

DEPARTMENT OF WATER RESOURCES

DIVISION OF FLOOD MANAGEMENT
PO Box 219000
Sacramento, CA 95821-9000



May 14, 2020

Via Electronic Mail and Online Submission

Craig Altare
Supervising Engineering Geologist
Sustainable Groundwater Management Office
California Department of Water Resources
901 P Street, Room 213
Sacramento, California 94236
Email: Craig.Altare@water.ca.gov

Subject: Comments on Groundwater Sustainability Plans for Borrego Springs
GSP #7-024.01

Dear Mr. Altare:

The California Department of Water Resources Division of Flood Management (DWR-DFM) has recently provided the attached comments to Kathy Rice and Helen Robins-Myers GSP Plans Contacts regarding the Groundwater Sustainability Plan (GSP) prepared for the Borrego Springs Subbasin. DWR-DFM is transmitting those comments to your office for your consideration.

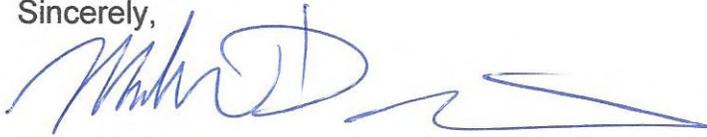
As you know, the Sustainable Groundwater Management Act (SGMA), requires state agencies to consider SGMA policies when carrying out their functions:

California Water Code §§10720.9. All relevant state agencies, including, but not limited to, the board, the regional water quality control boards, the department, and the Department of Fish and Wildlife, shall consider the policies of this part, and any groundwater sustainability plans adopted pursuant to this part, when revising or adopting policies, regulations, or criteria, or when issuing orders or determinations, where pertinent.

Subsequently, DWR-DFM has reviewed the GSPs for critically overdrafted groundwater basins submitted to your office in January 2020 to consider their potential effects on flood management and flood risk. DWR-DFM appreciates the opportunity to provide comments on GSPs and looks forward to further dialogue with Groundwater Sustainability Agencies and local floodplain managers to further explore groundwater – flood management linkages. If you have any questions please contact S. Greg Farley at Stuart.Farley@water.ca.gov or 916-764-7280.

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Sincerely,

A handwritten signature in blue ink, appearing to read "Michael Mierzwa", with a long horizontal flourish extending to the right.

Michael Mierzwa, P.E.
State Floodplain Manager

Attachment: Borrego Springs Subbasin comment letter

DEPARTMENT OF WATER RESOURCES

DIVISION OF FLOOD MANAGEMENT
PO Box 219000
Sacramento, CA 95821-9000



May 14, 2020

Ms. Kathy Dice, President
Borrego Water District
806 Palm Canyon Drive
Borrego Springs, California 92004

Ms. Helen Robins-Meyers
County of San Diego Chief Administrative Officer
1600 Pacific Highway
San Diego, California 92101

Dear Ms. Dice and Ms. Robins-Meyers,

Thank you for your important work in developing the Borrego Springs Sub-basin Groundwater Sustainability Plan (GSP) as required by the Sustainable Groundwater Management Act of 2014 (SGMA). As you know, the California Department of Water Resources (DWR) has direct responsibilities in implementing SGMA, including evaluating GSPs and issuing plan assessments. These tasks are being carried out by DWR's Sustainable Groundwater Management Office, who will continue to work with you throughout the SGMA process. DWR has additional, separate responsibilities, similar to other stakeholders, to review GSPs and consider potential effects on and relationships to DWR's other important programs. To that end, DWR's Division of Flood Management (DWR-DFM) has reviewed your GSP and is providing comments regarding its potential effects related to flood risk.

DWR-DFM is dedicated to preventing loss of life and reducing property damage caused by floods by monitoring weather and river conditions, issuing forecasts, coordinating flood response, managing emergency information, participating in flood control projects, implementing FloodSAFE California and the Central Valley Flood Protection Plan, and inspecting and maintaining levees, bypasses, weirs, and other flood control structures. In addition to carrying out specific mandates for operating and maintaining the State Plan of Flood Control within the Central Valley, DWR-DFM aids and supports local flood management efforts across the state including cooperation with the Federal Emergency Management Agency (FEMA) and local communities in carrying out the requirements of FEMA's National Flood Insurance Program (NFIP).

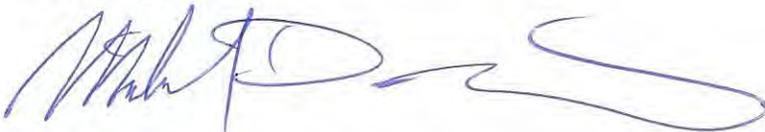
Ms. Dice and Ms. Robins-Meyers
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DWR recognizes that there are important links between flood management and groundwater management. Significantly, land subsidence can result in loss of conveyance capacity in floodways, diminished levee effectiveness, damage to flood control structures and drainage structures, and increased land area subject to inundation. Activities which increase flood risk have the added effect of potentially increasing local and State liability, as well as the cost of flood insurance premiums offered to property owners by FEMA's NFIP.

Based on DWR-DFM's review, your GSP reports that no or minor subsidence has occurred historically within the plan's boundaries and has not resulted in significant known effects. However, we are also aware of historic alluvial fan flooding in the Borrego Springs community. As you move forward with implementation of your GSP under SGMA, DWR-DFM recommends that you expand your consideration of Undesirable Results to include potential effects of subsidence on flood risk.

DWR-DFM appreciates the opportunity to review the Borrego Springs Sub-basin GSP. If you have any questions or would like to explore how DWR-DFM might be of assistance to your Groundwater Sustainability Agency in implementation of your GSP, please contact Ricardo Pineda, P.E., at Ricardo.Pineda@water.ca.gov or (916) 574-0632.

Sincerely,



Michael Mierzwa, P.E.
State Floodplain Manager



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
South Coast Region
3883 Ruffin Road
San Diego, CA 92123
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



May 15, 2020

Via Electronic Mail and Online Submission

Craig Altare
Supervising Engineering Geologist
California Department of Water Resources
901 P Street, Room 213
Sacramento, CA 94236
Craig.Altare@water.ca.gov

Dear Mr. Altare:

Subject: COMMENTS ON THE BORREGO SPRINGS GROUNDWATER SUBBASIN PROPOSED STIPULATED JUDGEMENT AND GROUNDWATER MANAGEMENT PLAN

The California Department of Fish and Wildlife (Department) Region 5 South Coast Region is providing comments on the Borrego Water District (BWD) Proposed Stipulated Judgement and Draft Final Groundwater Management Plan for the Borrego Springs Groundwater Subbasin (GMP), prepared as an alternative to a Groundwater Sustainability Plan (GSP), pursuant to the Sustainable Groundwater Management Act (SGMA). Through a Stipulated Judgement establishing a Watermaster, the BWD proposes to withdraw as a Groundwater Sustainability Agency (GSA). As trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species (Fish & Game Code §§ 711.7 and 1802).

Development and implementation of GSPs under SGMA represents a new era of California groundwater management. The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and species depend on groundwater and interconnected surface waters, including ecosystems on Department-owned and -managed lands within SGMA-regulated basins, and ecosystems on Department lands that fall within an alluvial groundwater basin adjacent to the Borrego Springs Groundwater Subbasin (7-024.02). SGMA and its implementing regulations afford ecosystems and species specific statutory and regulatory consideration, including the following as pertinent to Groundwater Sustainability Plans:

- Groundwater Sustainability Plans must **identify and consider impacts to groundwater dependent ecosystems (GDEs)** [23 CCR § 354.16(g) and Water Code § 10727.4(l)];
- Groundwater Sustainability Agencies must **consider all beneficial uses and users of groundwater**, including environmental users of groundwater [Water

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Code §10723.2 (e)]; and Groundwater Sustainability Plans must **identify and consider potential effects on all beneficial uses and users of groundwater** [23 CCR §§ 354.10(a), 354.26(b)(3), 354.28(b)(4), 354.34(b)(2), and 354.34(f)(3)];

- Groundwater Sustainability Plans must **establish sustainable management criteria that avoid undesirable results** within 20 years of the applicable statutory deadline, including **depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water** [23 CCR § 354.22 *et seq.* and Water Code §§ 10721(x)(6) and 10727.2(b)] and **describe monitoring networks** that can identify adverse impacts to beneficial uses of interconnected surface waters [23 CCR § 354.34(c)(6)(D)]; and
- Groundwater Sustainability Plans must **account for groundwater extraction for all water use sectors** including managed wetlands, managed recharge, and native vegetation [23 CCR §§ 351(a) and 354.18(b)(3)].
- Alternatives to Groundwater Sustainability Plans may be submitted by a local agency [Water Code §§10733.6 and 10737.4] **that will not substantially impair the ability to achieve sustainable groundwater management** [Water Code § 10737.8].

Furthermore, the Public Trust Doctrine imposes a related but distinct obligation to consider how groundwater management affects public trust resources, including navigable surface waters and fisheries. Groundwater hydrologically connected to navigable surface waters or surface waters supporting fisheries, and surface waters tributary to navigable surface waters or surface waters supporting fisheries, are also subject to the Public Trust Doctrine to the extent that groundwater extractions or diversions affect or may affect public trust uses (*Environmental Law Foundation v. State Water Resources Control Board* (2018), 26 Cal. App. 5th 844; *National Audubon Society v. Superior Court* (1983), 33 Cal. 3d 419). Accordingly, groundwater plans should consider potential impacts to and appropriate protections for interconnected surface waters and their tributaries, and interconnected surface waters that support fisheries, including the level of groundwater contribution to those waters.

In the context of SGMA statutes and regulations, and Public Trust Doctrine considerations, the Department values groundwater planning that carefully considers and protects environmental beneficial uses and users of groundwater including fish and wildlife and their habitats, groundwater dependent ecosystems, and interconnected surface waters.

COMMENT OVERVIEW

The Department supports ecosystem preservation and enhancement in compliance with SGMA and its implementing regulations based on Department expertise and best available information and science. The proposed Stipulated Judgement is proposed to, in combination with the GMP, constitute the physical solution and achieve sustainable

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groundwater management provided that the provision of the Judgement controls over and supersedes any contrary provisions with the GMP.

The Department recommends the Proposed Stipulated Judgement specify that groundwater extraction will be reduced to the sustainable yield estimate of 5,700 acre-feet a year (AFY) by 2040, provide for mandatory reductions in groundwater extractions by entities that pump more than their yearly allocation, and specifically defer to the GMP with regard to the use of the best available science to develop the water budget, adequately estimate sustainable yield, address data gaps, and address undesirable results to groundwater dependent ecosystems (GDEs). The GMP consists of the previously reviewed GSP that includes modifications to the Draft Borrego Valley Groundwater Basin GSP (BVGSP) to conform its terms to the proposed Stipulated Judgment. Consistent with comments on the Borrego Valley Groundwater Sustainability Agency's *Draft Groundwater Sustainability Plan for the Borrego Valley Groundwater Basin* (2019) previously submitted to the Borrego Valley GSA on May 20, 2019 (Attachment A), the Department recommends the GMP adequately describe the basin setting, rely on the best available science to develop the water budget, adequately estimate sustainable yield, address data gaps associated with potential groundwater flux at the Coyote Creek fault, include undesirable results to GDEs in adjacent groundwater basins, and address data gaps in the proposed monitoring. Where the Department's initial comments have not yet been fully addressed, they are restated in this letter with updated page citations or sections numbers when available.

COMMENTS AND RECOMMENDATIONS

The Department comments are as follows:

- 1. Proposed Stipulated Judgement, Section II.E (Determination of Sustainable Yield).** The determination of sustainable yield is not based on the best available science. This section proposes that a refined and specific sustainable yield will be determined by the Watermaster by January 1, 2025 and periodically updated thereafter but does not specify the details on how this determination will be made or commit to a specific procedure. The section refers to the recommendations of a Technical Advisory Committee that are to be based on, "...best science and data..." and the use of the U.S. Geological Survey (USGS) Borrego Valley Hydrological Model (BVHM), but does not specify the assumptions and input to be used. It is noted that the initial sustainable yield is 5,700 acre-feet per year (AFY) and that this sustainable yield determination is based on the 2015 BVHM that was modified for the BVGSP and supported by the information within the GMP. Based on the use of the more recent time period of 2007-2016 as described in Table 1 (Section 2.6.8 of *Update to United States Geological Survey Borrego Valley Hydrologic Model for Borrego Valley Sustainability Agency* dated July 2019; Appendix D1 of the Plan), the sustainable yield estimate could reasonably be calculated to be as low as the 2007-2016 inflow estimate of 4,737 AFY. Considering that California's Fourth Climate Change Assessment indicates

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future higher temperatures and trends of less precipitation for California's southern desert areas (Bedsworth et. al. 2018), the Department believes that a higher sustainable yield estimate in the GMP is not reasonable or scientifically supported.

- a. Issue: The methodology to calculate sustainable yield proposes use of the BVHM but does not adequately specify the assumptions and input to be used. The Department has previously expressed concerns (see Comment # 6) that the assumptions used for the BVHM do not represent the best available science.
 - b. Recommendations: First, revise assumptions and input used in the BVHM as specified below (see Comments # 5, 6, 11, 12, and 13) prior to using the BVHM to revise sustainable yield estimate. Second, submit a specific procedure for calculation of sustainable yield estimate to the DWR for approval. Third, specify in Section II.E that the sustainable yield estimate used be no more than 5,700 AFY.
2. **Proposed Stipulated Judgement, Section II.E (Judgement as a basis of SGMA Compliance for the Basin).** Insufficient information and data are known to formulate a reasonable and justified allocation of existing groundwater supplies. The GMP includes multiple data gaps (see Comments # 5, 11, 12, and 13) where the data needed to sustainably manage the Borrego Springs Groundwater Subbasin (BS Subbasin) does not exist.
- a. Issue: Multiple data gaps have been identified in the GMP (see Comments 5, 11, 12, and 13). The currently available information and data is inadequate to define and assess reasonable sustainable management criteria as required by Title 23 CCR section 354.12.
 - b. Recommendation: Incorporate a plan to address existing data gaps through monitoring efforts (see Comments # 5, 11, 12, and 13) within the GMP prior to adjudication.
3. **Proposed Stipulated Judgement, Section III.F (Process for Determining Sustainable Yield and Implementation of Subsequent Rampdown).** The implementation of the rampdown schedule as described may not achieve sustainable groundwater management within 20 years of the applicable statutory deadline, including depletions of interconnected surface water that have significant and unreasonable adverse impacts on beneficial uses of the surface water [23 CCR § 354.22 *et seq.* and Water Code § 10727.2(b)].
- a. Issue: Section A Introduction and Background Information states that, "This Judgment considered together with the Groundwater Management Plan ("GMP") attached hereto as **Exhibit "1"** constitutes the Physical Solution; provided, however, that the provisions of this Judgment control

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over and supersede any contrary provisions contained in the GMP.” At multiple locations in the GMP (e.g., Section 1.2), it is stated that the sustainability goal is to be met by 2040.

