State Water Resources Control Board

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NORTH AND SOUTH YUBA GROUNDWATER SUSTAINABILITY PLAN, GROUNDWATER SUBBASINS NO. 5-021.60 AND NO. 5-021.61

The State Water Resources Control Board (State Water Board) staff are providing these comments in support of the Department of Water Resources' (DWR) review of the Groundwater Sustainability Plan (GSP) for the North Yuba and South Yuba Groundwater Subbasins (subbasins). Given that the subbasins are not currently critically overdrafted, staff is only commenting on contents related to the treatment of depletions of interconnected surface water (ISW) in the following GSP sections:

- Basin Setting
- Monitoring Networks
- Sustainable Management Criteria

Basin Setting

1. State Water Board staff recommends that monitoring of shallow/intermediate groundwater levels, especially near the main rivers, should be an immediate priority to understand ISW and groundwater-dependent ecosystems (GDEs), and the Groundwater Sustainability Agencies (GSAs) should clarify the timeline for installing additional monitoring wells. The GSP states that groundwater hydrographs of wells in shallow groundwater correlate with river stage or show only a muted response to groundwater pumping (Section 2.2.2.1.3, pages 2-103 – 2-106; Section 2.2.2.7, page 2-143). Yet multi-level monitoring wells (Section 2.2.2.1.3, pages 2-103 – 2-106) and well clusters (Section 2.2.2.7, pages 2-143 – 2-144) in the subbasins show that intermediate-level groundwater and some shallow groundwater are influenced by groundwater pumping and move along downward vertical flow gradients (Section

2.2.2.1.3, pages 2-103 – 2-106). The GSP also acknowledges that shallow groundwater is the primary influence on ISW (Section 2.2.2.6, page 2-136; Section 4.3.6.4, pages 4-7 – 4-8).

2. The GSP states that the "shallow [aquifer] system is thin and not thought to store, transmit, and yield significant quantities of water, and is thus not a principal aquifer as defined by SGMA" (Section 2.2.1.0, page 2-70). Sufficient monitoring well data is not available to confirm the accuracy of this conclusion. If the additional shallow well data referenced in comment number 1, above, demonstrate that shallow groundwater is hydraulically connected to deeper groundwater and provides significant recharge to deeper groundwater and/or discharges to surface water, the GSAs should refine the Hydrogeologic Conceptual Model to recognize shallow groundwater as part of the principal aquifer[1] in the subbasins.

3. State Water Board staff recommends that the GSAs further characterize the relationship between minor streams and shallow groundwater. The GSP states that "minor streams typically maintain flow throughout the summer due to agricultural deliveries, tailwater, or subsurface flow from irrigation" (Section 2.2.2.6.1, pages 2-139 – 2-140). The anthropogenic influence on the source of water to these streams does not mean these streams are not connected to shallow groundwater, which is recharged by precipitation and irrigation return water.

4. State Water Board staff recommends using streamflow measurement surveys to further validate gaining and losing reaches and their temporal variations. The GSP bases its estimates of the timing and degree of surface water interconnection on output from the Yuba Groundwater Model (YGM) (Section 2.2.2.6, page 2-136); however, due to limited gage data and limited shallow groundwater data near streams, the YGM output for gaining and losing reaches has significant uncertainties that could be reduced. Additional streamflow measurements from surveys or additional gages could improve the accuracy of output related to surface water-groundwater interconnection.

5. State Water Board staff disagrees with the GSAs' approach for identifying groundwater dependent ecosystems. The GSP states the following:

   the identification of GDEs within the Yuba Subbasins was performed based on this question: "Would the ecosystem not exist if groundwater levels were deeper?" If the

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[1] "Principal aquifers" refer to "aquifers or aquifer systems that store, transmit, and yield significant or economic quantities of groundwater to wells, springs, or surface water systems." (23 CCR § 351, subd. (aa).)

answer is “yes,” then it is a GDE. If the answer is ‘no, the ecosystem would exist if groundwater levels were deeper,” then it is not a GDE (Section 2.2.2.7, page 2-140).

This method for identifying GDEs may exclude ecological communities that partially rely on groundwater during parts of the water year, in certain water years, or during certain life stages of GDE flora and fauna. These types of ecological communities might temporarily exist if groundwater were deeper, but may cover less acreage, fail to regenerate or be generally less resilient to ecological disturbance (e.g., drought, wildfire). State Water Board staff recommends that the GSP include potential GDEs until further analysis of groundwater levels near a potential GDE location can be used to determine its connection to groundwater.

