scientific and engineering professional standards of practice.

<sup>26</sup> Cuyama Basin GSP, Section 2.2.7, p. 208.

<sup>27</sup> Cuyama Basin GSP, Section 4.8, p. 321.

<sup>28</sup> Cuyama Basin GSP, Section 5.5, p. 360-361.

from an inactive well and from groundwater deeper than 700 feet below ground surface, which the GSP states is below the range of pumping depths for drinking water.<sup>29</sup> In other words, the GSP states that arsenic was not detected above MCL in active wells shallower than 700 feet.<sup>30</sup> However, credible public comments submitted to the Department raised concerns about this claim and the data the GSA may or may not have considered, the GSA's interpretation of that data, and the decision of the GSA to not monitor or develop management criteria for those constituents. For example, a comment submitted to the Department indicates the State Water Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program's Groundwater Information System contains records of arsenic concentrations exceeding the MCL in drinking water wells screened as shallow as 340 feet below ground surface.<sup>31</sup> Department staff confirmed that this claim appears to be true.

Regarding nitrates, a public comment submitted to the Department indicates that potentially 13 of 109 nitrate samples (12 percent) have exceeded the MCL in the past ten years,<sup>32</sup> which conflicts with the GSP's statement that only two samples during 2011 to 2018 exceeded the MCL.

### **Addressing the Deficiency**

Having identified them as constituents of concern, the GSA should reasonably and thoroughly address nitrate and arsenic in the GSP using best available information. Specifically, the GSA should consider the following:

1. Groundwater conditions. The Department received comments that raise credible technical issues regarding groundwater quality data that apparently were not considered when developing the GSP but are available to the public and likely, in the opinion of Department staff, to alter the GSA's assessment of the Basin conditions. The GSA should coordinate with interested parties that submitted comments, in particular with the Regional Water Quality Control Board, to obtain best available information regarding basinwide water quality. The GSA should evaluate this data, along with their existing data, and update the description of basinwide water quality in the GSP as appropriate.
2. Sustainable management criteria. After updating the information regarding existing groundwater quality conditions, the GSA should revise its discussion of groundwater quality sustainable management criteria to either include criteria for arsenic and nitrate or provide thorough, evidence-based descriptions for why

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<sup>29</sup> Cuyama Basin GSP, Section 2.2.7 and Section 4.8, p. 209 and 321.

<sup>30</sup> Cuyama Basin GSP, Section 2.2.7, p. 209.

<sup>31</sup> Central Coast Water Board Comments on Final Cuyama Valley Groundwater Sustainability Plan. Central Coast Regional Water Quality Control Board Comment Letter Submitted to the Department, 15 May 2020, <https://sgma.water.ca.gov/portal/service/gspdocument/download/4021>.

<sup>32</sup> *Ibid.*

groundwater management is not likely to cause significant and unreasonable degradation of groundwater by increasing concentrations of those constituents.

3. Monitoring networks. The GSA should appropriately revise its groundwater quality monitoring network based on updates to the GSP noted above. Department staff believe that, at a minimum, the GSA should include monitoring for arsenic and nitrates as they have been identified as constituents of concern and both appear to be relatively widespread. Monitoring will be important for the GSA to assess whether groundwater quality degradation for those constituents is occurring. The GSA may leverage existing programs that collect and disseminate water quality data and information. The GSA should address any data gaps in the groundwater quality monitoring network and provide specific schedules to address those data gaps.

#### **Potential Corrective Action 4. Provide explanation for how overdraft will be mitigated in the basin**

The fourth potential corrective action is related to the lack of a complete discussion of how overdraft will be mitigated in the entire basin through implementation of the GSP.

#### **Background**

GSP Regulations require that a GSP include a description of projects and management actions that the GSA has determined will achieve the sustainability goal for the basin, the timeline of implementation, and the sustainability indicators that are expected to benefit, including the circumstances in which they would be implemented.<sup>33</sup> For basins in overdraft, the description shall include a quantification of demand reduction or other methods for mitigating the overdraft.<sup>34</sup>

#### **GSP-Specific Deficiency**

The GSP identifies two management areas, Central Basin and Ventucopa, as the primary pumping areas in the Cuyama Valley that have the highest water demand. Groundwater levels in the Central Basin management area decline by a modeled 2 to 7.7 feet per year, whereas the Ventucopa management area decline by 2 to 3 feet per year.<sup>35</sup>

To meet the sustainability goal of the Basin, the GSA explains in detail throughout the GSP that a pumping reduction of 50 to 67 percent will be required.<sup>36</sup> Pumping reductions would begin in 2023 and become progressively larger each successive year, with full implementation of the total pumping reduction in 2038.<sup>37</sup>

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<sup>33</sup> 23 CCR § 354.44.

<sup>34</sup> 23 CCR § 354.44(b)(2).

<sup>35</sup> Cuyama Basin GSP, Figure 7-1, p. 387.

<sup>36</sup> Cuyama Basin GSP, Executive Summary and Table 2-7, p. 26 and 254.

<sup>37</sup> Cuyama Basin GSP, Figures ES-15 and 8-1, p. 32 and 419-420.

However, the GSP only intends to implement those pumping reductions in the Central Basin management area and does not explain why pumping reductions will not be implemented in the Ventucopa management area. The GSP executive summary states that “[p]umping reductions are not currently recommended for the Ventucopa Area” and instead recommends “to perform additional monitoring, incorporate new monitoring wells, and further evaluate groundwater conditions in the area over the next two to five years” and that “[o]nce additional data are obtained and evaluated, the need for any reductions in pumping will be determined.”<sup>38</sup> These cited details from the executive summary are the extent of the GSP’s description of the plans for possible demand management in the Ventucopa management area.<sup>39</sup> Lack of detail for this area is concerning because it appears to Department staff as though the GSA’s defined minimum thresholds, which should represent a point in the Basin that, if exceeded, may cause undesirable results<sup>40</sup>, in the Ventucopa management area could be exceeded in as soon as two years if two feet per year of groundwater level decline continues.<sup>41</sup> It is also concerning because the GSP explains that “[d]omestic water users in [the Ventucopa and Central Basin management areas] are experiencing water supply challenges, and in the 2012-2016 drought experienced well failures.”<sup>42</sup>

In addition to the Ventucopa Area, the GSP also does not discuss why projects and management actions were not considered in the Northwestern threshold region, where, as noted above in Potential Corrective Action 1, it appears that overdraft will occur for some time and the allowable groundwater-level decline is over 100 feet.

### **Addressing the Deficiency**

The GSA should explain the rationale for not implementing pumping reductions in the overdrafted Ventucopa management area or any other portion of the Basin where overdraft is expected to continue, and explain the timeline and criteria that may be used to determine whether future pumping reduction allocations are needed.<sup>43</sup> If the criteria to implement pumping reductions are related to the effects on beneficial uses and users, as mentioned in Potential Corrective Action 1, the GSP should clarify what those effects are that would necessitate pumping reductions.

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<sup>38</sup> Cuyama Basin GSP, Executive Summary, p. 32.

<sup>39</sup> Cuyama Basin GSP, Executive Summary and Section 7.3.2, p. 32 and 410.

<sup>40</sup> 23 CCR § 354.28(a).

<sup>41</sup> Maps in the GSP appear to indicate two representative monitoring wells are located in the Ventucopa Management Area, OPTI wells 62 and 101. The minimum threshold at OPTI Well 62 is 182 feet below ground surface and the water level as of December 2020 was 158.4 feet below ground surface; at two feet per year the minimum threshold will be exceeded in approximately 12 years. The minimum threshold at OPTI Well 101 is 111 feet below ground surface and the water level as of December 2020 was 108.6 feet below ground surface; at two feet per year the minimum threshold could be exceeded in approximately 2 years.

<sup>42</sup> Cuyama Basin GSP, Section 7.2.4, p. 405.

<sup>43</sup> 23 CCR §§ 355.4(b)(3), 355.4(b)(4), 355.4(b)(5), 355.4(b)(6).

The GSP states well failures occurred during the 2012-2016 drought. The GSP also projects a lowering of groundwater levels beyond those observed during the drought and below 2015 conditions. If, after considering this deficiency and the deficiency associated with Potential Corrective Action 1, the GSA retains minimum thresholds that allow for continued lowering of groundwater levels, then it is reasonable to assume that additional wells may be impacted during implementation of the Plan. While SGMA does not require all impacts to groundwater uses and users be mitigated, the GSA should consider including mitigation strategies describing how drinking water impacts that may occur due to continued overdraft during the period between the start of GSP implementation and achievement of the sustainability goal will be addressed. If mitigation strategies are not included, the GSP should contain a thorough discussion, with supporting facts and rationale, explaining how and why the GSA determined not to include specific actions to mitigate drinking water impacts from continued groundwater lowering below 2015 levels.



## TECHNICAL MEMORANDUM

TO: Craig Altare, California Department of Water Resources  
PREPARED BY: Woodard & Curran on Behalf of the Cuyama Valley Groundwater Basin Groundwater Sustainability Agency  
DATE: November 5, 2021  
RE: **Cuyama Basin GSA Response to DWR's June 3, 2021, Consultation Letter**

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### 1. INTRODUCTION

The Cuyama Valley Groundwater Basin Groundwater Sustainability Agency (CBGSA) received a Consultation Initiation Letter (Letter) on June 3, 2021 (Attachment 1), from the California Department of Water Resources (DWR). The Letter was intended to provide the CBGSA with a preview of potential corrective actions that could be included in the official review letter of the Groundwater Sustainability Plan (GSP) from DWR. Receiving this Letter also allows the CBGSA additional time to address potential corrective actions before the official review is released, which triggers a 180-day correction period to update and address any deficiencies in the GSP.

During the August 18, 2021, Board Meeting, the CBGSA laid out a framework for responding to the Letter and provided that framework in a letter addressed to Mr. Craig Altare (Groundwater Sustainability Plan Review Section Chief), dated August 27, 2021 (Attachment 2).

This memorandum includes the analysis and work outlined in the framework provided to Mr. Altare. This memorandum is intended to supplement the Cuyama Basin GSP that was submitted in January 2020 and fill potential gaps identified in the Letter provided by DWR. Future updates to the GSP will include the information and analysis, or an updated version of the information and analysis, provided in this memorandum.

This technical memorandum provides a thorough response to each potential corrective action in the sections below.



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## 2. POTENTIAL CORRECTIVE ACTION 1: PROVIDE JUSTIFICATION FOR, AND EFFECTS ASSOCIATED WITH, THE SUSTAINABLE MANAGEMENT CRITERIA

DWR requests additional information regarding the justification for the sustainable management criteria included in the GSP and the effects of those criteria on beneficial users in the Basin. DWR identified two issues that should be addressed as part of this corrective action:

1. Providing a more detailed description of the criterion used to identify undesirable results (URs)
2. Providing additional information regarding how the groundwater level minimum thresholds (MTs) are consistent with avoiding undesirable results, with a particular emphasis on the MTs in the Northwestern Region.

The following subsections address each of these issues by providing:

- A summary of this Potential Corrective Action in the Letter
- A brief review of information, justification, and data provided in the GSP
- A discussion with supplemental information, justification, and data as needed to support the GSP.

### 2.1 Defining the Criterion Used to Identify Undesirable Results

#### 2.1.1 Initial Review and Opinion Provided by DWR

In the Letter, DWR states that UR statements do not, **“identifying the specific significant and unreasonable effects that would constitute undesirable results... [and] does not provide an explanation for the specific significant and unreasonable condition(s) that the GSA intends to avoid in the Basin through implementation of the GSP.”** Although the GSP includes subsections in Section 3: Undesirable Results, titled *Identification of Undesirable Results*, the Letter **states there is no, “explanation for why the criterion is consistent with avoiding significant and unreasonable effects that constitute undesirable results.”**

#### 2.1.2 Review of Information and Data Provided in Submitted GSP

The Cuyama GSP provides a description of URs and Identification of URs for each of the applicable sustainability indicators in Section 3. For example, UR subsections for groundwater levels are as follows:

##### **“Description of Undesirable Results**

*The Undesirable Result for the chronic lowering of groundwater levels is a result that causes significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP.*

##### *Identification of Undesirable Results*

*This result is considered to occur during GSP implementation when 30 percent of representative monitoring wells (i.e., 18 of 60 wells) fall below their minimum groundwater elevation thresholds for two consecutive years.*



Quantifiable  
Criterion

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### Potential Causes of Undesirable Results

Cause

*Potential causes of Undesirable Results for the chronic lowering of groundwater levels are groundwater pumping that exceeds the average sustainable yield in the Basin, and changes in precipitation in the Cuyama Watershed in the future.*

### Potential Effects of Undesirable Results

Potential Effects

*If groundwater levels were to reach Undesirable Results levels, the Undesirable Results could cause potential de-watering of existing groundwater infrastructure, starting with the shallowest wells, could potentially adversely affect groundwater dependent ecosystems, and could potentially cause changes in irrigation practices, crops grown, and adverse effects to property values. Additionally, reaching Undesirable Results for groundwater levels could adversely affect domestic and municipal uses, including uses in disadvantaged communities, which rely on groundwater in the Basin.”*

Each applicable sustainability indicator has been provided the same level of discussion in the GSP. The following are the *Identification of Undesirable Results* statements for each of the applicable sustainability indicators.