- b. Recommendation: In order to be aligned with applicable statutory deadlines, the Judgement should specify in Section III.F that the sustainability goal is to be met by 2040.
4. **Proposed Stipulated Judgement, Section III.G (Overproduction).** The safeguards to achieve sustainable groundwater management by controlling overproduction are not adequate.
 - a. Issue: The procedure of solely using an Overproduction Penalty Assessment fee as a means of preventing groundwater extraction in excess of the Baseline Pumping Allocation (BPA) is inadequate to deter overpumping. Penalty fees may be as little as \$500 per acre-foot and, given sufficient financial incentive, some entities may choose to “buy in” and pay the penalty. This does not comply with SGMA and would not support sustainable groundwater management.
 - b. Recommendation: The Department recommends overproduction be offset with a mandatory reduction in the BPA for the subsequent year. If the overproduction is not offset in the subsequent year, penalty fees should be imposed such that there is no financial incentive to overproduce. Repeated overproduction should be penalized by a suspension of the BPA.
5. **Groundwater Management Plan, Section 2.2 (Basin Setting).** The Basin Setting is not adequately described. Section 2.2.1.2 acknowledges that the hydraulic connectivity across the Coyote Creek fault between the BS Subbasin and the adjacent Ocotillo-Clark Valley Groundwater Basin is not precisely known, and the range of flux across this fault is estimated to be anywhere between 32 AFY and 3,200 AFY. This is noted as a data gap in the “Data Gaps” subsection as well (section 2.2.2.1; Groundwater Elevation Data). Data gaps in the GMP are a continued concern of the Department. Appendix G of the GMP includes the responses of the Borrego Valley GSA to the Department’s May 20, 2019 letter providing Comments on the Draft BVGSP (included as Attachment B). The Department does not agree with the response to Comment # 1 of the letter that the identification of data gaps equates to adequacy to use the available information to develop the water budget (Response S1-2). While we are in alignment with the statement that “...if the flow across the Coyote Creek Fault into the subbasin is substantial, it would have a positive rather than a negative effect on meeting the GSA’s sustainability criteria;” such an inflow would have a negative effect on the adjacent Ocotillo-Clark Valley Groundwater Basin that needs to be thoroughly identified and assessed. The analysis of potential impact

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of the inflow to the adjacent Ocotillo-Clark Valley Groundwater Basin (Basin 7-025) needs to be included in order to accurately describe the Basin Setting. As a point of reference, the annual recharge of the Ocotillo-Clark Valley Groundwater Basin is about 2,300 AFY as identified in *California's Groundwater Bulletin 118, Colorado River Hydrologic Region, Ocotillo-Clark Valley Groundwater Basin* available at <https://water.ca.gov/> and included as Attachment C. The potential flux across the Coyote Creek fault may be as large (up to 3,200 AFY) as the entire estimated recharge for the adjacent Ocotillo-Clark Valley Groundwater Basin.

- a. Issue: The BS Subbasin cannot be accurately characterized with such a wide range of potential influx. The influx range is inadequate to define and assess reasonable sustainable management criteria as required by Title 23 CCR section 354.12. This issue has been identified as a data gap on pp. 2-58 and 2-59.
 - b. Recommendation: The existing data gaps should be addressed, first, through installation of monitoring wells in the above-referenced basin and subbasin. After the data is collected, it should be analyzed and included in the GMP in order to provide a more comprehensive and complete Basin Setting.
6. **Groundwater Management Plan, Section 2.2.3 (Water Budget).** Assumptions are used for the BVHM that do not represent the best available science. The BVHM is used to develop the water budget and is appropriate to model groundwater in an agricultural setting with an arid/semi-arid environment; however, the output of the BVHM is dependent on the validity of the data set used by the model. If the data input is incorrect, it can yield an inaccurate result. In section 2.2.3.3 it is noted that the BS Subbasin lost 7,300 AFY from storage during the 1945-2016 time-period, and the average loss for the last 10 years was 13,700 AFY. This information indicates that more recent years are characterized by higher extraction rates potentially associated with climatic shifts. In Table 1 within Section 2.6.8 of *Update to United States Geological Survey Borrego Valley Hydrologic Model for Borrego Valley Sustainability Agency* dated July 2019 (included as Appendix D1 of the Plan), the average annual inflow (including unsaturated zone recharge) was calculated to be 6,700 AFY based on a simulation period of 1929 to 2010. Based on the most recent 20-year period (1997-2016) that inflow is 5,751 AFY, and on the most recent 10-year period (2007-2016) the amount is 4,737 AFY. Inclusion of older data to develop the model output can introduce a bias into model output.

Currently, the GMP does not adequately quantify the current inflows and outflows for the BS Subbasin using the most recent hydrology, water supply, and water demand information as required by Title 23 CCR section 354.18(c)(1) or provide a quantitative assessment of the historic water budget as required in Title 23

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CCR section 354.18(c)(2)(B). The Department does not contest, as stated in Response S1-4, "...that uncertainty exists within precipitation and recharge variability..." Rather, we consider climate change to be a factor that will add to this already existing uncertainty through an increase in temperatures, a decrease/variability in precipitation, and an increase in variability of recharge. It is understood from BWD's Comment S1-4 response to the Department that the period from 1929-1944 in the model is a "spin-up" period. The Department does not agree with the use of the longer time period as described in Response S1-5 that "[a]verage inflows from the entire run of the model update provide a reasonable estimate of potential basin inflows because they capture a variety of climatic conditions." The Department considers the most recent time periods to be more reflective of current and future climatic conditions.

- a. Issue: Using a long historical record of groundwater use can result in skewed BVHM outputs and water budget calculations towards inflow/outflow numbers that are not reflective of current climate and groundwater use patterns.
- b. Recommendation: The GMP should use datasets from the most recent 50-year period for precipitation, evapotranspiration, and streamflow information; and the GMP should use only the most recent 10-year period of a quantitative assessment of the historical water budget to estimate and project future water budget information and future aquifer response to proposed groundwater management practices.

7. **Groundwater Management Plan, Section 3 (Sustainable Management Criteria).** Section 3 lacks page numbers on most pages.

- a. Issue: Lack of page numbers in Section 3 causes difficulty in referencing specific information within the GMP.
- b. Recommendation: Add page numbers to Section 3.

8. **Groundwater Management Plan, Section 3.3 (Minimum Thresholds).** The list of elements required by Title 23 CCR Section 354.28(b) is misnumbered as numbers 4 through 9.

- a. Issue: Mis-numbering obscures reference and suggests the list is incomplete.
- b. Recommendation: Use correct numbers in list (numbers 1 through 6).

9. **Section 3.3 (Minimum Thresholds).** Title 23 CCR section 354.28(e) states, "...the description of minimum thresholds shall include the following: ...[h]ow minimum thresholds have been selected to avoid undesirable results in adjacent

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basins or affecting the basins ability to achieve sustainability goals.” Because of the unknown flux across the Coyote Creek fault and the known overdraft of the BS Subbasin, groundwater extraction in the BS Subbasin may be impacting recharge in the adjacent Ocotillo-Clark Valley Groundwater Basin. San Felipe Creek is a GDE within the Ocotillo-Clark Valley Groundwater Basin that has been experiencing groundwater declines that is causing severe impacts to State- and federally-endangered desert pupfish (*Cyprinodon macularius*) and designated critical habitat (DCH) for this species (see Attachment D).

- a. Issue: Minimum thresholds do not include consideration of undesirable results in adjacent basins.
- b. Recommendation: Include a consideration of GDEs in adjacent Ocotillo-Clark Valley Groundwater Basin within section 3.3.7 (Groundwater Dependent Ecosystems-Minimum Thresholds) and section 3.4.7 (Groundwater Dependent Ecosystems-Measurable Outcomes).

10. Groundwater Management Plan, Section 3.3.1.3 (Minimum Threshold Impacts to Adjacent Basins). Section 3.3.1.3 states that, “...adjacent Ocotillo-Clark Valley Groundwater Basin and Ocotillo Wells Subbasin are both “very low” priority basins not required to prepare GSPs. As such, they are not expected to develop descriptive undesirable results or quantitative minimum thresholds and measurable objectives.” Desert pupfish are protected under the California Endangered Species Act (CESA) and the federal Endangered Species Act (ESA). Potential impacts to desert pupfish and desert pupfish DCH at San Felipe Creek (see Attachment D) should be considered an undesirable result per Title 23 CCR section 354.28(e).

- a. Issue: Minimum thresholds do not include consideration of undesirable results in adjacent basins.
- b. Recommendation: A consideration of GDEs in adjacent Ocotillo-Clark Valley Groundwater Basin should be included within section 3.3.7: Groundwater Dependent Ecosystems-Minimum Thresholds and section 3.4.7:Groundwater Dependent Ecosystems-Measurable Outcomes.

11. Groundwater Management Plan, Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection. Section 3.5.4.2 states that, “[m]ulticompletion wells or well clusters screened at discrete intervals in the upper, middle and lower aquifers would be required to determine potentiometric surface by aquifer unit. However, the average potentiometric surface measured at wells that are screened over one or more aquifer units appears to sufficiently represent groundwater conditions...” The Department does not agree that wells screened at more than one aquifer sufficiently represent groundwater conditions. The Department agrees with the recommendation included within section 6 on p.23 of the *Update to Borrego Valley Hydrologic Model* where it is recommended

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to, “[c]onduct aquifer tests at wells screened only in the upper aquifer and only in the middle aquifer to obtain site-specific estimates of hydraulic conductivity and specific yield for each aquifer unit. This information may be used to enhance the calibration of the model to these hydraulic properties and our understanding of storage in the BVGB.” This information is also identified in the BVHM subsection 3.5.4.2 to address the aforementioned data gap. The use of wells screened only for the upper and middle aquifers will, “...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation” as required by Title 23 CCR section 354.34(a).

- a. Issue: The proposed use of wells screened at more than one aquifer would be inadequate to monitor groundwater conditions within each aquifer.
- b. Recommendation: Plan and install multicompletion wells or well clusters screened only in the upper aquifer and only in the middle aquifer to specifically monitor aquifer conditions within each aquifer.

12. Groundwater Management Plan, Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection. The BVHM subsection 3.5.4.2 also identifies the previously mentioned data gap associated with potential flux across the Coyote Creek fault (see Comment 5). The Department recommends that monitoring wells be installed on both sides of the Coyote Creek fault to evaluate subsurface inflow and outflow along and across the Coyote Creek fault in order to, “...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation,” as required by Title 23 CCR section 354.34(a).

- a. Issue: There is an unknown amount of groundwater flux across and/or along the Coyote Creek Fault.
- b. Recommendation: Plan and install monitoring wells on both sides of the Coyote Creek Fault and incorporate data analysis into the GMP.

13. Groundwater Management Plan, Section 3.5.4.2 (Identification of Data Gaps). The BVHM subsection 3.5.4.2 does not mention a data gap associated with spring systems. However, Figure 2.2-17 identifies multiple spring systems that may be associated with the Borrego Springs Groundwater Basin. Springs constitute a GDE. The Department recommends identifying what springs, if any, should be considered GDEs potentially impacted by the GMP through a phased approach. Springs that would potentially be impacted by groundwater decline in

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the Borrego Springs Groundwater Basin would most likely be associated with a regional fault system that provides a hydrologic connection between the springs and the alluvial basin. Springs associated with regional faults would likely exhibit elevated temperatures in comparison to springs that are not associated with the fault system. A simple procedure of measuring temperatures of the neighboring springs can identify those associated with the basin. A second method, such as measurement of dissolved Helium isotope ratio of those springs with elevated temperatures can positively identify those systems associated with a fault system. Waters in contact with regional fault systems tend to exhibit an atypical Helium isotope ratio (in comparison to surface waters) that is indicative of exposure to mantle derived Helium. If springs are associated with regional fault systems they should be considered potential GDEs and included within the Plan in order to, "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation," as required by Title 23 CCR section 354.34(a). It is acknowledged that, as stated in Response S1-11, that neither the Hydrogeological Conceptual model (HCM) nor the HCM developed to evaluate GDEs support the idea that there would be a hydrologic connection between springs originating in bedrock outside the BS Subbasin and the sediments within the BS Subbasin; however, it appears to be assumed that no such conditions exist without any supporting direct evidence.

- a. Issue: It is unknown if springs have a hydrologic connection to the BS Subbasin.
- b. Recommendation: Measure water temperatures among springs to identify those with potential hydrologic connection to regional fault systems and basin. Also, perform tests and calculate the Helium isotope ratio to verify potential GDEs.

14. Funding for the Environmental Working Group.

- a. Issue: The GMP does not provide a budget or dedicate funds to support the Environmental Working Group and protect public trust resources, including the GDEs.
- b. Recommendation: Implement an administrative fee on each acre-foot pumped to fund the Environmental Working Group or a Biological Resources Trust Fund that could be created in the Stipulated Judgement to better protect public trust resources, including the GDEs.

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CONCLUSION

In conclusion, the BWD Proposed Stipulated Judgement and Draft Final Groundwater Management Plan for the Borrego Springs Groundwater Subbasin does not comply with all aspects of SGMA statute and regulations, and the Department finds the plan is not presently sufficient to consider impacts on fish and wildlife beneficial users of groundwater. The Department recommends that the Department of Water Resources determine the GMP inadequate and require the BWD to address shortcomings before approving the plan for the following reasons derived from regulatory criteria for plan evaluation:

1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available information and best available science. [23 CCR 355.4(b)(1)] (See Comments #1, 3, 6, 9, and 10).
2. The Plan does not identify reasonable measures and schedules to eliminate data gaps. [23 CCR §355.4(b)(2)] (See Comments # 2, 5, 11, 12, and 13).
3. The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Plan. [23 CCR §355.4(b)(3)] (See Comments # 1, 2, 5, 11, 12, and 13).
4. The projects and management actions are not feasible and/or not likely to prevent undesirable results and ensure that the BS Subbasin is operated within its sustainable yield. [23 CCR §355.4(b)(5)] (See Comments # 1, 3, 4, 6, 9, 10, and 13).
5. The Plan does not include a reasonable assessment of overdraft conditions or include reasonable means to mitigate overdraft, if present. [23 CCR §355.4(b)(6)] (See Comments # 1, 2, 3, 4, and 6).
6. The Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal. [23 CCR §355.4(b)(7)] (See Comments #5, 9, 10, and 12)

The Department appreciates the opportunity to provide comments. Please contact Mary Ngo at Mary.Ngo@wildlife.ca.gov or Charley Land at Charles.Land@wildlife.ca.gov with any questions.

Sincerely,

DocuSigned by:

 5/14/2020
David Mayer

Environmental Program Manager, South Coast Region

Mr. Craig Altare, Supervising Engineering Geologist
California Department of Water Resources
May 15, 2020
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Enclosures (References; Attachments A-D)

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References

Bedsworth, L., D. Cayan, G. Franco, L. Fisher, S. Ziaja. (California Governor's Office of Planning and Research, Scripps Institution of Oceanography, California Energy Commission, California Public Utilities Commission). 2018. Statewide Summary Report. California's Fourth Climate Change Assessment. Publication number: SUMCCCA4-2018-013.

Borrego Valley Groundwater Sustainability Agency. 2019. Draft Groundwater Sustainability Plan for the Borrego Valley Groundwater Basin.

Department of Interior, Bureau of Land Management California Desert District, El Centro Field Office. 2017. Information/Briefing Memorandum for the California Desert District, El Centro Field Office – Desert Pupfish Management in San Sebastian Marsh.

Department of Water Resources. 2004. California's Groundwater Bulletin 118, Colorado River Hydrologic Region, Ocotillo-Clark Valley Groundwater Basin available at <https://water.ca.gov/>.

*CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMENTS ON THE GROUNDWATER
MANAGEMENT PLAN FOR THE BORREGO SPRINGS GROUNDWATER SUBBASIN*

Attachment A:

California Department Fish and Wildlife Letter on the Draft BVGSP (May 20, 2019)



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
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www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



May 20, 2019

Via Electronic Mail and Online Submission

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Subject: Comments on the Draft Borrego Valley Groundwater Basin Groundwater Sustainability Plan

Dear Mr. Bennett:

The California Department of Fish and Wildlife (Department) is providing comments on the Draft Borrego Valley Groundwater Basin Groundwater Sustainability Plan (GSP). As trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species [Fish & Game Code §§ 711.7 and 1802]. The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and public trust resources depend on groundwater and interconnected surface waters, including ecosystems on Department lands that fall within an alluvial groundwater basin adjacent to the Borrego Springs Groundwater Subbasin (7-024.02).

COMMENT OVERVIEW

The Department is writing to support ecosystem preservation and enhancement under Sustainable Groundwater Management Act (SGMA) implementation in the context of the following SGMA statutory mandates and with the benefit of Department expertise.

SGMA affords ecosystems specific statutory and regulatory consideration:

- Groundwater Sustainability Plans (GSPs) must consider **impacts to groundwater dependent ecosystems** [Water Code §10727.4(l)].
- GSPs must identify potential **effects on all beneficial uses and users of groundwater**, including fish and wildlife preservation and enhancement [Title 23

James Bennett, Plan Manager
Borrego Valley Groundwater Sustainability Agency
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California Code of Regulations §666], that may occur from undesirable results [Title 23 California Code of Regulations (CCR) §354.26(b)(3)].