Monitoring Networks

6. State Water Board staff agrees with the GSP’s identification of the data gap regarding “stream-aquifer interaction, particularly in and near the Yuba Goldfields” and “groundwater conditions near GDE and other vegetation” (Section 3.2.1.6, page 3-10). Staff recommends that the GSAs prioritize resolving such data gaps. Additional data on stream-aquifer interaction in the Yuba Goldfields will be important for characterizing shallow groundwater, determining if potential GDEs are reliant on groundwater at any point during the water year, and refining the YGM.

Sustainable Management Criteria

7. State Water Board staff believe the GSP does not contain sufficient evidence to support its reliance on groundwater levels as a proxy for measuring depletions of ISW. The GSP proposes monitoring for depletions of ISW using groundwater elevations in the deeper groundwater as a proxy in the GSP, yet the GSP does not provide sufficient evidence that a “significant correlation exists between groundwater elevations” of the deeper groundwater and depletions of ISW (Cal. Code Regs., tit. 23 § 354.36, subd. (b)(1)) (see Comment #1). The GSP acknowledges that the depletions of ISW are more correlated with groundwater levels in the shallow groundwater, but the GSP relies on the YGM model and uses the deep groundwater levels as a proxy because of limited monitoring data from shallow groundwater. However, the GSP also acknowledges data gaps and uncertainty regarding the hydraulic connectivity between shallow groundwater, deep groundwater, and surface water. State Water Board staff recommends that the GSAs use data from additional shallow groundwater wells to clarify the Hydrogeologic Conceptual Model as to where shallow and deep groundwater are connected. The YGM should also be updated as needed.

If the additional data do not support the use of deeper groundwater elevations as a proxy for depletions of ISW, then State Water Board staff recommends that the GSP establish Sustainable Management Criteria based on the volume, rate, and timing of surface water depletions caused by groundwater pumping. The impacts of the volume, rate, and timing of surface water depletions caused by groundwater pumping to environmental beneficial users should be described in either case (Cal. Code Regs., tit. 23, § 354.28, subd. (c)(6)).

8. Board staff recommends the GSP further evaluate the potential locations, quantity, and timing of stream depletions. The GSP models groundwater level decline to the minimum threshold (MT) for chronic lowering of groundwater levels and concludes that the resulting streamflow depletions in the major rivers are not significant and unreasonable by comparing the additional amount of annual depletion to the total annual flow of the river (Section 4.3.6.4, pages 4-7 – 4-11). This approach misses potential seasonal impacts of stream depletion. While the total annual flow is dominated by high flows from winter storms or spring and summer snowmelt, the depletion impacts to surface water and environmental beneficial users would be most severe at low flow conditions. Therefore, the GSP has not demonstrated that the MTs for chronic decline of groundwater levels sufficiently prevent significant and unreasonable depletions of ISW. The GSP Regulations require monitoring of surface water and groundwater where ISW conditions exist to characterize the spatial and temporal exchanges between surface water and groundwater (Cal. Code Regs., tit. 23, § 354.34, subd. (c)(6)). The GSP should revisit its description of surface water-groundwater interconnection and perform more detailed analysis of impacts to beneficial users based on the model results.

9. The analysis of depletions of ISW does not adequately consider the impacts of the GSP's sustainable management criteria for depletions of ISW to GDEs and environmental beneficial users of surface water in the subbasins (Cal. Code Regs., tit. 23, § 354.28, subd. (c)(6)). For example, the GSP states the following:

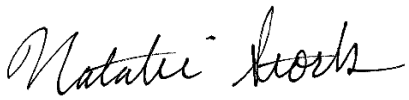
> Modeling scenarios indicated that the groundwater level sustainability indicator would prevent additional depletions of approximately 9,200 AFY, on an annual average, from the Bear River...Groundwater conditions in the 1980s were similar to this hypothetical condition. There are no known records indicating that depletions of the Bear River during the 1980s were considered problematic (Section 4.3.6.4.3, page 4-10).

The fact that there are no known records of impacts from depletions of ISW in the 1980s does not mean there were no impacts, and it is possible that impacts to GDEs would not have been acknowledged or considered to merit concern at the

time. The GSP should more specifically analyze and describe the impacts to environmental beneficial users of groundwater and ISW, including protected habitat for salmon in the Yuba, Feather, and Bear rivers.

If you any have questions regarding these comments, please do not hesitate to contact State Water Board Groundwater Management Program staff by email at SGMA@waterboards.ca.gov or by phone at 916-322-6508.

Sincerely,



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