- Chronic Lower of Groundwater Levels - This result is considered to occur during GSP implementation when 30 percent of representative monitoring wells (i.e., 18 of 60 wells) fall below their minimum groundwater elevation thresholds for two consecutive years.
- Reduction of Groundwater Storage - This result is considered to occur during GSP implementation when 30 percent of representative monitoring wells (i.e., 18 of 60 wells) fall below their minimum groundwater elevation thresholds for two consecutive years.
- Degraded Water Quality - This result is considered to occur during GSP implementation when 30 percent of the representative monitoring points (i.e., 20 of 64 sites) exceed the minimum threshold for a constituent for two consecutive years.
- Land Subsidence - This result is detected to occur during GSP implementation when 30 percent of representative subsidence monitoring sites (i.e., 1 of 2 sites) exceed the minimum threshold for subsidence over two years.
- Depletions of Interconnected Surface Water - This result is considered to occur during GSP implementation when 30 percent of representative monitoring wells (i.e., 18 of 60 wells) fall below their minimum groundwater elevation thresholds for two consecutive years.

It should be noted that as planned in the GSP Implementation, some monitoring networks have been modified for efficiency, access agreement obstructions, and to minimize burden on the GSA and its operating budget. These adjustments are ongoing and the CBGSA has continued to utilize the same percent criteria as above in its management of the Basin.

#### 2.1.3 Supplemental GSP Information in Response to DWR Letter

A review of SGMA regulations, Section 354.26 (Undesirable Results) provides three descriptive characteristics about URs (subsections (b) (1-3)).

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1. The cause of the UR.
  2. A quantifiable criterion used to describe when a UR occurs.
  3. Potential effects on beneficial uses and users, on land uses and property interests, and other potential effects that may occur from URs.

The information provided in the Section 3 of the GSP satisfies these regulations by providing the text, explanations, and quantitative descriptions and justifications for URs. Each of these three descriptive characteristics are labeled in the excerpt from Section 3 of the GSP provided above in Subsection 2.1.2 using the left-hand bubble callout labels. Furthermore, the GSP provided a quantifiable criterion (ratio of wells) to describe the conditions it would expect to see the potential effects as described.

To address the concerns raised in the DWR Letter, the following additional information is provided regarding the rationale for the criteria used in the GSP (i.e. **“30% of exceedances over 24 consecutive months”**) to define the point at which Basin conditions cause *significant and unreasonable* effects to occur.

The term **“significant and unreasonable”** is not defined by SGMA regulations. Instead, the conditions leading to this classification are determined by the GSA, beneficial users, and other interested parties in each basin. In the Cuyama Basin, the identification of undesirable results were developed through an extensive stakeholder-driven process that included:

- Careful consideration of input from local stakeholders and landowners
- A conceptualization of the hydrogeological conceptual model
- An assessment of current and historical conditions and best available data
- Local knowledge and professional opinion

The CBGSA recognizes the lack of reliable historical data and acknowledges the limitations and uncertainties it causes (see *Data Gaps* and *Plan to Fill Data Gap* subsections of *Section 4 – Monitoring Networks* and *Section 8 – Implementation Plan* for addressing those limitations). However, the re-assessment of thresholds and UR statements will be a likely component of future GSP updates. These future revisions will utilize the detailed and reliable data collected by the GSA during the first five years of GSP implementation.

The 30 percent of wells exceeding their MT for 24 consecutive months criteria included in the GSP allows the CBGSA the flexibility to identify the cause of MT exceedances and to develop a plan for response (per the Adaptive Management approach described in Section 7.6 of the GSP). Potential causes of MT exceedances could include:

- Prolonged drought
- Pumping nearby the representative well
- Unreliable and non-representative data used to calculate the MT

Minimum threshold exceedances in multiple wells is considered more indicative of a basin-scale decline in groundwater levels and potential adverse impacts on groundwater infrastructure, as opposed to a more localized groundwater level declines, which could be associated with nearby pumping. Furthermore, groundwater levels in areas of the basin change in response to climatic conditions and therefore, sustained exceedances of minimum thresholds are considered to be more significant than short-term exceedances. Setting the *Identification of Undesirable Results* criteria at 30 percent or more of wells exceeding their MT is intended to reflect undesirable results at the basin scale, and using 24 consecutive months allows the GSA time to address issues, perform investigations, and implement projects and management actions as needed.

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## 2.2 Additional Information on Groundwater Level Minimum Thresholds

### 2.2.1 Initial Review and Opinion Provided by DWR

The second part of this potential corrective action seeks additional information to explain how **each threshold region's** groundwater level MTs are consistent with avoiding undesirable results, "**particularly... in the Northwestern threshold region.**" For every threshold region, DWR requests that the GSA evaluate and provide the potential effects that MTs and URs would have on:

- Well infrastructure including domestic, community, public, and agricultural wells
- Environmental uses and users of groundwater

### 2.2.2 Review of Information and Data Provided in Submitted GSP

The CBGSA developed six specific Threshold Regions for the development of thresholds for chronic lowering of groundwater levels. The six threshold regions were defined to allow areas with similar conditions to be grouped together for calculating MOs, MTs, and IMs. These threshold regions are shown in Figure 2-1, and a detailed description of each threshold region is provided in *GSP Section 5.2 – Chronic Lower of Groundwater Levels*. Table 2-12-1 provides a summary of the approach used to establish the MT for chronic lowering of groundwater levels for each threshold region.

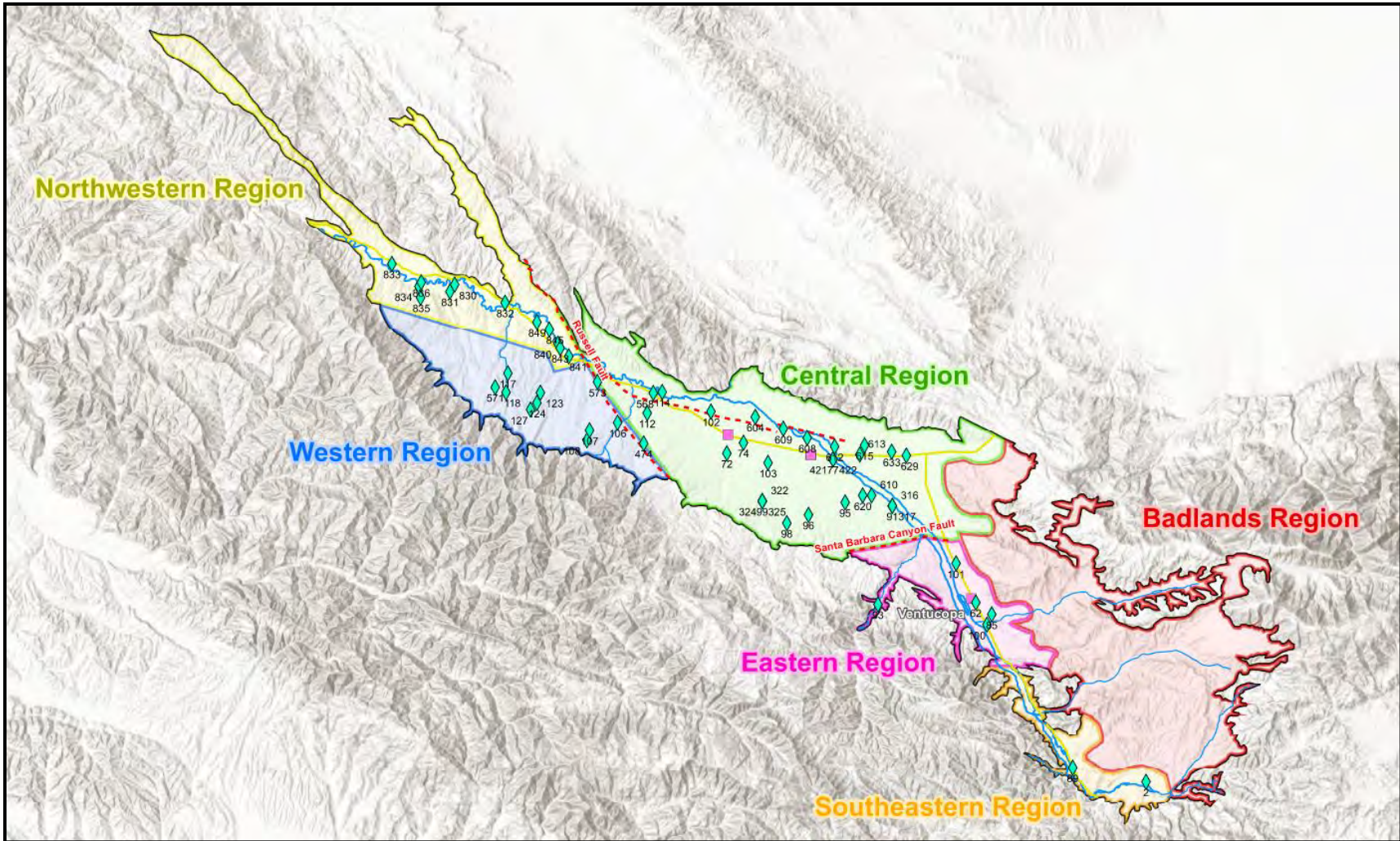


Figure 2-1. Cuyama Basin Threshold Regions

Table 2-1. Summary of MT Calculations for Chronic Lowering of Groundwater Levels for Each Threshold Region

Threshold Region	MT Calculation Approach	Justification
Northwestern	The MT for this region was found by <b>determining the region's total average</b> saturated thickness for the primary storage area and calculating 15 percent of that depth. This value was then set as the MT.	Monitoring in this threshold region indicates levels are stable, with some declines in the area where new agriculture is established. Due to these hydrologic conditions, the MT was set to protect the water levels from declining significantly, while allowing beneficial land surface uses (including domestic and agricultural uses) and using the storage capacity of this region.
Western	The MT was calculated by taking the difference between the total well depth and the value closest to mid-February, 2018, and calculating 15 percent of that depth. That value was then subtracted from the mid-February, 2018 measurement to calculate the MT.	Monitoring in this threshold region indicates groundwater levels are stable, and levels varied significantly depending on where representative wells were in the region. The most common use of groundwater in this region is for domestic use. Due to these hydrologic conditions, the MT was set to protect the water levels from declining significantly, while allowing beneficial land surface uses of the groundwater and protection of current well infrastructure. Values from mid-February, 2018, are used because data collected during this time represent a full basin condition. This calculation allows users in this region to use their groundwater supply without increasing the risk of running a well beyond acceptable limits, and this methodology is responsive to the variety of conditions and well depths in this region.
Central	MT was calculated by finding the maximum and minimum groundwater levels for each representative well and calculating 20 percent of the historical range. This 20 percent was then added to the depth to water measurement closest to, but not before, January 1, 2015, and no later than April 30, 2015.	Monitoring in this threshold region indicates a decline in groundwater levels, indicating an extraction rate that exceeds recharge rates. The MT for this region is set to allow current beneficial uses of groundwater while reducing extraction rates over the planning horizon to meet sustainable yield. The MO is intended to allow sufficient operational flexibility for future drought conditions.
Eastern	The MT was calculated by taking the total historical range of recorded groundwater levels and used 35 percent of the range. This 35 percent was then added below the value closest to January 1, 2015 (as described above).	Monitoring in this threshold region indicates a downward trend in groundwater levels. However, much of this downward trend is due to hydrologic variability and may be recovered in the future. Therefore, MTs have been set to allow for greater flexibility as compared to other regions. The MT for wells in this region intends to protect domestic, private, public and environmental uses of the groundwater by allowing for managed extraction in areas that have beneficial uses and protecting those with at risk infrastructure.

Threshold Region	MT Calculation Approach	Justification
Southeastern	MT was calculated by subtracting five years of groundwater storage from the MO. MO was calculated by finding the measurement taken closest to (but not before) January 1, 2015 and not after April 30, 2015.	Per SGMA Regulations, the CBGSA is not required to improve conditions prior to those seen when SGMA was enacted on January 1, 2015. Historical data also shows that groundwater levels are static except during drought conditions (experienced from 2013 to 2018) indicating this area of the Basin is generally at capacity. Because URs were not experienced during this last drought, setting MTs at five years of drought storage will provide the CBGSA a threshold that is protective of domestic, private, public, and environmental uses while providing operational flexibility during drought conditions.
Badlands	None	This threshold region has no groundwater use or active wells. As a result, no MO, MT, or IM was calculated.

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### 2.2.3 Supplemental GSP Information in Response to DWR Letter

The groundwater levels minimum thresholds included in the GSP were developed with the intention of avoiding the undesirable results of excessive drawdowns in the basin while minimizing the number of domestic wells that go dry and the potential impacts on GDEs in the basin. **Following receipt of DWR's letter**, two technical analyses were performed to provide additional information related to the effects of the GSPs groundwater levels minimum thresholds and undesirable results definitions on well infrastructure (i.e., domestic, public and other production wells) and on environmental uses of groundwater (i.e., GDEs).

The results of these analyses demonstrate that the minimum thresholds included in the GSP achieve the goals of avoiding undesirable results in the basin. In particular, the following conclusions can be made:

- The sustainability criteria are protective of production wells (including domestic wells) in the Basin. Only 5 wells (2% of all wells in the basin) are at risk of going dry if minimum thresholds are reached throughout the basin (i.e., at all representative wells). The CBGSA will strive to prevent domestic wells in the basin from going dry through the Adaptive Management approach included in the GSP (Section 7.6), which call for an investigation of potential issues if groundwater levels approach minimum thresholds. Therefore, the potential for a small number of domestic wells to be at risk is not considered to be a significant and unreasonable result.
- A numerical modeling analysis of proposed minimum thresholds at Wells 841 and 845 show that these thresholds would have no negative impact on local domestic wells and only minimal impact at a single GDE location. Stream depletions could potentially increase by a small amount.

The results of these technical analyses demonstrate that the minimum thresholds included in the GSP are protective against significant and unreasonable results for production wells and GDEs in the basin. The approach and results of each technical analysis are described below.