- GSPs must **account for groundwater extraction for all Water Use Sectors** including managed wetlands, managed recharge, and native vegetation [Title 23 CCR §351(a), §356.2(b)(4)].

In consideration of these and other SGMA statute and GSP regulations, the Borrego Valley Groundwater Basin GSP does not: adequately describe the basin setting, rely on the best available science to develop the water budget, adequately estimate sustainable yield, address data gaps associated with potential groundwater flux at the Coyote Creek fault, include undesirable results to groundwater dependent ecosystems (GDEs) in adjacent groundwater basins, and address data gaps in the proposed monitoring network. The Department recommends addressing these concerns before submitting the GSP to the Department of Water Resources for evaluation and assessment.

COMMENTS AND RECOMMENDATIONS

The Department comments are as follows:

1. **Section 2.2 (Basin Setting).** The Basin Setting is not adequately described. In section 2.2.1.2, it is stated that the hydraulic connectivity across the Coyote Creek fault between the Borrego Springs Subbasin and the adjacent Ocotillo-Clark Valley basin is not precisely known and the range of flux across this fault is estimated to be anywhere between 32 acre-feet per year (AFY) and 3,200 AFY. This is noted as a data gap in section 2.2.2.1 (Groundwater Elevation Data), "Data Gaps" subsection as well.
 - a. Issue: The basin cannot be accurately characterized with such a wide range of potential influx. This influx range is inadequate to define and assess reasonable sustainable management criteria as required by Title 23 CCR section 354.12. This issue has been identified as a data gap on p. 2-54.
 - b. Recommendation: Address existing data gap through monitoring efforts (see Comment #8) prior to development of a water budget.
2. **Section 2.2.2.1 (Groundwater Elevation Data), Data Gaps Subsection.** Groundwater movement along (parallel to) the San Felipe fault should be included as a data gap. It is noted that on Figure 2.2-8 (Geologic Map) that the San Felipe fault may potentially be directing subsurface flow along the fault towards a low spot in groundwater elevation associated with the Borrego Sink (see Figures 2.2-13A). The Department recommends that monitoring wells be installed along the San Felipe fault to evaluate subsurface inflow and outflow

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along the San Felipe fault in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).

- a. Issue: Unknown groundwater movement along the San Felipe fault potentially affects subsurface flow to San Felipe Creek GDE. Groundwater declines at San Felipe Creek GDE are currently impacting the state- and federally-endangered desert pupfish (*Cyprinodon macularius*) habitat and Designated Critical Habitat (DCH) through dewatering spring-fed surface waters.
 - b. Recommendation: Plan and install monitoring wells along the San Felipe Fault.
3. **Section 2.2.3 (Water Budget).** Assumptions are used for the Borrego Valley Hydrologic Model (BVHM) that don't represent the best available science. The BVHM is used to develop the water budget and is appropriate to model groundwater in an agricultural setting with an arid/semi-arid environment. However, the output of the BVHM is dependent on the validity of the data set used by the model. If the data input is biased, it can yield a biased result. In section 2.2.3.3 it is noted that the Subbasin lost 7,300 AFY from storage during the 1945-2016 time-period, but the average loss for the last 10 years was 13,700 AFY. This information indicates that more recent years are characterized by higher extraction rates potentially associated with climatic shifts. Within Section 2.6.8 of *Update to United States Geological Survey Borrego Valley Hydrologic Model for Borrego Valley Sustainability Agency* (included as Appendix D1 of the Plan), the average annual natural recharge of water reaching the saturated zone was calculated to be 5,700 AFY based on a simulation period of 1929 to 2010. Inclusion of older data to develop the model output can introduce a bias into model output. The Plan does not adequately quantify the current inflows and outflows for the basin using the most recent hydrology, water supply, and water demand information as required by Title 23 CCR section 354.18(c)(1) or provide a quantitative assessment of the historic water budget as required in Title 23 CCR section 354.18(c)(2)(B).
- a. Issue: Using a long historical record of groundwater use can bias BVHM outputs and water budget calculations towards inflow/outflow numbers that are not reflective of current climate and groundwater use patterns.
 - b. Recommendation: The GSP should use datasets from the most recent 50-year period for precipitation, evapotranspiration, and streamflow information; and the GSP should use only the most recent 10-year period of a quantitative assessment of the historical water budget to estimate and

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Borrego Valley Groundwater Sustainability Agency
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project future water budget information and future aquifer response to proposed groundwater management practices.

4. **Section 2.2.3.6 (Sustainable Yield Estimate).** In section 2.2.3.6 on p. 2-80, the average annual natural recharge of water reaching the saturated zone is estimated to be 5,700 AFY. However, this includes an average annual agricultural return flow of 1,473 AFY. As the pumping reduction and following Project and Management Actions are implemented, the agricultural return flow can reasonably be expected to be reduced. This would result in an underestimate of the natural recharge in the water budget and would not provide an accurate estimate of the "Inflow to the groundwater water..." specified by Title 23 CCR section 354.18(b)(2).
 - a. Issue: The water budget does not account for reduction in agricultural return flow associated with GSP implementation.
 - b. Recommendation: Redesign water budget calculations to account for reduction in agricultural return flow.
5. **Section 3.3 (Minimum Thresholds).** Section 3.3 identifies on p. 3-16 that Title 23 CCR section 354.28(e) states, "the description of minimum thresholds shall include the following: ...How minimum thresholds have been selected to avoid undesirable results in adjacent basins or affecting the basins ability to achieve sustainability goals". Because of the unknown flux across the Coyote Creek fault and the known overdraft of the Borrego Valley Subbasin, groundwater extraction in the Borrego Valley Subbasin may be impacting recharge in the adjacent Ocotillo-Clark Valley Groundwater Basin. San Felipe Creek is a GDE within the Ocotillo-Clark Valley Basin that has been experiencing groundwater declines that is causing severe impacts to State- and federally-endangered desert pupfish (*Cyprinodon macularius*) and DCH for this species.
 - a. Issue: Minimum thresholds do not include consideration of undesirable results in adjacent basins.
 - b. Recommendation: Include a consideration of GDEs in adjacent Ocotillo-Clark Valley groundwater basin within section 3.3.6 (Depletions of Interconnected Surface Waters-Minimum Thresholds) and section 3.4.6 (Depletions of Interconnected Surface Water-Measurable Outcomes).
6. **Section 3.3.1.3 (Minimum Threshold Impacts to Adjacent Basins).** Section 3.3.1.3 states that "...adjacent Ocotillo-Clark Valley Groundwater Basin and Ocotillo Wells Subbasin are both "very low" priority basins not required to prepare GSPs. As such, they are not expected to develop descriptive undesirable results or quantitative minimum thresholds and measurable objectives." Title 23 CCR section 354.28(e) states, "the description of minimum thresholds shall include the

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following:..How minimum thresholds have been selected to avoid undesirable results in adjacent basins or affecting the basins ability to achieve sustainability goals". Desert pupfish are protected under the California Endangered Species Act (CESA) and the federal Endangered Species Act (ESA). Potential impacts to desert pupfish and desert pupfish DCH at San Felipe Creek should be considered an undesirable result.

- a. Issue: Minimum thresholds do not include consideration of undesirable results in adjacent basins.
- b. Recommendation: Include a consideration of GDEs in adjacent Ocotillo-Clark Valley Groundwater Basin within section 3.3.6 (Depletions of Interconnected Surface Waters-Minimum Thresholds) and section 3.4.6 (Depletions of Interconnected Surface Water-Measurable Outcomes).

7. **Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection.** Section 3.5.4.2 states on p. 3-45 that "Multicompletion wells or well clusters screened at discrete intervals in the upper, middle and lower aquifers would be required to determine potentiometric surface by aquifer unit. However, the average potentiometric surface measured at wells that are screened over one or more aquifer units appears to sufficiently represent groundwater conditions..." The Department does not agree that wells screened at more than one aquifer sufficiently represent groundwater conditions. The Department agrees with the recommendation included within section 6 on p.16 of the *Update to Borrego Valley Hydrologic Model* where it is recommended to "Conduct aquifer tests at wells screened only in the upper aquifer and only in the middle aquifer to obtain site-specific estimates of hydraulic conductivity and specific yield for each aquifer unit. This information may be used to enhance the calibration of the model to these hydraulic properties and our understanding of storage in the BVGB." This information is also identified in the "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 as a means to address the aforementioned data gap. The use of wells screened only for the upper and middle aquifers will "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).

- a. Issue: Proposed use of wells screened at more than one aquifer could be inadequate to monitor groundwater conditions within each aquifer.
- b. Recommendation: Plan and install multicompletion wells or well clusters screened only in the upper aquifer and only in the middle aquifer to specifically monitor aquifer conditions within these aquifers.

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Borrego Valley Groundwater Sustainability Agency
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8. **Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection.** The "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 also identifies the previously mentioned data gap associated with potential flux across the Coyote Creek fault. The Department recommends that monitoring wells be installed on both sides of the Coyote Creek fault to evaluate subsurface inflow and outflow along and across the Coyote Creek fault in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title CCR section 354.34(a).
 - a. Issue: There is an unknown amount of groundwater flux across and/or along the Coyote Creek Fault.
 - b. Recommendation: Plan and install monitoring wells on both sides of the Coyote Creek Fault.

9. **Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection.** The "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 does not mention a data gap associated with the San Felipe Fault. However, it is noted that on Figure 2.2-8 (Geologic Map) that the San Felipe fault potentially may be directing subsurface flow along the fault towards a low spot in groundwater elevation associated with the Borrego Sink (see Figures 2.2-13A). The Department recommends that monitoring wells be installed along the San Felipe fault to evaluate subsurface inflow and outflow along the San Felipe fault in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).
 - a. Issue: There is an unknown amount of groundwater movement along the San Felipe Fault.
 - b. Recommendation: Plan and install monitoring wells along the San Felipe Fault.

10. **Section 3.5.4.2 (Identification of Data Gaps).** The "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 does not mention a data gap associated with spring systems. However, Figure 2.2-17 identifies multiple spring systems that may be associated with the Borrego Springs Groundwater Basin. Springs constitute a GDE. The Department recommends identifying what springs, if any, should be considered GDEs potentially impacted by the Plan through a phased approach. Springs that would potentially be impacted by groundwater decline in

James Bennett, Plan Manager
Borrego Valley Groundwater Sustainability Agency
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the Borrego Springs Groundwater Basin would most likely be associated with a regional fault system that provides a hydrologic connection between the springs and the alluvial basin. Springs associated with regional faults would likely exhibit elevated temperatures in comparison to springs that are not associated with the fault system. A simple procedure of measuring temperatures of the neighboring springs can identify those associated with the basin. A second method, such as measurement of dissolved Helium isotope ratio of those springs with elevated temperatures can positively identify those systems associated with fault system. Waters with contact with regional fault systems tend to exhibit an atypical Helium isotope ratio (in comparison to surface waters) that is indicative of exposure to mantle derived Helium. If springs are associated with regional fault systems they should be considered potential GDEs and included within the Plan in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).

- a. Issue: It is unknown if springs have hydrologic connection to basin.
- b. Recommendation: Measure water temperatures among springs to identify those with potential hydrologic connection to regional fault systems and basin. Perform second test for Helium isotope ratio to verify potential GDEs.

11. Appendix D1 (Update to Borrego Valley Hydrologic Model). The Department recommends that recharge from streamflow be monitored and the estimated annual average recharge during the term of the Plan be revised as climatic changes occur. In addition, recharge estimates from agricultural return flow will be altered by implementation of the Plan itself. This will alter the estimated recharge used by the BVHM. Accounting for changes in recharge components over time will provide a description of current groundwater conditions as required by Title 23 CCR section 354.16 and will quantify the inflow to the groundwater system required by Title 23 CCR section 354.18 (b)(2).

- a. Issue: Recharge associated with changing climate and changes in agricultural return flow are likely to be substantially altered during the term of the Plan.
- b. Recommendation: Revise the BVHM to be adaptive and incorporate systematic adjustments to input (e.g. agricultural return flow) used to calculate recharge.

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Borrego Valley Groundwater Sustainability Agency
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12. **Appendix D1 (Update to Borrego Valley Hydrologic Model), Section 6.** As described in section 6 of the *Update to Borrego Valley Hydrologic Model*, considerable uncertainty exists about agricultural pumping and stream flow leakage. The Department supports the recommendations contained in section 6 to install stream gauges and well pumping meters to address these uncertainties. Implementing these recommendations provide information about flow directions, lateral and vertical gradients, and regional pumping patterns as required by Title 23 CCR section 354.16(a) and quantify the inflow to the groundwater system required by Title 23 CCR section 354.18 (b)(2).
 - a. Issue: Considerable uncertainty exists regarding agricultural pumping and stream flow leakage.
 - b. Recommendation: Install stream gauges and well pumping meters as recommended in section 6 of Appendix D1.

13. **Appendix D1 (Update to Borrego Valley Hydrologic Model), Figures 11 and 12.** Both residual plots (Update to the Borrego Valley Hydrologic Model – Figure 11) and the linear model plots (Figure 12) suggest potential changes and increased bias in the model between the first and second runs (1945-2010 and 2011-2016). Performing a statistical comparison would provide information about flow directions, lateral and vertical gradients, and regional pumping patterns as required by Title 23 CCR section 354.16(a).
 - a. Issue: There are potential changes and increased bias in the model between the first and second runs (1945-2010 and 2011-2016).
 - b. Recommendation: Use an appropriate statistical comparison (e.g. ANCOVA) to determine changes in the relationship between predicted and estimated head.

CONCLUSION

In conclusion, the Borrego Valley Groundwater Basin Groundwater Sustainability Plan does not comply with all aspects of SGMA statute and regulations, and the Department deems the plan insufficient to consider impacts fish and wildlife beneficial users of groundwater. The Department recommends that the Borrego Valley Groundwater Sustainability Agency address the above comments to avoid a potential 'incomplete,' or 'inadequate' plan determination, as assessed by the Department of Water Resources, for the following reasons derived from regulatory criteria for plan evaluation:

1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available

James Bennett, Plan Manager
Borrego Valley Groundwater Sustainability Agency
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- information and best available science. [CCR 355.4(b)(1)] (See Comments #1 and 3)
2. The Plan does not identify reasonable measures and schedules to eliminate data gaps. [CCR §355.4(b)(2)] (See Comments #2, 7, 8, 9, and 10)
 3. The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Plan. [CCR §355.4(b)(3)] (See Comments #2, 4, 11, 12, and 13).
 4. The projects and management actions are not feasible and/or not likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield. [CCR §355.4(b)(5)] (See Comments #4, 11, 12, and 13)
 5. The Plan does not include a reasonable assessment of overdraft conditions or include reasonable means to mitigate overdraft, if present. [CCR §355.4(b)(6)] (See Comments #4, 11, 12, and 13)
 6. The Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal. [CCR §355.4(b)(7)] (See Comments #5, 6, and 8)

The Department appreciates the opportunity to provide comments. Please contact Nick Buckmaster at Nick.Buckmaster@wildlife.ca.gov or Charley Land at Charles.Land@wildlife.ca.gov with any questions.

Sincerely,



Leslie MacNair
Regional Manager,
Inland Desert Region

James Bennett, Plan Manager
Borrego Valley Groundwater Sustainability Agency
May 20, 2019
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cc: California Department of Fish and Wildlife

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*CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMENTS ON THE GROUNDWATER
MANAGEMENT PLAN FOR THE BORREGO SPRINGS GROUNDWATER SUBBASIN*

Attachment B:

**Borrego Valley GSA Response to the California Department Fish and Wildlife
Letter on the Draft BVGSP (May 20, 2019)**

Comment Letter S1



State of California – Natural Resources Agency
DEPARTMENT OF FISH AND WILDLIFE
Inland Deserts Region
3602 Inland Empire Boulevard, Suite C-220
Ontario, CA 91764
www.wildlife.ca.gov

GAVIN NEWSOM, Governor
CHARLTON H. BONHAM, Director



May 20, 2019

Via Electronic Mail and Online Submission

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5510 Overland Avenue
San Diego, CA 92123
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PDS.LUEGGroundWater@sdcounty.ca.gov

Subject: Comments on the Draft Borrego Valley Groundwater Basin Groundwater Sustainability Plan

Dear Mr. Bennett:

The California Department of Fish and Wildlife (Department) is providing comments on the Draft Borrego Valley Groundwater Basin Groundwater Sustainability Plan (GSP). As trustee agency for the State's fish and wildlife resources, the Department has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and the habitat necessary for biologically sustainable populations of such species [Fish & Game Code §§ 711.7 and 1802]. The Department has an interest in the sustainable management of groundwater, as many sensitive ecosystems and public trust resources depend on groundwater and interconnected surface waters, including ecosystems on Department lands that fall within an alluvial groundwater basin adjacent to the Borrego Springs Groundwater Subbasin (7-024.02).

COMMENT OVERVIEW

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S1-1

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Borrego Valley Groundwater Sustainability Agency
May 20, 2019
Page 2

California Code of Regulations §666], that may occur from undesirable results [Title 23 California Code of Regulations (CCR) §354.26(b)(3)].

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In consideration of these and other SGMA statute and GSP regulations, the Borrego Valley Groundwater Basin GSP does not: adequately describe the basin setting, rely on the best available science to develop the water budget, adequately estimate sustainable yield, address data gaps associated with potential groundwater flux at the Coyote Creek fault, include undesirable results to groundwater dependent ecosystems (GDEs) in adjacent groundwater basins, and address data gaps in the proposed monitoring network. The Department recommends addressing these concerns before submitting the GSP to the Department of Water Resources for evaluation and assessment.

COMMENTS AND RECOMMENDATIONS

The Department comments are as follows:

1. **Section 2.2 (Basin Setting).** The Basin Setting is not adequately described. In section 2.2.1.2, it is stated that the hydraulic connectivity across the Coyote Creek fault between the Borrego Springs Subbasin and the adjacent Ocotillo-Clark Valley basin is not precisely known and the range of flux across this fault is estimated to be anywhere between 32 acre-feet per year (AFY) and 3,200 AFY. This is noted as a data gap in section 2.2.2.1 (Groundwater Elevation Data), "Data Gaps" subsection as well.
 - a. Issue: The basin cannot be accurately characterized with such a wide range of potential influx. This influx range is inadequate to define and assess reasonable sustainable management criteria as required by Title 23 CCR section 354.12. This issue has been identified as a data gap on p. 2-54.
 - b. Recommendation: Address existing data gap through monitoring efforts (see Comment #8) prior to development of a water budget.
2. **Section 2.2.2.1 (Groundwater Elevation Data), Data Gaps Subsection.** Groundwater movement along (parallel to) the San Felipe fault should be included as a data gap. It is noted that on Figure 2.2-8 (Geologic Map) that the San Felipe fault may potentially be directing subsurface flow along the fault towards a low spot in groundwater elevation associated with the Borrego Sink (see Figures 2.2-13A). The Department recommends that monitoring wells be installed along the San Felipe fault to evaluate subsurface inflow and outflow.



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James Bennett, Plan Manager
 Borrego Valley Groundwater Sustainability Agency
 May 20, 2019
 Page 3

along the San Felipe fault in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).

- a. Issue: Unknown groundwater movement along the San Felipe fault potentially affects subsurface flow to San Felipe Creek GDE. Groundwater declines at San Felipe Creek GDE are currently impacting the state- and federally-endangered desert pupfish (*Cyprinodon macularius*) habitat and Designated Critical Habitat (DCH) through dewatering spring-fed surface waters.
- b. Recommendation: Plan and install monitoring wells along the San Felipe Fault.

3. **Section 2.2.3 (Water Budget).** Assumptions are used for the Borrego Valley Hydrologic Model (BVHM) that don't represent the best available science. The BVHM is used to develop the water budget and is appropriate to model groundwater in an agricultural setting with an arid/semi-arid environment. However, the output of the BVHM is dependent on the validity of the data set used by the model. If the data input is biased, it can yield a biased result. In section 2.2.3.3 it is noted that the Subbasin lost 7,300 AFY from storage during the 1945-2016 time-period, but the average loss for the last 10 years was 13,700 AFY. This information indicates that more recent years are characterized by higher extraction rates potentially associated with climatic shifts. Within Section 2.6.8 of *Update to United States Geological Survey Borrego Valley Hydrologic Model for Borrego Valley Sustainability Agency* (included as Appendix D1 of the Plan), the average annual natural recharge of water reaching the saturated zone was calculated to be 5,700 AFY based on a simulation period of 1929 to 2010. Inclusion of older data to develop the model output can introduce a bias into model output. The Plan does not adequately quantify the current inflows and outflows for the basin using the most recent hydrology, water supply, and water demand information as required by Title 23 CCR section 354.18(c)(1) or provide a quantitative assessment of the historic water budget as required in Title 23 CCR section 354.18(c)(2)(B).

- a. Issue: Using a long historical record of groundwater use can bias BVHM outputs and water budget calculations towards inflow/outflow numbers that are not reflective of current climate and groundwater use patterns.
- b. Recommendation: The GSP should use datasets from the most recent 50-year period for precipitation, evapotranspiration, and streamflow information; and the GSP should use only the most recent 10-year period of a quantitative assessment of the historical water budget to estimate and

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S1-3
Cont.

S1-4

James Bennett, Plan Manager
 Borrego Valley Groundwater Sustainability Agency
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project future water budget information and future aquifer response to proposed groundwater management practices.

4. **Section 2.2.3.6 (Sustainable Yield Estimate).** In section 2.2.3.6 on p. 2-80, the average annual natural recharge of water reaching the saturated zone is estimated to be 5,700 AFY. However, this includes an average annual agricultural return flow of 1,473 AFY. As the pumping reduction and following Project and Management Actions are implemented, the agricultural return flow can reasonably be expected to be reduced. This would result in an underestimate of the natural recharge in the water budget and would not provide an accurate estimate of the "Inflow to the groundwater water..." specified by Title 23 CCR section 354.18(b)(2).
 - a. Issue: The water budget does not account for reduction in agricultural return flow associated with GSP implementation.
 - b. Recommendation: Redesign water budget calculations to account for reduction in agricultural return flow.

5. **Section 3.3 (Minimum Thresholds).** Section 3.3 identifies on p. 3-16 that Title 23 CCR section 354.28(e) states, "the description of minimum thresholds shall include the following: ...How minimum thresholds have been selected to avoid undesirable results in adjacent basins or affecting the basins ability to achieve sustainability goals". Because of the unknown flux across the Coyote Creek fault and the known overdraft of the Borrego Valley Subbasin, groundwater extraction in the Borrego Valley Subbasin may be impacting recharge in the adjacent Ocotillo-Clark Valley Groundwater Basin. San Felipe Creek is a GDE within the Ocotillo-Clark Valley Basin that has been experiencing groundwater declines that is causing severe impacts to State- and federally-endangered desert pupfish (*Cyprinodon macularius*) and DCH for this species.
 - a. Issue: Minimum thresholds do not include consideration of undesirable results in adjacent basins.
 - b. Recommendation: Include a consideration of GDEs in adjacent Ocotillo-Clark Valley groundwater basin within section 3.3.6 (Depletions of Interconnected Surface Waters-Minimum Thresholds) and section 3.4.6 (Depletions of Interconnected Surface Water-Measurable Outcomes).

6. **Section 3.3.1.3 (Minimum Threshold Impacts to Adjacent Basins).** Section 3.3.1.3 states that "...adjacent Ocotillo-Clark Valley Groundwater Basin and Ocotillo Wells Subbasin are both "very low" priority basins not required to prepare GSPs. As such, they are not expected to develop descriptive undesirable results or quantitative minimum thresholds and measurable objectives." Title 23 CCR section 354.28(e) states, "the description of minimum thresholds shall include the

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following:..How minimum thresholds have been selected to avoid undesirable results in adjacent basins or affecting the basins ability to achieve sustainability goals". Desert pupfish are protected under the California Endangered Species Act (CESA) and the federal Endangered Species Act (ESA). Potential impacts to desert pupfish and desert pupfish DCH at San Felipe Creek should be considered an undesirable result.

- a. Issue: Minimum thresholds do not include consideration of undesirable results in adjacent basins.
- b. Recommendation: Include a consideration of GDEs in adjacent Ocotillo-Clark Valley Groundwater Basin within section 3.3.6 (Depletions of Interconnected Surface Waters-Minimum Thresholds) and section 3.4.6 (Depletions of Interconnected Surface Water-Measurable Outcomes).

7. **Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection.** Section 3.5.4.2 states on p. 3-45 that "Multicompletion wells or well clusters screened at discrete intervals in the upper, middle and lower aquifers would be required to determine potentiometric surface by aquifer unit. However, the average potentiometric surface measured at wells that are screened over one or more aquifer units appears to sufficiently represent groundwater conditions..." The Department does not agree that wells screened at more than one aquifer sufficiently represent groundwater conditions. The Department agrees with the recommendation included within section 6 on p.16 of the *Update to Borrego Valley Hydrologic Model* where it is recommended to "Conduct aquifer tests at wells screened only in the upper aquifer and only in the middle aquifer to obtain site-specific estimates of hydraulic conductivity and specific yield for each aquifer unit. This information may be used to enhance the calibration of the model to these hydraulic properties and our understanding of storage in the BVGB." This information is also identified in the "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 as a means to address the aforementioned data gap. The use of wells screened only for the upper and middle aquifers will "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).

- a. Issue: Proposed use of wells screened at more than one aquifer could be inadequate to monitor groundwater conditions within each aquifer.
- b. Recommendation: Plan and install multicompletion wells or well clusters screened only in the upper aquifer and only in the middle aquifer to specifically monitor aquifer conditions within these aquifers.

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8. **Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection.** The "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 also identifies the previously mentioned data gap associated with potential flux across the Coyote Creek fault. The Department recommends that monitoring wells be installed on both sides of the Coyote Creek fault to evaluate subsurface inflow and outflow along and across the Coyote Creek fault in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title CCR section 354.34(a).

- a. Issue: There is an unknown amount of groundwater flux across and/or along the Coyote Creek Fault.
- b. Recommendation: Plan and install monitoring wells on both sides of the Coyote Creek Fault.

S1-9

9. **Section 3.5.4.2 (Identification of Data Gaps) Groundwater Elevation subsection.** The "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 does not mention a data gap associated with the San Felipe Fault. However, it is noted that on Figure 2.2-8 (Geologic Map) that the San Felipe fault potentially may be directing subsurface flow along the fault towards a low spot in groundwater elevation associated with the Borrego Sink (see Figures 2.2-13A). The Department recommends that monitoring wells be installed along the San Felipe fault to evaluate subsurface inflow and outflow along the San Felipe fault in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).

- a. Issue: There is an unknown amount of groundwater movement along the San Felipe Fault.
- b. Recommendation: Plan and install monitoring wells along the San Felipe Fault.

S1-10

10. **Section 3.5.4.2 (Identification of Data Gaps).** The "Borrego Valley Hydrologic Model" subsection of section 3.5.4.2 does not mention a data gap associated with spring systems. However, Figure 2.2-17 identifies multiple spring systems that may be associated with the Borrego Springs Groundwater Basin. Springs constitute a GDE. The Department recommends identifying what springs, if any, should be considered GDEs potentially impacted by the Plan through a phased approach. Springs that would potentially be impacted by groundwater decline in

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the Borrego Springs Groundwater Basin would most likely be associated with a regional fault system that provides a hydrologic connection between the springs and the alluvial basin. Springs associated with regional faults would likely exhibit elevated temperatures in comparison to springs that are not associated with the fault system. A simple procedure of measuring temperatures of the neighboring springs can identify those associated with the basin. A second method, such as measurement of dissolved Helium isotope ratio of those springs with elevated temperatures can positively identify those systems associated with fault system. Waters with contact with regional fault systems tend to exhibit an atypical Helium isotope ratio (in comparison to surface waters) that is indicative of exposure to mantle derived Helium. If springs are associated with regional fault systems they should be considered potential GDEs and included within the Plan in order to "...develop a monitoring network capable of collecting sufficient data to demonstrate short-term, seasonal, and long-term trends in groundwater and related surface conditions, and yield representative information about groundwater conditions as necessary to evaluate Plan implementation" as required by Title 23 CCR section 354.34(a).

- a. Issue: It is unknown if springs have hydrologic connection to basin.
- b. Recommendation: Measure water temperatures among springs to identify those with potential hydrologic connection to regional fault systems and basin. Perform second test for Helium isotope ratio to verify potential GDEs.

11. **Appendix D1 (Update to Borrego Valley Hydrologic Model).** The Department recommends that recharge from streamflow be monitored and the estimated annual average recharge during the term of the Plan be revised as climatic changes occur. In addition, recharge estimates from agricultural return flow will be altered by implementation of the Plan itself. This will alter the estimated recharge used by the BVHM. Accounting for changes in recharge components over time will provide a description of current groundwater conditions as required by Title 23 CCR section 354.16 and will quantify the inflow to the groundwater system required by Title 23 CCR section 354.18 (b)(2).

- a. Issue: Recharge associated with changing climate and changes in agricultural return flow are likely to be substantially altered during the term of the Plan.
- b. Recommendation: Revise the BVHM to be adaptive and incorporate systematic adjustments to input (e.g. agricultural return flow) used to calculate recharge.

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S1-12

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12. **Appendix D1 (Update to Borrego Valley Hydrologic Model), Section 6.** As described in section 6 of the *Update to Borrego Valley Hydrologic Model*, considerable uncertainty exists about agricultural pumping and stream flow leakage. The Department supports the recommendations contained in section 6 to install stream gauges and well pumping meters to address these uncertainties. Implementing these recommendations provide information about flow directions, lateral and vertical gradients, and regional pumping patterns as required by Title 23 CCR section 354.16(a) and quantify the inflow to the groundwater system required by Title 23 CCR section 354.18 (b)(2).

- a. Issue: Considerable uncertainty exists regarding agricultural pumping and stream flow leakage.
- b. Recommendation: Install stream gauges and well pumping meters as recommended in section 6 of Appendix D1.

S1-13

13. **Appendix D1 (Update to Borrego Valley Hydrologic Model), Figures 11 and 12.** Both residual plots (Update to the Borrego Valley Hydrologic Model – Figure 11) and the linear model plots (Figure 12) suggest potential changes and increased bias in the model between the first and second runs (1945-2010 and 2011-2016). Performing a statistical comparison would provide information about flow directions, lateral and vertical gradients, and regional pumping patterns as required by Title 23 CCR section 354.16(a).

- a. Issue: There are potential changes and increased bias in the model between the first and second runs (1945-2010 and 2011-2016).
- b. Recommendation: Use an appropriate statistical comparison (e.g. ANCOVA) to determine changes in the relationship between predicted and estimated head.

S1-14

CONCLUSION

In conclusion, the Borrego Valley Groundwater Basin Groundwater Sustainability Plan does not comply with all aspects of SGMA statute and regulations, and the Department deems the plan insufficient to consider impacts fish and wildlife beneficial users of groundwater. The Department recommends that the Borrego Valley Groundwater Sustainability Agency address the above comments to avoid a potential 'incomplete,' or 'inadequate' plan determination, as assessed by the Department of Water Resources, for the following reasons derived from regulatory criteria for plan evaluation:

- 1. The assumptions, criteria, findings, and objectives, including the sustainability goal, undesirable results, minimum thresholds, measurable objectives, and interim milestones are not reasonable and/or not supported by the best available

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information and best available science. [CCR 355.4(b)(1)] (See Comments #1 and 3)

2. The Plan does not identify reasonable measures and schedules to eliminate data gaps. [CCR §355.4(b)(2)] (See Comments #2, 7, 8, 9, and 10)
3. The sustainable management criteria and projects and management actions are not commensurate with the level of understanding of the basin setting, based on the level of uncertainty, as reflected in the Plan. [CCR §355.4(b)(3)] (See Comments #2, 4, 11, 12, and 13).
4. The projects and management actions are not feasible and/or not likely to prevent undesirable results and ensure that the basin is operated within its sustainable yield. [CCR §355.4(b)(5)] (See Comments #4, 11, 12, and 13)
5. The Plan does not include a reasonable assessment of overdraft conditions or include reasonable means to mitigate overdraft, if present. [CCR §355.4(b)(6)] (See Comments #4, 11, 12, and 13)
6. The Plan will adversely affect the ability of an adjacent basin to implement its Plan or impede achievement of its sustainability goal. [CCR §355.4(b)(7)] (See Comments #5, 6, and 8)

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The Department appreciates the opportunity to provide comments. Please contact Nick Buckmaster at Nick.Buckmaster@wildlife.ca.gov or Charley Land at Charles.Land@wildlife.ca.gov with any questions.