#### Assessment of Minimum Thresholds as Compared to Domestic and Production Well Screen Intervals

An assessment was performed of the minimum threshold levels included in the GSP as compared to the well screen intervals of production wells throughout the basin to try to determine how many production wells may be at risk of going dry if the groundwater levels were to fall to minimum threshold levels at monitoring well locations throughout the basin. The assessment was performed using well location and construction information provided by the counties that overlie the basin, including Santa Barbara, San Luis Obispo, Ventura, and Kern. To accomplish this, the CBGSA collected all available well data from public sources and the four Counties in tabular formats. In the northwestern region, well completion reports were also individually collected, processed, and included in the analysis.

Wells were processed in GIS by utilizing their screen interval, and where screen interval information was unavailable, their well depths, to compare those values with minimum thresholds at monitoring wells located throughout for the Basin. Some basic filtering criteria were applied to the analysis to remove wells from consideration, including those that are destroyed or non-compliant in the county datasets, wells that are far away from active groundwater management and monitoring (e.g. the Badlands region), and those that were already dry as of January 1, 2015.

The results of the analysis are shown in Table 2-2 and Figure 2-2. Out of a total of 250 production wells that were evaluated, a total of seven (3% of the total) are at risk of going dry if minimum thresholds are reached. Four of these seven wells are domestic wells. As noted above, the CBGSA will strive to use adaptive management to prevent these domestic wells from going dry.



Table 2-2. Domestic and Production Wells and MT Summary Statistics

Threshold Region	Total Number of Production Wells	Domestic Wells at Risk to Go Dry if GWLs reach MTs	Total Production Wells at Risk to Go Dry if GWLs reach MTs	Percentage of Wells at Risk of Going Dry
Northwestern	16	1	1	6%
Western	40	0	0	0%
Central	89	0	0	0%
Eastern	39	2	5	13%
Southeastern	66	1	1	2%
<i>Whole Basin</i>	<i>250</i>	<i>4</i>	<i>7</i>	<i>3%</i>

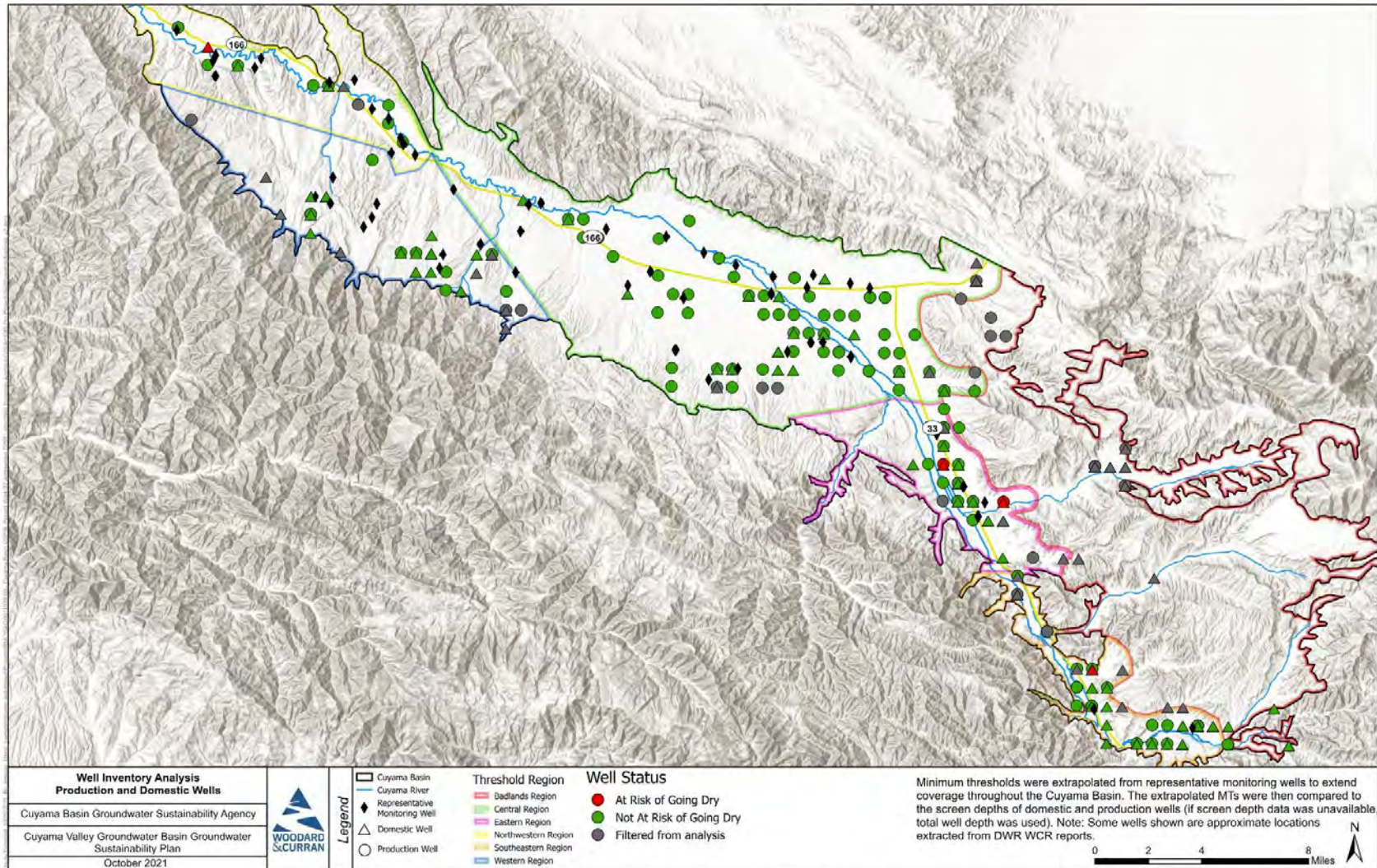


Figure 2-2. Well Status Based on Minimum Threshold Analysis

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## Modeling Analysis of Northwestern Threshold Groundwater Levels Minimum Thresholds

**Concern was presented in DWR's Letter about whether the thresholds established in the northwestern threshold region** at Opti wells 841 and 845 are protective of nearby beneficial users of water. Specifically, concern was raised that if groundwater levels were to reach MTs in representative wells what impact may occur to nearby domestic wells and GDEs. To address this, the Cuyama Basin Water Resources Model (CBWRM) was used to simulate groundwater level conditions by artificially dropping groundwater levels near Opti Wells 841 and 845 to the set MTs. This was done by assigning specified head boundary conditions at the MT levels for the model nodes near these well locations. The simulation was run for 10 years over the historical period between water years (WY) 2011 to 2020 during which the specified head boundary conditions at the MT levels were continuously active.

Figure 2-3 shows the modeled change in groundwater elevations resulting from setting groundwater levels at the minimum thresholds at wells 841 and 845. Areas shaded in red or tan color on the figure had reduced groundwater elevations as compared to the baseline condition. Areas shaded in lime green were unaffected by the change in groundwater elevations at the well 841 and 845 locations. As shown in the figure, there are no active domestic wells within the area affected by the lowered groundwater elevations at wells 841 and 845. The only GDE which may be affected is the GDE located at the confluence of Cottonwood Creek and the Cuyama River, which has an expected impact of less than 5 feet. However, even with this difference the estimated depth to water at this GDE location would be shallower than 30 feet. Potential impacts on this GDE location will be monitored at nearby Opti well 832.

As noted above, the other potential beneficial use that may be affected comes from Cuyama River inflows into Lake Twitchell. The model simulation also showed an increase in stream depletion in the affected portion of the aquifer of about 1,200 acre-feet per year. This represents about 12 percent (out of 10,200 afy) of the modeled streamflow in the Cuyama River at this location during the WY 2011-2020 model simulation period. However, the actual change in inflows into Lake Twitchell would be less than 1,200 afy because of stream depletions that would occur between Cottonwood Creek and Lake Twitchell. For comparison, during the same period the USGS gage on the Cuyama River just upstream of Lake Twitchell (11136800) recorded an average annual flow of 7,900 afy, only a portion of which comes from the Cuyama Basin. Given the lack of data regarding the hydrology and stream seepage between Cottonwood Creek and Lake Twitchell, it is uncertain how much of an impact this would have on the flows that ultimately are stored in Lake Twitchell.

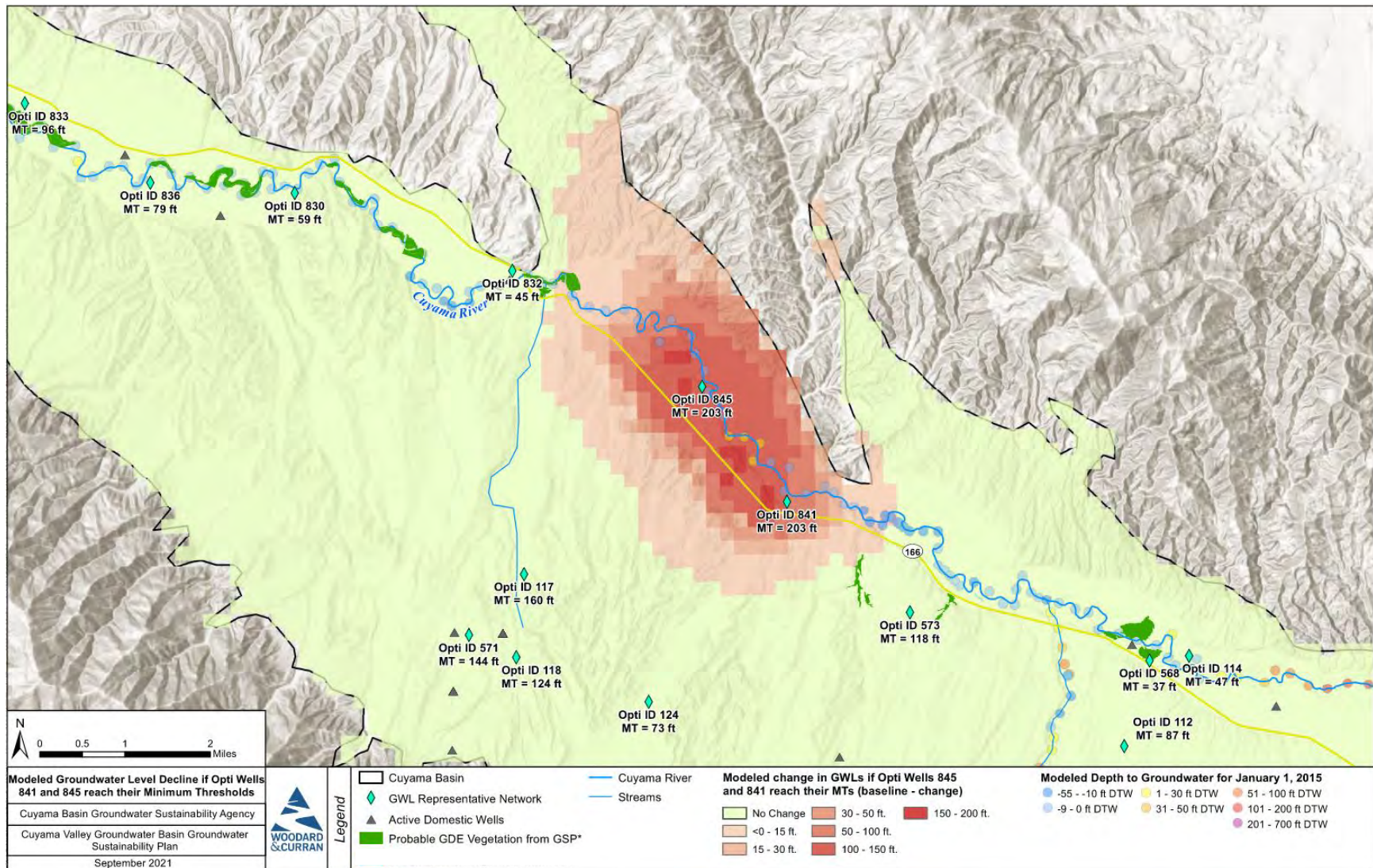


Figure 2-3. Change in Groundwater Levels in Northwestern Region from CBWRM Test Simulation

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### 3. POTENTIAL CORRECTIVE ACTION 2: USE OF GROUNDWATER LEVELS AS A PROXY FOR DEPLETION OF INTERCONNECTED SURFACE WATER

#### 3.1 Initial Review and Opinion Provided by DWR

As described in the Letter, DWR requests supporting evidence to justify the CBGSA's use of the basin-wide groundwater level minimum thresholds as a reasonable proxy for thresholds for depletions of interconnected surface water (ISW). It is the understanding of the CBGSA that the primary **objection to the CBGSA's approach** was the utilization of the entire groundwater level representative network as a one-for-one proxy for interconnected surface waters. This is because not all groundwater representative monitoring sites are necessarily appropriate for monitoring for depletion of interconnected surface waters.

#### 3.2 Review of Information and Data Provided in Submitted GSP

As stated in the SGMA regulations, as well as mentioned in the Letter, utilizing a sustainability indicator as a proxy for another is allowed if supported by adequate evidence. The submitted GSP provides justification for using groundwater levels thresholds as a proxy for interconnected surface waters in Sections 3.2.6 and 5.7 with supporting descriptions of surface water and groundwater interactions in Sections 2.1.9 and 2.2.8.

As described in Sections 2.1.9, the primary surface water body in the Basin is the Cuyama River. Flows in the Cuyama River are perennial, with most dry seasons seeing little to no flow. There are also four main contributing streams and other more minor contributing streams. The Cuyama River and all of the contributing streams are dry during most of the year, with flows occurring only during precipitation events during the winter months. Nearly all precipitation in the Basin and contributing watersheds percolate into the primary aquifer. The Cuyama River and four primary contributing streams were modeled, with the estimates of gaining and losing quantities provided in Table 2-2 of the GSP.