Sincerely,



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Regional Manager,
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RTC.2 STATE AGENCIES

Letter S1

**Commenter: Leslie MacNair, Regional Director, Inland Desert Region, California
Department of Fish and Wildlife (CDFW)**

Date: May 20, 2015

S1-1 This comment provides introductory information about CDFW’s role as a trustee agency and summarizes the comments in the letter. Specific responses to issues raised are provided below (Responses S1-2 through S2-14). The Groundwater Sustainability Plan (GSP) adequately considers impacts to groundwater dependent ecosystems (GDEs) (GSP Section 2.2.2.7, Section 3.2.6, and Appendix D4), effects of beneficial uses and users of groundwater (GSP Section 2.1.4 and Chapter 3), and accounts for groundwater extraction for all sectors, including native vegetation (GSP Section 2.2.3). The Draft GSP, Appendix D4 in particular, has been revised to provide clarification and additional supporting information. However, the Groundwater Sustainability Agency (GSA) maintains there are likely no interconnected surface waters within the Plan Area, and that the potential GDEs mapped within the Subbasin are dependent on surface water, percolating or perched water within the unsaturated zone, and/or groundwater originating from springs outside the Subbasin. Because potential GDEs are disconnected from the Subbasin’s groundwater aquifer, there are no undesirable effects occurring with respect to depletions of interconnected surface waters. Naturally, this conclusion extends to fish and wildlife species that may depend on habitats located within the Plan Area.

S1-2 The basin setting provided in Chapter 2 of the Draft GSP provides an adequate description of the Borrego Springs Subbasin. The U.S. Geological Survey (USGS) has a reasonable basis for considering the Coyote Creek Fault in its report as a no-flow barrier, including differences in groundwater levels across the fault and the orientation of groundwater contours. The description of the Subbasin in the Draft GSP is exhaustive and thorough, and includes the description of additional work done by graduate students under Dr. David Huntley that suggests the fault acts as a partial barrier to groundwater flow rather than a no-flow barrier (with an estimated inflow between 32 and 3,200 acre-feet per year [AFY]). This additional information satisfies the requirements under SGMA to identify data gaps and levels of uncertainty.

Although the potential inflow at the Coyote Creek fault could have additional inflow not accounted for in the Subbasin’s water budget in GSP Section 2.2.3, it

does not mean that the Subbasin has been inaccurately characterized. The Borrego Valley Hydrologic Model (BVHM) is a calibrated model based on observed groundwater levels, which means that if inflow across Coyote Creek Fault were added to the model, inflows and outflows for other model components would need to be redistributed to explain the same observed groundwater levels (finite difference model), such as an increase in the subsurface outflow to the Ocotillo Wells Subbasin, a decrease in stream recharge, or a decrease in subsurface inflow already estimated in the BVHM.

As stated in GSP Section 2.2.2.1,

the GSA does not consider this a critical data gap because historical groundwater levels and trends suggest the flux would be into the Subbasin rather than out of the Subbasin (i.e., a potential missing input to the water budget), and because the Coyote Creek Fault is distant from the active pumping centers within the Subbasin. This data gap does not affect the GSP's establishment of sustainable management criteria in Chapter 3, or the effectiveness of projects and management actions described in Chapter 4.

In other words, if the flow across the Coyote Creek Fault into the Subbasin is substantial, it would have a positive rather than a negative effect on meeting the GSA's sustainability criteria. Data gaps and uncertainties do not make a water budget "inadequate" especially when they are clearly identified; instead, uncertainty is an expected part of the development of a water budget. As described in the GSP Section 3.5.4, the GSA will continue to assess and improve the monitoring network, and will re-evaluate the BVHM to improve the accuracy of key water budget components and model forecasts.

S1-3

The rationale for the southern and southeastern boundary of the Subbasin, marked by San Felipe Creek, is provided in Draft GSP Section 2.2.1.2, including a description of how the geologic structure associated with the San Felipe Fault (San Felipe Anticline) affects the geometry of the Subbasin. It is unclear why the commenter asserts that the San Felipe Fault may be directing subsurface flow to the Borrego Sink, as this is not indicated in the geologic map (GSP Figure 2.2-8), the groundwater level contours (GSP Figure 2.2-13A), or the HCM for the Subbasin (GSP Section 2.2.1). In addition, there are no potential GDEs along San Felipe Creek within the Subbasin, as described in GSP Section 2.2.2.7 and Appendix D4. Furthermore, the location of the Desert pupfish habitat is in the lower-most Imperial County reach of San Felipe Creek, near the Salton Sea, downstream of the

confluence of Fish Creek with San Felipe Creek. This habitat is not within the Plan Area, but is more than 18 miles southeast of the closest part of the Borrego Springs Subbasin boundary.² The Desert pupfish habitat is located in the southern part of the Ocotillo-Clark Valley Groundwater Basin. There is no native Desert pupfish habitat located within the Plan Area. Several captive populations of Desert pupfish occur within the plan area, namely at Anza-Borrego State Park, Borrego Springs High School, and the UCR Palm Desert campus.³ These artificial habitats are unaffected by groundwater conditions in the Plan Area.

Neither the existing conditions of the Plan Area, the sustainability criteria, nor the projects and management actions contemplated in this GSP would have the ability to impact (either positively or negatively) the desert pup fish habitat referenced by CDFW as “San Felipe Creek GDE.” As there are no GDEs within the Plan Area along San Felipe Creek, and the designated critical habitat for the Desert pupfish is more than 18 miles away and not affected by the GSP, no data gap is identified for the San Felipe Fault.

S1-4

It is unclear why CDFW claims that inclusion of a longer period of record into datasets used in the BVHM results in biased outputs. The BVHM prepared by the USGS and updated by the GSA is based on basin conditions (like pumping) that change over time, so model outputs averaged over any particular period, such as the last 10 years, will naturally differ from the outputs from prior periods. The increased pumping in the recent past is incorporated into the BVHM and water budget (GSP Section 2.2.3), as is climate change considerations (GSP Section 3.3.1.1). Historical data on precipitation and evapotranspiration is used to the extent it is available. The U.S. Geological Survey uses the Basin Characterization Model (BCM), as described in GSP Section 2.2.3.1.

The projected water budget is based on the baseline pumping allocation and the planned pumping reduction program described in GSP Section 4.4, and the effects of the project pumping reductions on applicable sustainability indicators is described in GSP Chapter 3 (see Section 3.3.1.1). The level of pumping will be controlled by incrementally decreasing allocations to the target rate, not by climate change. In addition, the GSP recognizes that the long-term average for natural recharge may not be reproduced in the future, especially over shorter time intervals, as evaluated through a Monte Carlo Simulation (MCS) uncertainty analysis, described in GSP Section 3.3.1.1. This analysis found that the uncertainty

² <https://databasin.org/datasets/1aaf058b573a412bb0a43b47ecb107bd>

³ <https://www.wildlife.ca.gov/Regions/6/Desert-Fishes/Desert-Pupfish>

associated with precipitation and recharge variability is much greater than that associated with climate change.

As a point of clarification, both the original USGS model and the model update start in the year 1929. However, the period from 1929 through 1944 is considered to be a “spin-up” period for the model, and the data for these years is considered less reliable. In all calculations made by the USGS in their original report and by the GSA in the model update, data from 1929 through 1944 is excluded.

S1-5

The sustainable yield of 5,700 AFY presented in the Draft GSP is based the USGS’ pre-development scenario that estimated natural inflows to the boundaries of the Borrego Valley Hydrologic Model (BVHM) for the period 1945 through 2010 (USGS 2015), recognizing the adaptive management approach of SGMA and iterative process of updating the sustainable yield estimate at each 5-year check-in period during GSP implementation. Additionally, the USGS referenced approximately 1,400 AFY that enters the basin as underflow from adjacent basins but did not clarify the outflow components used in the pre-development scenario. Since calculations of sustainable yield must include both inflow and outflow components, a water budget from the GSP modeling update is presented to confirm the validity of using 5,700 AFY as the initial sustainable yield.

The USGS water budget using the BVHM for the developed condition for the years 1945 through 2010 and updated by Dudek for the years 2011 through 2016 indicate that average total inflows that includes groundwater subsurface inflow (specified flows), stream leakage, unsaturated zone recharge (UZF recharge) is 6,900 AFY for the period 1945 to 2010 and 6,800 AFY for the period 1945 to 2016. The 20-year and 10-year averages for the most recent periods are 5,800 AF and 4,700 AFY, respectively. These recent periods were comprised mostly of a drier climatic period compared to the longer scenarios beginning in 1945 that included both wet and dry periods. Historical inflows from 1945 to 2016 were compared to recent (past 10 years) groundwater outflows from the BHVM model update to estimate the initial sustainable yield of the basin. Average inflows from the entire run of the model update provide a reasonable estimate of potential basin inflows because they capture a variety of climatic conditions. Outflows from the most recent 10 years were considered to be more representative of potential basin outflows than the entire historical model period because the loss of native phreatophytes has decreased outflow from evapotranspiration in the basin. Using these assumptions, the surplus of inflows over outflows in the basin is estimated to be approximately 5,750 AFY.

S1-6 See response to Comment S1-3 regarding the commenter’s reference to the potential GDEs along San Felipe Creek and the federally endangered desert pupfish. Regardless of the presence and/or magnitude of (1) the flux into the Borrego Springs Subbasin from the Ocotillo-Clark Valley Groundwater Basin across the Coyote Creek Fault or (2) the flux out of the Subbasin across its southern boundary (formed by San Felipe Creek), there would be no appreciable effects on DWR’s priority status for adjacent basins due to conditions occurring in the Borrego Valley Subbasin. Furthermore, the minimum thresholds—as well as projects and management actions to avoid those thresholds—to be implemented under the GSP means that indirect effects on the adjacent basins, if any, would be positive in nature when compared to continuation of the status quo. In GSP Section 3.3, the GSA addresses impacts to adjacent basins as a subsection under the description of the minimum thresholds for each sustainability indicator.

S1-7 The response to this comment has been addressed under responses to Comment S1-3 and Comment S1-6.

S1-8 The sentence cited by the commenter (GSP Section 3.5.4.2, p. 3-45) accurately states that the average potentiometric surface (i.e., the theoretical groundwater level for each aquifer, if it was screened in isolation) across all three aquifers sufficiently represents groundwater conditions. The definition of aquifers in the BVHM is based on a textural model, which evaluates differences in grain size composition from a complete dataset of well completion reports (i.e., boring logs) within the Subbasin. The recommendation provided in the Draft GSP (e.g., GSP Section 3.5.4.2 and Appendix D1) to develop specific aquifer parameters for each of the three layers would help improve the academic understanding of the aquifer, but is not required to develop “representative information about groundwater conditions” (Title 23 CCR Section 354.34[a]).

There are no regionally significant confining layers (i.e., aquitards) present within the Subbasin. The lack of any confining layers means the potentiometric across the three aquifers are not sufficiently different to meaningfully affect the groundwater levels observed regardless of the screened interval of a well. Monitoring Well MW-5A/B is a multicompletion well near the Borrego Sink which has two well casings, one screened in the upper aquifer and one screened in the lower aquifer. The difference in the groundwater levels between the two was 0.03 feet as of Fall 2018 (GSP Figure 2.2-13B). Although it is the only dual-completion monitoring well in the Subbasin, groundwater monitoring data elsewhere validates this because monitoring wells, even where within short distances of each other, report similar groundwater levels despite having different screened intervals.

- S1-9** This comment has been addressed in response to Comment S1-2.
- S1-10** This comment has been addressed in response to Comment S1-3.
- S1-11** The only springs identified within the Subbasin, as shown in GSP Figure 2.2-17, are Borrego Spring and Pup Fish Pond Spring. Borrego Spring dried up sometime before 1963, as stated on Draft GSP p. 2-86, and the artificial Pup Fish Pond (in addition to the pupfish pond near the Palm Canyon Trailhead in Borrego Palm Canyon Campground) is sustained by ABDSP's public water system, and not a spring. As discussed in Draft GSP Section 2.2.2.6, the water source for springs outside the Subbasin as well as perennial waters that may flow for a short length into the margins of the basin is runoff from the watershed, and/or springs or seeps originating from the fractured rock aquifer that make up the mountain front. These surface water sources are topographically higher than the groundwater elevation of the underlying basin, in many cases hundreds of feet higher. For reference, the GSP's elevation contours and labels have been added to the GSP's groundwater contour maps to further illustrate this. Neither the hydrogeological conceptual model (HCM) developed for the basin (GSP Section 2.2.1) nor the HCM developed to evaluate GDEs (GSP Appendix D4) support the idea that there would be a hydrologic connection between springs originating from bedrock outside the Subbasin, and the Quaternary age sediments that make up the Borrego Springs Subbasin.
- S1-12** As described in GSP Section 2.2.3.1 and Appendix D1 (BVHM Update), flows from streams into the model domain are estimated using the modeled streamflow from the U.S. Geological Survey Basin Characterization Model (BCM), which is calibrated using the USGS streamgages for the periods when data are available from the streamgages within the Subbasin or its contributing watersheds. There are two historical streamgages along Coyote Creek, and one active streamgage on Borrego Palm Creek. Therefore, all available data from streamgages are incorporated into the BVHM. The GSA will continue to use the BCM in future model updates, and incorporate new streamflow records that may become available within the watershed, in accordance with adaptive management needs and as necessary to meet the GSP's sustainability goal.
- Agricultural return flow is not an input to the BVHM and cannot be adjusted directly, but rather is calculated based on the estimated consumptive use in the model that is calculated using land use/crop type, farm efficiency factors, and climate data. Land use in the model future projections was left the same as land use in 2016 as determined during the BVHM update. The justification for this is presented in Draft GSP Section 2.1.3, which explains why the GSA expects little

to no growth to occur in the Plan Area. Farm efficiency factors were estimated by the USGS based on the best available information, and will be adjusted in the future if and when data becomes available to support changes. Climate data was adjusted for future projections based on the DWR guidance. It should be noted that since applied water and return flows are calculated by the model using these consumptive use calculations, irrigation return flows decrease through time in the future model scenarios as applied water decreases.

- S1-13** The level of study presented in the Draft GSP is appropriately at the Subbasin-wide scale, and thus with regard to stream gages, use of the BCM, as described in response to Comment S1-12, is appropriate and represents the best available data. With regard to agricultural pumping, the commenter is referred to Draft GSP Section 4.4, which describes the pumping reduction program. To implement this program, the GSA will require metering of production wells to allow direct measurements of pumping volumes by agricultural users. The quantification of agricultural pumping will be significantly improved upon implementation of the Metering Plan, included as Appendix E3 of the Draft GSP. With regard to past and current agricultural pumping, the indirect method of estimating irrigation needs used by the U.S Geological Survey and the GSA (i.e., the Farm Process Package) is the most appropriate method available. The GSA will incorporate the recommendations in Appendix D1 during the GSP's planning and implementation horizon, in accordance with adaptive management needs and as necessary to meet the GSP's sustainability goal.
- S1-14** The commenter is referred to Sections 4 and 5 of Draft GSP Appendix D1 for a comparison of the USGS's BVHM from 1945 to 2010 and the GSA's BVHM Update to include the period from January 2011 to September 2016.
- S1-15** The commenter provides conclusory remarks, and summarizes the comments provided in the letter. These issues have been responded to above under responses to Comment S1-2 through Comment S1-14.

*CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMENTS ON THE GROUNDWATER
MANAGEMENT PLAN FOR THE BORREGO SPRINGS GROUNDWATER SUBBASIN*

Attachment C:

**California's Groundwater Bulletin 118, Colorado River Hydrologic Region,
Ocotillo-Clark Valley Groundwater Basin**

Ocotillo-Clark Valley Groundwater Basin

- Groundwater Basin Number: 7-25
- County: San Diego and Imperial
- Surface Area: 223,000 acres (348 square miles)

Basin Boundaries and Hydrology

This basin underlies Clark and Ocotillo Valleys in eastern Imperial and western San Diego Counties. The basin is bounded by the Santa Rosa Mountains on the north and northeast, the Coyote Creek and Superstition Mountain faults on the west and south, and the Salton Sea and surface drainage divides on the east. Clark Valley drains internally toward Clark (dry) Lake and the remainder of the valley drains to the Salton Sea (Strand 1962; Rogers 1965; Jennings 1967). Average annual precipitation is about 5 inches.

In Bulletin 118-75, groundwater beneath Clark Valley and Ocotillo Valley were treated as belonging to separate groundwater basins. This bulletin combines the Clark Valley Groundwater Basin (7-23) with a large portion of Ocotillo Valley Groundwater Basin (7-25) to form the Ocotillo-Clark Valley Groundwater Basin. Instead of using surface water divides, this report mostly uses groundwater divides and barriers (Moyle 1974; 1982) to define the boundaries of this basin.

Hydrogeologic Information

Water Bearing Formations

The groundwater basin is an alluvium-filled valley and is underlain by nonwater-bearing crystalline bedrock. The valley fill in Clark Valley and upper Ocotillo Valley is likely similar to that of Borrego Valley, which is more thoroughly studied. The water-bearing sediments are likely Pliocene to Holocene stream, alluvial fan, lake and eolian deposits. In the adjacent Borrego Valley Groundwater Basin, these deposits form three aquifers that can reach more than 1,800 feet thick, with specific yield ranging to 25 percent (DWR 1984).

Restrictive Structures

The northwest-trending Coyote Creek and Superstition Mountain faults bound the basin on the south. Water level differences of 100 feet on opposite sides of the Coyote Creek fault indicate the fault is a barrier to groundwater flow (Moyle 1974; 1982). The San Jacinto and San Felipe Hills faults also displace rocks in the basin; however, it is not known whether or not these faults are barriers to groundwater movement.

Recharge Areas

Groundwater recharge to the basin is likely by percolation of runoff from mountains north and east of the valley.

Groundwater Level Trends

Groundwater levels near Clark Lake did not change appreciably from 1952 through 1980; however, water levels south of Coyote Mountain declined about 30 feet during the same period (Moyle 1982). Groundwater generally flows southeastward through the basin (Moyle 1974); however, water levels suggest that some groundwater may flow southwestward out of Clark Valley and spill over the Coyote Creek fault into the Borrego Valley Groundwater Basin (Moyle 1982).

Groundwater Storage

Groundwater Storage Capacity. The storage capacity estimated for Clark Valley is about 450,000 af and the capacity estimated for Ocotillo Valley is about 5,800,000 af (DWR 1975). These estimates add to about 6,250,000 af.

Groundwater in Storage. Unknown

Groundwater Budget (Type C)

Annual recharge to the basin is estimated to be about 1,200 af/yr for the Clark Valley portion of the basin and about 1,100 af/yr for the Ocotillo Valley portion (DWR 1975). Extractions for 1952 were estimated to have been about 3 af for the Ocotillo Valley portion of the basin (DWR 1975).

Groundwater Quality

Characterization. In the groundwater near Clark Lake, in the northern part of the basin, the dominant cation is sodium or calcium and the dominant anions are sulfate and chloride. TDS content ranges from 560 to 1,983 mg/L and averages about 950 mg/L. Groundwater in the southern part of the basin has sodium chloride-sulfate or sodium chloride character. Measured TDS content ranges from 955 to 4,656 mg/L and averages about 2,500 mg/L. TDS content often increases though time for wells with multiple measurements and increases from northwest to southeast in the basin.

Impairments. High TDS, sulfate, chloride, and fluoride concentrations locally impair groundwater for domestic and irrigation use.

Well Characteristics

	Well yields (gal/min)	
Municipal/Irrigation	Range: to 3,500 gal/min	Average: 1,760 gal/min (7 Well Completion Reports)
	Total depths (ft)	
Domestic	Range: to 410 ft	Average: 240 ft.
Municipal/Irrigation	Range: to 1,000 ft.	Average: 460 ft.

Active Monitoring Data

Agency	Parameter	Number of wells /measurement frequency
US Geological Survey	Groundwater levels	1
Department of Health Services and cooperators	Miscellaneous water quality	2
	Title 22 water quality	

Basin Management

Groundwater management:

Water agencies

Public

Private

References Cited

- California Department of Public Works (CDPW). 1954. *Ground Water Occurrence and Quality, Colorado River Basin Region*. Water Quality Investigations. Report No. 4.
- California Department of Water Resources (DWR). 1984. *Borrego Valley Water Management Plan*. 45 p.
- Jennings, C. W. 1967. *Geologic Map of California: Salton Sea Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1: 250,000.
- Moyle, W.R., Jr. 1974. *Geohydrologic Map of Southern California*. U.S. Geological Survey. Water-Resources Investigations Report 48-73. 39 p.
- _____. 1982. *Water Resources of Borrego Valley and Vicinity, California, Phase I – Definition of Geologic and Hydrologic Characteristics of Basin*. U.S. Geological Survey. Open-File Report 82-855. 39 p.
- Rogers, T. H. 1965. *Geologic Map of California: Santa Ana Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1: 250,000.
- Strand, R. G. 1962. *Geologic Map of California: San Diego-El Centro Sheet*. Olaf P. Jenkins Edition. California Department of Conservation, Division of Mines and Geology. Scale 1: 250,000.

Additional References

- California Department of Public Works. 1954. *Ground Water Occurrence and Quality, Colorado River Basin Region*. Water Quality Investigations Report No. 4.
- California Department of Water Resources. 1968. *Water Wells and Springs in Borrego, Carrizo, and San Felipe Valley Areas, San Diego and Imperial Counties, California*. Bulletin 91-15. 121 p.
- U.S. Geological Survey. Water-Resources Investigations Report 87-4199.
- _____. 1974. *Vegetative Water Use in California*. Bulletin 113-3.
- _____. 1981. *A Preliminary Evaluation of Recharging the Borrego Valley Ground Water Basin with Local Runoff*. Technical Information Record 1335-43-1-A.
- _____. 1983. *A Preliminary Evaluation of Annual Recharge Borrego Valley Ground Water Basin*. Technical Information Record 1335-11-B-1.

Hydrologic Region Colorado River
Ocotillo-Clark Valley Groundwater Basin

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Mitten, H.T., G.C. Hines, C Berenbrock, and T.J. Durbin. 1988. *Water Resources of Borrego Valley and Vicinity, San Diego County, California: Phase 2—Development of a Ground-Water Flow Model.*

Phoenix, David, A. 1979. *An Appraisal of the Groundwater Resources in the Northern Subbasin of the Borrego Valley Reservoir, San Diego County, with Emphasis on the Recovery of Groundwater from the Borrego Springs Park Area.* Consultant Report for Federated Development Company.

United States Bureau of Reclamation. 1968. *Inland Basins Projects: Borrego Valley, California.* Reconnaissance Investigations Internal Report.

Errata

Changes made to the basin description will be noted here.

*CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE COMMENTS ON THE GROUNDWATER
MANAGEMENT PLAN FOR THE BORREGO SPRINGS GROUNDWATER SUBBASIN*

Attachment D:

BLM Memorandum on San Felipe Creek and Desert Pupfish

**INFORMATION/BRIEFING MEMORANDUM
FOR THE CALIFORNIA DESERT DISTRICT, EL CENTRO FIELD OFFICE –
DESERT PUPFISH MANAGEMENT IN SAN SEBASTIAN MARSH**

DATE: September 29, 2017

FROM: Boris Poff, Hydrologist – Bureau of Land Management, Southern Nevada District

SUBJECT: Desert Pupfish Management in San Sebastian Marsh

The purpose of this memorandum is to provide

- 1) a potential explanation for the changes in hydrologic conditions that may have impacted desert pupfish habitat in the San Sebastian Marsh;
- 2) a hydrologic monitoring plan for the San Sebastian Marsh; and
- 3) vegetation management suggestions that may improve the hydrologic conditions in the San Sebastian Marsh.

KEY FACTS

The San Sebastian Marsh is the last designated natural critical habitat for the desert pupfish. San Felipe Creek, the main perennial surface water channel within the marsh, went dry in the summer of 2017.

BACKGROUND

San Sebastian Marsh

The San Sebastian Marsh is a 3-mile riparian corridor along the perennial section of San Felipe Creek in Imperial County in Southern California. The creek itself is located in a “trough” set about 30 feet below the surrounding extremely arid desert lands. The creek and part of the watershed used to be covered by an “ancient sea” probably a larger Salton Sea, which is now located about 8 miles to the east. A detailed description of the marsh is provided in *San Sebastian Marsh* (Lebo et al. 1982).

The perennial creek is a perched stream (Figure 1). The substrate is composed of clays and silts. The surface water is a mix between runs with a visible flow rate and stagnant pools, as well as the occasional waterfall (Figure 2). The vegetation lining the active stream channel consists almost exclusively of invasive Tamarisk (*Tamarix ramosissima*) (Figure 3). The pools that have been the most productive desert pupfish habitat, have some bulrushes and cattails mixed with significant open areas containing little emergent vegetation. These pools also contained a population of nonnative mosquito fish. Figure 4 is an aerial image of the Marsh, showing San Felipe Creek and some of the pools in the upper portion of the Marsh.

In the summer of 2017, California Department of Fish and Wildlife (CDFW) Fisheries Biologist Sharon Keeney observed that water levels in the perennial section of San Felipe Creek were

dropping drastically and quickly, initiating a desert pupfish salvage effort. CDFW, with the help of cooperators, was able to salvage and relocate about 350 pupfish. Approximately 200 pupfish mortalities were observed, but it is expected that most of the population perished.

During two site visits at the end of September 2017, water levels were found about 6 inches below previous ocular measurements. It is believed the creek largely dried by the end of the summer 2017 and water levels then rose to some degree by the September site visits, though were significantly below expected levels.

The purpose of this briefing paper is to discuss potential and likely causes for the change in the hydrologic conditions as well as to propose several monitoring plan options and management actions that may improve hydrologic conditions.



Figure 1: San Felipe Creek is a perched stream. The water in the stream channel on the left is several feet higher than the dry channel on the right.



Figure 2: The braided stream channel of San Felipe Creek flows into a deep pool via a small waterfall.



Figure 3: As of the writing of this report, the entire stretch of the San Felipe Creek surface flow is lined almost exclusively by Tamarisk.



Figure 4: San Sebastian Marsh. CA Hwy 78 to the North and HWY 86 to the East. The darker areas indicate dense vegetation and pools, which, in turn, are prime wildlife and fish habitat.

DISCUSSION

Geology and seismic activity

The Imperial Valley is filled with numerous geologic fault lines. The San Sebastian Marsh and its tributaries overlay several of these faults directly (Lebo et al. 1982). Over the year prior to writing this report nearly 1000 earthquakes had been recorded by the USGS in or near the Imperial Valley (USGS 2017a). In the summer of 2016 a 5.2 magnitude near Borrego Springs alone had 10 aftershocks ranging in magnitude from 3.8 to 1.7. In March of 2017 seismic activities were recorded in Mexico, just across the border along the fault system running into the Imperial Valley. These two earthquakes had a magnitude of 4.1 and 4.0 (USGS 2017a). Figure 5 shows the locations and magnitude of recent earthquakes with a magnitude of 4.0 and greater within the vicinity of the Imperial Valley.



Figure 5: Locations and magnitude of recent earthquakes with a magnitude of 4.0 and greater within the vicinity of the Imperial Valley. (Figure taken from [https://earthquaketrack.com/us-ca-imperial/recent?mag_filter=4])

Seismic activities have been linked to temporary changes in groundwater levels in the Mojave Desert. Such observations have been made at monitoring wells, Well AD-4a, (Figure 6) (USGS 2017b) and observed in spring discharge records such as Nevares and Travertine springs as well as Travertine Point, (Figure 7) (USGS 2017c). The most dramatic observations have probably been made at another pupfish habitat, namely at Devils Hole. There is even a YouTube video filmed by a technician who was present as a 2012 earthquake made waves at this spring: https://www.youtube.com/watch?v=a6h82Pli_-0.

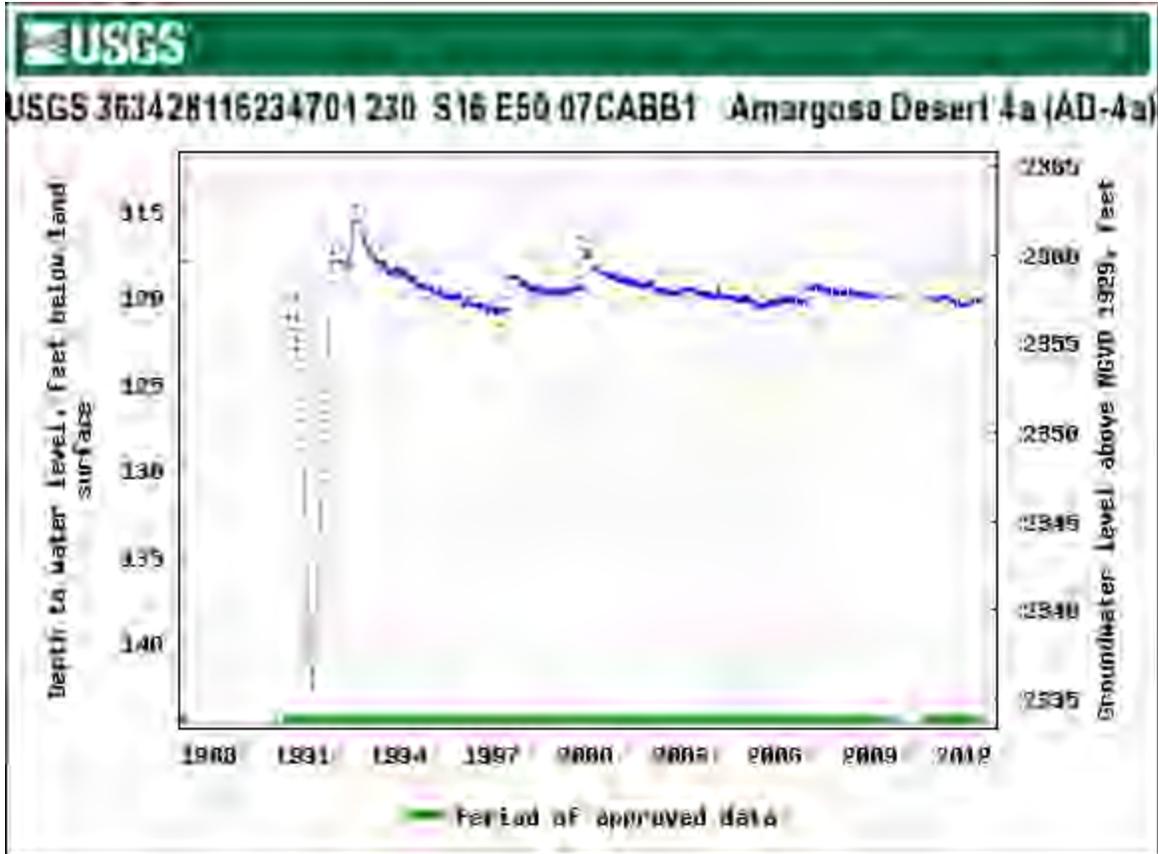


Figure 6: After an earthquake in the early 1990, water levels at the monitoring well AD-4a water levels dropped over 20 feet, but rebounded above previous levels several month later.