As noted in the plan, there is limited data available pertaining to the shallow aquifer system or to the quantity and timing of streamflows in the Basin. To help address this deficiency, the CBGSA recently installed new streamflow gages on the Cuyama River. In addition, in Section 2.2.9 the GSP recommended the installation of piezometers in the vicinity of the streambed to provide additional shallow aquifer groundwater level measurements.

#### 3.3 Updates to GSP in Response to DWR Letter

The CBGSA agrees that additional evidence and/or description may be warranted for justifying the use of groundwater levels as a proxy for interconnected surface waters. Specifically, the CBGSA feels that identifying a subset of groundwater level representative monitoring wells for use in ISW monitoring, and providing a rationale for their selection, adequately addresses concerns provided in the Letter.

##### 3.3.1 Summary of Potential Undesirable Results for Interconnected Surface Waters

Depletions of ISW are related to chronic lowering of groundwater levels via changes in the hydraulic gradient. Therefore, declines in groundwater elevations in portions of the river system that are hydrologically connected to the river system can lead to increased depletions of surface water. As shown in Figure 3-1, an analysis of the results of the historical simulation of the Cuyama Basin Water Resources Model (CBWRM) reveals that many portions of the stream system in the basin were already disconnected as of 2015 and therefore ISW flows in these stream reaches would not be affected by changes in groundwater levels. The primary areas of concern for ISW are on stretches of the Cuyama River upstream of Ventucopa and downstream of the Russell Fault.

Because the Cuyama River does not flow during most days of the year and the river is not subject to environmental flow regulations, the primary beneficial uses of Cuyama River streamflows are GDEs and water users who utilize water

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that may flow into Lake Twitchell downstream of the basin boundary. Lowering groundwater levels could result in reduced streamflows for beneficial use by these users. Therefore, the intent of the ISW monitoring network and sustainability criteria is to ensure that long-term groundwater level declines do not occur in the vicinity of the connected stretches of the Cuyama River.

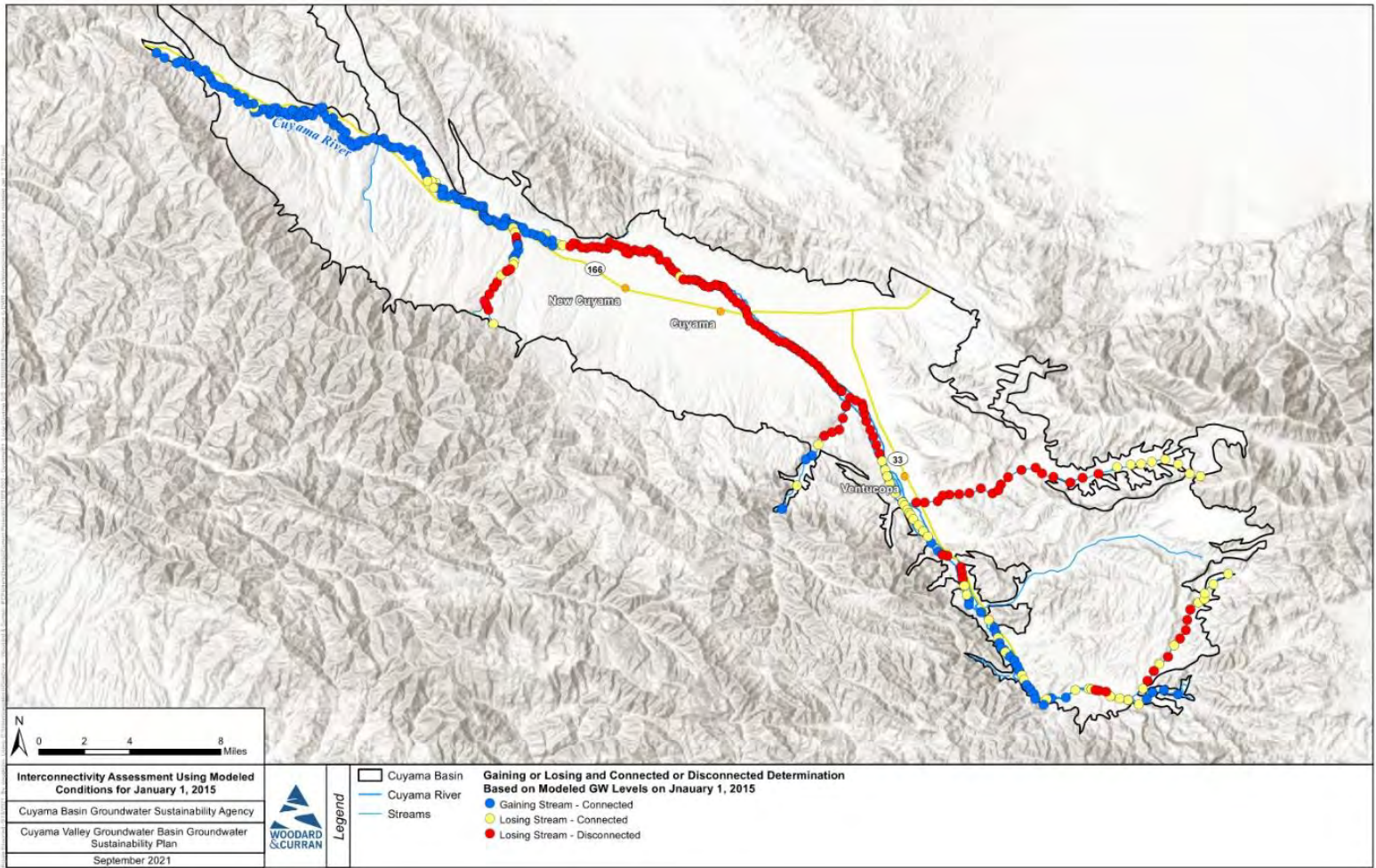


Figure 3-1. Potential Stream Interconnectivity using Historical Modeled Groundwater Levels in January 2015

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### 3.3.2 Approach for ISW Monitoring and Sustainability Criteria

To develop an ISW monitoring network, a subset of wells from the groundwater levels representative monitoring network has been used to create a depletion of interconnected surface water representative monitoring network. Wells not included in the groundwater levels monitoring network were also considered; but no additional wells were identified that would be suitable for ISW monitoring. After consulting DWRs BMPs for Monitoring Networks and Identification of Data Gaps, the following criteria were used to select wells to be included in the interconnected surface water representative network:

1. They are within 1.5-miles of the Cuyama River and/or 1-mile of one of the four major contributing streams to the Cuyama River, including Aliso Creek, Santa Barbara Creek, Quantal Canyon Creek, and Cuyama Creek,
2. They have screen intervals within 100 feet below ground surface (bgs). In some cases, wells without screen interval information but with well depths greater than 100 feet bgs were included, under the assumption that the screen interval was less than 100 feet bgs. In many of these wells, recent groundwater depth to water measurements were 40 feet bgs or less.

DWR BMP *Monitoring Networks and Identification of Data Gaps*, provides the following guidance for well selection: **“Identify and quantify both timing and volume of groundwater pumping within approximately 3 miles of the stream or as appropriate for the flow regime.”** However, the CBGSA has chosen to use a 1.5-mile buffer around the Cuyama River and a 1-mile buffer around the major contributing streams because the Basin’s unique and dynamic geological and topographical conditions require a narrower window so that the ISW monitoring network wells would cover just the portion of Valley in the vicinity of the River system (and not extend into the foothill areas with significant topographical changes).

In addition, depletions of interconnected surface waters occur at the interaction of surface and groundwater, which is in the shallow portion of the aquifer. In general, wells with completions or depths within 100 ft bgs are preferable to provide more useful information about this near surface interaction. Common practice is to also only include wells that are in areas of interconnectivity or areas where interconnectivity conditions are close to those that define interconnectivity (for example, areas with groundwater levels between 30 to 50-feet below ground surface). Due to the limited number of available wells in the Cuyama Basin with screen intervals (or where screen interval data is not available, well depth) of less than 100 ft bgs, the proposed ISW network includes only five wells. Additional monitoring locations will need to be identified to fill data gaps in the ISW network as discussed below.

The resulting ISW monitoring network is shown in Table 3-1 and Figure 3-2 below. The monitoring network includes 12 wells, nine of which are representative wells for which minimum thresholds and measurable objective have been defined. Minimum thresholds at the representative well locations are protective of GDE locations in the upper and lower portions of the river, with minimum thresholds less than 30 feet from the bottom of the river channel in the vicinity of four wells (89, 114, 830 and 832). Note that well 906 is part of a new multi-completion well that was constructed in the **summer of 2021 under DWR’s Technical Support Services; while well 906 is a representative well, sustainability criteria** will not be developed for this well until a history of groundwater level measurements has been established. While the three non-representative wells in the central basin are too deep for direct monitoring of ISW flows, they are included to allow the GSA to monitor potential groundwater level increases that could result in reconnection between the river and aquifer in the central basin going forward.



Table 3-1. Interconnected Surface Water Monitoring Network

Opti ID	Threshold Region	Well Depth (feet bgs)	Screen Interval	Minimum Threshold (feet bgs)	Measurable Objective (feet bgs)
Representative Wells					
2	Southeastern	73	Unknown	72	55
89	Southeastern	125	Unknown	64	44
114	Central	58	Unknown	47	45
568	Central	188	Unknown	37	36
830	Northwestern	77	Unknown	59	56
832	Northwestern	132	Unknown	45	30
833	Northwestern	504	Unknown	96	24
836	Northwestern	325	Unknown	79	36
906	Northwestern	Unknown	50-70	TBD	TBD
Other Monitoring Network Wells					
101	Central	200	Unknown	n/a	n/a
102	Central	Unknown	Unknown	n/a	n/a
421	Central	620	Unknown	n/a	n/a

The proposed network includes data gaps which will need to be filled in the future:

- Due to the shortage of shallow monitoring wells available to include in the network, additional shallow aquifer measurement devices will be needed. As noted above, the CBGSA has called for the installation of piezometers in the vicinity of the streambed.
- A spatial data gap exists along the Cuyama River in between Well 89 and Ventucopa. Note that significant stretches of the Cuyama River (particularly in the Central Basin) were already disconnected from the groundwater aquifer in 2015 (as discussed in Section 2.2.8 of the GSP).

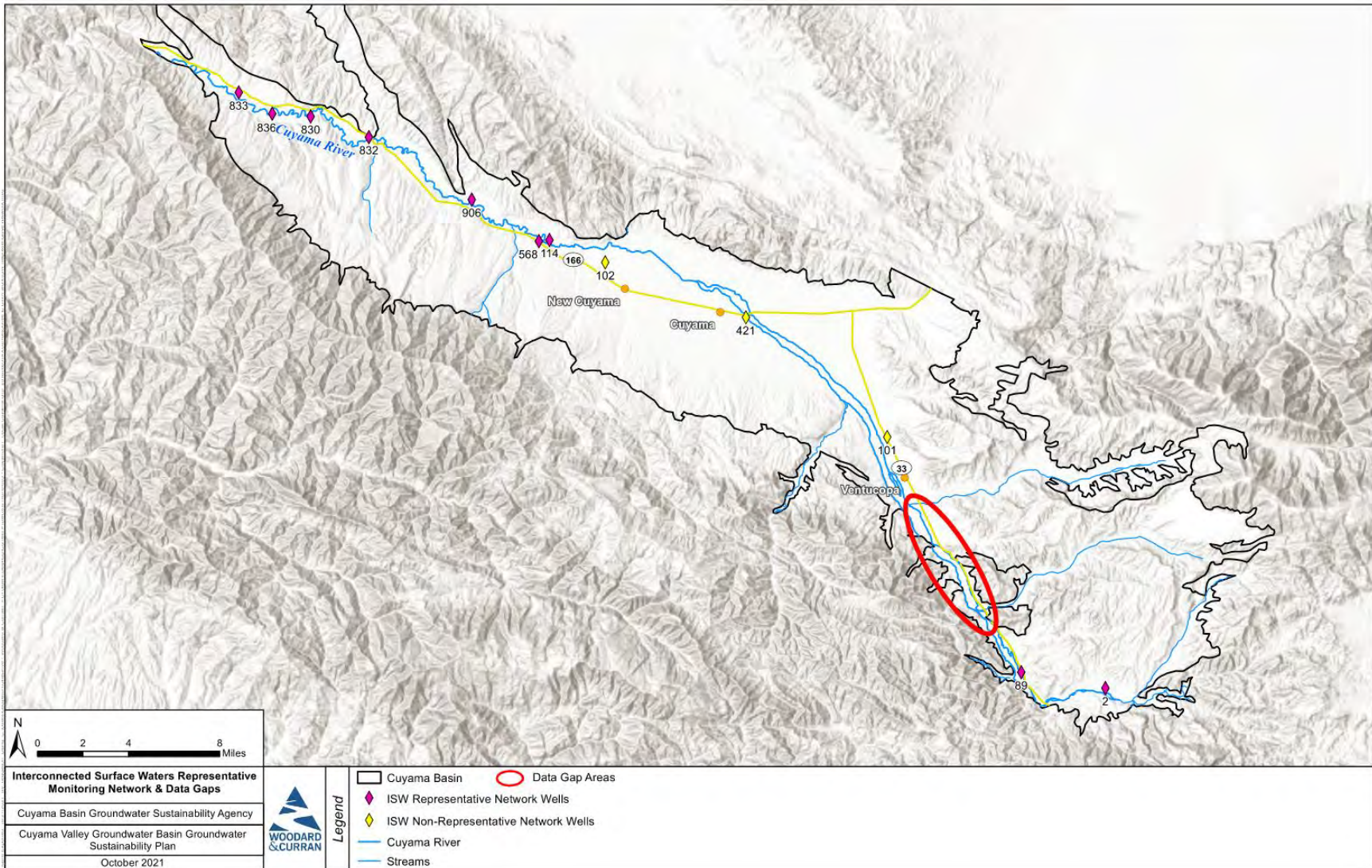


Figure 3-2. Interconnected Surface Water Monitoring Network

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## 4. POTENTIAL CORRECTIVE ACTION 3: FURTHER ADDRESS DEGRADED WATER QUALITY

### 4.1 Initial Review and Opinion Provided by DWR

**DWR's** Letter expressed two main concerns about the water quality analysis and constituent thresholds used in the GSP. First, the GSP acknowledges that nitrate and arsenic have been historical constituents of concern, but due to regulatory limitations, did not set thresholds for these two constituents. Second, based on feedback provided in a public comment, there was concern that some public data was not included in the water quality analysis conducted for the Basin. DWR believes that the GSA may have approached the management strategies differently (through setting thresholds for these constituents) if this data had been utilized. DWR recommended the following to address the concerns raised in the letter:

- Groundwater conditions information related to water quality should be updated to include all available data, in particular as recommended by the Regional Water Quality Control Board, so as to reflect the best available information regarding water quality.
- The GSA should either develop sustainable management criteria for arsenic and nitrate or provide a thorough, evidence-based description for why groundwater management is unlikely to cause significant and unreasonable degradation of groundwater.
- The GSA should appropriately revise its monitoring network based on the above updates. At a minimum, the GSA should include monitoring for arsenic and nitrates as they have been identified as constituents of concern in the basin.

### 4.2 Review of Information and Data Provided in Submitted GSP

As discussed in Section 4.3.3 of the GSP, water quality data for the Basin was collected from the Irrigated Lands Program (ILP), Groundwater Ambient Monitoring and Assessment (GAMA) Program, United States Geological Survey (USGS), Cuyama Community Services District (CCSD), Ventura County Water Protection District, and private landowners. Staff performed detailed analysis to ensure that wells included in multiple datasets were paired correctly at to the best of their ability, remove duplicate measurements and data.

The GSP includes a monitoring network (Section 4.8) and sustainability criteria (Section 5.5) for management of TDS in the basin.

The GSP discussion noted that the CBGSA does not have the ability or authority to perform actions to address nitrate or arsenic levels in the Basin. Nitrate concentrations are directly related to fertilizer application on agricultural crops, and SGMA regulations do not provide GSAs the regulatory authority to manage fertilizer application. This regulatory authority is, however, held by the SWRCB through the ILP. Additionally, arsenic is naturally occurring, and has only been measured in limited regions of the basins.

### 4.3 Updates to GSP in Response to DWR Letter

The following sections provided updated information in response to the three actions recommended by DWR.

#### 4.3.1 Updates to Groundwater Conditions Descriptions

Additional data collection efforts were performed for nitrate and arsenic measurements, including collecting updated data from publicly available data portals such as GAMA, CEDEN, GeoTracker, and the National Water Quality

Monitoring Council that were previously accessed during GSP development. In addition to accessing the public portals for each program, staff coordinated with RWQCB staff to ensure that all publicly available data was collected. It was confirmed by RWQCB staff that all available data for the ILP program were included in the online GAMA data portal download. Some of these public portals have overlapping data that, where possible, were removed, to develop a comprehensive data set for the Basin.

Summary statistics for nitrate (as N) and arsenic measurements taken from 2010-2020 are shown in Table 4-1. For nitrates, 41 of the 102 wells with measurements during this period recorded a measurement exceeding the MCL of 10 mg/L. For arsenic, 5 of the 23 wells with measurement recorded a measurement exceeding the MCL of 10 µg/L. Figures 4.1 and 4.2 show the locations of wells with monitoring measurements for nitrates and arsenic during the 2010-2020 period and the average concentrations measured in each well. In each case, the wells with average values exceeding the MCLs correspond with the wells tabulated in Table 4-1. A review of the data for wells with measurements both before and after 2015 showed little change with no wells showing degradation of nitrate or arsenic such that a well that was below the MCL before 2015 was above the MCL afterwards.

Table 4-1. Summary Statistics for Nitrate (as N) and Arsenic

	Nitrate (as N)	Arsenic
Number of monitoring wells	102	23
Number of wells with recorded MCL exceedances from 2010-2020	41	5

As shown in Figures 4-1 and 4-2, most wells with nitrate and arsenic concentrations exceeding MCLs are located in the central threshold region. The locations of high arsenic concentrations are focused to the south of the town of New Cuyama near the existing Cuyama Community Services District (CCSD) well. This is a known issue for the CCSD that will be mitigated by the construction of a replacement well for the district, which was included as a project in the GSP (see section 7.4.4).

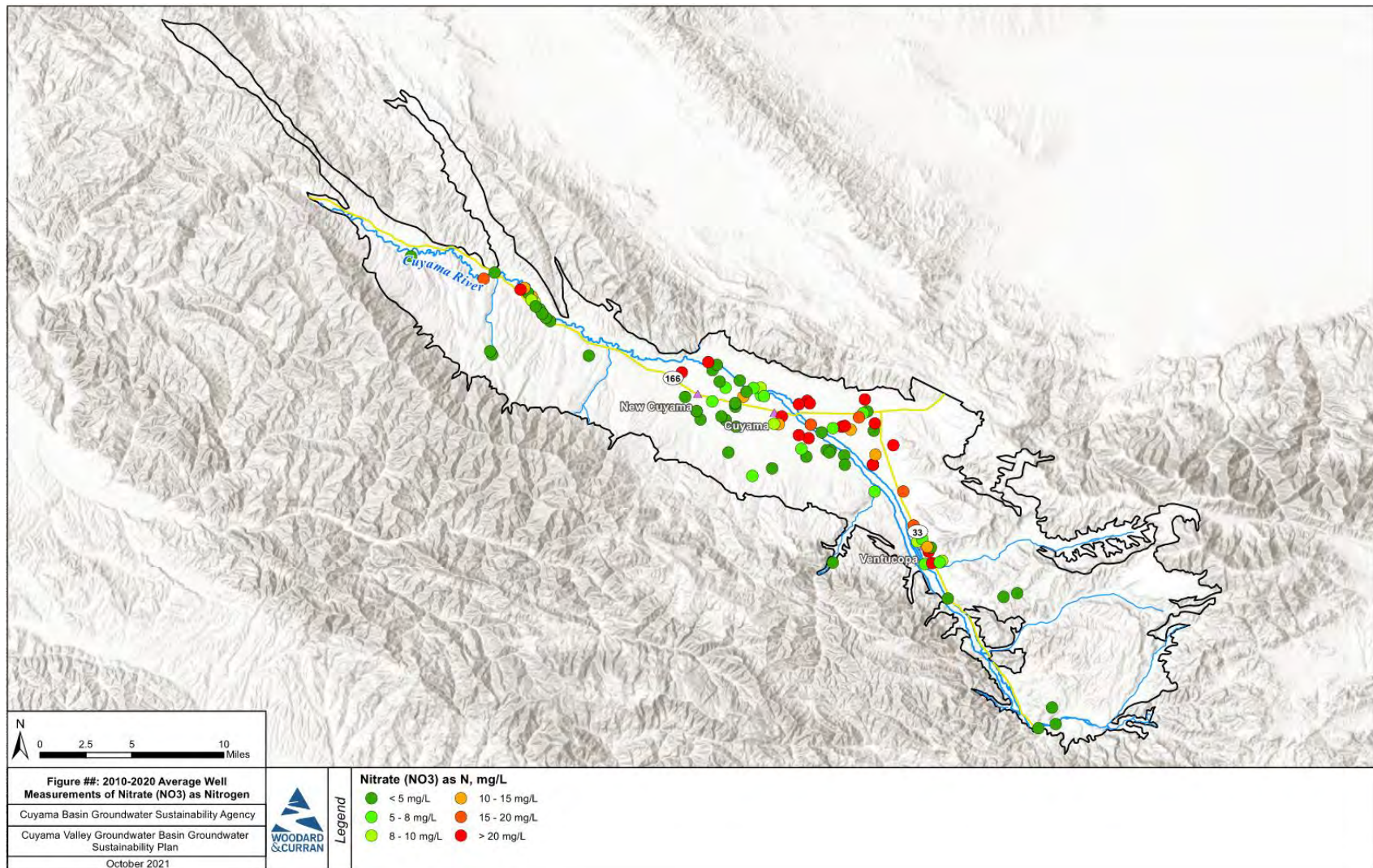


Figure 4-1. Average Well Measurements of Nitrate (as N) from 2010 through 2020

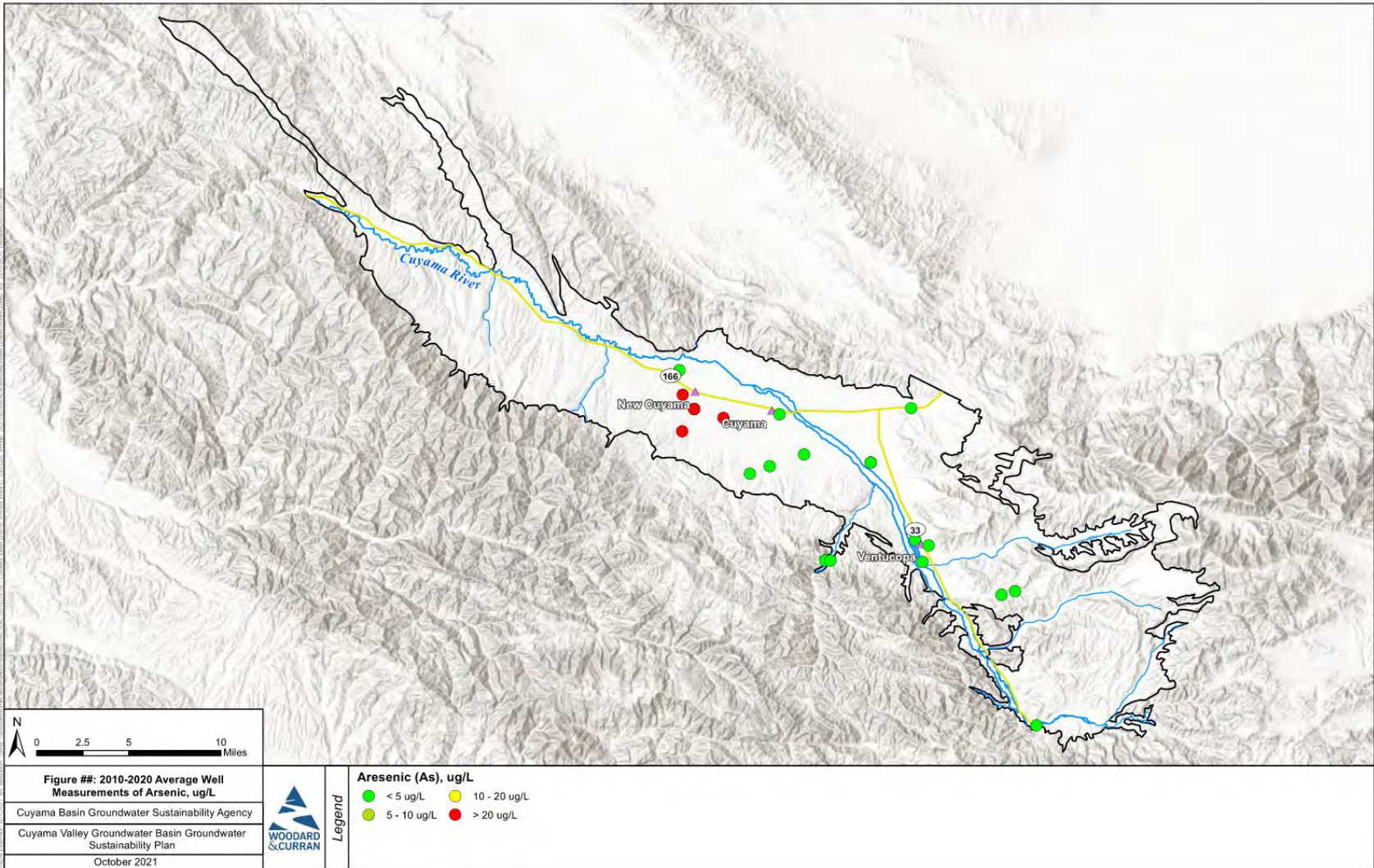


Figure 4-2. Average Well Measurements of Arsenic from 2010 through 2020

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#### 4.3.2 Why Groundwater Management is Unlikely to Affect Nitrate and Arsenic Concentrations

As discussed in the submitted GSP, nitrates are the result of fertilizer application on agricultural land. The CBGSA does not have the regulatory authority granted through SGMA to regulate the application of fertilizer. This regulatory authority is held by the SWRCB through the Irrigated Lands Regulatory Program (ILP). The CBGSA can encourage agricultural users in the Basin to use best management practices when using fertilizers but cannot limit their use. Because the CBGSA has no mechanism to directly control nitrate concentrations, it is believed that setting thresholds for nitrates is not appropriate. However, it should be noted that GSP implementation will likely have an indirect effect on nitrates in the central basin due to the pumping allocations that were included in the GSP. This will likely reduce the application of fertilizers in the central part of the basin as agricultural production in the Basin is reduced over time.

Similarly, because arsenic is naturally occurring, the CBGSA does not believe the establishment of thresholds for arsenic is appropriate. As shown in Figure 4-2, wells with high arsenic concentrations are located in a relatively small area of the basin south of New Cuyama. A review of production well data provided by the counties (discussed in Section 2) indicates that there are no active private domestic wells located in this part of the basin. The only operational public well that is located in this part of the basin serves the Cuyama Community Services District (CCSD). As noted above, the CCSD is currently pursuing the drilling of a new production well, which was included as a project in the GSP. Once this well is completed, it is not believed that any domestic water users will be using a well that accesses groundwater with known high arsenic concentrations.