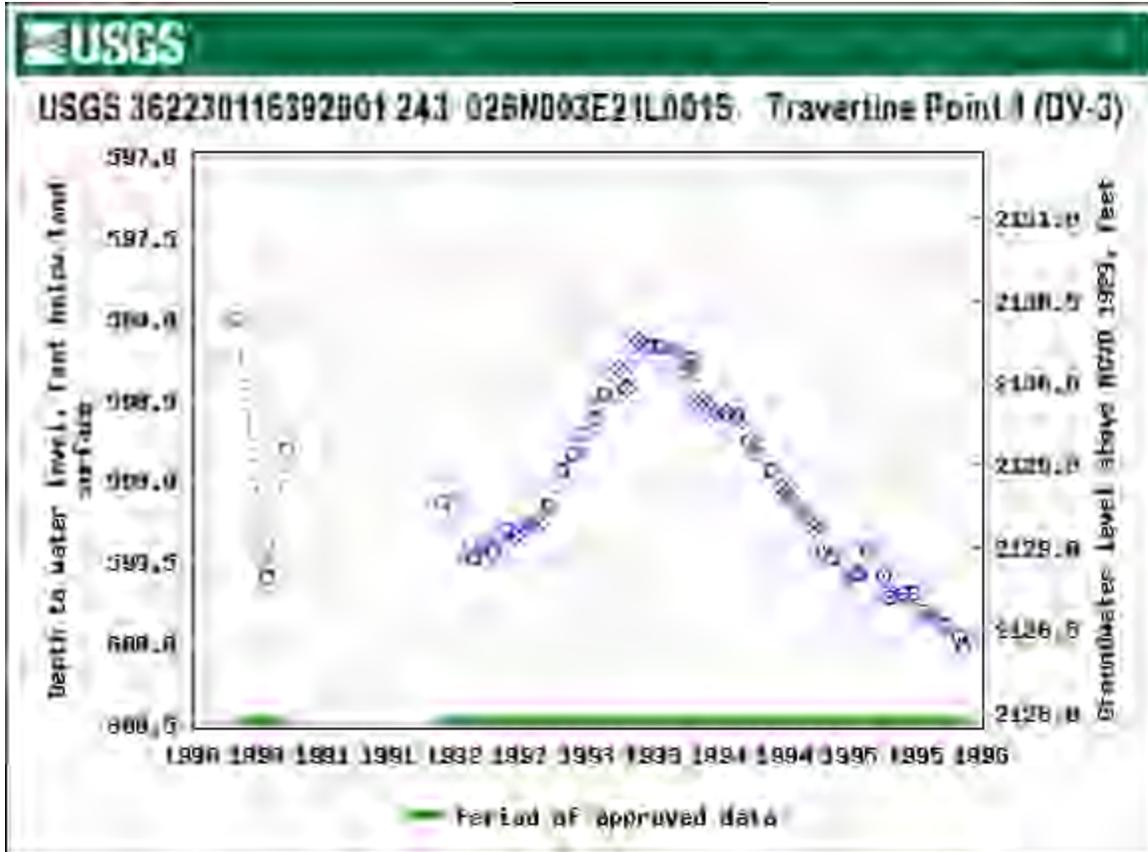


Figure 7: At Traverline Point an earthquake caused the water levels to rise in the early 1990, before beginning to drop again. Probably to lag time this process took several years.

Another cause for the sudden drop in water levels in the marsh could potentially be groundwater pumping. However, that seems unlikely for several reasons. One is the location of the closest notable well fields/pumping locations. Wells located in Borrego Valley are located about 20 miles to the north-northwest of the Marsh and about 700 feet higher in elevation. Other known major wells are located downstream in the watershed. There used to be a ranch with active wells located upstream, but most of these agricultural fields have been converted into a solar power plants. Other wells are either located across the Coyote Creek fault, which is likely a groundwater barrier (Faunt et al. 2015) or are most likely too far away to have their cone of depression reach the perched aquifers of underground springs that feed Fish Creek and San Felipe Creek. Further, the water levels dropping suddenly is very unlikely to be caused by distant groundwater pumping. Such effects are more commonly seen in groundwater levels in close proximity to where the pumping occurs and then stops. When pumping occurs within a short distance, the cone of depression is more likely to appear quickly and also to rebound more quickly. Otherwise long distances and lag times would weaken such pumping effects. However, threats of long term water level declines have been observed in many wells within the watershed (Lebo et al. 1982) and Borrego Valley in which San Felipe Creek originates (Faunt et al. 2015). If a known well is suspected to have caused the water level drop, a pump/aquifer test could either confirm or eliminate such suspicion.

Hydrologic monitoring plan needs for the San Sebastian Marsh

A lack of exact water level data for San Felipe Creek within the San Sebastian Marsh makes it challenging to make management decisions in regards to the only natural desert pupfish habitat. Management of the San Sebastian Marsh would benefit from better, current, continuous and long term hydrologic data. A streamgage on San Felipe Creek as well as several shallow groundwater monitoring wells would provide a plethora of information which can be used to more effectively manage the resources at risk. While San Felipe Creek/Fish Creek have apparently had perennial flow for the past 300 years, seismic activity is the most likely culprit for the sudden dis-and re-appearance of this perennial flow. The presence of desert pupfish in the creek (prior to the summer of 2017) would suggest that such drastic fluctuations in flow are rather uncommon.

San Felipe Creek at Hwy 86 was monitored from 1961 to 1978 by the USGS. The location of the streamgage provided some generally interesting information, such as the “flashiness” of the system, i.e. 17 flows over 1000 cfs in 17 years, though the measured flow was usually 0.0 cfs. However, this information is less useful for monitoring water levels for fish populations because the streamgage was located below the perennial part of the stream and hence, below the designated critical habitat. In 1980, UC Santa Cruz conducted a brief study of the Marsh, including installing four streamgages and nine shallow test wells for the month of March. This study provides a snapshot in time. The streamgages measured flows between 0.243 and 0.75 cfs along the San Felipe Creek. Although this information is interesting, it is difficult to make management decisions based on one snapshot in time, because water levels can change dramatically overtime.

Having a small monitoring network in place that includes a streamgage and shallow monitoring wells would help to answer a number of questions – some of which federal land managers have jurisdiction and influence over and some which they do not. A streamgage operated by the USGS has the capability to provide non-biased, publicly defensible, real-time data, i.e. water levels which can be checked remotely via the USGS NWIS website. If desired there is the option to set-up “WaterAlert”, which will inform any willing user via text when water levels at a streamgage fall below a user-determined level. Therefore, should the desert pupfish persist in the remaining natural critical habitat, water levels could be monitored in real-time. Further, long-term monitoring data, from the streamgage and shallow monitoring wells, would help identify water levels trends. Are water levels in flux? Is there a steady decline or seasonality? Such information would not only help guide management decisions, (i.e. should desert pupfish be reintroduced in the first place or are such efforts a waste of limited resources), but data and information can also help guide funding requests and strengthen funding proposals. Last but not least, this knowledge can also direct restoration efforts.

Restoration needs for the San Sebastian Marsh

Currently, there are several restoration needs in San Sebastian Marsh. The top priority should be the removal of the tamarisk. Ideally control of this invasive species should include both chemical and mechanical treatment methods, either separately or in combination. Chemical treatments should include the use of herbicides, applied by hand using portable hand sprayers or backpack

sprayers, or vehicle mounted sprayers where sites are accessible by road or trail. Only those herbicide formulations and adjuvants approved by BLM and rated for use in or near aquatic sites should be used, and in accordance with approved application rates and techniques, label instructions, and other applicable laws and regulations.

Mechanical treatments should include pulling, cutting and/or digging weeds by hand or using hand tools or portable power tools (such as chain saws). Cutting should be followed by herbicide application to the cut stump or to cuts in the bark. Burning should also be used to kill tamarisk where appropriate and safe to do so. It would not be safe to burn tamarisk where hot ashes, or large amount of ashes in general, could be washed into the stream when and where fish are present.

Where hazardous fuel reduction is needed to reduce the risk of wildland fire at the marsh, treatment methods should include cutting, digging, and/or burning, and should be combined with herbicide treatment of cut stumps as well as later herbicide application to any regrowth. In some cases cut wood could be removed from the site for disposal in order to prevent seed release or regeneration from cuttings. In other cases, woody slash could be chipped or scattered and left on site where it would provide mulching and erosion control benefits, if doing so does not pose a risk of fire or weed regeneration. Where appropriate, slash could be piled and burned at a later time.

Ecological restoration of the marsh will be beneficial in many cases to stabilize soil, return water flow to normal levels (tamarisk have a high water consumption), and re-establish native vegetation. This may involve minor ground disturbance for seeding, planting, and installation of temporary fencing to protect plantings during the establishment period (one to two years). A streamgauge would allow managers to determine whether tamarisk removal changed streamflow. It would be advisable to begin tamarisk removal/native vegetation planting upstream in the watershed and then work downstream, if this project needs to be phased though focus should also be prioritized to maximize immediate benefit to pupfish.

Excluding the use of herbicides for weed control would eliminate the potential risks of chemical pesticides, such as accidental spills, excessive application, or possible contamination of water sources. However, only allowing for manual removal, in place of herbicide use, would not allow for effective control of tamarisk at the marsh. In addition to seeds, tamarisk, as many other weed species reproduce by rhizomatous roots, which can re-sprout after cutting or generate new plants from root fragments. Tamarisk will continue resprouting from the stumps. This would necessitate repeated treatments to control regrowth of tamarisk for many years, increasing the cost and time required to complete the restoration efforts. Ineffective control of tamarisk could significantly impact the purposes of the proposed restoration efforts.

NEXT STEPS

Hydrologic monitoring in the San Sebastian Marsh

As a next step I recommend a two pronged monitoring plan. 1) Enter into an Interagency Agreement (IAA) with the USGS to set-up an USGS streamgage about 100 feet upstream of the previously most productive desert pupfish habitat within the marsh; and 2) set-up a small network of BLM-installed and maintained shallow monitoring wells along San Felipe Creek within the Marsh.

On Sept. 28, 2017 Kimball Stumpf from the USGS Poway Field Office came out to visit San Felipe Creek to help determine the feasibility and estimated costs of putting a USGS streamgage on the creek (Figure 8). We concluded that a streamgage could be placed at a site approx. 100 feet upstream from - what had previously been - the main desert pupfish habitat. This main habitat consists of a series of small pools, runs and riffles and is located within an “L”-bow within the San Felipe Creek (Figure 9). This stretch is heavily vegetated with cattails, sedges and rushes. It has open areas as well as edges along the creek.



Figure 8: Site visit with USGS on Sept. 28, 2017. Camden Bruner, BLM El Centro Field Office (left) and Kimball Stumpf, USGS Poway Field Office.



Figure 9: The upper reach of the previously main habitat for the desert pupfish along San Felipe Creek.

The proposed gaging site is located about 30 feet upstream of a bend in the creek with a tall “cliff” on the right bank (Figure 10). This will be less suitable to measure peak flows. However, from a desert pupfish habitat management standpoint, base flow and minimum flows are critical data points. While peak flows are also important to desert pupfish, because the species requires occasional disturbance, the actual peak flow measurements are not required. In general, it is more important to know that these peak flows happen rather than the magnitude of these flows.



Figure 10: The proposed location for a USGS streamgage within the San Sebastian Marsh.

USGS CA charges \$25,000 for the installation of a streamgage and an annual \$25,500 fee for the Operation and Maintenance (O&M) of the gage. These cost could be shared with other federal, state or local agencies. Data would be collected every 15 minutes at this USGS streamgage and would be available on the USGS National Water Information System website (<https://waterdata.usgs.gov/nwis/sw>). The streamgage can then be used to set-up the USGS “WaterAlert,” which is a service that sends e-mail or text (SMS) messages when certain parameters, as measured by a USGS real-time data-collection station, exceed user-definable thresholds (i.e. water drops below a certain predetermined level), which could be detrimental for pupfish.

I would also recommend that BLM personnel record physical and chemical characteristics of the surface water including pH, specific conductance, temperature, dissolved oxygen, and percent dissolved-oxygen saturation. This type of information can be easily collected with a simple water quality probe (i.e. Hach HQ30d or Oakton meters model # PCS Testr 35). This data should be collected seasonally in the beginning and then at least annually, to establish a baseline of data and then to monitor for trends and or changes in the water quality.

Further, I would recommend three to five shallow monitoring wells. One about 300 feet upstream of the proposed USGS streamgage location, one within 50 feet of the USGS

streamgage and one to three wells further downstream about 300 feet apart. All monitoring wells should be located within the dry part of the stream channel. Exact location of each well should be determined in consultation with agency archaeologists to avoid conflict with cultural resources in the area. The wells would be installed manually using a drive point attached to the steel pipe, to a depth of approximately 20 feet. The top of each well pipe would be capped and camouflaged. The wells would be intended to be semi-permanent. The wells would be sealed/reclaimed according to California state regulations when they will no longer be used. Total disturbance would be approximately 0.09 acre. (See attachment for a description of the suggested monitoring wells.) Once wells are in place, pressure transducers/data loggers (<https://www.solinst.com/products/dataloggers-and-telemetry/3001-levellogger-series/levellogger-edge/>) could be installed in each well, to record changes in water level. Monitoring should be accomplished by BLM staff visiting the wells bimonthly or quarterly to download sensor data, which then could be documented and further analyzed to help make informed management decisions. As an alternative to pressure transducers BLM staff can also use e-tape (<http://www.heroninstruments.com/product/dipper-t/>) or steel tape to make these measurements. I would suggest working with the local USGS office to get the chosen measurement instrument calibrated by them and to follow their protocol. That would allow the BLM collected data to be published on the NWIS. This is probably associated with a fee as well. The advantage of having BLM data on the USGS website is that this data is publicly available and becomes peer reviewed.

Further, I recommend that the BLM El Centro office prepare NEPA documentation for both proposed actions, streamgage and monitoring wells, ahead of time to expedite and facilitate the installation process. These proposed actions are categorically excluded from further documentation under the National Environmental Policy Act (NEPA) in accordance with 516 DM 11.9, J.3. "Conducting preliminary hazardous materials assessments and site investigations, site characterization studies and environmental monitoring. Included are siting, construction, installation and/or operation of small monitoring devices such as wells, ...". (Example NEPA documents for a USGS streamgage and BLM monitoring wells are attached.)

Other Considerations and Recommendations

Conducting restoration work and putting a monitoring network in place will most likely require additional funding, potentially from multiple sources. While in the recent past funding for such projects may have come from mitigation fees (i.e. solar), there are other foundations and groups that are interested in providing financial support for exactly this type of wetlands project. The Walton Foundation in the past has funded projects that help restore Southwestern Flycatcher habitat. During the September field trips such potential habitat was observed along the San Felipe Creek. The Tamarisk Coalition is working to manage invasive plant species and to restore native riparian vegetation - specifically focusing on tamarisk removal. These organizations have grown to focus on riparian restoration as a whole and promote cross-boundary, ecosystem-wide restoration approaches that employ a landscape-scale perspective. Other funding sources include California Proposition 1 and Section 106.

These organizations are usually attracted to watersheds that have existing and functioning working groups. Hence, it would be advantageous if the BLM ECFO had MOUs in place with

state agencies and/or state parks as well as universities. Collaborative work could include growing out native vegetation at nurseries (i.e. BOR/NPS) for replanting in the marsh.

REFERENCES

Faunt, C.C., Stamos, C.L., Flint, L.E., Wright, M.T., Burgess, M.K., Sneed, Michelle, Brandt, Justin, Martin, Peter, and Coes, A.L., 2015, Hydrogeology, hydrologic effects of development, and simulation of groundwater flow in the Borrego Valley, San Diego County, California: U.S. Geological Survey Scientific Investigations Report 2015–5150, 135 p., <http://dx.doi.org/10.3133/sir20155150>

Lebo, A., Nitikman, L., Salmen, C. 1982. *San Sebastian Marsh*. Publication No. 9 Environmental Field Program, University of California, Santa Cruz.

U.S. Geological Survey, 2017a, National Earthquake data available on the World Wide Web, accessed [November 14, 2017], at URL [<https://earthquake.usgs.gov/>].

U.S. Geological Survey, 2017b, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed [November 14, 2017], at URL [https://nwis.waterdata.usgs.gov/usa/nwis/gwlevels/?site_no=363428116234701].

U.S. Geological Survey, 2017c, National Water Information System data available on the World Wide Web (USGS Water Data for the Nation), accessed [November 14, 2017], at URL [https://nwis.waterdata.usgs.gov/usa/nwis/gwlevels/?site_no=362230116392901].