#### 4.3.3 Monitoring Approach for Nitrates and Arsenic

The CBGSA intends to leverage and make use of existing monitoring programs for nitrates and arsenic, in particular ILP for nitrates and USGS for arsenic. The wells in the basin where recent monitoring data is available for these constituents are shown in Figures 4-1 and 4-2. To supplement the understanding of nitrate and arsenic concentrations in the basin, the GSP intends to perform an additional measurement of nitrate and arsenic at each water quality well identified in the GSP (GSP Figure 4-20) during calendar year 2022. This will provide a baseline constituent level in all groundwater quality representative monitoring network locations that can be utilized for future basin planning. Additional measurements may be considered by the GSA in the future in anticipation of future five-year updates.

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## 5. POTENTIAL CORRECTIVE ACTION 4: PROVIDE EXPLANATION FOR HOW OVERDRAFT WILL BE MITIGATED IN THE BASIN

### 5.1 Initial Review and Opinion Provided by DWR

This potential corrective action is related to the lack discussion of how overdraft will be mitigated in the entire basin. In particular, DWR requests additional information for why the GSP does not include pumping reductions in the Ventucopa management area (where the Cuyama Basin Water Resources Model (CBWRM) predicts long-term groundwater level declines) and why projects and management actions are not included to prevent groundwater level declines in the northwest region.

### 5.2 Review of Information and Data Provided in Submitted GSP

The Water budget section of the GSP (section 2.3) includes a sustainability analysis that estimates that basin-wide groundwater pumping (currently estimated at about 60-64 taf per year) would need to be reduced by somewhere between 55% and 67% (depending on whether climate change and/or water supply projects are included).

The GSP defined management areas in central basin and in the Ventucopa region because those were the two regions in which the model predicted long-term overdraft (Section 7.1). The modeling results did not predict overdraft or groundwater declines in any other portion of the basin, including the northwest region. The Projects and Management Actions section includes an action to implement pumping allocations in the Central Basin management area to address projected overdraft in that portion of the basin. However, as described in the Executive Summary, pumping reductions were not recommended in the Ventucopa management area because **of the need to “perform additional monitoring, incorporate new monitoring wells, and further evaluate groundwater conditions” before the need for pumping reductions** can be determined.

The CBWRM model documentation (Appendix 2-C) estimated the range of uncertainty of basinwide model results and included recommendations for future model updates, including additional hydrogeological characterization, improved streamflow data collection, an assessment of groundwater pumping levels and incorporating future collected data into model calibration – **each of which is relevant to the model’s** representation of the Ventucopa region.

### 5.3 Updates to GSP in Response to DWR Letter

The following sections provide additional information regarding the Ventucopa management area and the northwestern region.

#### 5.3.1 Ventucopa Management Area

As noted in the Executive Summary of the GSP, the GSA intends to re-evaluate the need for pumping reductions in the Ventucopa region after further evaluating groundwater conditions over a two-to-five-year period following submission of the GSP. At the time that the GSP was submitted, the CBGSA felt that it was premature to prescribe pumping reductions in the Ventucopa region on the basis of CBWRM model results because the development of the model in that portion of the basin posed significant challenges:

- Limited groundwater level data was available for model calibration. Only three calibration wells were available in that area of the basin (wells 62, 85, and 617). Since submission of the GSP, a new multi-completion monitoring well has been installed in the area, which will provide additional information for model calibration going forward.



- Characterization of streamflows and their effect on the groundwater aquifer was challenging because there were no streamflow gages on the Cuyama River with measurements taken during the calibration period and limited information was available regarding stream geometry in the region. Since submission of the GSP, a new streamflow gage has been installed on the Cuyama River upstream of the Ventucopa region.
- Groundwater pumping levels in the region were based on estimates from available land use information. However, unlike the central basin, cropping patterns in this portion of the basin was not provided by local landowners but was instead estimated using satellite imagery. Furthermore, specific well locations were not available in this portion of the basin. The CBGSA has addressed these shortcomings through the requirement of landowners to install meters on production wells and to report well information starting in calendar year 2022.
- The magnitude of water budget estimates in the region were relatively small as compared to the basin as a whole, which meant that a small change in the estimate for a single water budget component could have a large effect on the estimated change in storage (and corresponding estimates of long-term groundwater elevation change). In particular, some basin stakeholders have raised a concern that the model may be underestimating stream seepage into the aquifer in this stretch of the Cuyama River.
- Due to time and budget constraints during GSP development, model development and calibration prioritized development of an accurate representation of the central basin portion of the aquifer (where long-term overdraft was known to occur) with lesser emphasis on other parts of the model. The primary model calibration objective during CBWRM development of the Ventucopa region was on ensuring that groundwater levels matched historical trends at the boundary of the central basin and Ventucopa region.

Table 5-1 shows the average annual groundwater budget in the Eastern threshold region for the 50-year current and projected simulation (without climate change) included in the GSP. While the historical simulation showed a small surplus in the region, the future projected simulation showed a deficit of about 700 acre-feet per year (AFY), which corresponded to the groundwater level declines shown in Figure 7-1 of the GSP. This quantity is small compared to an overall basin groundwater storage deficit of 25,000 AFY, and it is approximately 10% of the total groundwater inflow in this region. This can be well within the range of uncertainties in any of the water budget components, and the range of overdraft can be +/- 10%. In light of the uncertainties, and lack of sufficient data on the water budget components to verify the model projected water budget, the CBGSA determined that implementing a management action in the region at this early stage may be too premature. Instead, the CBGSA is determined to compile and analyze additional data and information on groundwater levels, surface water flows, groundwater pumping, as well as information on channel geometry and subsurface conditions. This information will be used to further enhance the capabilities of the model for analysis of projected water budgets and groundwater conditions in the region, and determination of possible management actions to address any possible projected overdraft conditions.

Table 5-1. Eastern Region Groundwater Budget Summary (Acre-feet per year)

	Current and Projected Simulation (2018-2067)
Inflows	
Deep percolation	4,100
Stream seepage	1,300
Subsurface inflow	700
Total Inflows	6,100
Outflows	
Groundwater pumping	6,800
Total Outflows	6,800
Change in Storage	-700

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### 5.3.2 Northwestern Region

In regard to the northwestern region, management actions were not included in the GSP for this region because the available information did not indicate a projected overdraft in that region. The following information was considered during development of the GSP:

- The CBWRM model indicated a balance between groundwater inflows and outflows in the region in all of the water budget scenarios that were simulated.
- The Cleath-Harris Geologists (CHG) document *Sustainability Thresholds for Northwestern Region, Cuyama Valley*, dated December 7, 2018<sup>1</sup>, developed under contract with the North Fork Vineyard. This document identified minimum thresholds for this area that would be protective of groundwater pumping capacity for production wells in this area. CHG estimated that the minimum thresholds proposed for the region would result in a fifteen percent reduction in the saturated thickness screened by the production wells, which would correspond in very general terms to a similar reduction in transmissivity and pumping capacity of the production wells.

The technical analyses described in Section 2 regarding potential corrective action 1 indicates that the potential drawdown due to the minimum thresholds set for wells 841 and 845 could have a small effect on GDEs and domestic wells in the area. However, the thresholds set in the monitoring wells located in the vicinity of these basin resources are set at protective levels that would be indicative of any issues that may arise, allowing the CBGSA to make an appropriate adaptive management response (per section 7.6 of the GSP). Therefore, the available evidence indicates that management actions are not required in this region at this time.

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<sup>1</sup> Posted at the Cuyama Basin GSA website here: <https://cuyamabasin.org/assets/pdf/Cleath-Harris-Sustainability-Thresholds-for-Northwestern-Region.pdf>

# Attachment 1



CALIFORNIA DEPARTMENT OF WATER RESOURCES

# SUSTAINABLE GROUNDWATER MANAGEMENT OFFICE

901 P Street, Room 313-B | Sacramento, CA 95814 | P.O. Box 942836 | Sacramento, CA 94236-0001

June 3, 2021

Mr. Taylor Blakslee  
Cuyama Basin GSA Project Coordinator  
4900 California Avenue, Tower B, 2nd Floor  
Bakersfield, CA. 93309

RE: Cuyama Valley - 2020 Groundwater Sustainability Plan

Dear Taylor Blakslee,

The Cuyama Basin Groundwater Sustainability Agency (GSA) submitted the Cuyama Valley Groundwater Basin (Basin) Groundwater Sustainability Plan (GSP) to the Department of Water Resources (Department) for evaluation and assessment as required by the Sustainable Groundwater Management Act (SGMA).<sup>1</sup> This letter is intended to initiate consultation between the Department and the GSA in advance of issuance of a determination described under the GSP Regulations.<sup>2</sup>

Department staff recognize the significant effort that went into development of the first GSP for the Basin and believe the aggressive approach toward demand management is a significant step toward achieving groundwater sustainability for the Basin.

Department staff have completed an initial review of the GSP and have identified deficiencies which may preclude the Department's approval.<sup>3</sup> Consistent with the GSP Regulations, Department staff are considering corrective actions<sup>4</sup> that the GSA should review to determine whether and how the deficiencies can be addressed. The deficiencies and corrective actions are generally related to the need to define sustainable management criteria in the manner required by SGMA and the GSP Regulations, further address water quality, and better explain how overdraft will be mitigated.

The Department has the authority to determine the GSP is incomplete and, if it does so, the deficiencies precluding approval will need to be addressed within a period of time not to exceed 180 days from the determination, which would be issued no later than January 28, 2022. Prior to making that determination, and after you review the contents of this letter, Department staff will contact you to discuss the deficiencies and consult

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

<sup>2</sup> 23 CCR Division 2, Chapter 1.5, Subchapter 2.

<sup>3</sup> 23 CCR § 355.2(e)(2).

<sup>4</sup> 23 CCR § 355.2(e)(2)(B).

with you regarding the amount of time needed by the GSA to address the potential corrective actions detailed in Attachment 1.

If you have any questions, please don't hesitate to contact the Sustainable Groundwater Management Office staff by emailing [sgmps@water.ca.gov](mailto:sgmps@water.ca.gov).

Thank you,

A handwritten signature in black ink, appearing to read "Craig Altare". The signature is fluid and cursive, with the first name "Craig" being more prominent than the last name "Altare".

Craig Altare, P.G.  
Supervising Engineering Geologist  
Groundwater Sustainability Plan Review Section Chief

Attachment:

1. Potential Corrective Actions

## Potential Corrective Actions

Department staff have identified deficiencies in the GSP which may preclude the Department's approval. Consistent with the GSP Regulations, Department staff are considering corrective actions that the GSA should review to determine how the deficiencies can be addressed. The deficiencies and corrective actions are explained below, including an explanation of the general regulatory background, the specific deficiency identified in the GSP, and the specific actions to address the deficiency. The specific actions identified are potential corrective actions until a final determination is made by the Department.

### **Potential Corrective Action 1. Provide justification for, and effects associated with, the sustainable management criteria**

The first potential corrective action relates to the GSP's lack of justification for the established sustainable management criteria and the effects of those criteria on the interests of beneficial uses and users in the Basin.

#### **Background**

The Department's GSP Regulations collect several required elements of a GSP under the heading of "Sustainable Management Criteria," including undesirable results along with the sustainability goal, minimum thresholds, and measurable objectives. Except for the sustainability goal, the components of sustainable management criteria must be quantified so that progress towards sustainability can be monitored and evaluated consistently and objectively.

A GSA relies on, among other factors, local experience, public outreach and involvement, and information about the basin it has described in its basin setting—the hydrogeologic conceptual model, the description of current and historical groundwater conditions, and the water budget—to develop criteria for defining undesirable results and setting minimum thresholds and measurable objectives.<sup>5</sup>

SGMA defines sustainable groundwater management as the management and use of groundwater in a manner that can be maintained during the planning and implementation horizon without causing undesirable results.<sup>6</sup> The avoidance of undesirable results is thus explicitly part of sustainable groundwater management as established by SGMA and critical to the success of a GSP. Accordingly, managing a basin solely to eliminate overdraft within 20 years does not necessarily mean that GSAs in the basin have done

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<sup>5</sup> Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT). California Department of Water Resources, November 2017, [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT\\_ay\\_19.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf).

<sup>6</sup> Water Code § 10721(v).

all that is required to achieve sustainable groundwater management. To achieve sustainable groundwater management under SGMA, the basin must experience no undesirable results by the end of the 20-year GSP implementation period and be able to demonstrate an ability to maintain those defined sustainable conditions over the 50-year planning and implementation horizon.

The definition of undesirable results is thus critical to the establishment of an objective method to define and measure sustainability for a basin. As an initial matter, SGMA provides a qualitative definition of undesirable results as “one or more” of six specific “effects caused by groundwater conditions occurring throughout the basin.”<sup>7</sup>

It is up to GSAs to define in their GSPs the specific significant and unreasonable effects that would constitute undesirable results and to define the groundwater conditions that would produce those results in their basins.<sup>8</sup> The GSA’s definition needs to include a description of the processes and criteria relied upon to define undesirable results and must describe the effect of undesirable results on the beneficial uses and users of groundwater. From this definition, the GSA establishes minimum thresholds, which are quantitative values that represent groundwater conditions at representative monitoring sites that, when exceeded individually or in combination with minimum thresholds at other monitoring sites, may cause the basin to experience undesirable results.<sup>9</sup>

SGMA leaves the task of establishing undesirable results and setting thresholds largely to the discretion of the GSA, subject to review by the Department. In its review, the Department requires a thorough and reasonable analysis of the groundwater conditions the GSA is trying to avoid, and the GSA’s stated rationale for setting objective and quantitative sustainable management criteria to prevent those conditions from occurring. If a Plan does not meet this requirement, the Department is unable to evaluate the likelihood of the Plan in achieving its sustainability goal. This does not necessarily mean that the GSP or its objectives are inherently unreasonable; however, it is unclear which conditions the GSA seeks to avoid, making it difficult for the Department to monitor whether the GSA will be successful in that effort when implementing its GSP.