Borrego Valley's Groundwater Management Plan and the Public Interest

A year ago, on May 20, 2019, I submitted a comment letter on the DWR web page regarding the transition from work on a GSP for Borrego to a privately negotiated settlement. The comment letter was entitled "Regarding Integration of a possible negotiated settlement/stipulated agreement among major pumpers and the GSP." I am going to restate some issues raised in that comment letter, updated in the light of a few months of meetings of the Interim Watermaster Board, which is functioning to implement the Stipulation Judgement now in place as Borrego's sustainable water plan. The GSP that was the product of 2.5 years of meetings and work is now incorporated with some modifications as part of the GMP (Groundwater Management Plan), which is the term used for the Stipulation Judgement and associated documents.

The intention of the comment letter from 2019 was to point out that the private negotiations that eventually resulted in the Stipulation Judgement did not conform to the public participation aspects of SGMA, and that in such negotiations, the Borrego Water District was considered one pumper among others, instead of being acknowledged as the one pumper who represents thousands of residents and visitors, and is responsible for delivering water that will make the town of Borrego Springs viable into the future. I stated then that one voice for the town of Borrego Springs could not be sufficient.

Perhaps partly in response to that comment, the Watermaster Board that is to manage the basin in line with the GMP was designed to have a Community Representative in addition to Representatives for Agricultural and Recreational interests, as well as a Borrego Water District Representative and potentially a seat for the County of San Diego, which is yet to be filled.

I also mentioned in the previous comment letter that when the stakeholder GSP Advisory Committee meetings were occurring, we were advised by the GSA in place then (by representatives of San Diego County and the Borrego Water District), that there would be a fully transparent public process to determine the Projects and Management Actions that would govern the parts of the GSP that are mentioned but were left to be determined in the future, like the water reduction program, fallowing program, and water trading program. I suggested that those matters should be discussed and decided in a public manner with public participation. But those matters were addressed instead in the private negotiations and resulted in the Stipulation Judgement.

In response to concerns like the one I expressed in my comment letter advocating for public decision-making, the Stipulation Judgement included an agreement by the pumpers who signed it to conduct meetings of the Watermaster Board (currently the

Interim Watermaster Board) in accordance with the Brown Act, providing for a publicly transparent management of the basin.

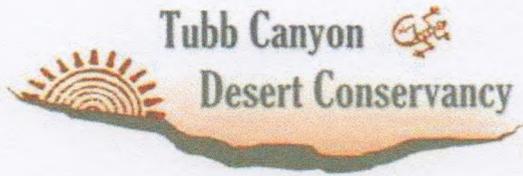
In light of my previously submitted concerns regarding public transparency and participation, and now, having attended the two Watermaster Board Meetings that have occurred so far, I have the following concerns, while acknowledging the very positive addition of a Community Representative to the Watermaster Board and also the agreement that the Watermaster Board will follow the Brown Act in order to be transparent and have public participation:

1. The Watermaster Board is very much lawyer-led. While that is in part temporary until an Executive Director can be chosen and hired, the fact that the Board is composed of only four members at present, three of whom have their own attorneys in attendance, and the fact that attorneys were primary drafters and negotiators of the Stipulation Judgement, means that the Watermaster Board currently favors those Board Members with lawyers. Again, this will in part shift when the Watermaster Board hires its own attorney, but it will remain the case that the Community Representative is the only Member without a private attorney to advise him. This raises a concern about the weight that can or will be given to the public's interests in decisions made by the Board.
2. A proposal on the Agenda for the May 14, 2020 Watermaster Board Meeting was for an External Communication Policy, limiting what Board Members can say to the press and other media while identifying themselves as a Watermaster Board Members. This is concerning as it indicates a desire to limit public knowledge to those who are able to attend meetings and to the official statements for the Watermaster Board made by a yet-to-be-hired Executive Director. An excessive External Communications Policy proposed to such a small Watermaster Board by one of its Members is concerning. Is the commitment to transparency to the public strong enough to be in accordance with SGMA's intent? The discussion held at the meeting may lead to some changes in the policy. I have no quarrel with a need to have a consistent voice about Watermaster Board policies. My concern is that the public not be shut out of understanding and becoming familiar with Watermaster Board matters, as it would, for instance, if Watermaster Board Members were prohibited from identifying themselves as such when engaging in external communications, so that these could only be offered as an individual's opinion, not an opinion or perspective of a Member of the Watermaster Board.
3. My understanding of SGMA is that is based on the idea that groundwater is a public resource and has to be managed sustainably in order to continue to be a public resource. My sense of the major pumpers, with the exception of BWD, is that they think of groundwater as belonging to them because the right to pump is conceived of as ownership of the public resource. Having control of managing

the basin in the few hands of the major pumpers lends itself to this conception as well. The remedy I can imagine now that we are on the GMP (privately negotiated) path versus the GSP (publicly negotiated) path is for DWR and the State Water Resources Control Board to provide oversight that emphasizes the public nature of the resource, and not to waive close oversight of that resource because a management plan is in effect.

4. I still have a concern for impacts on water quality from the water trading program and on air quality from the fallowing program. With the small number of interests represented on the Watermaster Board deciding which consultants to hire, what needs monitoring, and what will be financed, oversight beyond a judge is needed to protect the public resource. Borrego Water District will play an important role in these issues, but itself is limited in its finances, staff and expertise. I hope that State Agencies responsible for ensuring good water quality and air quality will play a role and also help fortify the public accountability that was built into SGMA.

Rebecca Falk
May 14, 2020



May 14, 2020

Via Upload to SGMA Portal
California Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

To Whom It May Concern:

I am submitting these comments regarding the alternative to a Groundwater Sustainability Plan (GSP) that has been submitted by the Borrego Water District (BWD) to the Department of Water Resources (DWR). My understanding is that the Physical Solution thus submitted is in essence the GSP that could have been approved by the County of San Diego and BWD. Further, it is my understanding it is now DWR's job to determine if the Physical Solution substantially meets requirements of the Sustainable Groundwater Management Act (SGMA). And finally, it is my understanding this may be DWR's last chance to influence the Physical Solution that would henceforth be monitored by the courts.

I have three areas of concern and associated questions of DWR:

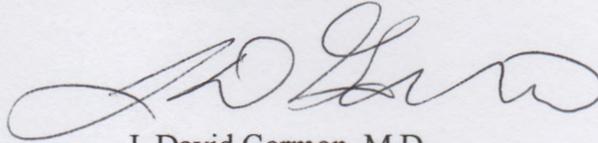
Reduction Period. Does the Physical Solution have sufficiently clear metrics for determining if 20 years is too long to reach basin sustainable yield? Does the Physical Solution assume fast enough reductions to avoid excessive costs to BWD for re-drilling, replacing, and/or abandoning some of its production wells prematurely due to declining water levels? It takes years and millions of dollars to relocate a municipal well.

Water Quality Monitoring. In my reading of the Physical Solution, it is not clear what metrics will be used for basin-wide water quality monitoring. My belief is that the entire basin is potentially the sole source for municipal water supply. Thus, it may be prudent that there be a clearly defined basin-wide water quality standard. If water quality standards for monitoring wells are radically different from existing BWD production wells, such a discrepancy adds greater uncertainty to the need for advanced treatment and potentially much higher rates for municipal customers. This additional cost for municipal water would be a hardship for a community that has been designated as a Severely Disadvantaged Community (SDAC).

Fallowing Standards. The Physical Solution has little in the way of fallowing standards, even as reductions assume the non-irrigation of potentially thousands of acres of previously irrigated farmland in the basin. The Stipulation describes some rudimentary fallowing standards but provides no analytical basis to support the conclusion that these standards are adequate to prevent public health impacts from blowing dust. Is this something that DWR or SGMA cares about — deleterious public health impacts from declining air quality from implementing SGMA?

Thank you for this opportunity to provide input into this critical process. Please do not hesitate to contact at the number listed below if you require any additional information.

Sincerely yours,

A handwritten signature in black ink, appearing to read 'J. David Garmon', written in a cursive style.

J. David Garmon, M.D.

President, TCDC

JDG: ms

March 30, 2020

Via Upload to SGMA Portal
California Department of Water Resources
P.O. Box 942836
Sacramento, CA 94236-0001

Re: 7-024.01 Borrego Springs Subbasin of the Borrego Valley Groundwater Basin (the "Basin")

Dear Sir/Madam:

Our firm represents Borrego Air Ranch Mutual Water & Improvement Co., a California public benefit corporation (the "Air Ranch").

The Air Ranch is located at 2580 Stinson Road, Borrego Springs, CA. The Air Ranch expects to be served with the complaint in, and therefore to become bound by that certain stipulated judgment (the "Stipulated Judgment") proposed for entry in, San Diego County Superior Court Case No. 37-2020-00005776-CU-TT-CTL. Capitalized terms that are used in this letter without definition and that are defined in the Stipulated Judgment are used herein as so defined.

The Borrego Water District ("BWD"), together with the County of San Diego ("County"), established a GSA for the Basin pursuant to the Sustainable Groundwater Management Act, California Water Code sections 10720 et seq. ("SGMA"), in 2016. However, the County withdrew as a GSA, effective December 31, 2019.

Although it expects to be made party to the Stipulated Judgment, the Air Ranch is not located within the boundary of BWD, which is now the sole proponent of the GSP for the Basin. We understand that representatives of the California Department of Water Resources ("DWR") reached out to BWD to express the Department's concern that the Stipulated Judgment cannot apply to the Air Ranch and at least two other Persons who are similarly situated. As a result, we understand these three pumpers who are outside the jurisdiction of BWD could be subject to oversight by DWR. This creates ambiguity in that the Air Ranch could be subject to reporting groundwater usage and to paying groundwater pumping fees to both the watermaster that will be appointed by the Court pursuant to the Stipulated Judgment (the "Watermaster") and to DWR.

The Air Ranch is considering becoming a Stipulating Party by executing the Stipulated Judgment (as opposed to being bound by the Stipulated Judgment solely by virtue of being served with the complaint). Prior to deciding, however, the Air Ranch is requesting (1) certain clarifying changes to the proposed Stipulated Judgment and (2) resolution of the ambiguity described in the foregoing paragraph. The purpose of this letter is to make comments to DWR

addressing these two requests.

A. Suggested Changes to Stipulated Judgment.

(i) Paragraphs 1 and 2 on page 23 of the Stipulated Judgment should be modified as follows (with the proposed modifications underlined or stricken through, as appropriate, and an explanatory comment following each requested modifications):

1. Good Standing and Intervention Requirements. Permanent Transfers and Leases may only be completed in accordance with these rules by Parties to this Judgment (including without limitation those Persons that have become subject to this Judgment by virtue of having been named and served with the Complaint) in good standing (meaning both buyer and seller have paid all applicable Pump assessments, fees, charges or will do so prior to completion of the transfer, and are otherwise in compliance with this Judgment). A transferee who is not already a Party must intervene as a Party as a condition of completing any Lease or Permanent Transfer.

COMMENT: This proposed change is for clarification only. The reason for this proposed change is that some Persons may not sign the Stipulated Judgment, but nevertheless will become bound by it only as a result of having been named and served with the Complaint. The Air Ranch may find itself in this position.

2. Anti-Speculation Provision. A buyer of BPA pursuant to a Permanent Transfer must own at least one acre overlying the Basin for every five acre-feet of BPA transferred to the buyer (the "Eligibility Requirement"). The "Anti-Speculation" provisions of this paragraph do not apply to BWD, the County, a mutual water company, or an owner of an Original BPA Parcel; provided, however, that the "Anti-Speculation provisions shall not apply to an owner of an Original BPA Parcel only so long as either (i) the BPA owner retains the same or greater quantity of acreage in proportion to its Original BPA or (ii) the BPA owner does not hold an amount of Annual Allocation in excess of the quantity of its originally granted BPA. As a condition of completing a Permanent Transfer, the Watermaster may demand that a BPA buyer (excepting BWD, the County, a mutual water company and an owner of an Original BPA Parcel satisfying the criteria specified above) submit a deed reflecting the buyer's ownership in fee duly recorded, or Court order evidencing ownership by the buyer, of a legal parcel or parcels overlying the Basin of sufficient acreage to satisfy the buyer's satisfaction of the Eligibility Requirement (the "Eligibility Proof").

COMMENT: This proposed change also is for clarification only. The reason for this proposed change is that, under the Stipulated Judgment, BPA is recorded in the name of a mutual water company, such as the Air Ranch, and not in the name of the individual lot owners. The

proposed change is intended to clarify that the Eligibility Requirements do not apply to the Air Ranch, a mutual water company, which, like the County or BWD, is a water service provider that delivers water to a large area or to numerous water service customers, but the Air Ranch, like BWD, owns solely well sites and associated infrastructure. The proposed change would put the Air Ranch on the same footing as BWD and the County, which is how a mutual water company is treated elsewhere in the Stipulated Judgment.

(ii) Paragraph 4 on page 24 of the Stipulated Judgment should be modified as follows (with the proposed modifications underlined or stricken through, as appropriate, and an explanatory comment following the requested modifications):

4. Transfer Records. ~~Except for BWD, the County and a mutual water company,~~ Upon completion of the Permanent Transfer, the BPA will be assigned to the buyer's Parcel(s) on the records of the Watermaster. Notwithstanding the foregoing, upon completion of the Permanent Transfer to BWD, a mutual water company, or the County, the BPA will be assigned on the records of the Watermaster to BWD, the mutual water company or the County, as applicable.

COMMENT: This proposed change also is for clarification only. The reason for this proposed change is that, under the Stipulated Judgment, BPA is recorded in the name of a mutual water company, such as the Air Ranch, and not in the name of the individual lot owners. The proposed change is intended to clarify that, upon completion of a Permanent Transfer, BPA will be assigned to a mutual water company (and to BWD or the County, as applicable), and not to the individual lot owners. This change would be consistent with how BWD, the County and mutual water companies are treated elsewhere in the Stipulated Judgment.

B. DWR Concerns Over GSA.

As previously indicated, the Air Ranch expects to be made a party to the Stipulated Judgment, it is not located within the boundary of BWD (i.e., the sole proponent of the GSP for the Basin), and DWR has expressed concern that the Stipulated Judgment cannot apply to the Air Ranch, which is outside of BWD's jurisdiction. This creates the possibility that the Air Ranch could be subject to oversight by the Watermaster (because the Air Ranch is located within the area of the Stipulated Judgment) and also by DWR (because the Air Ranch is outside of BWD's territorial jurisdiction), which could subject the Air Ranch to reporting groundwater usage and to paying groundwater pumping fees to both the Watermaster and to DWR.

In view of the foregoing, the Air Ranch requests that one of the following alternatives be implemented:

(i) If the Air Ranch becomes a Stipulating Party by executing the Stipulated Judgment, then the Air Ranch would report groundwater usage and pay groundwater pumping fees solely to the Watermaster in accordance with the Stipulated Judgment. DWR would acknowledge in writing that such reporting and payment to the Watermaster satisfies any

Letter to Department of Water Resources

March 30, 2020

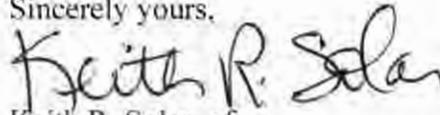
Page 4

obligation of the Air Ranch to report groundwater usage and to pay groundwater pumping fees to DWR.

(ii) If the Air Ranch does not become a Stipulating Party by executing the Stipulated Judgment, then the Air Ranch would report groundwater usage and pay groundwater pumping fees solely to DWR. The Stipulated Judgment would be modified to reflect that such reporting and payment to DWR satisfies any obligation of the Air Ranch to report groundwater usage and to pay groundwater pumping fees to the Watermaster under the Stipulated Judgment.

Thank you for your consideration. Should you have any questions, please contact the undersigned at your convenience.

Sincerely yours,

A handwritten signature in black ink that reads "Keith R. Solar". The signature is written in a cursive, slightly slanted style.

Keith R. Solar, of
Parks & Solar, LLP

KRS:

Cc: Bill Carpenter (via email)

Cary Lowe, Esq. (via email)