### **GSP-Specific Deficiency**

Based on its initial review, Department staff are concerned that although the GSP appears to realistically quantify the water budget and identify the extent of overdraft in the Basin, and while the GSP proposes projects and management actions that appear likely to eventually eliminate overdraft in portions of the Basin, the GSP has not defined

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<sup>7</sup> Water Code § 10721(x).

<sup>8</sup> 23 CCR § 354.26.

<sup>9</sup> 23 CCR § 354.28, Best Management Practices for the Sustainable Management of Groundwater: Sustainable Management Criteria (DRAFT). California Department of Water Resources, November 2017, [https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT\\_ay\\_19.pdf](https://water.ca.gov/-/media/DWR-Website/Web-Pages/Programs/Groundwater-Management/Sustainable-Groundwater-Management/Best-Management-Practices-and-Guidance-Documents/Files/BMP-6-Sustainable-Management-Criteria-DRAFT_ay_19.pdf).

sustainable management criteria in the manner required by SGMA and the GSP Regulations.

### *Undesirable Results*

The GSP provides quantitative values for the minimum thresholds and includes a combination of those minimum threshold exceedances that the GSA considers causing an undesirable result. However, the GSP does not discuss, or appear to address, the critical first step of identifying the specific significant and unreasonable effects that would constitute undesirable results. The GSP provides general statements about undesirable results (e.g., “The Undesirable Result for the chronic lowering of groundwater levels is a result that causes significant and unreasonable reduction in the long-term viability of domestic, agricultural, municipal, or environmental uses over the planning and implementation horizon of this GSP.”<sup>10</sup>) and generic descriptions of the effects of undesirable results (e.g., “...the Undesirable Results could cause potential de-watering of existing groundwater infrastructure, starting with the shallowest wells...”<sup>11</sup>), but does not provide an explanation for the specific significant and unreasonable condition(s) that the GSA intends to avoid in the Basin through implementation of the GSP (e.g., a level of impact to well infrastructure or to environmental uses).

The GSP states undesirable results for chronic lowering of groundwater levels would occur when groundwater level minimum thresholds are exceeded in 30 percent of monitoring wells for two consecutive years. (The same 30 percent for two consecutive years criterion is used for reduction in storage, degradation of groundwater quality, land subsidence, and depletion of interconnected surface water.) However, the GSP does not provide any explanation for why the criterion is consistent with avoiding significant and unreasonable effects that constitute undesirable results.

### *Minimum Thresholds.*

The GSP lacks explanation of the justification for setting its minimum thresholds and also lacks explanation of the anticipated effects of groundwater conditions at those thresholds on the interests of the beneficial uses and users of groundwater in nearly all threshold regions. The GSP describes that each threshold region has its own formula to determine the quantitative minimum threshold (e.g., in the Central threshold region it is determined by subtracting 20 percent of the historical range in groundwater levels from the groundwater level observed in early 2015). While it is acceptable to set minimum thresholds differently in portions of a basin, all minimum thresholds must, by the definition of that term in the GSP Regulations, relate to the conditions that could cause undesirable results.

This lack of information is particularly notable in the Northwestern threshold region. The GSP states that the intention of the sustainable management criteria for the Northwestern

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<sup>10</sup> Cuyama Basin GSP, Section 3.2.1, p. 260.

<sup>11</sup> *Ibid.*



region is to “...protect the water levels from declining significantly, while allowing beneficial land surface uses (including domestic and agricultural uses) and using the storage capacity of this region.”<sup>12</sup> However, the Northwestern region is the only region in the Basin where the sustainable management criteria indicate a plan to substantially lower groundwater levels, relative to conditions at the time of GSP preparation (i.e., the minimum thresholds for groundwater levels are up to 140 to 160 feet lower<sup>13</sup>), in an area with the highest concentration of potential GDEs<sup>14</sup> in Cuyama Valley and with interconnected surface water, which is evidenced by a gaining reach of the river.<sup>15</sup> The GSP did not quantify the expected depletions of surface water over time or assess or disclose the anticipated effects of the established minimum thresholds on beneficial uses and users of groundwater, which, based on Department staff’s review, appear to include nearby domestic users, potential GDEs, and users of the interconnected surface water.

The absence of this information and related discussion precludes meaningful disclosure to, and participation by, interested parties and residents in the Basin. In addition, without this discussion it is difficult for Department staff to determine whether it is appropriate or reasonable for the GSA to conclude that undesirable results in the Basin would not occur unless nearly a third of representative monitoring points exceed their minimum thresholds for two consecutive years.

### **Addressing the Deficiency**

The GSA must provide more detailed information, as required in the GSP Regulations, regarding undesirable results and minimum thresholds for all applicable threshold regions.<sup>16</sup> The GSA should describe the anticipated effects of the established minimum thresholds and undesirable results on the interests of beneficial uses and users and how the GSA determined that those thresholds would avoid undesirable results in the Basin. Department staff suggest that the following issues be considered and addressed:

1. The GSA should describe the specific undesirable results they aim to avoid through implementing the GSP. For example, if the long-term viability of domestic, agricultural, municipal, or environmental uses is a concern with respect to lowering of groundwater levels, then the GSA should describe the specific effects on those users that the GSA considers significant and unreasonable and define groundwater conditions that would lead to those effects. Clarify how the criteria defining when undesirable results occur in the Basin (i.e., 30 percent exceedance of minimum thresholds for two consecutive years) was established, the rationale

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<sup>12</sup> Cuyama Basin GSP, Section 5.2.2, p. 352.

<sup>13</sup> Cuyama Basin GSP, Chapter 5 Appendix A, p. 1505-1509.

<sup>14</sup> Cuyama Basin GSP, Section 2.2.9, p. 227, Figures 2-63 and 2-64, p. 230-231, Chapter 2-Appendix D, p. 1258-1279.

<sup>15</sup> Cuyama Basin GSP, Section 2.2.8, p. 222, Figure 2-61, p. 223.

<sup>16</sup> 23 CCR §§ 354.26, 354.28.

behind the approach, and why it is consistent with avoiding the significant and unreasonable effects identified by the GSA.

2. The GSA should either explain how the existing minimum threshold groundwater levels are consistent with avoiding undesirable results or they should establish minimum thresholds at the representative monitoring wells that account for the specific undesirable results the GSA aims to avoid. For each threshold region, the GSA should evaluate and disclose the anticipated effects of the GSP's minimum thresholds and undesirable results on:

- a. Well infrastructure, including domestic wells, community and public water supply wells, and agricultural wells. The GSA may utilize the Department's well completion report dataset<sup>17</sup> or other similar data to estimate the number and kinds of wells expected to be impacted at the minimum thresholds identified in the GSP. Public water system well locations and water quality data can currently be obtained using the State Water Resource Control Board's (State Water Board) Geotracker website.<sup>18</sup> Administrative contact information for public water systems and well locations and contacts for state small water systems and domestic wells can be obtained by contacting the State Water Board's Needs Analysis staff.<sup>19</sup> The State Water Board is currently developing a database to allow for more streamlined access to this data in the future.

If the GSA identifies potential impacts to drinking water wells, including de minimis users and disadvantaged communities, those impacts should be described in the GSP. By the first five-year update, the GSA should inventory and better define the location of active wells in the Basin. The GSA should document known impacts to drinking water users caused by groundwater management, should they occur, in annual reports and subsequent periodic updates.

- b. Environmental uses and users of groundwater. If data are not available to support evaluation of the effects of established minimum thresholds on environmental uses and users, the GSA should clarify the strategy, mechanism, and timeline for acquiring that data and incorporating that data into management of the Basin.<sup>20</sup>

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<sup>17</sup> Well Completion Report Map Application. California Department of Water Resources, <https://www.arcgis.com/apps/webappviewer/index.html?id=181078580a214c0986e2da28f8623b37>.

<sup>18</sup> GeoTracker Application. California State Water Resources Control Board, <https://geotracker.waterboards.ca.gov/map/#>; select "Public Water Wells" under the "Other Sites" option and navigate to the area of interest.

<sup>19</sup> [DDW-SAFER-NAU@Waterboards.ca.gov](mailto:DDW-SAFER-NAU@Waterboards.ca.gov).

<sup>20</sup> 23 CCR §§ 355.4(b)(2), 355.4(b)(3).

## **Potential Corrective Action 2. Use of groundwater levels as a proxy for depletion of interconnected surface water**

The second potential corrective action relates to the GSP's lack of explanation and justification for the use of groundwater levels as a proxy for depletions of interconnected surface water.

### **Background**

The GSP Regulations allow for a GSP to establish representative groundwater level thresholds that serve as minimum thresholds for other sustainability indicators if the GSA can demonstrate the representative groundwater level value is a reasonable proxy, supported by adequate evidence.

### **GSP-Specific Deficiency**

The GSP lacks a demonstration, with supporting evidence, of the reasonableness of using groundwater level thresholds as a proxy for depletion of interconnected surface water. The GSP states that “[b]y setting minimum thresholds on shallow groundwater wells near surface water, the [GSA] can to (*sic*) monitor and manage [the hydraulic gradient between surface water and groundwater], and in turn, manage potential changes in depletions of interconnected surface [water].”<sup>21</sup> However, in defining the groundwater level proxies for depletion of interconnected surface water, the GSA appears to have used all the groundwater level thresholds it defined for chronic lowering of groundwater levels regardless of depth of the well or proximity to surface water. It is not obvious to Department staff why managing the Basin to the complete set of chronic lowering of groundwater level thresholds is sufficient to avoid undesirable results for depletion of interconnected surface water, especially since many of those groundwater level thresholds represent conditions that are lower than current conditions.

### **Addressing the Deficiency**

The GSA should provide a demonstration, with supporting evidence, for why using the basinwide groundwater level minimum thresholds is a reasonable proxy for thresholds for depletion of interconnected surface water.

## **Potential Corrective Action 3. Further address degraded water quality**

The third potential corrective action relates to the GSP's apparent lack of consideration of the best available information and data regarding water quality, and the resultant effects on the GSP's description of water quality conditions, water quality sustainable management criteria, and monitoring for certain water quality constituents.

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<sup>21</sup> Cuyama Basin GSP, Section 3.2.6, p. 263.

## Background

SGMA and the GSP Regulations do not require a GSP to address undesirable results associated with degraded water quality that occurred before, and have not been corrected by, January 1, 2015. However, management of a basin pursuant to an adopted GSP should not result in further water quality degradation that is significant and unreasonable, either due to routine groundwater use or as a result of implementing projects or management actions called for in the GSP.<sup>22</sup> SGMA provides GSAs with legal authority to regulate and affect pumping and groundwater levels, which have the potential to affect the concentration or migration of water quality constituents and result in degradation of water quality. Additionally, the GSP Regulations state that GSAs should consider local, state, and federal water quality standards when establishing sustainable management criteria,<sup>23</sup> and SGMA provides GSAs with the authority to manage and control polluted water and use authorities under existing laws to implement its GSP.<sup>24</sup> Thus, establishing sustainable management criteria and performing routine monitoring of water quality constituents known to affect beneficial uses and users is within the purview of a GSA.

## GSP-Specific Deficiency

Department staff believe the GSA's decision to not set sustainable management criteria for arsenic and nitrates may not be reasonable because the findings were not supported by the best available information.<sup>25</sup> The GSP focused on total dissolved solids (TDS), nitrates, and arsenic as a result of public comments received during GSP development.<sup>26</sup> The GSP includes sustainable management criteria for TDS but, despite acknowledging that nitrate and arsenic have exceeded maximum contaminant levels (MCL) prescribed by the State Water Board, the GSP did not establish sustainable management criteria for those constituents. Furthermore, the GSA does not intend to perform routine monitoring for nitrates and arsenic on the basis that they determined there is no "causal nexus" between the GSA's authority to implement projects and management actions and concentrations of arsenic or nitrate.<sup>27</sup>

In its justification for the lack of sustainable management criteria for nitrates and arsenic, the GSP explains that there were relatively few detections of those constituents above drinking water regulatory limits—two nitrate samples and three arsenic samples.<sup>28</sup> Regarding arsenic, the GSP states that the three arsenic detections above the MCL came

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<sup>22</sup> Water Code § 10721(x)(4); 23 CCR § 354.28(c)(4).

<sup>23</sup> 23 CCR § 354.28(c)(4).

<sup>24</sup> Water Code §§ 10726.2(e), 10726.8(a).

<sup>25</sup> While there is no definition of best available information, the GSP Regulations define best available science as the use of sufficient and credible information and data, specific to the decision being made and the time frame available for making that decision, that is consistent with scientific and engineering professional standards of practice.

<sup>26</sup> Cuyama Basin GSP, Section 2.2.7, p. 208.

<sup>27</sup> Cuyama Basin GSP, Section 4.8, p. 321.

<sup>28</sup> Cuyama Basin GSP, Section 5.5, p. 360-361.

from an inactive well and from groundwater deeper than 700 feet below ground surface, which the GSP states is below the range of pumping depths for drinking water.<sup>29</sup> In other words, the GSP states that arsenic was not detected above MCL in active wells shallower than 700 feet.<sup>30</sup> However, credible public comments submitted to the Department raised concerns about this claim and the data the GSA may or may not have considered, the GSA's interpretation of that data, and the decision of the GSA to not monitor or develop management criteria for those constituents. For example, a comment submitted to the Department indicates the State Water Board's Groundwater Ambient Monitoring and Assessment (GAMA) Program's Groundwater Information System contains records of arsenic concentrations exceeding the MCL in drinking water wells screened as shallow as 340 feet below ground surface.<sup>31</sup> Department staff confirmed that this claim appears to be true.

Regarding nitrates, a public comment submitted to the Department indicates that potentially 13 of 109 nitrate samples (12 percent) have exceeded the MCL in the past ten years,<sup>32</sup> which conflicts with the GSP's statement that only two samples during 2011 to 2018 exceeded the MCL.

### **Addressing the Deficiency**

Having identified them as constituents of concern, the GSA should reasonably and thoroughly address nitrate and arsenic in the GSP using best available information. Specifically, the GSA should consider the following:

1. Groundwater conditions. The Department received comments that raise credible technical issues regarding groundwater quality data that apparently were not considered when developing the GSP but are available to the public and likely, in the opinion of Department staff, to alter the GSA's assessment of the Basin conditions. The GSA should coordinate with interested parties that submitted comments, in particular with the Regional Water Quality Control Board, to obtain best available information regarding basinwide water quality. The GSA should evaluate this data, along with their existing data, and update the description of basinwide water quality in the GSP as appropriate.
2. Sustainable management criteria. After updating the information regarding existing groundwater quality conditions, the GSA should revise its discussion of groundwater quality sustainable management criteria to either include criteria for arsenic and nitrate or provide thorough, evidence-based descriptions for why

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<sup>29</sup> Cuyama Basin GSP, Section 2.2.7 and Section 4.8, p. 209 and 321.

<sup>30</sup> Cuyama Basin GSP, Section 2.2.7, p. 209.

<sup>31</sup> Central Coast Water Board Comments on Final Cuyama Valley Groundwater Sustainability Plan. Central Coast Regional Water Quality Control Board Comment Letter Submitted to the Department, 15 May 2020, <https://sgma.water.ca.gov/portal/service/gspdocument/download/4021>.

<sup>32</sup> *Ibid.*

groundwater management is not likely to cause significant and unreasonable degradation of groundwater by increasing concentrations of those constituents.

3. Monitoring networks. The GSA should appropriately revise its groundwater quality monitoring network based on updates to the GSP noted above. Department staff believe that, at a minimum, the GSA should include monitoring for arsenic and nitrates as they have been identified as constituents of concern and both appear to be relatively widespread. Monitoring will be important for the GSA to assess whether groundwater quality degradation for those constituents is occurring. The GSA may leverage existing programs that collect and disseminate water quality data and information. The GSA should address any data gaps in the groundwater quality monitoring network and provide specific schedules to address those data gaps.

#### **Potential Corrective Action 4. Provide explanation for how overdraft will be mitigated in the basin**

The fourth potential corrective action is related to the lack of a complete discussion of how overdraft will be mitigated in the entire basin through implementation of the GSP.

#### **Background**

GSP Regulations require that a GSP include a description of projects and management actions that the GSA has determined will achieve the sustainability goal for the basin, the timeline of implementation, and the sustainability indicators that are expected to benefit, including the circumstances in which they would be implemented.<sup>33</sup> For basins in overdraft, the description shall include a quantification of demand reduction or other methods for mitigating the overdraft.<sup>34</sup>

#### **GSP-Specific Deficiency**

The GSP identifies two management areas, Central Basin and Ventucopa, as the primary pumping areas in the Cuyama Valley that have the highest water demand. Groundwater levels in the Central Basin management area decline by a modeled 2 to 7.7 feet per year, whereas the Ventucopa management area decline by 2 to 3 feet per year.<sup>35</sup>

To meet the sustainability goal of the Basin, the GSA explains in detail throughout the GSP that a pumping reduction of 50 to 67 percent will be required.<sup>36</sup> Pumping reductions would begin in 2023 and become progressively larger each successive year, with full implementation of the total pumping reduction in 2038.<sup>37</sup>

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<sup>33</sup> 23 CCR § 354.44.

<sup>34</sup> 23 CCR § 354.44(b)(2).

<sup>35</sup> Cuyama Basin GSP, Figure 7-1, p. 387.

<sup>36</sup> Cuyama Basin GSP, Executive Summary and Table 2-7, p. 26 and 254.

<sup>37</sup> Cuyama Basin GSP, Figures ES-15 and 8-1, p. 32 and 419-420.

However, the GSP only intends to implement those pumping reductions in the Central Basin management area and does not explain why pumping reductions will not be implemented in the Ventucopa management area. The GSP executive summary states that “[p]umping reductions are not currently recommended for the Ventucopa Area” and instead recommends “to perform additional monitoring, incorporate new monitoring wells, and further evaluate groundwater conditions in the area over the next two to five years” and that “[o]nce additional data are obtained and evaluated, the need for any reductions in pumping will be determined.”<sup>38</sup> These cited details from the executive summary are the extent of the GSP’s description of the plans for possible demand management in the Ventucopa management area.<sup>39</sup> Lack of detail for this area is concerning because it appears to Department staff as though the GSA’s defined minimum thresholds, which should represent a point in the Basin that, if exceeded, may cause undesirable results<sup>40</sup>, in the Ventucopa management area could be exceeded in as soon as two years if two feet per year of groundwater level decline continues.<sup>41</sup> It is also concerning because the GSP explains that “[d]omestic water users in [the Ventucopa and Central Basin management areas] are experiencing water supply challenges, and in the 2012-2016 drought experienced well failures.”<sup>42</sup>

In addition to the Ventucopa Area, the GSP also does not discuss why projects and management actions were not considered in the Northwestern threshold region, where, as noted above in Potential Corrective Action 1, it appears that overdraft will occur for some time and the allowable groundwater-level decline is over 100 feet.

### **Addressing the Deficiency**

The GSA should explain the rationale for not implementing pumping reductions in the overdrafted Ventucopa management area or any other portion of the Basin where overdraft is expected to continue, and explain the timeline and criteria that may be used to determine whether future pumping reduction allocations are needed.<sup>43</sup> If the criteria to implement pumping reductions are related to the effects on beneficial uses and users, as mentioned in Potential Corrective Action 1, the GSP should clarify what those effects are that would necessitate pumping reductions.

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<sup>38</sup> Cuyama Basin GSP, Executive Summary, p. 32.

<sup>39</sup> Cuyama Basin GSP, Executive Summary and Section 7.3.2, p. 32 and 410.

<sup>40</sup> 23 CCR § 354.28(a).

<sup>41</sup> Maps in the GSP appear to indicate two representative monitoring wells are located in the Ventucopa Management Area, OPTI wells 62 and 101. The minimum threshold at OPTI Well 62 is 182 feet below ground surface and the water level as of December 2020 was 158.4 feet below ground surface; at two feet per year the minimum threshold will be exceeded in approximately 12 years. The minimum threshold at OPTI Well 101 is 111 feet below ground surface and the water level as of December 2020 was 108.6 feet below ground surface; at two feet per year the minimum threshold could be exceeded in approximately 2 years.

<sup>42</sup> Cuyama Basin GSP, Section 7.2.4, p. 405.

<sup>43</sup> 23 CCR §§ 355.4(b)(3), 355.4(b)(4), 355.4(b)(5), 355.4(b)(6).

The GSP states well failures occurred during the 2012-2016 drought. The GSP also projects a lowering of groundwater levels beyond those observed during the drought and below 2015 conditions. If, after considering this deficiency and the deficiency associated with Potential Corrective Action 1, the GSA retains minimum thresholds that allow for continued lowering of groundwater levels, then it is reasonable to assume that additional wells may be impacted during implementation of the Plan. While SGMA does not require all impacts to groundwater uses and users be mitigated, the GSA should consider including mitigation strategies describing how drinking water impacts that may occur due to continued overdraft during the period between the start of GSP implementation and achievement of the sustainability goal will be addressed. If mitigation strategies are not included, the GSP should contain a thorough discussion, with supporting facts and rationale, explaining how and why the GSA determined not to include specific actions to mitigate drinking water impacts from continued groundwater lowering below 2015 levels.



## Attachment 2



**Directors:**

Derek Yurosek  
*Chair*

Lynn Compton  
*Vice Chair*

Byron Albano

Cory Bantilan

Paul Chounet

Zack Scrivner

Glenn Shephard

Lorena Stoller

Matt Vickery

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**Staff:**

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August 27, 2021

Craig Altare, P.G.  
Supervising Engineering Geologist | Groundwater Sustainability Plan Review Section Chief  
California Department of Water Resources  
901 P Street, Room 313-B  
Sacramento, CA 95814

Re: Cuyama Basin GSA Response to DWR's June 3, 2021, Consultation Letter

Dear Mr. Altare:

The Cuyama Basin Groundwater Sustainability Agency (CBGSA) appreciates the California Department of Water Resources' (DWR) Consultation Letter dated June 3, 2021 (Letter) (Attachment 1), and the advanced time to address deficiencies DWR identified in the CBGSA's Groundwater Sustainability Plan (GSP). The CBGSA Board of Directors' (Board) intends to address the four Potential Corrective Actions identified by DWR in a satisfactory way prior to DWR's final determination of GSP status in January 2022.

At the August 18, 2021, Board meeting, the Board discussed various options to address the four Potential Corrective Actions provided in DWR's Letter. Following extensive public discussion and review, the Board approved specific responses to those Potential Corrective Actions, as detailed below.

In implementing the Board's direction, the CBGSA will:

- Perform additional technical analyses and develop draft technical content responsive to DWR's comments that will be reviewed and considered at a Special Standing Advisory Committee and Board meeting in mid-to-late October 2021.
- Develop a memorandum and Board resolution describing the CBGSA's responsive actions that will be reviewed and considered by the Board at its November 2021 meeting for submittal to DWR.

**Potential Corrective Action No. 1**

*Provide justification for, and effects associated with, the sustainable management criteria.*

The CBGSA will perform a technical analysis of minimum thresholds in relation to production well depths and Groundwater Dependent Ecosystems (GDE) locations, including investigation of individual wells. Using available data, the analysis will consider well depths, perforations, and the distribution of well age in the Cuyama

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groundwater basin (Basin). In addition, a modeling analysis will be performed in the Northwestern region of the Basin to evaluate the effects of pumping drawdown in that area on nearby domestic wells and GDEs. Finally, a more detailed investigation will be performed on GDEs in the Northwestern threshold region by a biologist and hydrogeologist.

The results of these analyses will be used to develop a more detailed narrative on potential undesirable results, discussion of how beneficial uses and users were considered, potential economic impacts (from the direct and indirect economic analyses performed by ERA), and their relationship to sustainability criteria in the GSP. This will be included in the memorandum to be provided to DWR.

**Potential Corrective Action No. 2**

*Use of groundwater levels as a proxy for depletion of interconnected surface water.*

The CBGSA will identify a subset of existing groundwater level monitoring wells to be used for Interconnected Surface Water (ISW) monitoring. Further, the CBGSA will develop appropriate undesirable results criteria for ISW. Wells for the ISW monitoring network will be selected by considering both proximity to the river and perforation depth. While the Basin currently has limited historical data and limited existing monitoring resources to characterize surface water flows and groundwater, the CBGSA is pursuing improvements to monitoring with new USGS flow gauges and new piezometers that can improve understanding of ISW in the Basin going forward.

The memorandum to be provided to DWR will describe the revised ISW monitoring network and how ISW monitoring will be improved once additional monitoring resources are available.

**Potential Corrective Action No. 3**

*Further address degraded water quality.*

The CBGSA will review all available existing water quality data to develop an evidence-based description of why groundwater management is unlikely to cause significant and unreasonable degradation of groundwater. It will also identify existing agencies that serve as primary regulators of water quality in the Basin. CBGSA intends for those agencies to continue serving that regulatory role in the Basin, specifically related to arsenic and nitrates. Finally, the CBGSA will take a measurement for nitrates and arsenic in each water quality monitoring well in 2022 to establish a baseline understanding of nitrate and arsenic.

These actions will be described in the memorandum to be provided to DWR.

**Potential Corrective Action No. 4**

*Provide explanation for how overdraft will be mitigated in the basin.*

DWR commented that the "lack of detail for [the Ventucopa Area] is concerning because it appears to Department staff as though the GSA's defined minimum thresholds, which should represent a point in the Basin that, if exceeded, may cause undesirable results, in the Ventucopa management area could be exceeded in as soon as two years if two feet per year of groundwater level decline continues." In response, the CBGSA will provide more detail on its management decisions for the Ventucopa Area by

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describing model deficiencies in the context of operational knowledge and local expertise for that region. This will be included in the memorandum to be provided to DWR.

For the Northwestern Region threshold region, DWR commented that "the GSP also does not discuss why projects and management actions were not considered in the Northwestern threshold region, where, as noted above in Potential Corrective Action 1, it appears that overdraft will occur for some time and the allowable groundwater-level decline is over 100 feet." In response, the CBGSA will utilize the analyses to be performed under Potential Corrective Action No. 1, as well as other available information, to provide a rationale for the CBGSA's decisions for management actions in that region. This will be included in the memorandum to be provided to DWR.

#### **DWR / CBGSA Coordination**

CBGSA staff and an ad hoc committee of the Board would like to meet with DWR staff to discuss the CBGSA's approach to addressing the Potential Corrective Actions. CBGSA staff will contact DWR soon to coordinate this meeting.

The CBGSA appreciates the opportunity to address these issues and believes DWR's concerns can be addressed resulting in a successfully approved GSP in January 2022.

Please feel free to contact Taylor Blakslee at (661) 477-3385, or [tblakslee@hgcpm.com](mailto:tblakslee@hgcpm.com) if you have any questions.

Sincerely,



Derek Yurosek  
Board Chairman  
Cuyama Basin Groundwater Sustainability Agency